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Causes of Corruption: Evidence from Sub-Sahara Africa

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Abstract

This study explores the causes of corruption for Sub-Sahara Africa in a panel of 22 countries from 1996 to 2013. The sources of corruption are grouped under three main thematic areas – historical roots, contemporary causes and institutional causes to make way for both subjective and objective measures. The subjective measures allow this paper to gauge the effectiveness of anticorruption policies. Focusing on three estimation strategies and using the perceived level of

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corruption as dependent variable, we find ethnic diversity, resource abundance and educational attainment to be markedly less associated with corruption; whereas wage levels of bureaucrats and anticorruption controls using government effectiveness and regulatory quality breeds substantial corruption. Press freedom was variedly associated with corruption. As a policy implication, the fight against corruption on the continent needs to be reinvented through qualitative institutional reforms. Existing educational systems should be used as medium to intensify awareness on the devastating effects of corruption on national development.

Key words: Corruption; Democracy; Institutional Quality; Sub-Sahara Africa; Governance.

1.0 Introduction

The debate to account for sub-Sahara's development challenges have been pending over the last two decades. Development economists, political heads and political scientists have in no small way attempted to contribute in finding the right mix of factors that best explains the plight of the continent. Among the factors considered, the devastating effects of corruption on well-being cannot be overemphasized (Rose-Ackerman 1999b; Rose-Ackerman 1999a). As a result, countless efforts have gone into strategies to combat it. This is against the backdrop that institutional quality precedes all national development. According to Jain (2001), aid efforts, sound policies as well as well-intentioned incentives may be less relevant unless when offered in an environment that encourages self-sustaining development.

That notwithstanding, there is a growing stream of empirical research on the causes and consequences of corruption across countries in recent times (see Asongu, 2013; Dong & Torgler, 2013; Mauro, 1995; Pellegrini, 2011; Treisman, 2000). Although there appear to be a budding

consensus on the sources of corruption, the complexity of the topic leads to a number of critical issues that warrant some attention. To begin with, there is lack of agreement on how to measure and quantify the effect of institutions on controlling corruption (Billger & Goel, 2009). Moreover, there is this impression that corruption controls can only be gauged from a subjective perspective. In line with these concerns, this paper fundamentally understands that anticorruption policies dictate the spate of social behavior, which is essentially connected to corrupt practices. Social behavior on the other hand is generally seen as the rules of the game defined by institutions. Using this as caveat, this paper focuses on this concern and thus identifies institutional effectiveness as an emerging source of corruption. This coupled with the fact that the connection bordering on the effectiveness of these policies remains fuzzy (Billger & Goel, 2009).

The contribution of this paper to literature on corruption lies in extending the sources of corruption from the perspective of institutional effectiveness. We extend the conventional factors in contemporary literature with the ones that are institutionally embedded to answer the question on whether traditional sources of corruption holds in the face of effective corruption controls in Sub-Sahara Africa. We assume if the quality of institutions could affect social behaviors and the incentive to fight against corruption, then the results of this paper could have significant implications for the literature on the empirics of corruption and policy making to stem the tide on corrupt practices in the region. This approach allows countries within the region to be assessed on the basis of common institutional characteristics. We organize this paper as follows. The next section review literature on the theories of corruption. Data and methodology are presented and outlined in section 3. Section 4 deals with the empirical findings and discusses it within the

theories under the respective estimation strategies (pooled OLS, fixed-effects and Instrumental variable). Section 5 is the conclusion and policy direction.

2. Related Literature Review

2.1 Theories of Corruption

In the seminal contribution of Jain (2001) on the causes of corruption, three fundamental preconditions are identified for corruption. First the paper points to bureaucratic discretionary power. Second the association of this power with economic rent, and thirdly the deterrence that has to do with the probability of being caught and punished. These preconditions can further be broadly categorized under cost and benefit with the first two focusing variedly on the benefits of corruption whiles the third deals with the cost of corruption (Becker 1968; Dong & Torgler 2013). What about ambiguous and outmoded laws?

That notwithstanding, theories on the sources of corruption are in manifold and have widely been used based on economic and socio-cultural principles. Yet with the increasing importance attached to understanding the causes, others have contributed in extending these factors in both inductive and deductive studies. For instance, Dimant (2014), in a study in which an inductive approach was employed categorizes the causes of corruption into *economic* and *social* factors. Other instrumental writers such as Wang (2005) in an attempt to diagnose the causes of corruption in china used two broad-base terminologies. Wang categorizes these factors under "*social structural system*" and "*social cultural character*". Though these categorizations are commendable, this research believes such delineations fail to acknowledge the impact of anticorruption policies on corruption which are subjectively inclined. These policies by extension shape social behavior.

Moreover, it is important to note that social behavior (which accounts for social factors) are the antecedents of existing set of rules. Rules according to North (1990) originate from institutions. Put formally, institution is generally understood as a representation of regularity in social behavior agreed by members of a society, which specifies behavior in specific recurrent situations, and is either self-policed by some external authority (Schotter 1981). By extension, institution affects human activities by defining what they can do or interact with each other. Based on this rationalization, we choose to reclassify some of the determinants under the social factors within the institutional perspectives. This allows the study to group the theories of corruption under three perspectives – historical roots, contemporary causes and institutional causes. The first two approaches invariably deal with the benefits of corruption whiles the third classification is more or less concerned with the cost aspect. The study proceeds to discuss the theoretical and empirical linkages in the section that follows.

Historical Roots

A central underlying factor that determines corruption as argued in the literature is embedded in the historical connections that have profound significance in current administrative and political landscape. Among these explanations, the one on legal theory seems to have practical significance in modern days. The theory explains that existing legal codes may invariably affect the quality of government, including the level of control of corruption. Countries that have been one way or the other colonized in past stand to have their legal codes influenced greatly by their colonizers. Glaeser and Shleifer (2002) document that historical antecedents largely trace the effort of property owners to limit the discretionary power of the monarch's power as the origin of common law legal codes. They together with La Porta et al.

(1999) further suggest that the actions of independent judicial system in countries that adopted the British legal code will be conducive to better governance with lower levels of corruption.

Within the same historical elements, there is a convergence to the effect that former British colonies are poised to have better civil service code due to the influence of the British bureaucracy. The theory further explains that British civil structure is premised on procedural aspects of the law which enhances the capability of subordinates and judges to challenge hierarchies in order to enforce the law (Treisman 2000). However, the method with which colonization was imposed on these countries has been questioned, thereby undermining this positive effect it bestowed on the colonies. Critics of this theory argue that the British colonizers were interested in extracting resources and that the legal procedures established was meant to ensure they had a smooth operation unless there is an empirical attempt to test the effects of colonization on present day corruption. Meanwhile, Mauro (1995) explains that a more ethnically fractionalized country tend to be more corrupt. The link as he tried to establish was between ethno-linguistic fractionalization and corruption, based on the existence of alternative affiliations and obedience with respect to the state. Thus, in ethically divided societies civil servants and politicians would exploit their position to favor members of their ethnic groups. In other words, divided societies tend to under provide public goods and this, in turn, would augment the dependency on special bounds to obtain essential services from the state.

Contemporary Causes

The contemporary perspective provides more entrance for objective measures on anti-corruption policies as compared to the theories on historical roots. To begin, income levels of

countries may pose as a strong determinant of corruption in several ways. Richer countries can be expected to afford better institutions than poorer ones. Furthermore, many variables correlate with income such as schooling levels, urbanization and access to mass media, are associated with higher development levels and decrease the tolerance of the polity towards corruption. Thus, it is expected that real income relationship with corruption should be negative.

Another theory embedded in the rent-seeking literature emphasizes the link between corruption and possibilities for economic agents to gain access to sources of higher-than-average rents, when state interventions prevent free entry (Rose-Ackerman, 1999). The fight against corruption is helped by the reduction of non-generic state regulation and that corruption would be associated to the size of government activities (Acemoglu & Verdier, 2000; Chaufen & Guzman, 1999b; Kotera et al., 2012). Related to this is monopoly or restriction on import which creates opportunities for corruption by limiting the ability of citizens to choose from other goods and services (Vian 2008). The supply of foreign products on the domestic market accordingly reduces rent-seeking and corruption by enhancing competition.

When viewed from economic perspective, officials weigh the costs and benefits of being corrupt and that of acting with integrity and choose to act in a way that maximizes their self-interest (Jaen & Paravisini, 2002). Corruption is more pervasive in situations where government agents or even private entities have monopoly power over clients, implying officials have a great deal of discretion or autonomy to make decisions without adequate control on this discretion; and there is not enough accountability or even government's control is ineffective for decision results (Vian 2008; Klitgaard 1988; Pellegrini 2011). The monopoly thesis is further explained within the enclave of rent-seeking where economic agents gain access to sources of higher-than-average rents especially when state intervention or policy prevent free entry (see Feinberg, 2009; Kolstad

& Søreide, 2009; Rose-Ackerman, 1999; Søreide, 2002). Thus corruption is associated to the size of government activities (Acemoglu & Verdier, 2000; Chaufen & Guzman, 1999b).

Other theories also suggest at the higher income levels or additional income obtained through legitimate means, corrupt practices could be less tempting because of decreasing marginal utility of income (Schulze and Frank, 2003). The wage levels of bureaucrats may also affect vulnerability to corruption. Higher wages portends as higher cost when a position is lost, and a cost benefit analysis suggests that higher wages provide an incentive to refrain from corruption (Becker, 1968; Treisman, 2000). Other theory argue at a higher income level or additional income obtained through corrupt practices could be less tempting because of decreasing marginal utility of income (Schulze and Frank, 2003).

Other seminal contributions have in recent times identified foreign aid as a determinant of corruption in developing countries. In revealing this, Akurut (2013) inductively suggest that foreign aid money acts as a source of corruption. Her main point of emphasis was on foreign aid money, the process of the aid release and how it is used. These assertions have been empirically established by Alesina and Dollar (2000) who have shown that aid inflow is weakly correlated with the development of beneficiary countries, but is strongly related to other elements such as cultural and historical proximity between donor and recipient countries. Similar study by Ohler et al. (2012) that sought to investigate whether the Millennium Challenge Corporation (MCC) was successful in promoting better control of corruption using difference-in-difference-in-difference (DDD) approach. The study found strong anticipation effect soon after the announcement of the MCC, while increasing uncertainty about the timing and amount of MCC, aid appears to have weakened the incentives to fight corruption over time. Other authors have also argued that since foreign aid is not correlated with the development of the recipient

countries, it is possible it may be going elsewhere, thus fuelling corruption (see Burnside & Dollar, 2000, 2004; Collier & Dollar, 2002, 2004; Forson et al., 2015; Knack, 2013; Tavares, 2003).

Expanding on how rent-seeking activities can trigger corruption, proponents have identified natural resource endowment as a source of corruption. According to these proponents, natural resources are a common source of high rents, available to those that have obtained the rights for exploration and extraction. It is further explained that these rents promote activities geared towards influencing policy makers who have power in the distribution of exploitation rights, drawing away resources from other productive activities (Leite & Weidmann, 1999).

A common variant identified in most studies but treated as a contemporary cause of corruption in this study is contemporary democracy. Contemporary democracy when considered from the procedural aspect hinges on free elections and electoral competitions, the association is less straightforward. Most indexes of democracy are based on the procedural aspects of democracy with related mixed empirical results. Studies that made use of few control found contemporary democracy to reduce corruption levels (Bohara et al., 2004; Chowburry, 2004; Hill, 2003). Yet related cross-country studies on some Latin American countries suggest that the transition did not help to reduce corruption as postulated by earlier theories. A classic example is that of Mexico which adopted democracy but was plagued by series of corruption scandals. There have also been countless cases of corruption in the European context (see EC, 2014). For instance, the Berlin anticorruption watch-dog has consistently scored Italy high on the corruption index despite being a democratic state having embraced the procedural aspect of democracy over the last six decades.

The role of educational attainment in contemporary studies documents mixed results. However the normative connection has it that education enhances awareness on the devastating effect of corruption on well-being, hence the relation is negative. Whereas proponent in related literature are of the view that higher educational attainment encourages participation in corrupt activities in some respect (see Kaffenberger, 2012; Mocan, 2008; Truex, 2011), opponent have argued to the effect that when there are good policies on the ground, educational attainment can indirectly prove useful in the fight against corruption (see Asongu, 2015; Cheung & Chan, 2008).

Institutional Causes

The institutional perspective basically focuses on set of rules that shape human behavior and interaction. This strand allows for the entrant of other subjective measures used to gauge the effectiveness of anti-corruption policies. The perspective acknowledges that corruption thrives and flourishes in structures that are dysfunctional. It also exposes the streaks of ineptitudes among government agencies (governance).

We classify the role of the media as an institutional variant using newspaper circulation or the freedom of the press. The theory asserts that the fundamental role of the press is to act as a check on those that should represent the public interest. The hypothesis further assert that corruption scandals freely enquired and exposed by the mass media act as a deterrent for bureaucrats and politician to engage in corrupt practices (see Brunnetti & Guzman, 2003; Camaj, 2013; Dahlström, 2010; Färdigh, 2012; Pellegrini, 2011b).

The absence of rule of law has been identified as a determinant of corruption under the institutional dichotomy. In the words of UNODC Executive Director, "where corruption exists, the rule of law cannot flourish". This implies rule of law and corruption are inversely related (Fedotov 2012). Corruption and bribery circumvent fair tendering processes and the consequences are severe: funding meant for life-enhancing projects (Schools and hospitals) can be diverted into the hands of corrupt individuals. Corruption undermines the rule of law by eroding democratic institutions essential for fair and equitable societies. Thus, sustainable development could be guaranteed when the rule of law is in full swing. Though theoretically this sounds true, there are relatively fewer empirical supports for this claim.

Some aspects of economic institution measured using economic freedom according to some authors are beneficial in reducing corruption. Explained other way, it has been documented that the lack of competition policies and government regulations may yield more corruption. Empirically, this has been proven in related studies with economic freedom and regulatory quality having a negative relationship on corruption. However, this conjecture is conditioned on the distinctive character of the development path of the country in question (Graeff & Mehlkop, 2003; Kumar, 2011; Pieroni & d'Agostino, 2013).

Subservient to the components of economic institutions identified as determinants of corruption gaining popularity in contemporary literature lately but subjectively treated as mere conjecture is secured property right protection. According to Dong and Torgler (2011), democracy works better when secured property right system is effective. Thus contrasting this assertion is the belief that the absence of property right system leads to an increase of corruption.

Accountability especially when it is deficient on the part of politicians and bureaucrats according to other researchers creates opportunities for corruption to thrive. For instance, Brinkerhoff (2004) explicates on three key elements of accountability (i.e. goals measurement and result; justification of results and punishment and sanctions) that proliferate or curtail corruption. Accountability is the obligation of government to demonstrate effectiveness in carrying out goals and meeting the demands of the public (Segal & Summers, 2002). Empirically, this has not been adequately researched into as accountability is more of a qualitative variable. However, in recent times, there have been an increasing attempt to measure the effectiveness of governance structures from one country to another by the World Bank using the World Governance Indicators (WGI). The indicators variedly measure governance in relation to policy effectiveness, control of corruption, accountability among a host of other indicators. As a result, Schumacher (2013) points out that improvements in electoral accountability induce a decrease in bribing while trust increases. This preposition has not been empirically proven deductively.

Based on the theoretical and empirical evidence from the literature, the sources of corruption are varied and thus can broadly be categorized into three main perspectives. These perspectives are further identified the cost-benefit incentive strand. To provide a clear lead to the empirical analysis, we provide a summary of the sources with the corresponding signs suggested by the literature in Table 1.

Table 1. Sources of Corruption

Cost		Benefits			
Sources of corruption	Sign	**Sources of Corruption**	Sign	**Sources of Corruption**	Sign
INSTITUTIONAL CAUSES		CONTEMPORARY CAUSES		HISTORICAL ROOTS	
Press Freedom	-	*Aid Inflows*	+	*Bureaucratic Cost*	+
Government Effectiveness	-	*Wage of bureaucrats*	-	*Ethnic Fractionalization*	+

Regulatory Quality	+	*Resource Abundance*	+	*British Colony*	-
Rule of Law	-	*Trade Freedom*	-		
Property Rights Protection	+	*Trade openness*	-		
Size of Government	+	*Contemporary Democracy*	-		
		Education	+		

Source: Authors' construct

3. Empirical Analysis

3.1 Data and Methodology

We explore the causes of corruption for 22 countries in Sub-Sahara Africa with updated data for the period 1995 to 2013 from various sources. The dependent variable is the index of perceived level of corruption from Transparency International. We also control for other variables such as population growth, and economic prosperity using GDP growth rates in the full specification. The resulting descriptive statistics are presented in Table 2 with the variable definitions and the corresponding sources.

Our baseline specification for investigating the causes of corruption is similar to that of Pellegrini (2011) and Dong and Torgler (2013) and is of the form;

$$Y_{cor,it} = a_0 + \beta_1 \sum_{i=1}^{3} Hist_{it} + \beta_2 \sum_{i=2}^{6} Contem_{it} + \beta_3 \sum_{i=3}^{6} instit_{it} + \beta_j \sum_{j}^{2} Cont_{it} + \mu_i + \gamma_t + \varepsilon_{it} \quad (1)$$

This specification measures the wage level of bureaucrats using the natural logarithm of per capita income as proxy for the countries involved due to variations and to ensure comparability. Education is the proportion of primary and secondary enrollments. We used a dummy variable to represent British colonial heritage. The three error terms in the specification accounts for regional fixed-effects such as culture that are unobserved but strongly affects corruption.

To determine the sources of corruption in sub-Sahara Africa, it is important for the study to address the problems of multicollinearity (see correlation matrix in Table A1) and endogeneity. To reduce the issue of multicollinearity, we intuitively segregate the variables that are highly correlated. By this we are able to control the condition numbers and variance inflation factors in the panel regressions to be lower than 100 and 10 respectively. We also follow other research approach (see Dong & Torgler, 2013; Hair et al., 1995) and assume there is no serious collinearity in the regressions. To deal with the issue of endogeneity, the study depends on three estimation strategies. We rationalize our decision on the basis of the fact that corruption is an institutional problem that last for long and since the major source of bias in our panel regressions may be time-invariant historical factors, we decided to use interchangeably a combination of the conventional fixed-effects, and pooled OLS with fixed-effects. However the fixed-effects regression may not necessarily identify the causal effects of corruption and its sources when omitted time-variant factors are considered. To address this, we depend on the fixed-effects within instrumental variable (IV) regression for the causal inference. We strongly believe through these approach, we will be able to deal with problem related to endogeneity in determining the sources of corruption.

We investigate the sources of corruption using our baseline regression in equation (1) that allows this paper to be compared with related findings in the literature. It should be pointed out that the estimation strategy follows the theoretical classifications discussed in the literature under the historical roots, contemporary causes and institutional causes. We test each thematic area robustness against the variables highlighted by the theory. We also do further tests for robustness with estimates that jointly uses full specification. In all the processes, we make sure multicollinearity is dealt with.

Variables	Years	Description	Mean	Std. Dev.	Source
~~Economic Prosperity~~	~~1970-2013~~	~~A proxy of annual percentage growth rate of GDP per capita based on constant local currency.~~			~~World Bank~~
Economic Prosperity	1970-2013	A proxy of annual percentage growth rate of GDP per capita based on constant local currency.	1.169	6.666	World Bank
Prim. ENR	1970-2013	Total enrollment in primary education, regardless of age.	82.92	27.93	World Bank
Sec. ENR	1970-2013	Total enrollment in secondary education, regardless of age.	26.47	20.97	World Bank
Population Growth	1970-2013	Exponential rate of growth of midyear population from year t-1 to t	2.701	0.879	World Bank
Resource Abundance	1970-2013	Sum of all rents (natural gas, coal (hard and soft), mineral, and forest)	11.89	13.53	World Bank
log(Aid inflows)	1970-2013	Logarithm of Aid inflow is the transfer of capital for the benefit of recipient country or its population.	8.147	0.742	World Bank
log(Bureaucrats wages)	1970-2013	A proxy of per capita income used to represent the average government wage as a multiple of GDP per capita	2.802	0.393	World Bank
Trade openness	1970-2013	A measure of the openness of the economy and equals to the share of imports over GDP.	67.72	27.73	World Bank
Corruption Index	1996-2013	Perceived level of corruption. Countries ranked on a scale of 100 (very clean) to 0 (highly corrupt).	2.845	1.016	Transparency International
Press Freedom	1996-2013	The degree to which country permits the free flow of news and information. Scored from 0 (best) to 100 (worst).	51.4	16.45	Freedom House
Contemp. Democracy	1970-2012	Index of democracy based on five key institutional characteristics. 10 = most autocratic, to 10 = most democratic.	-1.907	19.49	Polity IV Project
Gov't Effectiveness	1996-2013	The quality of public services, civil service and the degree of independence from political pressures, ranges from -2.5 to 2.5, higher values = better governance outcomes	-0.638	0.585	WGI/WB
Size of Government	1998-2013	The four components that indicates the extent to which countries rely on the political process to allocate resources and goods and services.	6.218	1.063	Economic Freedom of the World project (EFW)
Regulatory Quality	1996-2013	Perception of the ability of the government to formulate and implement sound policies. Ranging from -2.5 to 2.5.	-0.502	0.584	WGI/WB
Rule of Law	1996-2013	Extent to which agents have confidence in and abide by rules	-0.419	0.523	WGI/WB
Property Right Protection	1998-2013	Degree to which a country's laws protect private property rights and extent of government law enforcement.	42.66	13.34	HF/Polity IV
Bureaucratic cost	1996-2013	Sub-component based on *Global Competitive Report* on the question: Standards on product/service quality, energy and other regulations (outside environmental regulations) in your country are: (1= Lax on non-existence, 7= among the World's most stringent).	5.225	0.819	Economic Freedom of the World project (EFW)
Economic Freedom	1998-2013	Degree to which the policies and institutions of countries are supportive of economic freedom. The scores range from 0 to 10.	57.76	5.074	GLH
British Colony	1970-2013	Dummy variable for countries that have been under British control.	0.29	0.45	WF
Ethnic Fractionalization	1961/1985/95	The probability that two randomly selected individuals in the population belong to different groups.	0.758	0.125	Roede, & Alesina et al.

Table 2. *Data description, source and summary statistics*

Source: Authors' construct

3.2 Findings and Discussion

3.2.1 Pooled OLS estimates

To empirically test the effects of anticorruption policies on corruption, we examine the impact of the media (press freedom) as an institution, government effectiveness, regulatory quality, rule of law, economic institution (property rights protection) and size of government on corruption. The results for the pooled OLS estimates is presented in Table 3.

Regression (1) investigates among variables grouped under the institutional dichotomy. The explanatory variables Press freedom and regulatory quality are indeed validated as all are seen to be statistically significant ($p<0.001$) with the expected negative coefficients. This suggest the media as an institution is less associated with corruption. To forecast the impact of press freedom on corruption would imply a 1% change in the value of press freedom is associated with 0.0194 point reduction in corruption levels in sub-Sahara Africa.

However, the negative relation on regulatory quality ought to be interpreted carefully based on how the variable has been defined. On that basis, it presupposes regulatory quality is positively associated with corruption. This means the quality of regulation creates seepages that allows the practice to thrive in the region. In terms of elasticity, a 1% change in regulatory quality worsens governance which substantially raises the level of corruption in the region by almost 1.044 points. However as argued in contemporary literature that the size of government is a determinant of corruption, the study finds this variable to be insignificant but positive. Regression (1) cross-variable variance is high (83%) which implies the goodness of fit in the choice of variables selected as sources of corruption under the institutional variants in SSA holds a lot of theoretical soundness.

Table 3. Corruption and its sources in Sub-Sahara Africa: Pooled OLS estimation

VARIABLES	(1) Corruption	(2) Corruption	(3) Corruption	(4) Corruption
CONTEMPORARY CAUSES				
Log(aid)			0.041	0.291
			(0.029)	(0.212)
Log(wages of bureaucrats)			0.361***	1.940*
			(0.101)	(1.118)
Natural Resources			-0.003*	-0.008
			(0.001)	(0.017)
Trade freedom			0.007	-0.112
			(0.013)	(0.078)
Contemp. Democracy			-0.000	-0.002
			(0.000)	(0.003)
Education			-0.002*	-0.032**
			(0.001)	(0.014)
INSTITUTIONAL FACTORS				
Press freedom	-0.019***			-0.042**
	(0.003)			(0.019)
Regulatory quality	-1.044***			0.298
	(0.096)			(0.607)
Rule of law	-0.029			0.252
	(0.076)			(0.294)
Property right	0.003			0.008
	(0.003)			(0.007)
Size of gov't	0.025			-0.079
	(0.025)			(0.048)
HISTORICAL ROOTS				
Bureaucratic cost		-0.118		0.002
		(0.081)		(0.072)
Ethnic-fractionalization		-4.056***		-4.603*
		(0.445)		(2.408)
Economic Prosperity				-0.003
				(0.011)
Population Growth				0.007
				(0.123)
Constant	3.830***	6.483***	1.265***	2.378
	(0.201)	(0.573)	(0.347)	(4.428)
Year Dummy	Yes	Yes	Yes	Yes
Country Dummy	No	No	No	No
Observations	125	245	788	52
Adjusted R^2	0.827	0.269	0.955	0.870
F-stats	99.84	30.95	248.6	22.41

Note: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Historical background has a lasting impression on the spate of corrupt practices. With that establishment, we empirically test for the validity of this notion using bureaucratic cost, British heritage and ethnic linguistic fractionalization. We find ethnic-linguistic fractionalization to be negative in regression (2). Ethnicity in this regard is less associated with corruption in the region. Although the influence is seen to be minimal, it does not however negate the fact that fractionalization is a medium through which corruption permeates. This correlation greatly supports the explanation in the literature that suggest the more ethnic diverse there is in society, the more bureaucrats and politicians abuse their positions to favor members of their own ethnic divide. The dominant cultural trait in sub-Sahara Africa hitherto used to be collectivism, which by extension increases the susceptibility of becoming parochial and promoting cronyism. Nevertheless the effect of globalization has gradually diluted this through the adoption of western lifestyles. Democracy allows for competition which means the element of favoritism may be low. The findings under the historical roots support other studies in the literature (see Glaeser & Shleifer, 2002; Glaeser et al., 2004; Mauro, 1995; Treisman, 2000, 2007).

Progressing to the contemporary frontier shows the wage level of bureaucrats, resource abundance and education are variedly associated with corruption in Africa. However, arguments advanced by researchers such as Ohler et al. (2012) and others based on the fuzzy correlation between aid and development is not supported in this research. Although contemporary democracy was insignificant, it had the expected negative coefficient to support popular proposition that democracy is less associated with corruption. On bureaucrats' wage levels, the study finds a positive relationship between bureaucrat's wages and corruption. This implies the current income levels explains why corruption continues to flourish in the region. Resource abundance and education (secondary enrollment) on the other hand were markedly less

associated with corruption. The proliferation of media houses means awareness on corruption is enhanced. This awareness increases participation at the grassroots on the fight against corruption. This explains why educational attainment is less associated with corruption in Africa. The evidence supports the indirect role of education in the fight against corruption in Africa (see Asongu, 2015; Cheung & Chan, 2008; Truex, 2011).

Although some of the variables are insignificant in the regression, it is equally vital to partially comment on them for the sake of the signs they bear. In the first place, we find the impact of contemporary democracy to be less associated with corruption in the African sub-region when inferred from the negative coefficient it consistently has from the two estimators. This implies the procedural aspect of democracy (free and fair election and electoral competition) in the region increases participation which may probably serve as checks on politicians in the region (see Bohara et al., 2004; Chowburry, 2004; Hill, 2003). Secondly, aid inflow bears a positive relation with corruption on Africa. This is possible as aid conditionalities are used as medium to either transfer funds back to donors or to grease palms in return for special favors hence the incentive to fight corruption is entirely low (see Forson et al., 2015; Ohler et al., 2012).

Evidence from the full specification in regression (4) confirms previous results. However, economic prosperity and population growth used as controls are found to be insignificant. Nevertheless the negative relation on economic prosperity has some important implication which warrants attention. It suggests economic prosperity is less associated with corruption. This means as countries in the region progress economically, their ability to formulate and undertake qualitative institutional reforms to tackle societal challenges may be enhanced. This is

theoretically supported and can also be explained within the marginal utility of income hypothesis (see Asongu, 2013; Dong & Torgler, 2013; Schulze & Frank, 2003).

3.2.2 Fixed-Effects Estimates

In Table 4, we consider the impact of the explanatory variables that are time-invariant in regression (1). We find a contrasting relation as press freedom is positively significant to suggest it is associated with corruption on the continent. The media as a whistle-blowing institution is supposed to serve as checks on corrupt politicians and bureaucrats. They freely enquire and put in the public domain corrupt bureaucrats and politicians. Yet in Africa, due to political patronage, the media has increasingly reneged on its duty as a whistle-blowing institution, hence the variation in the relation. For example, there are media outlets that operate to defend politicians and political parties to that effect.Some politicians own media houses and such media outlets work to promote the owners' interest whether good or bad and will defend corrupt practices of such politicians. Facts on corrupt leaders are distorted in that process. The negative relationship on government effectiveness warrants some attention given how the variable is measured. The negative relation attest to anticorruption agencies in the region being under constant political pressure. Such an act could lead to circumvention. This means governance structures have done little in the fight against corruption due to interference. In terms of elasticity, a 1% decrease in government effectiveness worsens governance in the region which raises the spate of corruption by 0.48 points.

On the historical front, when we consider the results in regression (2), it turns out that none of the variants considered is significant. A possible reason could be the range of controls

used to capture time and country effects. Again the variables considered especially, ethnicity is fundamentally a cultural element which means time has limited effect on it. The results here contrast the pooled OLS outcomes. The model is however jointly insignificant at the 1% significant level with low coefficient of determination.

Table 4. Corruption and its sources in Sub-Sahara Africa: Fixed-effects estimation

VARIABLES	(1) Corruption	(2) Corruption	(3) Corruption	(4) Corruption
INSTITUTIONAL FACTORS				
Press freedom	0.069***			0.027
	(0.024)			(0.075)
Gov't effect.	-0.480*			0.111
	(0.460)			(0.282)
Rule of law	0.048			0.154
	(0.072)			(0.291)
Property protection	-0.000			0.009
	(0.003)			(0.007)
Size of gov't	0.026			-0.079
	(0.025)			(0.048)
HISTORICAL ROOT				
Bureaucratic cost		0.021		0.026
		(0.057)		(0.074)
Ethnic fractionalization		-0.553		-4.976*
		(0.766)		(2.364)
CONTEMPORARY CAUSES				
Log(aid)			0.041	0.355
			(0.029)	(0.221)
Log(Income of bureaucrats)			0.361***	2.025*
			(0.101)	(0.011)
Resource Abundance			-0.003*	-0.005
			(0.001)	(0.015)
Trade openness			-0.000	-0.121
			(0.001)	(0.082)
Contemporary Democracy			-0.000	-0.002
			(0.000)	(0.003)
Education			-0.002*	-0.037**
			(0.001)	(0.015)
Economic Prosperity				-0.001
				(0.011)
Population Growth				0.001
				(0.124)
Constant	-0.800	3.268***	1.604***	-1.846
	(1.431)	(0.873)	(0.357)	(5.085)

Year dummy	Yes	Yes	Yes	Yes
Country dummy	Yes	Yes	Yes	Yes
Observations	125	245	788	62
Number of country	11	18	19	13
R-squared	0.709	0.149	0.291	0.294
F-stats	17.47	1.328	2.445	1.98

Note: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The fixed-effects estimates in regression (3) in Table 4 corroborates the pooled OLS results on the contemporary causes. Bureaucrats' wages, resource abundance and education are collectively significant amidst different signs. The model explanatory power is low (adj. R^2=29%) but the model is jointly significant at 1% (F= 2.45).

The two estimation strategies in Table 3 and 4 have consistently shown that income used as proxy for bureaucrats' wages substantially affects corruption in the region. However, Treisman (2000) and Glaeser and Saks (2006) suggest such a relation might be suffering from potential omitted variable bias and reverse causality between corruption and income. To address this, we need to find an instrumental variable that captures the wage characteristics of the countries in the sample within the region. Although the literature suggest colonial legacy and ethnic-linguistic fractionalization, we resorted to the intuitive criteria to find an instrument.

This is against the backdrop that the mechanism to establish relation as suggested by the literature in the presence of time-invariant institutional factors and time-variant may be difficult. Nevertheless, as established in the objective of the paper, our prime focus is to assess the impact of institutional effectiveness in combating corruption in Africa. We in this regard instrumented with the variable wages and treated government effectiveness as endogenous variable in the fixed-effects within IV regression. The results are similar to previous ones even when we instrument wages to capture the country characteristics (see Table A2).

4. Concluding Remarks

In this study, we explore the causes of corruption within the lenses of three thematic sources – historical roots, contemporary and institutional causes in sub-Sahara Africa. The crux of the paper is its attempt to assess the effect of anticorruption policies on the spate of corruption in the region by incorporating institutional factors. This approach allows for both subjective and objective factors to be examined. Our study complements other cross-country study on the causes of corruption by presenting contextual evidence on Sub-Sahara Africa. The number of independent variables and approach used allows this paper to deal with omitted variable bias and endogeneity. A mixture of time-variant and time-invariant variables also permits this study to assess the impact of fixed effects on the causes of corruption in the region.

We find ethnic diversity, resource abundance and educational attainment to be less associated with corruption; whereas wage levels of bureaucrats and anticorruption controls using government effectiveness and regulatory quality breeds substantial corruption.

Our empirical findings have substantial policy implication. As a policy implication, the fight against corruption on the continent needs to be reinvented through qualitative institutional reforms. Existing educational systems should be used as medium to intensify awareness on the devastating effects of corruption on national development.

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Appendix

Table A1. Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
Corruption (1)	1												
Economic Prosperity (2)	0.10*	1											
primary enrollment (3)	0.12*	0.01	1										
secondary enrollment (4)	0.49*	-0	0.57*	1									
Trade freedom (5)	0.34*	0.14*	0.07*	0.19*	1								
population growth (6)	-0.14*	0.27*	0.03	-0.19*	-0.04	1							
Resource abundance (7)	-0.36*	-0.1	0.14*	0.04	-0.20*	-0.05	1						
Aid inflow (8)	0.02	0.02	0.21*	0.15*	0.19*	-0.04	-0	1					
Bureaucrats wages (9)	0.53*	0.03	0.41*	0.72*	0.22*	-0.09*	-0.1	-0	1				
Press freedom (10)	-0.62*	-0.13*	0.14*	-0.28*	-0.33*	0.21*	0.05	-0.10*	-0.23*	1			
Government Effectiveness (11)	0.82*	0.11*	0.05	0.43*	0.46*	-0.04	-0.48*	0.24*	0.50*	-0.62*	1		
Regulatory Quality (12)	0.71*	0.12*	0.03	0.30*	0.53*	0.04	-0.44*	0.13*	0.36*	-0.69*	0.87*	1	
Rule of law (13)	-0.08	0.02	-0.27*	-0.38*	0.22*	0.40*	-0.1	-0.27*	0.03	-0.18*	0.19*	0.39*	1

Source: Authors' construct
Note: *p<0.05

Table A1. Correlation Matrix (Cont.…)

	14	15	16	17	18	19	20
Property Rights (14)	1						
Economic Freedom(15)	0.67*	1					
Size of Government(16)	-0.04	0.00	1				
Contemp. Democracy (17)	-0.04	-0.1	-0.11	1			
Bureaucrats cost(18)	0.00	-0.00	-0.01	-0.17*	1		
Ethnic Fractionalization (19)	0.29*	0.31*	0.01	-0.11	0.08	1	
British colony (20)	0.05	0.03	-0.08	0.05	-0.38*	-0.10	1

Source: Authors' construct
Note: *p<0.05

Table A2. Fixed-effects 2SLS (within) IV regression

First stage Regression	(1)	(2)	(3)	(4)	(5)
	Coefficients of corresponding instrumental variables in first stage regressions				
Variable Instrumented					
Bureaucrats wages	2.867***	2.838***	4.218***	4.323***	3.534***
	(0.582)	(0.575)	(1.439)	(1.518)	(0.853)
Instruments					
Press freedom	0.008	0.011	0.001	0.001	0.045
	(0.025)	(0.024)	(0.006)	(0.006)	(0.028)
Resource abundance	-0.031**	-0.027**	-0.003**	-0.003*	-0.044***
	(0.009)	0.009	(0.002)	(0.003)	(0.014)
Rule of Law	0.0471	(0.120)			0.084
	(0.079)	0.094			(0.089)
Property Right	0.004	0.003			0.004
	(0.003)	(0.003)			(0.003)
Population growth	-0.146*	-0.134*			-0.161**
	(0.051)	(0.050)			(0.060)
Aid inflows		0.133			0.307*
		(0.095)			(0.136)
Contempt. Democracy				-0.001	-0.001
				(0.0012)	(0.002)
Openness					-0.016
					(0.036)
Education					-0.014**
					(0.006)
Economic Prosperity					-0.003
					(0.005)
constant	-5.328	-6.384	-8.654	-8.923	-10.504
	(1.964)	(2.140)	(3.985)	(4.198)	(3.546)
Year Dummy	Yes	Yes	Yes	Yes	Yes
Number of observation	140	140	679	670	140
R-Square	0.468	0.538	0.311	0.3057	0.6339
IV F-stats	52.52	32.62	69.8	65.91	24.1

Note: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$