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Simplice A. Asongu

E-mail: asongusimplice@yahoo.com

Tel: 0032 473613172

HEC-Management School, University of Liège.

Rue Louvrex 14, Bldg. N1, B-4000 Liège, Belgium

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Abstract

Purpose – Are there different determinants in the fight against corruption across African countries? Why are some countries more effective at battling corruption than others? To assess these concerns we examine the determinants of corruption-control throughout the conditional distribution of the fight against corruption using panel data from 46 African countries for the period 2002-2010.

Design/methodology/approach – The panel quantile regression technique enables us to investigate if the relationship between corruption-control and the exogenous variables differs throughout the distribution of the fight against corruption.

Findings – Results could be summarized in the following. (1) Greater economic prosperity leads to less corruption-control and the magnitude of the effect is more important in countries where the fight against corruption is high. (2) Regulation quality seems bimodal, with less positive effects in the tails: among the best and least fighters of corruption. (3) There is support for a less negative consequence of population growth in countries that are already taking the fight against corruption seriously in comparison to those that are lax on the issue. (4) Findings on democracy broadly indicate the democratization process increases the fight against corruption with a greater magnitude at higher quantiles: countries that are already taking the fight seriously. (5) The relevance of voice and accountability in the battle against corruption decreases as corruption-control is taken more seriously by the powers that be. (6) Good governance dynamics of political stability, government effectiveness and the rule of law gain more importance in the fight against corruption when existing levels of corruption-control are already high.

Social implications – Our results suggest that the determinants of corruption-control respond differently across the corruption-control distribution. This implies some current corruption-control policies may be reconsidered, especially among the most corrupt and least corrupt African nations. As a policy implication, the fight against corruption should not be postponed, doing so will only reduce the effectiveness of policies in the future. The rewards of institutional reforms are more positive in countries that are already seriously engaged in the corruption fight.

Originality/value – This paper contributes to existing literature on the determinants of corruption by focusing on the distribution of the dependent variable (control of corruption). It is likely that good and poor corruption fighters respond differently to factors that influence the fight against corruption. There are subtle institutional differences between corrupt and clean nations that may affect corruption-control determinants and government efficacy in the fight against corruption.

JEL Classification: C10; H10; K10; O10; O55

Keywords: Corruption; Democracy; Government quality; Quantile regression; Africa

1. Introduction

Over the past decades, the issue of corruption and the search for strategies to combat its corrosive effects have grown in importance as a topic of public debate and a criterion by which the civil society evaluates leadership. This increased attention is motivated by the realization among international development experts that development requires above all governance quality. Advice on sound policies, well intentioned incentives and aid efforts may not achieve their desired objective unless they are offered in an environment that stimulates self-sustaining growth and development(Jain,2001). There is also mounting realization that unsustainable policies do not always emerge from a lack of knowledge about what best policies should be. Rather they could result just as much from decision makers distorting economic policies for their own interest(Coolidge & Rose-Ackerman, 1997; Grossman & Helpman, 1994; Krueger 1993a; Krueger 1993b). Corruption is seen by many as one of the principal impediments to the development of an efficient government system; since it is conceived as a “*symptom that something has gone wrong in the management of the state*”(Rose-Ackeman,1999, p.9). Even the public acknowledges at large that corruption is the greatest obstacle to economic development (Jain, 2001). There is currently a stream of empirical investigations on the causes and consequences of corruption. Though some consensus is slowly emerging on the determinants of corruption across countries, a number of aspects remain unsolved. There is lack of consensus on the ability to measure corrupt activity and the difficulty of quantifying the impact of institutions on controlling corruption(Billger & Goel, 2009). The focus of this paper is the later concern. Today policies in the fight against corruption espoused by national governments and international organizations appear to be similar across countries. Yet the effectiveness of some of these policies remain unclear(Billger & Goel, 2009).

The contribution of this paper to the literature is its focus on the distribution of the dependent variable(i.e. control of corruption). Corruption-control determinants and governments' efficacy in combating corruption maybe different across countries such that corrupt and 'clean' countries respond differently to factors that ignite the fight against corruption. This hypothesis begs the question of whether there are different determinants of combating corruption in high corruption-control countries as compared to low corruption-control ones. Thus if existing levels of corruption-control affect how various motives for the fight against corruption come into play, then findings of this paper could have significant implications both for the literature and policy making toward the battle against corrupt practices in Africa. It follows that instead of focusing on groups of countries with common corruption-control measures, policy could instead target groups of countries with the same corruption-control characteristics(high, low or average). The remainder of the paper is organized 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. Section 5 concludes.

2. Existing literature

2.1 Theoretical highlights

According to Jain(2001), corruption requires three preconditions: discretionary power related to regulations(also see Rose-Ackeman, 1978), economic rents linked to power and sufficiently marginal punishment(Dong et al.,2012). These are the results of four main theories of corruption. (1) Good and misguided governments formulate systems that are very rigid. Venal bureaucrats shape the rules. Corruption diminishes red-tape and if anything improves allocation efficiency(Leff, 1964; Huntington, 1968). (2) Good and smart governments plan systems that are

supposed to be rigid. Venal bureaucrats bend the rules and regulations. Corruption reduces bureaucracy and worsens allocation efficiency(Laffont & Tirole, 1993). (3) Greedy and smart governments make rules that are very lax and allow bureaucrats more discretion than they should have. There is absence of red-tape and no need for any corruption. Allocation efficiency suffers a great deal(Shleifer & Vishny,1993). (4) Good and smart governments establish rules that make it tempting for the bureaucrat to take money and bend the rules. The bureaucrat introduces red-tape in a bid to bend the rules in a way that protects him/her. Corruption and red-tape go hand in glove.

According to Billger & Goel (2009), the theoretical foundations for corruption studies also draw from the larger literature on the determinants of criminal activity, where rational individuals(bribe-givers, bribe-takers ...etc) weigh the relative costs and benefits of criminal(corrupt) acts(Becker, 1968). Potential benefits of corruption could include disproportionate favors that monopolist bureaucrats maybe able to hand-out(Shleifer & Vishny, 1993) or they may involve cutting(accelerating) bureaucratic red-tape(Guriev, 2004). The differential levels of impatience(discount rates) across economic agents induce some to accept/offer bribes and dictate the size of the bribes. Potential costs of engaging in corrupt endeavors include the cost of apprehension and punishment. Surviving literature does however allow for the possibility that monitoring agencies might themselves be corrupt(Banerjee, 1997).

2.2 Types and levels of corruption: how the stakes involved can influence governance

Given the context of this paper, it is irrelevant to center the debate on the issue of whether corruption is inherently good or bad. It is more useful to determine which types of corruption have the most corrosive effect on social/economic stability(development). Political leadership play a crucial role in promoting/discouraging corrupt activities. To effectively shape

this role, it is imperative to move beyond the subjective and qualitative analyses that describe corruption as a mere moral failing of politicians, bureaucrats and businessmen. Thus it is more useful to consider it as a political and economic phenomenon.

Corruption is prevalent to some degree in all societies. In recent years however political scientists have aggressively sought to understand the reason some nations and societies are clearly more vulnerable to abusive political and economic opportunism than others. In response they have suggested a number of typologies that indicate linkages between the incidences of corruption and specific stages of political, economic and social developments (Kpundeh,1998). According to some authors, the types and amounts of corruption vary in accordance with a number of factors affecting the relationship between government and civil society(Johnston, 1982). For the purpose of explicitly stating the objective of our study, it is useful to categorize the phenomenon into three frameworks: incidental, systematic and systemic corruption as summarized in Table 1(consistent with Kpundeh(1998)). Firstly, Incidental corruption is characterized by petty bribery and involves opportunistic individuals or small groups. In this context, corruption is the exception rather than the rule. High-level private sector actors and senior officials seldom bother with such theft. Secondly, Systematic corruption is organized, not necessarily institutionalized or pervasive but recurrent. It usually involves large gains which are often subject to popular scandals. While it is entrenched and functions with a large number of officials, intermediaries and entrepreneurs, this form of corruption originates from high-level civil servants that recognize and exploit the illegal ventures and opportunities in government departments and agencies. Hence, this practice is the direct violation of the rule of law. Thirdly, Systemic corruption is pervasive, institutionalized(perhaps accepted but not necessarily approved), and built into the economic and political institutions. It occurs and flourishes in

situations where public sector wages fall below a living-wage. In contrast to systematic corruption, it involves all levels of employment.

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, favoritism 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, business men and white-collar workers.	Large-scale embezzlement through ‘ghost worker’ on government pay roll, 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’, favoritism and discrimination exercised in favor of ruling parties in exchange for political contributions.

Source: Kpundeh(1998)

Thus from a theoretical standpoint the fight against corruption could be incidental, systematic or systemic. However from a practical standpoint legislation against corruption often encompasses the three types. Our paper focuses indifferently on the three types of corruption. This is because where there is systemic corruption, systematic and incidental corruption are already prevalent; which is the case of most African countries.

2.3 Governance and fight against corruption in Africa

An intense debate has raged on for years over Africa’s economic woes. Aside from the obvious problems of warfare, drought and disease, the usual suspect is economic policy(Coolidge & Rose-Ackerman, 1997). Corruption remains the most daunting challenge for majority of African countries. As evidenced by several studies and surveys, it is a major

obstacle to economic progress, social welfare, service delivery and good governance in the continent. According to the United Nations Economic Commission for Africa(UNECA,2009, p.1), it is estimated that in 2004, the continent lost more than \$148 billion to corruption; approximately 25% of its Gross Domestic Product(GDP). In addition, the African Development Bank(ADB,2006, p.7) suggests that 50% of tax revenue and \$30 billion in aid for Africa ends up in corrupt hands. According to the UNECA(2005), corruption ranked as one of the three most serious national problems confronting African countries, the other two being poverty and unemployment. In the 2009 African Governance Report, corruption seems to have worsened in many Africa countries (UNECA, 2009). Most governance institutions: executive, legislative, judiciary and public service are considered to be corrupt. In line with 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 could be cited as major causes of corruption. Even civil society is not immune to the scourge. More so, 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.

Many African countries have adopted policy measures, enacted laws and established institutions in a bid to address the issue. Yet corruption continues to be a lingering concern in governance and economic life. In this paper we attempt to explain determinants in the fight against corruption. Its contribution to the literature is threefold. (1) 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 corruption-control conditional on the distribution of corruption-control.

(2) A corollary of the first contribution is that, countries manifesting the same existing levels of corruption-control could be provided with similar policy-options; thus making policy-measures more targeted and compatible with the conditional distribution of corruption-control. (3) The use of much recent data(2002-2010) based on majority(46) of African countries provides results with inclusive and updated policy implications.

Given both the inability 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 & Goel, 2009). The first consists of examining additional determinants of corruption (Treisman, 2000) while the second involves employing different estimation techniques(McAdam & Rummel, 2004). The later strategy is the focus of this paper. This approach enables us to capture the subtle differences in the determinants of corruption-control across ‘clean’ and ‘dirty’ countries. Thus 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 and Methodology

3.1 Data

We assess a panel of 46 countries with updated data(2002-2010) from African Development Indicators(ADI) of the World Bank(WB). The dependent variable is the ‘control of corruption’ indicator; consistent with the corruption literature(Billger & Goel,2009; Okada & Samreth,2012; Asongu,2012). In this study we use eight control variables: level of economic prosperity, population growth, democracy, regulation quality, political stability, government effectiveness, voice & accountability and rule of law. These variables have been used separately or collectively in the corruption literature(Bardhan,1997; Treisman,2000; Jain,2001; Aidt,2003;

Lambdorff,2006; Billger & Goel,2009). A substantial bulk of research has shown that a politico-economic approach stressing the importance of institutions is a powerful tool in understanding corruption(Abed & Gupta,2002; Bradhan,1997; Rose-Ackerman,1997). Electoral rules and structures substantially affect the corruption level(Kunicova & Rose-Ackeman,2005) and countries tend to achieve an equilibrium position that is driven by the balance of political forces and institutions(Bird et al.,2006; Bird et al.,2008). Beyond these empirical backings in the choice of government-quality control variables, the theoretical underpinnings of the corruption literature point to the central role of good-governance in the fight against the scourge. In plainer terms, the choice 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 detailed in the appendices.

Beside good-governance determinants, borrowing from Billger & Goel (2009,p.300), economic prosperity and democracy are standard determinants of corruption. Economic prosperity in the literature(Serra,2006) is observed to decrease corruption because from common-sense to some extent economic theory bribe-takers and bribe-givers are lower in wealthier nations, as the propensity to take bribe decreases when growth in national income is equitably distributed. Political competition entrenched in democracy is more likely to exert a positive 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 common to most African countries is the fight against corruption. Government quality enshrined in regulation quality, rule of law, government effectiveness, voice & accountability and political stability(no violence) ensure greater economic and political freedoms

which lead to less corruption(Chowdhury, 2004; Goel & Nelson, 2005). The size of the population is also likely to affect corruption, especially if demographic increase is accompanied with a higher degree of urbanization(Billger & Goel, 2009). A greater concentration of the population in urban areas is likely to increase their discount rates and greater opportunities for interactions between potential bribe-takers and bribe-givers. Conversely, a highly concentrated urban population might indicate a greater chance of corruption-oversight (Billger & Goel, 2009).

3.2 Methodology

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

Previous studies on the determinants of corruption are based on Ordinary Least Squares(OLS) estimation, which report parameter estimates at the conditional mean of corruption. While mean effects are certainly important, this study expands such findings using quantile regression. More so, 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 error term. Therefore, based on this technique we are able to carefully assess the determinants of corruption-control throughout the conditional distribution with particular emphasis on the best and worst fighters of corruption. Quantile regression(QR) yields parameters estimated at multiple points in the conditional distribution of the dependent variable(Koenker & Bassett, 1978) and has gained attention in recent corruption

literature(Billger & Goel, 2009; Okada & Samreth, 2012). The θ th quantile estimator of the dependent variable is obtained by solving for the following optimization problem.

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

Where $\theta \in (0, 1)$. Contrary to OLS which is based on minimizing the sum of squared residuals, with QR we minimize the weighted sum of absolute deviations. For instance the 10th or 90th quantiles(with $\theta = 0.10$ or 0.90 respectively) by approximately weighing the residuals. The conditional quantile of y_i given x_i is :

$$Q_y(\theta / x_i) = x_i \beta_\theta \quad (2)$$

where unique slope parameters are estimated 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 dependent variable. For the model in Eq.(2) the dependent variable y_i is the corruption-control indicator while x_i contains a constant term, GDP growth, population growth, democracy, rule of law, regulation quality, voice & accountability, government effectiveness and political stability. The quantile estimation technique is more robust than the OLS approach in the presence of outliers when the distribution of the dependent variable is a highly non-normal pattern(Okada & Samreth, 2012). We also report results for Least Absolute Deviations(LAD) which should correspond to those of the 0.5th quantile for robustness purpose.

4. Empirical analysis

4.1 Empirical results

The results presented in Table 2 include OLS, LAD and QR estimates. 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 dependent variable. In the interpretation of the signs of estimated coefficients, note should be taken of the fact that smaller values (in conditional distributions) of the dependent variable denote less corruption-control.

In the OLS regressions, greater economic prosperity lowers corruption-control in all cases. This finding could be elucidated from two perspectives: (1) most African nations experiencing double-digit growth rates are in the hands of dictatorships (Angola, Equatorial Guinea ... etc) and less corruption-control is characteristic of authoritarian regimes; (2) economic prosperity if equitably distributed could lead to a decrease in subsistence-oriented corruption (activity and perceptions) and hence less imperative for corruption-control. Contrary to mainstream literature (Goel & Nelson, 2005; Serra, 2006), economic prosperity does move in tandem with greater political freedoms (democracy) that favor corruption-control. Consistently across the five specifications; democracy, rule of law, regulation quality, voice & accountability, political stability and government effectiveness fuel the fight against corruption. But for the second specification, positive demographic changes significantly hinder the fight against corruption. This could be the result of increased urbanization owing to rural exodus. More urbanized nations in Africa, other things being equal are associated with less effective government oversight and increased interactions between bribe-takers and bribe-givers. LAD regression results are broadly consistent with those of the 0.50th quantile in the conditional distribution.

Table 2: Determinants of Corruption-Control: OLS, LAD and Quantile Regressions

	OLS	LAD	Q 0.1	Q 0.25	Q 0.50	Q 0.75	Q 0.90
Specification 1							
Constant	-0.062 (0.279)	0.039 (0.352)	-0.024 (0.675)	0.030 (0.490)	0.039 (0.465)	0.058 (0.496)	0.128 (0.212)
Economic Prosperity	-0.010*** (0.002)	-0.008** (0.023)	-0.0009 (0.801)	-0.001 (0.637)	-0.008** (0.016)	-0.012** (0.018)	-0.013** (0.031)
Population growth	-0.068*** (0.003)	-0.123*** (0.000)	-0.241*** (0.000)	-0.204*** (0.000)	-0.123*** (0.000)	-0.041 (0.230)	0.033 (0.420)
Democracy	0.019*** (0.000)	0.017*** (0.001)	0.015*** (0.003)	0.016*** (0.000)	0.017*** (0.000)	0.025*** (0.000)	0.031*** (0.000)
Regulation Quality	0.618*** (0.000)	0.689*** (0.000)	0.660*** (0.660)	0.682*** (0.000)	0.689*** (0.000)	0.652*** (0.000)	0.650*** (0.000)
Observations	414	414	414	414	414	414	414
Specification 2							
Constant	-0.227*** (0.000)	0.054 (0.648)	-1.126*** (0.000)	-0.592*** (0.000)	0.054 (0.475)	0.062 (0.281)	0.304*** (0.000)
Economic Prosperity	-0.005 (0.186)	-0.001 (0.818)	-0.009* (0.092)	0.003 (0.543)	-0.001 (0.722)	-0.008** (0.022)	-0.000 (0.992)
Population growth	-0.108*** (0.000)	-0.225*** (0.000)	0.039 (0.294)	-0.108*** (0.003)	-0.225*** (0.000)	-0.109*** (0.000)	-0.048 (0.138)
Democracy	0.025*** (0.000)	0.012** (0.039)	0.023*** (0.005)	0.026*** (0.001)	0.012* (0.066)	0.028*** (0.000)	0.011 (0.120)
Political Stability	0.348*** (0.000)	0.323*** (0.000)	0.233*** (0.000)	0.287*** (0.000)	0.323*** (0.000)	0.363*** (0.000)	0.534*** (0.000)
Observations	414	414	414	414	414	414	414
Specification 3							
Constant	-0.140*** (0.001)	-0.081*** (0.196)	-0.357*** (0.000)	-0.217*** (0.000)	-0.081* (0.076)	-0.023 (0.694)	0.183 (0.135)
Economic Prosperity	-0.011*** (0.000)	-0.012*** (0.000)	-0.004* (0.091)	-0.007*** (0.009)	-0.012*** (0.000)	-0.015*** (0.000)	-0.021*** (0.006)
Population growth	0.062*** (0.001)	0.028 (0.399)	-0.004 (0.796)	-0.007 (0.723)	0.028 (0.164)	0.090*** (0.000)	0.116** (0.032)
Democracy	0.005 (0.143)	0.004 (0.256)	0.006* (0.082)	0.005 (0.239)	0.004 (0.309)	0.006 (0.216)	0.012 (0.275)
Government Effectiveness	0.824*** (0.000)	0.814*** (0.000)	0.786*** (0.000)	0.780*** (0.000)	0.814*** (0.000)	0.849*** (0.000)	0.848*** (0.000)
Observations	414	414	414	414	414	414	414
Specification 4							
Constant	-0.0007 (0.987)	-0.001 (0.985)	-0.364*** (0.000)	-0.210*** (0.000)	-0.001 (0.973)	0.286*** (0.000)	0.369*** (0.000)
Economic Prosperity	-0.009*** (0.000)	-0.007*** (0.002)	-0.007*** (0.000)	-0.002 (0.449)	-0.007*** (0.001)	-0.009*** (0.001)	-0.004 (0.234)
Population growth	-0.015 (0.388)	-0.042 (0.116)	-0.071*** (0.000)	-0.067*** (0.000)	-0.042*** (0.003)	-0.006 (0.736)	0.046** (0.047)
Democracy	0.002 (0.492)	0.004 (0.331)	0.019*** (0.000)	0.011** (0.011)	0.004 (0.217)	-0.008* (0.067)	-0.009* (0.071)
Rule of Law	0.777*** (0.000)	0.753*** (0.000)	0.628*** (0.000)	0.662*** (0.000)	0.753*** (0.000)	0.918*** (0.000)	0.968*** (0.000)
Observations	414	414	414	414	414	414	414
Specification 5							
Constant	0.024 (0.673)	0.213*** (0.001)	-0.504*** (0.000)	-0.031 (0.652)	0.213*** (0.000)	0.301*** (0.000)	0.375*** (0.000)
Economic Prosperity	-0.004 (0.205)	0.001 (0.817)	0.001 (0.705)	0.003 (0.381)	0.001 (0.633)	-0.002 (0.688)	-0.002 (0.642)
Population growth	-0.113*** (0.000)	-0.217*** (0.000)	-0.085*** (0.001)	-0.205*** (0.000)	-0.217*** (0.000)	-0.144*** (0.000)	-0.038 (0.306)
Political Stability	0.258*** (0.000)	0.198*** (0.000)	0.071** (0.019)	0.088*** (0.007)	0.198*** (0.000)	0.294*** (0.000)	0.512*** (0.000)
Voice and Accountability	0.302*** (0.000)	0.368*** (0.000)	0.456*** (0.000)	0.485*** (0.000)	0.368*** (0.000)	0.267*** (0.000)	0.081 (0.101)
Observations	414	414	414	414	414	414	414

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.

Quantile regressions results reveal that the effect of economic prosperity(GDP growth) is consistent in sign(whether significant or not) across specifications and across quantiles. Greater economic prosperity leads to less corruption-control and the magnitude of the effect is more important in countries where the fight against corruption is high. This implies that everything being constant, similar growth levels across countries will reduce motivation in the fight against corruption at higher quantiles: countries where corruption-control is already high. In comparison with the findings from OLS, the sign of quantile estimates is consistent, with the magnitude of the effect of economic prosperity increasing across quantiles(from the smallest to the highest).

But for specification 3, the effect of population growth is negative across quantiles and other specifications: consistent with the OLS estimates. However, the magnitude of the effect of positive demographic change does not reveal consistent results. While in specifications 2 and 5 the negative magnitude increases from the 0.10th to the 0.50th quantiles then decreases subsequently, a corresponding general decrease in magnitude is observed for specifications 1 and 4. Thus in a combined interpretation of specifications, 1, 2, 4 and 5, within the top half of the conditional distribution(among countries with more corruption control) the negative effect of population growth on the fight against corruption has lower magnitudes.

The effect of democracy is almost always positive, confirming the position that political freedoms create conditions that monitor corrupt activities(Goel & Nelson, 2005; Serra, 2006). Corresponding OLS estimates suggest democracy significantly improves the fight against corruption. The effect is supported by QR estimates, though not consistently across quantiles and specifications. But for results in specification 4, comparing only extreme distributions reveal that the fight against corruption increases with the democratization process. The magnitude is higher in countries that are already taking the fight against corruption very seriously.

Political stability(specifications 2 & 5), government effectiveness(specification 3) and rule of law(specification 4) QR estimates (consistent with OLS estimates) suggest that these aspects of good governance increase the fight against corruption. However the magnitude of the effect increases with ‘political will’ to fight corruption. It implies the effect is more witnessed in countries where there are already better institutions for corruption-control. Conversely, *ceteris paribus*, the positive effect of voice & accountability on the fight against corruption(specification 5) has a higher magnitude in lower quantiles; implying as voice & accountability is instituted in countries where the fight against corruption is less important, its effect on controlling corruption is much higher than if the same institutions for accountability were established in countries where the battle against corruption is already very important. In a nutshell, as the fight against corruption increases the relevance of voice and accountability in this fight decreases across the conditional distribution. Conversely, as the fight against corruption increases, political stability, government effectiveness and the rule of law become more relevant in the battle against bribery.

4.2 Discussion, policy implications and limitations

The fight against corruption remains an important priority in policy making bodies in the African continent. In our findings, OLS estimates correspond(*stricto sensu*) at times to just a specific quantile of the conditional distribution. This difference suggests that some policies based on OLS should be reconsidered, especially across the best and worst fighters of corruption. Based on the findings, the following policy implications result. (1) Regulation quality seems bimodal, with less positive effects in the tails: among the cleanest and dirtiest countries in the fight against corruption. This implies policies to instill regulation in a bid to battle corruption will have less positive effects in countries experiencing the least and most effective battles against corruption. Conversely, the effect will be more consequential in countries falling within

the conditional distribution corresponding to the 0.5th quantile; *ceteris paribus*. (2) Population growth remains an important concern in Africa today with the continent's emergence as one with the highest demographic growth rates, with the population projected to double by 2036 and represent 20% of the World by 2050(Asongu & Jingwa, 2011). This represents an important challenge to urbanization with an obvious potential increase in 'bribe-takers bribe-givers' interactions. Our results support a less negative consequence of population growth on countries that are already taking the fight against corruption seriously in comparison to those that are lax on the issue. It follows that African governments need to take the fight against corruption seriously now to mitigate the potential effects of demographic explosion and massive rural exodus(increased urbanization). Strict reliance on OLS estimates would not have yielded these specificities. (3) Findings on democracy broadly indicate the democratization process increases the fight against corruption with a higher magnitude in the countries that are already taking the fight seriously. The logical conclusion is that less authoritarian African regimes taking corruption-control very seriously will benefit more from improving democratization, in comparison to more authoritarian regimes. (4) The relevance of voice and accountability in the fight against corruption decreases as the corruption-control is taking more seriously by the powers that be. It logically follows that this tool of government quality is more effective at the early stages of the fight against corruption than at the later stages. (5) Good governance dynamics like political stability, government effectiveness and the rule of law gain more importance in the fight against corruption when existing levels of corruption-control are already high. (6) Economic prosperity in terms of GDP growth creates unfavorable conditions for corruption-control with a greater magnitude at the higher quantiles(where the prevalence of corruption-control is already very important). This suggests that as the economy booms,

countries with high existing levels of corruption-control should increase their vigilance on corruption-control mechanisms(as there are higher temptations to abandoning the fight against corruption with economic prosperity).

Our results show that blanket corruption-control policies are unlikely to succeed equally across countries with different political wills in the fight against corruption. Thus to be effective, corruption policies should be conditional on the prevailing levels of corruption-control as we have elucidated above. To be effective, corruption-control initiatives should be tailored differently across the best and worst corruption-fighting countries especially with respect to regulation quality, democracy, population growth and other good governance initiatives(political stability, government effectiveness, voice & accountability and rule of law).

Common to all conditional corruption-control distribution strands is the issue of ‘political will’ in the implementation of reforms. Most African countries already have well established corruption control policies. However, their implementation and enforcement is another issue and remains a matter of political will. We shall outline some aspects that need to be accounted for if the reforms and policies we have suggested are to yield any fruits. (1) The fight against corruption cannot be a ‘one man show’ and relegated uniquely to political leadership. Anti-corruption strategies are effective if they are inclusive, systematic and structured; that is to say integrating all institutions and policies(investigation, prosecution research and prevention). Such institutionalization develops a forum of mutually reinforcing ‘horizontal accountability’ which inhibits reforms from being perceived as partisan issues or ‘witch hunts’. (2) Administrations could establish public confidence through regular updates in press conferences that reveal strides that are being made towards reducing wrongdoing, increasing accountability and transparency. (3) The independence of the anti-corruption body set-up by government is also

paramount for the success of reform strategies. In Hong-Kong and Singapore for instance, the effectiveness and success of anti-corruption institutions are directly related to their degree of autonomy. If the independent bodies are answerable to parliament rather than the head of state, this could improve their effectiveness.

An important limitation worth taking into account is that studies of this kind depend to a great deal on the integrity of the proxy for corruption obtained from perception-based measures. Thus omitted variables and media-effect may significantly influence perceptions of corruption-control. However, to the best of our knowledge there are no better indicators of corruption-control than those from African Development Indicators of the World Bank.

5. Conclusion

Are there different determinants in the fight against corruption across African countries? Why are some countries more effective at battling corruption than others? This paper has contributed to the literature on the determinants of corruption-control by focusing on the distribution of the dependent variable (the control of corruption). It is likely that the best and worst countries in the corruption-battle respond differently to factors that influence the fight against corruption. There could be subtle institutional differences in corruption-control between dirty and clean nations that may affect corruption-control determinants and government efficacy in the fight against corruption. Our results suggest that the determinants of fighting corruption respond differently across the corruption-control distribution. This implies some current corruption-control policies may be reconsidered, especially among the best and worst African nations in the battle against the scourge. Results could be summarized in the following. (1) Greater economic prosperity leads to less corruption-control and the magnitude of the effect is more important in countries where the fight against corruption is high. (2) Regulation quality

seems bimodal, with less positive effects in the tails: among the best and worst fighters of corruption. (3) There is support for a less negative consequence of population growth in countries that are already taking the fight against corruption seriously in comparison to those that are lax on the issue. (4) Findings on democracy broadly indicate the democratization process increases the fight against corruption with a higher magnitude on countries that are already taking the fight seriously. (5) The relevance of voice and accountability in the fight against corruption decreases as the corruption-control is taken more seriously by the powers that be. (6) Good governance dynamics like political stability, government effectiveness and the rule of law gain more importance in the fight against corruption when existing levels of corruption-control are already high.

In summary the rewards of institutional reforms are more positive in countries that are already more seriously engaged in the corruption fight. This implies there is a reward to 'experience' in the battle against corruption, meaning laggard countries in this fight will definitely benefit less in time when common policies are instituted by all countries. As a policy implication, the fight against corruption should not be postponed, doing so will only reduce the effectiveness of policies in the future.

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
	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
Independent Control Variables	Regulation Quality	-0.651	0.617	-2.394	0.905	414
	Rule of Law	-0.694	0.619	-1.913	1.053	414
	Government Effectiveness	-0.703	0.603	-1.774	0.807	414
	Voice and Accountability	-0.720	0.711	-2.174	0.947	414
	Political Stability	-0.541	0.860	-2.700	1.122	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.

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

Num: number of countries

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