Institutions and Economies
Vol. 5, No. 3, October 2013, pp. 53-74

Fighting Corruption when Existing Corruption-Control Levels Count: What do Wealth-Effects Tell us in Africa?

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Abstract: Why are some nations more effective at battling corruption than others? Are there different determinants in the fight against corruption across developing nations? Do income-levels matter in the fight against corruption when existing corruption-control levels also matter? In other words, how does the wealth of nations matter in the fight against corruption when corruption is assessed throughout the conditional distribution of corruption-control from countries with low initial levels of corruption-control to those with high initial levels of corruption-control. To investigate these concerns we examine the determinants of corruption-control throughout the conditional distribution of the fight against corruption. The following broad findings are established: (1) Population growth is a tool in the fight against corruption in Low income countries. (2) Democracy increases corruption-control in Middle income countries. As a policy implication, blanket corruption-control strategies are unlikely to succeed equally across countries with different income levels and political will in the fight against corruption. Thus to be effective, anti-corruption policies should be contingent on the prevailing levels of corruption-control and income-bracket.

Keywords: *Corruption, Democracy, Government quality, Quantile regression, Africa*

***JEL Classification*:** C10, H10, K10, O10, O55

1. Introduction

There is growing realisation among international development experts that quality of governance is vital for development (Kaliannan *et al*., 2010; Rasiah, 2011; Katz and Iizuka, 2011). Over the past decades, corruption and the search for strategies to counter its corrosive effects have grown in importance as a topic of public debate and a criteria by which civil society scrutinises leadership.

Advice on sound policies, well-intentioned incentives and aid efforts may not achieve their desired objectives unless they are offered in an environment which stimulates self-sustaining growth and development (Jain, 2001). There is also growing realisation that unsustainable policies do not always emerge from a deficiency in knowledge; rather they could emanate just as much from decision-makers distorting economic policies for their own interest (Coolidge and Rose-Ackerman, 1997; Grossman and Helpman, 1994; Krueger 1993a; Krueger 1993b). Corruption is seen by many as one of the principal impediments to the development of an efficient government since it is acknowledged as a "*symptom that something has gone wrong in the management of the state*" (Rose-Ankerman, 1999:9). Even the public acknowledges that corruption is the greatest obstacle to economic development (Jain, 2001). Empirical assessments on the causes and consequences of corruption abound. Though some consensus is slowly emerging on the determinants of corruption across countries, a number of aspects remain unaddressed. There is lack of consensus on how to measure corrupt activity in addition to difficulties in quantifying the impact of institutions on fighting corruption (Billger and Goel, 2009). The latter concern is the primary objective of this paper. Today, anti-corruption policies espoused by national governments and international organisations are similar across countries. Yet, the effectiveness of some of these strategies are questionable (Billger and Goel, 2009).

The work contributes to the literature by focusing on the distribution of the dependent variables (control of corruption). Corruption-control (hence CC) determinants and governments' efficacy in combating corruption may differ across countries such that, corrupt and "clean" countries respond differently to factors that stimulate the fight against corruption. This hypothesis prompts the question of whether there are different determinants of combating corruption in high CC countries compared with least CC ones. Therefore, if existing levels of CC affect how various motives for the fight against corruption come into play, then findings of this paper would have significant implications both for the literature and policy orientation towards the battle against corrupt practices in Africa in particular. It follows that, instead of emphasising on groups of countries with common CC measures, policy could instead target groups of countries with the same CC characteristics (high, low or average). The remainder of the paper is presented as follows: Section 2 reviews existing literature. Data and methodology are presented and outlined respectively in Section 3. Empirical analysis is covered in Section 4 while Section 5 summarises the main points.

2. Theoretical Highlights from Extant Literature

Borrowing from Jain (2001), corruption requires three preconditions: discretionary power related to regulations (also see Rose-Ankerman, 1978), economic rents linked to power and, marginal punishment (Dong *et al.*, 2012). Four main theories of corruption: (1) Good and misguided governments establish systems that are very rigid. Venal bureaucrats mould the rules. Corruption diminishes red-tape and if anything, improves the allocation of resources (Leff, 1964; Huntington, 1968). (2) Good and smart governments establish systems that are supposed to be rigid. Venal bureaucrats turn around the rules and regulations. Corruption reduces bureaucracy and deteriorates allocation efficiency (Laffont and Tirole, 1993). (3) Greedy and smart governments make rules that are very lax and allow bureaucrats more discretion than they should normally enjoy. There is an absence of red-tape and no need for any corrupt activity. Efficient allocation of resources suffers a great deal (Shleifer and Vishny, 1993). (4) Good and smart governments establish rules that make it tempting for the bureaucrat to take money and turn around the rules. A bureaucrat introduces red-tape in a bid to bend the rules in a way that protects him/her. Corruption and red-tape move hand in hand.

According to Billger and Goel (2009), the theoretical basis for corruption studies also draws from the larger literature on the determinants of criminal activity, where rational individuals (bribe-givers, bribe-takers among others) weigh the relative benefits and costs of criminal (corrupt) acts (Becker, 1968). Potential benefits of corruption include disproportionate favours that monopolist bureaucrats hand out (Shleifer and Vishny, 1993) or they may involve reducing (or accelerating, if there is no benefit) bureaucratic red-tape (Guriev, 2004). The differential levels of impatience (discount rates) across economic agents induce some to accept/offer bribes and determine the size of the bribes. Potential costs of indulging in corrupt activity include apprehension and punishment. Existing literature does however, indicate the possibility that monitoring agencies could themselves be corrupt (Banerjee, 1997).

2.1 Types and Levels of Corruption: How the Stakes Involved can Influence Governance

It is not within the purview of the paper to discuss if corruption is inherently good or bad. It is more useful to cite which types of corruption have the most corrosive effect on social/economic stability (read development). Political leadership plays a crucial role in promoting/discouraging corrupt activities. To effectively shape this role, it is imperative to move beyond the subjective and qualitative analyses which describe corruption as a mere moral failing of

politicians, bureaucrats and businessmen. It is more useful to consider it as a politico-economic phenomenon.

Corrupt activities are prevalent to some degree in all societies. In recent years however, political scientists have theorised why some nations and societies are clearly more vulnerable to abusive political and economic opportunism than others. They have suggested a number of typologies that indicate links between the incidences of corruption and specific stages of political, economic and social developments (Kpundeh, 1998). Some scholars have suggested the types and amounts of corruption depend on a number of factors affecting the relationship between government and civil society (Johnston, 1982). For the purposes of this study, it is useful to categorise the phenomenon into three frameworks: incidental, systematic and systemic corruption, as summarised in Table 1 (consistent with Kpundeh, 1998).

Table 1: A Simplified Typology of Corruption

Type	Main Actors	Mode
Incidental	Petty officials, interested officials and opportunistic individuals.	Small size embezzlement and misappropriation, bribes, favouritism and discrimination.
Systematic	Public officials, politicians, representatives of donor and recipient countries, bureaucratic elites, business men and middle men.	Bribery and kickbacks, collusion to defraud the public, large-scale embezzlement and misappropriation through public tender and disposal of public property, economic privileges accorded to special interests, large political donations and bribes.
Systemic	Bureaucratic elites, politicians, businessmen and white-collar workers.	Large-scale embezzlement through "ghost worker" on government payroll, embezzling government funds through false procurement-payment for nonexistent goods, large scale disbursement of public property to special and privileged interest under the pretext of "national interest", favouritism and discrimination exercised in favour of ruling parties in exchange for political contributions.

Source: Kpundeh (1998)

Firstly, incidental corruption is typical of petty bribery and involves opportunistic individuals or small groups. Within this framework, corruption is the exception rather than the rule. High-level private sector actors and senior officials are seldom disturbed by such theft. Secondly, systematic corruption is organised, not necessarily pervasive or institutionalised, and recurrent. It usually

involves large gains which are for the most part subject to popular scandals. Whereas it is entrenched and occurs when there is a large number of officials, intermediaries and entrepreneurs, this form of corruption originates from high-level civil servants who exploit opportunities in government departments and agencies. Hence, this practice is the direct violation of the regulation and rule of law. Thirdly, systemic corruption is pervasive, institutionalised (perhaps condoned but not necessarily approved), and built into the economic and political institutions. It occurs and flourishes in circumstances where public sector wages fall below a living threshold. In contrast to systematic corruption, it involves all levels of employment.

Therefore, from a theoretical standpoint, the fight against corruption could be incidental, systematic or systemic. However, from a practical perspective, legislation against corruption often encompasses the three types. The paper focuses on the three categories of corruption where systemic corruption is present and systematic and incidental corruption are already prevalent which appears to be the case for most African countries.

2.2 Governance and fight against corruption in Africa

Corruption in African countries is one of the greatest challenges to leaders and citizens, threatening to undermine effective governmental financial management (Isa, 2009). It is also a menace to economic development and the goal of establishing enduring democracy in the African continent. A heated debate has raged on for years over Africa's economic woes. The usual suspect is economic policy in addition to obvious factors such as civil wars, drought and diseases (Coolidge and Rose-Ackerman, 1997). Corruption remains one of the most daunting challenges for majority of African countries. Studies and surveys show that corruption is a major obstacle to economic progress, social welfare, service delivery and good governance in the continent. The literature on African corruption will look at its causes, ramifications and measures in the fight against the scourge. The paper is positioned from the first three angles.

Much has been documented on the causes of corruption in the African continent (Callaghy, 1986; Nukunya, 1992; Groenendijk, 1997; Waligo, 1999; Osei, 1999; Rossouw, 1999). These scholars have traced the root causes of corruption in Africa to prevalence of dictatorial rules, monetised economies, poor economic and educational empowerment of the citizenry, "belly politics", emphasis on the public sector as the "prime driver" of economic development, absence of national ethical and moral values, deterioration of true patriotism, inter alia. According to the 2009 African Governance Report, corruption seems to have worsened in many African countries (UNECA, 2009). Most governance institutions: executive, legislative, judiciary and public service are deemed to be corrupt. According to the report, poor governance, lack of accountability

and transparency, low level of democratic culture and tradition, deficiency in citizen participation, lack of clear regulations, low level of institutional control, extreme poverty and inequality are the major causes of corruption. Even civil society is not immune to the scourge. In addition, a blurred distinction between private and public interests, inadequate accounting and auditing, over-regulated bureaucracy and deterioration of acceptable moral standards are all part of the problem.

Isa (2009) postulates that the most serious obstacle to the achievement of the Millennium Development Goals (MDGs) in the African continent is corruption. Corruption in African countries is widespread owing to the absence of stringent measures for effective prevention and control. Auyo (1998) says abuse of power, ill-treatment of subordinates and indecent treatment of people's needs, self-awards of public contracts, malicious withdrawal or "under-carpeting" of personnel files, fraudulent distortion of facts and figures, nepotism, unnecessary delay of actions on certain demands, financial misappropriation and embezzlement, ghost worker systems, over-invoicing, transfer of public funds to private accounts, over-pricing of contracts, inter alia are rampant in Africa. Borrowing from the United Nations Economic Commission for Africa (UNECA, 2009:1), it is estimated that in 2004, the continent lost more than US$148 billion to corruption - approximately 25% of its Gross Domestic Product (GDP). The African Development Bank (AFDB, 2006:7) suggests that 50% of tax revenue and US$30 billion in aid for Africa ends up in corrupt hands. According to the UNECA (2005), corruption is ranked as one of the three most serious national problems confronting African countries, the other two being poverty and unemployment.

In the third strand, we discuss measures to root out the causes and mitigate the consequences of corruption. Relying on documented facts and research findings, Isa (2009) advocates that whistle blowing should be encouraged by using adequate laws to protect the whistle blowers and by providing them with incentives in the form of payment of an agreed percentage of any amount recovered from fraudulent officers through the efforts of the whistle blowers. Many analysts are of the opinion that "piecemeal approaches may never work in comparison to comprehensive approaches." The relationship between business and government and between business and civil society institutions (especially political groups in society) spell out the manner in which political economy hinders efforts to mitigate corruption. These relationships are particularly relevant in societies where self-regulation and government regulatory efforts are insufficient. Under these circumstances, business, civil society, and government cannot act independently and need the support of each other to effectively deal with corruption. Thus, there is a need to move forward with collective actions. On the international front, Okada and Samreth (2012) have recently suggested foreign aid as a cure for corruption in developing countries. Asongu (2012a)

rejects Okada and Samreth's conclusion in the context of Africa. Using updated data (1996-2010) from 52 African countries, he provided robust evidence of a positive aid-corruption nexus and concluded that development assistance fuels corruption in the African continent. Hence, the Okada and Samreth findings for developing countries may not be relevant for Africa. Asongu (2012a) extends his arguments to include other dynamics of political economy, inter alia, government effectiveness, voice & accountability, political stability, rule of law and quality of regulation (Asongu, 2012b).

Many African countries have adopted policy measures, enacted laws and established institutions to address the issue. Still, corruption continues to be a lingering concern in governance and economic life. In light of the above, extending the Okada and Samreth (2012) and Asongu (2012a) debate by including other dynamics into the equation could provide policy makers with the much-needed guidance on how to fight the scourge. This paper attempts to explain determinants in the fight against corruption. Its contribution to the literature is threefold: (a) By focusing on the distribution of the dependent variable, we assess if corrupt and "clean" countries respond differently to factors that deter corrupt activity. Unlike mainstream literature, we are able to provide an assessment of CC conditional on its (CC) distribution. (2) The use of recent data (2002-2010) based on majority (46) of African countries provides results with inclusive and updated policy implications. (3) Disaggregation of the dataset into four homogenous panels reflecting income-levels (low, middle, lower-middle and upper-middle) could provide more targeted policy implications.

Given both the herculean task of measuring the true level of corruption and the substantial effort required in creating another index (which could be no better than existing indices), two research avenues have been proposed (Billger and Goel, 2009). The first consists of examining additional determinants of corruption (Treisman, 2000) whereas the second entails employing different estimation techniques (McAdam and Rummel, 2004). The latter strategy is the object of this paper. This approach allows us to capture the subtle differences in the determinants of CC across "clean" and "dirty" countries. Therefore, an assessment throughout the conditional distribution of the fight against corruption could substantially add to the extant body of knowledge in the corruption-development nexus.

3. Data

A total of 46 countries with updated data (2002-2010) from African Development Indicators (ADI) of the World Bank (WB) is examined in this paper. Due to constraints in data availability, the paper only examines 46 instead of 54 African countries. To allow for more options in policy implications, the dataset is disaggregated into income-levels (low, middle, lower-middle and

upper-middle). The endogenous variable is the "control of corruption" indicator, consistent with the literature in corruption (Billger and Goel, 2009; Okada and Samreth, 2012; Asongu, 2012ab; Asongu, 2013). Five control variables are used: level of economic prosperity, population growth, democracy, regulation quality and government effectiveness. These variables have been used collectively or separately in the literature (Bardhan, 1997; Treisman, 2000; Jain, 2001; Aidt, 2003; Lambdorff, 2006; Billger and Goel, 2009). Research has shown that a politico-economic approach stressing the importance of institutions is a powerful tool in understanding corruption (Abed and Gupta, 2002; Bardhan, 1997; Rose-Ackerman, 1997). Electoral rules and structures substantially influence level of corruption (Kunicova and Rose-Ankerman, 2005) and countries tend to achieve an equilibrium driven by the balance of political forces and institutions (Bird *et al.*, 2006; Bird *et al.*, 2008). Beyond these empirical bases in the choice of government-quality control variables, the theoretical underpinnings of the literature point to the central role of good-governance in the fight against the scourge. In plainer terms, selection of variables is fully justified by theoretical and empirical literature. Corresponding summary statistics (Appendix 1), correlation analysis (Appendix 2), variable definitions (Appendix 3) and presentation of countries (Appendix 4) are provided in the appendices.

Apart from good-governance determinants, borrowing from Billger and Goel (2009:300), economic prosperity and democracy are standard determinants of CC. Economic prosperity (Serra, 2006) is noted as a deterrent to corruption because the propensity to accept bribes decreases when growth in national income is distributed equitably. Political competition entrenched in democracy is more likely to exert an appealing effect on the fight against corruption because elected officials are required to account for policies and are sanctioned by the electorate if election promises are not kept. A major election promise in majority of African countries is the fight against corruption. Government intervention as reflected in quality of regulation, rule of law, freedom of expression and accountability as well as political stability (no violence) that ensure greater economic and political freedoms which lead to less corruption (Chowdhury, 2004; Goel and Nelson, 2005). The size of the population is also likely to affect corruption, especially if demographic change is accompanied with a higher degree of urbanisation (Billger and Goel, 2009). A greater concentration of the population in urban areas is likely to provide greater opportunities for interactions between potential bribe-takers and bribe-givers. Conversely, a highly concentrated urban population provides a greater chance of informal anti-corruption oversight (Billger and Goel, 2009).

4. Methodology

Borrowing from Billger and Goel (2009) to determine how existing levels of CC affect various determinants in the battle against corruption, we use quantile regression. This approach enables us to investigate if the relationship between CC and the exogenous variables differ throughout the distribution of the dependent variable (Koenker and Hallock, 2001).

Previous studies on the determinants of corruption are based on estimation by Ordinary Least Squares (OLS), which report parameter estimates as the conditional mean of corruption. Whereas mean effects are certainly important, this study expands such findings using quantile regression. In addition, one of the underlying assumptions of OLS regression is that the error term and the dependent variable are normally distributed. However, quantile regression does not require a normally distributed disturbance term. Thus, based on this estimation technique we are able to carefully assess the determinants of CC throughout the conditional distribution with a particular emphasis on the best and worst fighters of corruption. Quantile regression (hence, QR) yields parameters estimated at multiple points in the conditional distribution of the dependent variable (Koenker and Bassett, 1978) and is relevant in recent literature on corruption (Billger and Goel, 2009; Okada and Samreth, 2012). The θ th quantile estimator of the endogenous variable is obtained by solving the following optimisation problem.

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

Where $\theta \in (0, 1)$. Contrary to OLS that is based on minimising the sum of squared residuals, with QR the weighted sum of absolute deviations is minimised; for example, the 10th or 90th quantiles (with θ=0.10 or 0.90 respectively) by approximately weighing the residuals. The conditional quantile of y_i given x_i is :

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

where unique slope parameters are derived for each θ th quantile of interest. This formulation is analogous to $E(y/x) = x_i'\beta$ in the OLS slope though parameters are estimated only at the mean of the conditional distribution of

the endogenous variable. For the model in Eq. (2), the dependent variable y_i is the CC indicator while x_i contains a constant term, GDP growth, population growth, democracy, regulation quality and government effectiveness. The quantile estimation approach is more robust than the OLS approach in the presence of outliers when the distribution of the dependent variable is a non-normal pattern (Okada and Samreth, 2012). We also report findings for Least Absolute Deviations (LAD) which should correspond to those of the 0.5^{th} quantile for robustness purpose.

5. Empirical analysis: Low and Middle income countries

The findings in Table 2 are OLS, LAD and QR estimates. While Panel A presents results for low income countries, findings for middle income countries are captured in Panel B. OLS estimates provide a baseline of mean effects and we compare these to estimates of LAD and separate quantiles in the conditional distributions of the endogenous variable. In interpreting the signs of estimated coefficients, note should be taken of the fact that smaller values (in conditional distributions) of the endogenous variable denote less CC.

The following can be established from the findings. (1) In Panel A, OLS regressions show that economic prosperity helps in the control of corruption while population growth and good governance (regulation quality and government effectiveness) improve it. Corresponding Panel B OLS results differ from those of Panel A in one dimension: population growth decreases the fight against corruption. It follows that based on OLS, population growth is a tool for the fight against corruption only in low income countries. (2) Based on QR, in both low and middle income countries, economic prosperity reduces incentives to CC with a higher magnitude at higher quantiles: countries that are already taking the corruption fight seriously. (3) As concerns QR estimates on population growth, while for low income countries (hence LICs) the magnitude of positive effect of population growth on CC increases in tandem with incentives to fight corruption, for middle income countries (hence MICs), the negative effect of demographic change on CC has no definite pattern (wave-like effect across the distribution). (4) Whereas democracy diminishes CC in LICs (with the effect only significant at the 0.90^{th} quantile), the positive effect of democracy on CC in MICs is consistently significant across the conditional distribution (though the magnitude of the effect is wave-like). (5) Government effectiveness in either LICs or MICs improves CC with the magnitude increasing with the distribution; that is, as the battle against corruption increases. (6) Regulation quality ameliorates CC in either LICs or MICs with a quasi-normal distribution which peaks at the 0.50^{th} and 0.25^{th} quantiles for LICs and MICs respectively. (7) The LAD findings correspond with the 0.50^{th} quantile estimates across specifications.

Table 2: Corruption-Control: Low and Middle income countries

	Panel A: Low Income Countries (28)						
	OLS	**LAD**	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**
Specification 1							
Constant	**-0.647*****	-0.198	**-0.512*****	**-0.351*****	**-0.198***	**-0.438*****	**-0.473*****
	(0.000)	(0.281)	**(0.000)**	**(0.000)**	**(0.060)**	**(0.000)**	**(0.000)**
Economic Prosperity	**-0.007***	-0.004	-0.002	-0.003	-0.004	-0.006	-0.009
	(0.073)	(0.469)	(0.386)	(0.214)	(0.369)	(0.149)	(0.237)
Population growth	**0.100*****	-0.048	**-0.091*****	**-0.086*****	-0.048	**0.094*****	**0.253*****
	(0.002)	(0.331)	**(0.000)**	**(0.000)**	(0.144)	**(0.006)**	**(0.000)**
Democracy	0.003	0.002	-0.0008	0.000	0.002	0.009	**-0.024****
	(0.627)	(0.731)	(0.831)	(0.993)	(0.670)	(0.152)	**(0.033)**
Regulation Quality	**0.398*****	**0.552*****	**0.423*****	**0.480*****	**0.552*****	**0.452*****	**0.365*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Observations	252	252	252	252	252	252	252
Specification 2							
Constant	**-0.450*****	**-0.286*****	**-0.888*****	**-0.567*****	**-0.286*****	**-0.293****	**-0.348*****
	(0.000)	**(0.009)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.013)**	**(0.000)**
Economic Prosperity	**-0.008****	-0.007	-0.004	-0.004	**-0.007****	-0.008	**-0.010*****
	(0.026)	(0.125)	(0.534)	(0.338)	**(0.024)**	(0.102)	**(0.000)**
Population growth	**0.143*****	**0.091****	**0.095***	**0.072****	**0.091*****	**0.170*****	**0.251*****
	(0.000)	**(0.017)**	**(0.050)**	**(0.029)**	**(0.000)**	**(0.000)**	**(0.000)**
Democracy	-0.002	-0.002	0.007	0.001	-0.002	-0.003	**-0.009*****
	(0.660)	(0.728)	(0.446)	(0.857)	(0.674)	(0.686)	**(0.000)**
Government Effectiveness	**0.685*****	**0.731*****	**0.513*****	**0.613*****	**0.731*****	**0.737*****	**0.699*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Observations	252	252	252	252	252	252	252

	Panel B: Middle Income Countries (18)						
	OLS	**LAD**	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**
Specification 1							
Constant	**0.213*****	**0.165***	**-0.076*****	**0.088****	**0.165****	**0.394*****	**0.572*****
	(0.001)	**(0.055)**	**(0.007)**	**(0.040)**	**(0.041)**	**(0.000)**	**(0.000)**
Economic Prosperity	-0.004	-0.005	0.001	-0.001	-0.005	**-0.009***	-0.002
	(0.355)	(0.262)	(0.529)	(0.645)	(0.299)	**(0.089)**	(0.539)
Population growth	**-0.251*****	**-0.226*****	**-0.225*****	**-0.249*****	**-0.226*****	**-0.265*****	**-0.294*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000°**
Democracy	**0.033*****	**0.026*****	**0.020*****	**0.015*****	**0.026*****	**0.048*****	**0.052*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Regulation Quality	**0.660*****	**0.699*****	**0.709*****	**0.713*****	**0.699*****	**0.691*****	**0.641*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Observations	162	162	162	162	162	162	162
Specification 2							
Constant	**0.126****	**0.205*****	-0.063	-0.038	**0.205*****	**0.328*****	**0.564*****
	(0.027)	**(0.002)**	(0.178)	(0.507)	**(0.002)**	**(0.000)**	**(0.000)**
Economic Prosperity	**-0.008****	**-0.007****	-0.001	-0.004	**-0.007***	**-0.011*****	**-0.011*****
	(0.021)	**(0.040)**	(0.714)	(0.216)	**(0.082)**	**(0.033)**	**(0.000)**
Population growth	**-0.140*****	**-0.209*****	**-0.252*****	**-0.166*****	**-0.209*****	**-0.149*****	**-0.169*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.004)**	**(0.000)**
Democracy	**0.016*****	0.009	**0.023*****	**0.015*****	0.009	**0.017****	**0.010****
	(0.005)	(0.220)	**(0.000)**	**(0.009)**	(0.149)	**(0.030)**	**(0.015)**
Government Effectiveness	**0.765*****	**0.704*****	**0.606*****	**0.692*****	**0.704*****	**0.807*****	**0.910*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Observations	162	162	162	162	162	162	162

Notes. Dependent variable is the Control of Corruption index. *,**,***, denote significance levels of 10%, 5% and 1% respectively. Lower quantiles (e.g., Q 0.1) signify nations where the Control of Corruption is least. OLS: Ordinary Least Squares. LAD: Least Absolute Deviation. LI: Low Income. MI: Middle Income. World Bank (2010).

5.1 Lower Middle Income and Upper Middle Income Countries

Table 3 below presents results for Lower Middle Income (LMI) and Upper Middle Income (UMI) countries in OLS, LAD and QR estimates. Panel A presents results for LMI countries while Panel B depicts findings for their UMI counterparts. OLS estimates provide a baseline of mean effects and we compare the estimates of LAD and separate quantiles in the conditional distributions of the endogenous variable. In the comparative analysis, smaller values (in conditional distributions) of the endogenous variable denote less CC.

The following could be established with respect to findings in Table 3: (1) For both Panel A and Panel B, OLS regressions show that while economic prosperity and population growth decrease CC, government quality dynamics (democracy, regulation quality and government effectiveness) improve it. (2) Based on QR in both LMI and UMI countries, economic prosperity reduces incentives to CC with a greater magnitude at higher quantiles: countries that are already taking the corruption fight seriously. (3) Population growth is detrimental to CC, however, the pattern of the distribution is not definite (wave-like effect across the distribution). (4) From a broad perspective, democracy improves CC both in UMI and LMI countries, but the positive effect is higher when existing levels of CC in these countries are already high. In other words, countries that are already fighting corruption seriously will benefit more from democracy in the battle against corruption than countries that are taking the fight against corruption less seriously. (5) Government effectiveness in either LMI or UMI countries improve CC with the magnitude increasing with the conditional distribution up to a certain level (0.50^{th} quantile for LMI countries and 0.75^{th} for UMI countries) before adopting a wave-like distribution (for LMI countries) or decreasing (for UMI countries). (6) The positive effect of regulation quality on CC is somewhat antagonistic: while for LMI countries it decreases to the 0.50^{th} quantile before increasing; for UMI countries it increases to the 0.25^{th} quantile before dropping progressively. (7) The LAD findings correspond to the 0.50^{th} quantile estimates across specifications.

5.2 Discussion, policy implications and limitations

5.2.1 What wealth-effects tell us?

Two important factors that govern Africa's future are population growth and good governance. Accelerating demographic change remains an important concern in Africa today having the highest demographic growth rates, with the population projected to double by 2036 and represent 20% of the World by 2050 (Asongu and Jingwa, 2012). The recent geopolitical landscape of the African continent, marked by the Arab-Spring, has centred around the perils of authoritarian regimes (Asongu, 2012c). Thus, population growth,

Table 3: Corruption-Control: Lower middle and Upper middle income countries

	Lower Middle Income Countries (10)						
	OLS	LAD	Q 0.1	Q 0.25	Q 0.50	Q 0.75	Q 0.90
Specification 1							
Constant	**0.285*****	**0.207****	0.055	**0.098***	**0.207*****	0.407***	0.621***
	(0.000)	**(0.049)**	(0.539)	**(0.053)**	**(0.007)**	**(0.000)**	**(0.000)**
Economic Prosperity	-0.006	-0.005	0.000	-0.003	-0.005	**-0.012***	**-0.014*****
	(0.287)	(0.443)	(0.982)	(0.485)	(0.462)	**(0.063)**	**(0.000)**
Population growth	-0.273***	-0.265***	-0.262***	-0.244***	-0.265***	-0.274***	-0.263***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Democracy	0.036***	0.032***	0.023***	0.023***	0.032***	0.047***	0.045***
	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)
Regulation Quality	0.706***	0.645***	0.750***	0.705***	0.645***	0.694***	0.781***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	90	90	90	90	90	92	90
Specification 2							
Constant	**0.191*****	**0.235*****	0.105	**0.056*****	**0.235*****	**0.316****	**0.403*****
	(0.000)	**(0.000)**	(0.199)	**(0.000)**	**(0.000)**	**(0.012)**	**(0.000)**
Economic Prosperity	**-0.013****	-0.011	-0.007	**-0.009*****	**-0.011****	-0.015	**-0.024*****
	(0.011)	(0.133)	(0.365)	**(0.000)**	**(0.014)**	(0.198)	**(0.005)**
Population growth	-0.221***	-0.257***	-0.334***	-0.231***	-0.257***	-0.239***	-0.182***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.002)
Democracy	**0.022*****	**0.017***	0.003	**0.009*****	**0.017*****	**0.024****	**0.036*****
	(0.000)	**(0.058)**	(0.694)	**(0.000)**	**(0.000)**	**(0.049)**	**(0.000)**
Government Effectiveness	0.620***	0.628***	0.544***	0.564***	0.628***	0.580***	0.589***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	90	90	90	90	90	90	90
	Upper Middle Income Countries (8)						
	OLS	LAD	Q 0.1	Q 0.25	Q 0.50	Q 0.75	Q 0.90
Specification 1							
Constant	-0.082	-0.301	**-0.227****	-0.204	-0.301	**-0.211***	-0.156
	(0.930)	(0.468)	**(0.015)**	(0.207)	(0.456)	**(0.063)**	(0.725)
Economic Prosperity	-0.005	-0.011	0.0007	0.000	-0.011	**-0.022*****	-0.000
	(0.452)	(0.399)	(0.759)	(0.989)	(0.268)	**(0.000)**	(0.944)
Population growth	-0.104	0.019	**-0.203*****	**-0.168****	0.019	-0.010	-0.063
	(0.349)	(0.924)	**(0.000)**	**(0.019)**	(0.914)	(0.823)	(0.743)
Democracy	**0.046***	0.048	**0.038*****	**0.036****	0.048	**0.091*****	**0.126*****
	(0.057)	(0.217)	**(0.000)**	**(0.019)**	(0.213)	**(0.000)**	**(0.003)**
Regulation Quality	0.656***	0.680***	0.637***	0.700***	0.680***	0.402***	0.399**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.045)
Observations	72	72	72	72	72	72	72
Specification 2							
Constant	0.042	0.124	-0.122	-0.022	0.124	0.204*	0.333***
	(0.813)	(0.595)	(0.687)	(0.884)	(0.430)	**(0.096)**	**(0.000)**
Economic Prosperity	-0.006	-0.008	-0.0005	-0.005	**-0.008***	-0.004	**-0.008*****
	(0.172)	(0.131)	(0.945)	(0.204)	**(0.052)**	(0.203)	**(0.000)**
Population growth	0.096	0.111	-0.177	0.013	0.111	**0.132****	**0.080*****
	(0.241)	(0.289)	(0.208)	(0.845)	(0.126)	(0.021)	(0.004)
Democracy	-0.032	**-0.055***	0.014	-0.025	**-0.055*****	**-0.043*****	**-0.030*****
	(0.106)	**(0.084)**	(0.662)	(0.146)	**(0.001)**	**(0.001)**	**(0.000)**
Government Effectiveness	1.159***	1.232***	0.720***	1.026***	1.232***	1.279***	1.210***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	72	72	72	72	72	72	72

Notes. Dependent variable is the Control of Corruption index. *,**,***, denote significance levels of 10%, 5% and 1% respectively. Lower quantiles (e.g., Q 0.1) signify nations where the Control of Corruption is least. OLS: Ordinary Least Squares. LAD: Least Absolute Deviation. LMI: Lower Middle Income. UMI: Upper Middle Income. World Bank (2010).

democratisation and the fight against corruption constitute serious challenges to the continent's ability to emerge from poverty.

Our investigation on the incidence of wealth effects in the fight against corruption when existing corruption-control levels matter has yielded the following broad findings. (1) Based on OLS and QR estimates, population growth is a tool for the fight against corruption only in low income countries with a higher magnitude in higher quantiles. This suggests that very poor countries experiencing faster population growth rates could use this instrument positively in improving good governance. More so, LICs already taking the fight against corruption seriously will benefit more from this tool than their counterparts still lax in combating the scourge. (2) Population growth in MICs significantly mitigates the fight against corruption; this is consistent with UMI as well as LMI countries. This implies in wealthier African countries, population growth is accompanied by an increase in "bribe-taker bribe-giver interactions" as well as a decrease in corruption oversight. (3) Democracy decreases CC in LICs, with a significant effect at the highest quantile. The process of democratisation in LIC does not produce institutions that effectively fight corruption. This may in part be the result of relative lack of financial means to set up appropriate institutions. (4) Democratisation is a tool in the fight against corruption only in MICs, with significant effects across specifications and distributions for the most part. This confirms the thesis that democracy requires a certain threshold in national economic prosperity for its effectiveness (Asongu, 2011).

5.2.2 Further discussion and limitations

The battle against corruption remains an important priority in policy making bodies in the African continent. Our findings suggest that OLS estimates correspond (stricto-sensu) at times to just a specific quantile of the conditional distribution. This difference implies that some policies based on OLS should be reconsidered, especially across the best and worst fighters of corruption. Thus, our findings demonstrate that blanket CC policies are unlikely to succeed equally across countries with different income-levels and political-wills in the fight against corruption. Success of CC policies should be contingent on the prevailing levels of CC and income-bracket as we have elucidated above. To be effective, CC initiatives should be tailored differently across the best and worst corruption-fighting countries especially with respect to democracy and population growth.

A great many African countries already have well established CC policies, yet, their implementation and enforcement is another issue and remains a matter of "political will." The following are some aspects that need to be accounted for if reform and policies we have proposed are to yield fruits. (1) The battle against corruption cannot be a "one man show" and relegated uniquely to political

leadership. Anti-corruption endeavours are effective if they are inclusive, systematic and structured; that is to say, integrating all institutions and policies (investigation, prosecution, research and prevention). Such institutionalisation develops a forum of mutually reinforcing "horizontal accountability" which prevents reforms from being perceived as partisan concerns or "witch hunts." (2) Administrations could establish public confidence through regular updates in press conferences that outline progresses that are being made towards mitigating wrongdoing, increasing accountability and transparency. (3) The independence of the anti-corruption body set-up by the powers that be is also paramount for the success of reform strategies. In Hong Kong and Singapore for instance, the effectiveness and success of anti-corruption establishments are directly linked to their degree of autonomy. If the independent entities are answerable to parliament instead of the head of state, this could improve their effectiveness (Kpundeh, 1998:105).

The paper has employed two novelties: (1) assessing how the wealth of nations matter in the fight against corruption when corruption is investigated throughout the conditional distribution of corruption-control from countries with low initial levels of corruption-control to those with high initial levels of corruption-control; (2) using the determinants that represent significant challenges to long-term development in the African continent. Hence, this positioning does not enable us to conclude as to if a given factor absolutely increases or reduces the incidence of corruption (like in the Okada and Samreth (2012) and Asongu (2012ab) debate). We have cut adrift this debate by presenting corruption as a multidimensional and complex issue that can only be properly understood if a multitude of dynamics is taken into account. Such dynamics in our case constitute the novelties highlighted in the first sentence of this paragraph.

An important limitation to take into account is that studies of this kind depend heavily on the integrity of the proxy for CC obtained from perception-based measures. Thus, omitted variables and media effects may significantly influence perceptions on the fight against corruption in a given country. However, as far as we know there are no better indicators of CC than those from African Development Indicators of the World Bank. Also, while this study is useful as an education or learning tool for students and practitioners, it has some limited policy applicability. In fact, some of the policy variables that affect corruption (such as population growth) are of little use for short-term policy change (regarding corruption control). Hence, change in population policy is not something any country can do overnight. While the shortcoming of immediate policy application is evident, the study holds some ground with respect to the manner in which distant challenges would play out in the fight against corruption if the wealth of nations is taken into account.

6. Conclusion

Why are some nations more effective at battling corruption than others? Are there different determinants in the fight against corruption across developing nations? How do wealth-effects play out when existing corruption-control levels matter in the corruption battle? To investigate these concerns, we have examined the determinants of corruption-control throughout the conditional distribution of the fight against corruption. The following broad findings have been established. (1) Based on OLS and QR, population growth is a tool in the fight against corruption only in low income countries with a higher magnitude at higher quantiles. (2) Population growth in middle income countries significantly mitigates the fight against corruption; this is consistent with upper as well as lower middle income countries. (3) Democracy decreases corruption-control in low income countries, with a significant effect at the highest quantile. (4) Democratisation is a tool in the fight against corruption only in middle income countries, with significant effects across specifications and distributions for the most part.

As a policy implication, blanket corruption-control policies are unlikely to succeed equally across countries with different income levels and political wills in the fight against corruption. Thus to be effective, anti-corruption policies should be contingent on the prevailing levels of corruption-control and income-bracket as we have elucidated above. It follows that corruption-control initiatives should be tailored differently across the best and worst corruption-fighting countries especially with respect to democracy and population growth. Caveats of the study have been discussed.

Acknowledgement

The author is highly indebted to the editor and referees for their very useful comments.

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Appendices

Appendix 1: Summary Statistics

	Variables	Mean	S.D	Min.	Max.	Observations
Dependent Variable	Control of Corruption	-0.612	0.561	-1.694	1.086	414
Independent Variables	Economic Prosperity	4.602	5.254	-31.30	37.99	414
	Population Growth	2.262	0.815	-0.143	4.477	414
	Democracy	2.903	3.896	-8.000	10.000	414
	Regulation Quality	-0.651	0.617	-2.394	0.905	414
	Government Effectiveness	-0.703	0.603	-1.774	0.807	414

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

Appendix 2: Correlation Analysis

CC	RQ	RL	GE	V& A	PolS	Demo	GDPg	Popg	
1.000	0.753	0.867	0.865	0.628	0.648	0.452	-0.043	-0.292	CC
	1.000	0.857	0.865	0.751	0.624	0.466	0.109	-0.224	RQ
		1.000	0.907	0.700	0.756	0.510	0.063	-0.282	RL
			1.000	0.699	0.644	0.483	0.036	-0.396	GE
				1.000	0.582	0.750	0.050	-0.100	V& A
					1.000	0.492	0.070	-0.194	PolS
						1.000	0.073	-0.094	Demo
							1.000	0.279	GDPg
								1.000	Popg

CC: Control of Corruption. RQ: Regulation Quality. RL: Rule of Law. GE:Government Effectiveness. V& A: Voice & Accountability. PolS: Political Stability. Demo: Democracy. GDPg: GDP Growth. Popg: Population Growth

Appendix 3: Variable Definitions

Variables	Signs	Variable Definitions	Source
Control of Corruption	CC	Control of Corruption (estimate)	World Bank (WDI)
Government Effectiveness	GE	Government Effectiveness (estimate)	World Bank (WDI)
Political Stability/ No Violence	PolS	Political Stability/ No Violence (estimate)	World Bank (WDI)
Regulation Quality	R.Q	Regulation Quality (estimate)	World Bank (WDI)
Rule of Law	R.L	Rule of Law (estimate)	World Bank (WDI)
Voice and Accountability	V & A	Voice and Accountability (estimate)	World Bank (WDI)
Economic Prosperity	GDPg	GDP growth rate (annual %)	World Bank (WDI)
Population growth	Popg	Average annual population growth rate	World Bank (WDI)
Democracy	Demo	Level of Institutionalized Democracy	World Bank (WDI)

WDI: World Bank Development Indicators (World Bank, 2010).

Appendix 4: Presentation of Countries

Instruments	Instrument Category	Countries	Num.
Legal-origins	English Common-Law	Botswana, The Gambia, Ghana, Kenya, Lesotho, Liberia, Malawi, Mauritius, Namibia, Sierra Leone, South Africa, Sudan, Swaziland, Uganda, Zambia, Tanzania, Zimbabwe.	17
	French Civil-Law	Algeria, Angola, Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo Republic, Congo Democratic Republic, Djibouti, Egypt, Eritrea, Equatorial Guinea, Ivory Coast, Ethiopia, Gabon, Guinea, Guinea-Bissau, Libya, Madagascar, Mali, Mauritania, Morocco, Mozambique, Rwanda, Senegal, Togo, Tunisia.	29
Religions	Christianity	Angola, Benin ,Botswana, Burundi, Cameroon, Central African Republic, Congo Republic, Congo Democratic Republic, Ivory Coast, Equatorial Guinea, Ethiopia, Eritrea, Gabon, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Togo, Uganda, Zambia, Tanzania, Zimbabwe.	30
	Islam	Algeria, Burkina Faso, Chad, Djibouti, The Gambia, Egypt, Guinea-Bissau, Guinea, Libya, Mali, Mauritania, Morocco, Senegal, Sierra Leone, Sudan, Tunisia.	16
Income Levels	Low Income	Benin ,Burkina Faso, Burundi, Central African Republic, Chad, Congo Republic, Congo Democratic Republic, Djibouti, Ethiopia, Eritrea, The Gambia, Ghana, Guinea-Bissau, Guinea, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Rwanda, Sierra Leone, Togo, Uganda, Zambia, Tanzania, Zimbabwe.	28
	Middle Income	Algeria, Angola ,Botswana, Cameroon, Egypt, Ivory Coast, Equatorial Guinea, Gabon, Lesotho, Libya, Mauritius, Morocco, Namibia, Senegal, South Africa, Sudan, Swaziland, Tunisia.	18
	Lower Middle Income	Angola, Cameroon, Egypt, Ivory Coast, Lesotho, Morocco, Senegal, Sudan, Swaziland, Tunisia.	10
	Upper Middle Income	Algeria, Botswana, Equatorial Guinea, Gabon, Libya, Mauritius, Namibia, South Africa.	8

Note: Num: number of countries