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Fighting African corruption when existing corruption-control levels matter in a dynamic cultural setting

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Abstract

Purpose – This paper assesses the determinants of corruption-control with freedom dynamics (economic, political, press and trade), government quality and a plethora of socio-economic factors in 46 African countries using updated data.

Design/methodology/approach – A quantile regression approach is employed while controlling for the unobserved heterogeneity. Principal component analysis is also used to reduce the dimensions of highly correlated variables.

Findings – With the legal origin fundamental characteristic, the following findings have been established. (1) While political freedom increases corruption-control (CC) in a bottom quantile of English common law countries, there is no such evidence in their French civil law counterparts. (2) Government quality consistently improves CC across all quantiles in English common law countries but fails to exert the same effect in middle quantiles of French civil law countries. (3) Economic freedom ameliorates CC only in common law countries with low existing CC levels (bottom quantiles). (4) We find no significant evidence of a positive 'press freedom'-CC nexus and having the status of Low income English common law (French civil law) countries decreases (increases) CC.

From a religious domination scenario, we also find the following. (1) Political and trade freedoms only reduce CC in Christian dominated countries while press freedom has a mitigation effect in both religious cultures (though more consistent across quantiles of Christian-oriented countries). (2) Government quality is more pro-CC in Christian than in Muslim-dominated countries. (3) While economic freedom has a scanty negative nexus with CC in Christian-oriented countries, the effect is positive in their Muslim-dominated counterparts. (4) Having a low-income status in countries with Christian common law tradition improves CC.

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Originality/value – We complement the literature on the fight against corruption in Africa by employing recently documented additional factors that should be considered in corruption studies.

JEL Classification: C10; H10; K10; O10; O55
Keywords: Corruption; Freedom; Government quality; Quantile regression; Africa

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1. Introduction

Corruption remains one of the most daunting institutional challenges for majority of African countries. As supported by several studies and surveys, it is a major impediment to economic progress, social welfare, service delivery and good governance in the continent. In accordance with 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). More so, the African Development Bank (AfDB, 2006, p.7) suggests that 50% of tax revenues and $30 billion in aid for Africa, ends up in corrupt pockets. In line with the UNECA (2005), corruption is ranked as one of the three most serious national problems confronting African countries, the other two being unemployment and poverty.

Many African countries have enacted laws, adopted policy measures and established institutions in attempts to address the concern. Still corruption continues to be a lingering issue in governance and economic life. Though some consensus is gradually emerging on the determinants of corruption across countries, a number of aspects remain unsolved. Today policies for the fight against the scourge embraced by national governments and international organizations happen to be similar across countries. Yet the effectiveness of some of these

measures remains ambiguous (Billger & Goel, 2009), especially the effect of foreign aid on corruption.

The debate by Okada & Samreth (2012) and Asongu (2012a, 2013a) on 'the effect of foreign aid on corruption' has had an important influence in policy and academic circles. Accordingly, the debate can be highlighted in two main strands. In the first, Okada and Samreth (O & S) have investigated the nexus between corruption and foreign aid in 120 developing countries for the period 1995-2009 and concluded that aid generally reduces corruption and its reduction effect is greater in less corrupt countries. As a direct response, Asongu (2012a) has partially not subscribed to their criticism of the mainstream approach to the aid-development nexus. Using data from 52 African countries for the period 1996-2010, he has found that development assistance fuels (mitigates) corruption (the control of corruption) in the African continent. Hence, has concluded that the findings of O & S for developing countries may not be relevant for Africa.

In the second strand, some scholars have informally criticized Asongu (2012a) for not taking into account the conditional dimension of the O & S conclusion ("…*reduces corruption especially and its reduction effect is greater in less corrupt countries*" p.1). In response Asongu (2013a) has extended the debate by: not partially negating the methodological underpinnings of O & S and; broadening the horizon of inquiry from corruption to eight institutional quality dynamics (corruption, voice & accountability, political stability, corruption-control, rule of law, regulation quality, democracy and, government effectiveness). Core to this extension is a hypothetical contingency of the 'institutional perils of foreign aid' on existing institutional quality such that, the institutional downside of foreign aid maybe questionable when greater domestic institutional development has taken place. With the hypothesis of institutional

thresholds of foreign aid effectiveness fully integrated into the debate, the negative effect of development assistance on institutional quality is broadly confirmed in 53 African countries for the period 1996-2010 (Asongu, 2013a, p. 1). While the first and second strands have recently been reconciled by Asongu & Jellal (2013)[2], the present study aims to extend the debate by taking into account cultural settings.

In the present paper we attempt to explain determinants in the fight against corruption under different cultural scenarios. Its contribution to existing literature is fivefold. Firstly, by focusing on the distribution of the dependent variable, we examine if corrupt and 'clean' nations respond differently to factors that deter corrupt activity. Contrary to mainstream literature, we are able to provide an assessment of corruption-control contingent on the distribution of corruption-control. Secondly, the use of much recent data (2002-2010) based on majority (46) of African countries provides findings with inclusive and updated policy implications. Thirdly, disaggregation of the dataset into four homogenous panels, reflecting legal-origins (Common-law and Civil-law) and religious-influences (Christianity and Islam) could provide more targeted policy implications. Though studies have focused on legal and cultural determinants of corruption (La Porta et al., 1999; Asongu, 2013a,b,c), to the best of our knowledge this is the first paper that examines these determinants when existing corruption levels matter in a dynamic cultural setting. Thus, by examining the determinants of corruption-control throughout the conditional distribution with particular emphasis on the best and worst fighters of corruption,

[2] "*The debate by Okada & Samreth (2012, EL) and Asongu (2012, EB; 2013, EEL) on 'the effect of foreign aid on corruption' in its current state has the shortcoming of modeling corruption as a direct effect of development assistance. This note extends the debate by assessing the channels of foreign aid to corruption in 53 African countries for the period 1996-2010. Two main findings are established to unite the two streams of the debate. (1) Foreign aid channeled through government's consumption expenditure increases corruption. (2) Development assistance channeled via private investment and tax effort decreases corruption. It follows that foreign aid that is targeted towards reducing corruption should be channeled via private investment and tax effort, not through government expenditure. Our results integrate an indirect component and reconcile the debate by showing that, the effect could either be positive or negative depending on the transmission channel*" (p. 1).

policy measures could focus beyond legal-origins and religious-influences if determinants of corruption-control differ across the conditional distribution of the fight against corruption. Fourthly, we complement Asongu (2013a,b,c) on the dynamics of fighting African corruption from a cultural standpoint. Fifthly, while Treisman (2000) and others have focused on a limited set of variables, more recent studies have shown that additional factors should be considered for corruption studies, especially freedom qualities (Saha et al., 2009[3]; Peyton & Belasen, 2012[4]). Hence, by using four freedom channels (economic, political, trade and press freedoms), we complement this recent strand (exclusively from an African standpoint) with the first-four contributions highlighted above.

The rest of the paper is organized as follows. Section 2 examines the data and presents the methodology. The empirical analysis is covered in Section 3. Section 4 concludes.

2. Data and Methodology

2.1 Data

We assess a panel of 46 countries with updated data (2002-2010) from the African Development Indicators (ADI) of the World Bank (WB), Freedom House and Gwartney et al. (2011). Limitation to this time span has a twofold justification: the quest to obtain results with

[3] "*This paper examines the effects of economic freedom, democracy and its interaction term on controlling corruption. The results indicate that interaction between economic freedom and democracy has a significant impact on combating corruption. Partial effect analysis shows that economic freedom reduces corruption in any political environment, and the effect is substantially greater with a higher-level of democracy. In contrast democracy increases corruption when the level of economic liberalization is low, however, once past the threshold level corruption is substantially lower with full economic freedom*" (Saha et al., 2009, p.1).

[4] "*Corruption has affected systems of governance for thousands of years. Existing evidence suggests that it is especially common in "emerging and developing economies," yet cross-country analysis in this context is rare. We examine the impact of political, economic and media freedom on corruption in a large sample of countries across multiple time periods to investigate the marginal differences within each. The results show that increased economic and press freedoms are associated with lower levels of corruption in developing countries. We find that although increased political freedom through democratization is statistically significant, it reduces corruption only in developed countries and may increase levels of corruption in developing countries*" (Peyton & Belasen, 2012, p. 1).

more updated policy implications and; constraints in data availability for economic freedom and freedom to trade.

The endogenous variable is the 'control of corruption' indicator; in line with the corruption literature (Billger & Goel, 2009; Asongu, 2012a; Asongu, 2013a,b,c). Consistent with recent findings (Saha et al., 2009; Peyton & Belasen, 2012), we explain corruption-control using five main independent variables of interest: economic freedom, trade freedom, press freedom, political freedom and government quality. The first two source from the Gwartney et al. (2011) economic freedom dataset. Press freedom quality is obtained from Freedom House while, the last two are obtained from the ADI of the WB.

Seven control variables are used: level of economic prosperity, population growth, government expenditure, financial globalization, human development, development assistance and low-income countries. These measures have been used collectively or separately in a significant bulk of the corruption literature (Bardhan, 1997; Saha et al., 2009; Treisman, 2000; Billger & Goel, 2009; Peyton & Belasen, 2012; Asongu, 2013a,b,c). Given the cultural dynamic setting of the analysis, the expected signs of the control variables may not be homogenous. However, population growth should decrease corruption-control (Asongu, 2013a), government expenditure may either be a mitigating or fueling factor depending on the state of institutions, financial globalization and human development generally increases the phenomenon (Lalountas et al., 2011; Asongu, 2013d) and, contrary to Okada & Samreth (2012) there is a negative 'foreign-aid'-'corruption-control' nexus in Africa (Asongu, 2012a). Consistent with recent evidence on wealth-dynamics in the African corruption-control literature, we also control for the unobserved heterogeneity with low-income countries (Asongu, 2013cd). Selection of these low-

income countries is in accordance with the Financial Development and Structure Database (FDSD) of the WB (countries with a Gross National Product per capita of less than $786).

To allow for more options in policy implications, the dataset is disaggregated into legal-origins (English common-law and French civil-law) and religious-influences (Christianity and Islam). Firstly, the premise of legal origin (with the edge of English common-law countries) as a fundamental cultural characteristic in the fight against corruption (documented by La Porta et al. (1998)) has been substantially confirmed in recent African piracy literature (Asongu, 2012bc). Accordingly, the underlying logic of informal norms, formal rules and enforcement characteristics affect the fight against corruption. Secondly, from intuition religious institutions play a significant role in the fight against corruption due to their orientation towards morally sound citizens. Beside the particularity of religious institutions on ethical related issues, Christianity and Islam significantly differ in the perception of punishments related to corruption. The choice of the legal origin is based on La Porta et al. (2008, p. 289), while religious domination is consistent with the Central Intelligence Agency (CIA, 2011) World Fact book.

The summary statistics (with presentation of countries), correlation analysis (showing the nexuses between key variables used in the paper), and variable definitions are presented in the appendices. The 'summary statistics' (Appendix 1) of the variables used in the panel regressions shows that, there is quite some variation in the data utilized so that one should be confident that reasonable estimated nexuses should emerge (Panel A). Panel B of the summary statistics shows the countries employed in the study. The purpose of the correlation matrix (Appendix 2) is to mitigate issues resulting from overparametization and multicolinearity. After a preliminary assessment of the correlation coefficients, any serious issues in terms of the relationships to the

estimated have been tackled with dual specifications (discussed in Section 2.2 below). Appendix 3 provides definitions and corresponding sources of the variables.

2.2 Methodology

Due to the high correlation among various government quality indicators, one might criticize the redundancy of some information. Hence, we use principal component analysis (PCA) to reduce the dimensions of government-effectiveness, rule of law, regulation quality, voice & accountability and political stability. PCA is a widely used statistical technique applied to reduce a larger set of correlated variables into a smaller set of uncorrelated variables called principal components (PCs) that reflect most of the information in the original data set. In the selection of the PCs, the criteria applied to determine how many common factors to retain are consistent with Kaiser (1974) and Jolliffe (2002). Hence, only PCs with an eigenvalue greater than one are retained. As shown in Table 1 below, the first PC is appropriate since it has an eigenvalue of 3.971 and represents more than 79% of information in the government quality indicators combined. The first PC will subsequently represent the Government Quality (GQ) index.

Table 1: Principal Component Analysis (PCA) for a Government Quality (GQ) Index

Principal Components	Component Matrix(Loadings)					Proportion	Cumulative Proportion	Eigen Value
	V & A	R.L	R.Q	G.E	PS			
First P.C	0.419	0.478	0.464	0.467	0.403	0.794	0.794	3.971
Second P.C	0.408	-0.099	0.298	0.164	-0.841	0.091	0.886	0.459
Third P.C	-0.786	0.304	0.198	0.425	-0.264	0.071	0.957	0.358

P.C: Principal Component. V& A: Voice & Accountability. R.L: Rule of Law. R.Q: Regulation Quality. G.E: Government Effectiveness. PS: Political Stability.

Borrowing from the literature (Billger & Goel, 2009; Asongu, 2013abc), to determine whether existing levels of corruption-control affect how various determinants in the battle against corruption come into play, we use Quantile Regression (QR). The θth quantile estimator of the outcome variable is obtained by solving for the following optimization problem.

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

Where $\theta \in (0, 1)$. Contrary to Ordinary Least Squares (OLS) that is founded on minimizing the sum of squared residuals, with QR we minimize the weighted sum of absolute deviations. 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 derived for each θth quantile of interest. For the model in Eq. (2) the dependent variable y_i is the corruption-control indicator while x_i contains a constant parameter, economic freedom, political freedom, press freedom, trade freedom, per capita GDP growth, population growth, government expenditure, foreign direct investment, human development, foreign aid and low-income. In comparison to OLS, the QR approach is more robust in the presence of outliers when the distribution of the dependent variable is a highly non-normal pattern (Okada & Samreth, 2012).

Owing to issues of overparametization and multicolinearity in the independent variables of interest, we are poised to mitigate the concerns by using two specifications. Accordingly from experience, if two highly positively correlated variables are employed in the same regression, the estimated signs of the variables will be opposite with only one significant. The employment of dual specifications to tackle the above issues is consistent with the corruption-control literature (Billger & Goel, 2009; Okada & Samreth, 2012; Asongu, 2013abc).

3. Empirical results

3.1 Legal origins: Common-law and Civil-law countries

The findings presented in Table 2 below entail OLS and QR estimates. OLS estimates provide a baseline of mean effects and we compare these to separate quantiles in the conditional distributions of the outcome variable.

Based on the results, the following could be established. (1) While political freedom increases corruption-control (CC) in a bottom quantile of English common-law countries, there is no such evidence in their French Civil-law counterparts. (2) Government quality consistently improves CC across all quantiles in English common-law countries but fails to exert the same effect in middle quantiles of French civil-law countries. (3) Economic freedom ameliorates CC only in common-law countries with low existing CC levels (bottom quantiles). (4) From an OLS perspective (Specification 2), trade freedom mitigates the phenomenon in both legal cultures, but the positive nexus is further significant only in middle quantiles of French civil-law countries. (5) We find no significant evidence of a positive 'press freedom'-CC nexus. (6) Being a low-income English-common law (French civil-law) country decreases (increases) CC. (7) Most of the significant control variable have the right signs: government expenditures has a positive effect (an indication of the quality of existing institutions); foreign-aid generally has a perilous impact; positive demographic change could be tackled with additional measures to combating lobbying (and rent seeking) and; the negative incidence of human development is due to the weight of its per capita income component[5].

[5]Per capita income prosperity already negatively affects corruption-control (though insignificantly). The educational and life expectancy components of human development should intuitively have a positive effect on human development. Firstly, citizens with higher levels of education are more informed the on consequences of corruption as well as other channels of reaching the same end without necessarily resorting to corrupt means. Education also enables citizens to be better informed on their right to demand checks and balances from officials. Secondly, as life expectancy increases, citizens would be less motivated to engage in corrupt activities because of the fore-knowledge that, they would potentially spend more time in jail during their life-time if caught and convicted.

Table 2: Determinants of Corruption-Control in a legal-origin setting

	English Common Law Countries						French Civil Law Countries					
	Specification 1						Specification 1					
	OLS	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**	**OLS**	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**
Constant	**-1.50****	-0.30	**-2.5*****	**-2.02****	-0.69	-1.79	-0.68	0.008	-0.54	-0.55	-0.46	-0.215
	(0.031)	(0.880)	**(0.007)**	**(0.049)**	(0.680)	(0.146)	(0.229)	(0.990)	(0.597)	(0.428)	(0.624)	(0.835)
PolFree	0.022	-0.01	**0.08****	0.048	-0.005	-0.000	0.008	-0.015	0.006	0.015	0.013	-0.005
	(0.402)	(0.825)	**(0.024)**	(0.199)	(0.880)	(0.987)	(0.568)	(0.564)	(0.871)	(0.683)	(0.470)	(0.735)
GQIndex	**0.19*****	**0.19*****	**0.15*****	**0.18*****	**0.23****	**0.15****	**0.20*****	**0.16****	0.135	0.169	**0.22*****	**0.31*****
	(0.000)	**(0.001)**	**(0.000)**	**(0.000)**	**(0.024)**	**(0.038)**	**(0.000)**	**(0.025)**	(0.134)	(0.194)	**(0.002)**	**(0.000)**
GDPpcg	-0.017	0.006	0.001	-0.01	-0.01	0.013	-0.009	-0.014	-0.014	-0.005	-0.011	-0.01
	(0.139)	(0.841)	(0.940)	(0.460)	(0.573)	(0.423)	(0.324)	(0.716)	(0.790)	(0.815)	(0.300)	(0.347)
Popg	**0.53*****	-0.04	**0.89*****	**0.66*****	0.347	**0.46****	**-0.3*****	**-0.4*****	**-0.37****	-0.293	-0.266	-0.192
	(0.000)	(0.950)	**(0.004)**	**(0.004)**	(0.150)	**(0.035)**	**(0.001)**	**(0.001)**	**(0.012)**	(0.258)	(0.202)	(0.408)
TradeFree	0.067	-0.007	0.073	0.095	0.021	0.211	**0.12****	-0.038	0.036	0.068	0.095	0.069
	(0.420)	(0.954)	(0.467)	(0.445)	(0.944)	(0.356)	**(0.042)**	(0.796)	(0.855)	(0.451)	(0.248)	(0.341)
Gov.Exp.	**0.012*****	-0.0004	**0.01****	**0.01*****	**0.009***	**0.01****	0.001	-0.000	-0.000	0.000	0.006	**0.008***
	(0.005)	(0.969)	**(0.042)**	**(0.003)**	**(0.077)**	**(0.047)**	(0.560)	(0.804)	(0.904)	(0.997)	(0.169)	**(0.056)**
FDI	0.016	0.025	0.014	0.013	0.005	-0.01	**-0.04*****	0.001	-0.012	**-0.03****	-0.036	-0.034
	(0.199)	(0.220)	(0.499)	(0.458)	(0.836)	(0.494)	**(0.001)**	(0.922)	(0.549)	**(0.042)**	(0.233)	(0.264)
IHDI	**-0.007***	0.003	**-0.007***	**-0.009****	-0.009	**-0.01****	0.102	0.421	0.673	0.335	0.016	-0.290
	(0.058)	(0.734)	**(0.061)**	**(0.034)**	(0.140)	**(0.008)**	(0.853)	(0.706)	(0.641)	(0.664)	(0.989)	(0.836)
NODA	-0.009	-0.011	0.003	-0.005	-0.015	-0.014	-0.001	0.006	0.004	0.000	-0.003	-0.01
	(0.344)	(0.545)	(0.794)	(0.581)	(0.231)	(0.264)	(0.800)	(0.621)	(0.772)	(0.977)	(0.715)	(0.267)
Low-Income	**-1.48*****	-0.447	**-1.9*****	**-1.6*****	**-1.17****	**-1.6*****	**0.28*****	0.373	0.276	**0.29****	**0.35*****	**0.40*****
	(0.000)	(0.718)	**(0.000)**	**(0.000)**	**(0.038)**	**(0.000)**	**(0.005)**	(0.181)	(0.455)	**(0.048)**	**(0.003)**	**(0.000)**
Adjusted R^2	0.974	0.756	0.768	0.835	0.825	0.823	0.749	0.583	0.535	0.502	0.543	0.554
Fisher	**124.5*****	**---**	**---**	**---**	**---**	**---**	**22.2*****	**---**	**---**	**---**	**---**	**---**
Quasi-LR	**---**	**97.0*****	**177*****	**291*****	**239*****	**158*****	**---**	**111*****	**114*****	**104*****	**110*****	**92.01*****
	Specification 2						Specification 2					
	OLS	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**	**OLS**	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**
Constant	**-3.5*****	**-4.5*****	-3.76	**-3.9*****	-1.90	-0.25	**-3.95****	-3.68	-4.68	-1.59	-2.56	-4.16
	(0.003)	**(0.007)**	(0.126)	**(0.000)**	(0.434)	(0.943)	**(0.045)**	(0.466)	(0.302)	(0.628)	(0.219)	(0.171)
EconFree	**0.290***	**0.49****	**0.489***	0.358	-0.108	-0.25	0.072	0.047	-0.21	-0.307	-0.04	0.376
	(0.058)	**(0.036)**	**(0.057)**	(0.108)	(0.691)	(0.451)	(0.803)	(0.940)	(0.715)	(0.580)	(0.891)	(0.493)
PressFree	-0.002	0.004	-0.000	-0.001	-0.008	-0.005	-0.003	0.012	0.010	-0.000	-0.01	-0.006
	(0.736)	(0.665)	(0.994)	(0.858)	(0.466)	(0.710)	(0.480)	(0.259)	(0.339)	(0.987)	(0.118)	(0.469)
GDPpcg	-0.019	0.013	-0.019	-0.039	0.011	0.012	-0.006	-0.027	-0.01	-0.021	0.005	-0.01
	(0.323)	(0.655)	(0.567)	(0.113)	(0.755)	(0.794)	(0.666)	(0.740)	(0.879)	(0.697)	(0.756)	(0.474)
Popg	**0.64*****	0.391	0.399	**0.65*****	**0.66****	0.466	0.358	0.507	**0.793***	0.247	0.375	0.754
	(0.000)	(0.155)	(0.393)	**(0.000)**	**(0.016)**	(0.285)	(0.144)	(0.313)	**(0.084)**	(0.497)	(0.362)	(0.520)
TradeFree	**0.215***	0.099	0.038	0.210	0.422	0.365	**0.37*****	0.165	**0.32*****	**0.34****	0.212	0.180
	(0.085)	(0.576)	(0.758)	(0.217)	(0.178)	(0.379)	**(0.000)**	(0.414)	**(0.007)**	**(0.026)**	(0.314)	(0.576)
Gov.Exp.	**0.02*****	**0.016***	0.014	**0.02*****	**0.018***	0.015	0.002	0.000	0.001	0.001	0.003	0.009
	(0.001)	**(0.078)**	(0.150)	**(0.000)**	**(0.099)**	(0.431)	(0.594)	(0.940)	(0.679)	(0.774)	(0.403)	(0.130)
FDI	-0.002	-0.003	0.004	-0.017	-0.002	-0.001	**-0.07****	-0.047	-0.01	-0.03	-0.06	-0.072
	(0.894)	(0.867)	(0.822)	(0.427)	(0.952)	(0.981)	**(0.030)**	(0.304)	(0.651)	(0.552)	(0.212)	(0.211)
IHDI	**-0.01*****	-0.002	-0.005	**-0.01****	**-0.02****	**-0.01***	-0.475	-1.72	0.766	-0.57	1.942	-2.53
	(0.008)	(0.690)	(0.446)	**(0.013)**	**(0.016)**	**(0.071)**	(0.737)	(0.406)	(0.717)	(0.814)	(1.942)	(0.572)
NODA	**-0.019***	0.0005	-0.000	-0.008	**-0.03***	-0.023	0.017	0.030	0.029	0.019	0.005	0.020
	(0.060)	(0.973)	(0.944)	(0.483)	**(0.069)**	(0.311)	(0.100)	(0.162)	(0.115)	(0.222)	(0.713)	(0.271)
Low-Income	**-2.26*****	**-2.0*****	-1.941	**-2.4*****	**-2.1*****	**-2.0*****	0.149	0.126	0.008	0.220	0.194	-0.04
	(0.000)	**(0.007)**	(0.127)	**(0.000)**	**(0.000)**	**(0.003)**	(0.339)	(0.704)	(0.974)	(0.407)	(0.242)	(0.916)
Adjusted R^2	0.941	0.696	0.713	0.788	0.779	0.793	0.545	0.361	0.360	0.252	0.376	0.437
Fisher	**62.2*****	**---**	**---**	**---**	**---**	**---**	**6.27*****	**---**	**---**	**---**	**---**	**---**
Quasi-LR	**---**	**63.6*****	**132*****	**234*****	**166*****	**101*****	**---**	**25.3*****	**41.9*****	**31.3*****	**41.6*****	**33.9*****

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. PolFree: Political Freedom. GQIndex: Government Quality Index. EconFree: Economic Freedom. PressFree: Press Freedom. GDPpcg: GDP per capita growth. Popg: Population growth. TradeFree: Trade Freedom. NODA: Net Official Development Assistance. Gov. Exp: Government Expenditure. FDI: Foreign Direct Investment. IHDI: Inequality adjusted Human Development Index. Low-Income: Low Income Countries. P values in brackets. LR: Likelihood Ratio test.

3.2 Religious-influences: Christian and Islamic countries

The findings presented in Table 3 below entail OLS and QR estimates. OLS estimates provide a baseline of mean effects and we compare them to separate quantiles in the conditional distributions of the outcome variable.

Table 3: Determinants of Corruption-Control in a religious-domination setting

	Christian Oriented Countries						**Islam Dominated Countries**					
	Specification 1						**Specification 1**					
	OLS	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**	**OLS**	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**
Constant	0.751	0.433	0.572	**1.28****	**2.04****	0.416	0.089	-0.096	-0.183	0.188	-0.046	1.30
	(0.1281)	(0.515)	(0.433)	**(0.029)**	**(0.024)**	(0.854)	(0.898)	(0.915)	(0.850)	(0.805)	(0.981)	(0.679)
PolFree	**-0.02***	**-0.04*****	**-0.03*****	**-0.03*****	**-0.05*****	-0.019	0.005	-0.036	-0.037	-0.015	0.003	0.149
	(0.061)	**(0.002)**	**(0.004)**	**(0.004)**	**(0.001)**	(0.827)	(0.898)	(0.637)	(0.641)	(0.759)	(0.990)	(0.628)
GQIndex	**0.29*****	**0.26*****	**0.23*****	**0.28*****	**0.39*****	**0.351***	**0.42*****	0.515	0.497	**0.40****	0.493	0.264
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.052)**	**(0.001)**	(0.244)	(0.403)	**(0.016)**	(0.523)	(0.719)
GDPpcg	-0.008	0.009	0.014	0.005	-0.006	-0.007	-0.009	-0.007	-0.012	-0.002	-0.017	-0.034
	(0.369)	(0.785)	(0.669)	(0.805)	(0.807)	(0.710)	(0.644)	(0.858)	(0.802)	(0.923)	(0.630)	(0.495)
Popg	**-0.30*****	**-0.39*****	**-0.39*****	**-0.38*****	**-0.52*****	-0.146	-0.008	0.056	0.025	0.069	-0.039	-0.121
	(0.003)	**(0.002)**	**(0.006)**	**(0.000)**	**(0.003)**	(0.711)	(0.960)	(0.916)	(0.972)	(0.749)	(0.971)	(0.934)
TradeFree	**-0.12****	-0.081	-0.098	**-0.19****	-0.233	-0.077	-0.139	-0.077	-0.063	-0.127	-0.116	-0.533
	(0.044)	(0.288)	(0.224)	**(0.040)**	(0.170)	(0.829)	(0.169)	(0.622)	(0.690)	(0.257)	(0.458)	(0.578)
Gov.Exp.	-0.002	-0.003	-0.002	-0.003	-0.001	0.004	0.010	0.006	0.006	0.007	0.009	0.006
	(0.378)	(0.128)	(0.297)	(0.701)	(0.862)	(0.589)	(0.133)	(0.568)	(0.533)	(0.316)	(0.189)	(0.619)
FDI	0.021	0.020	0.024	**0.024***	-0.002	-0.014	-0.004	-0.009	-0.010	0.008	0.011	0.009
	(0.103)	(0.324)	(0.130)	**(0.066)**	(0.924)	(0.883)	(0.815)	(0.713)	(0.761)	(0.736)	(0.870)	(0.859)
IHDI	0.003	**0.01*****	**0.009****	0.006	-0.003	-0.008	-0.034	-0.735	-0.613	-0.579	-0.042	2.684
	(0.611)	**(0.001)**	**(0.011)**	(0.115)	(0.511)	(0.637)	(0.966)	(0.722)	(0.812)	(0.567)	(0.981)	(0.555)
NODA	-0.003	**-0.01****	**-0.01***	-0.01	-0.009	-0.002	-0.005	-0.022	-0.006	0.002	-0.002	-0.019
	(0.512)	**(0.021)**	**(0.088)**	(0.253)	(0.552)	(0.929)	(0.860)	(0.881)	(0.974)	(0.942)	(0.936)	(0.735)
Low-Income	0.215	**0.50****	**0.386***	**0.35****	**0.52*****	0.209	0.096	0.188	0.048	-0.278	0.340	0.748
	(0.197)	**(0.015)**	**(0.077)**	**(0.020)**	**(0.005)**	(0.720)	(0.723)	(0.813)	(0.963)	(0.370)	(0.858)	(0.776)
Adjusted R^2	0.849	0.607	0.591	0.614	0.663	0.675	0.717	0.535	0.500	0.481	0.393	0.530
Fisher	**46.6*****	**---**	**---**	**---**	**---**	**---**	**9.39*****	**---**	**---**	**---**	**---**	**---**
Quasi-LR	**---**	**140*****	**186*****	**229*****	**259*****	**159*****	**---**	**35.9*****	**45.1*****	**56.9*****	**39.3*****	**30.9*****
	Specification 2						**Specification 2**					
	OLS	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**	**OLS**	**Q 0.1**	**Q 0.25**	**Q 0.50**	**Q 0.75**	**Q 0.90**
Constant	**1.34***	0.163	0.070	1.354	**3.9*****	**4.6*****	14.38	**-1.9****	**-1.9****	8.865	**-2.39****	**-3.4*****
	(0.067)	(0.815)	(0.949)	(0.126)	**(0.000)**	**(0.003)**	(0.414)	**(0.014)**	**(0.037)**	(0.727)	**(0.012)**	**(0.000)**
EconFree	-0.078	0.214	0.141	0.062	**-0.8*****	-0.38	-0.720	**0.23***	**0.31****	0.187	**0.5*****	**0.69*****
	(0.587)	(0.102)	(0.368)	(0.665)	**(0.000)**	(0.413)	(0.706)	**(0.051)**	**(0.022)**	(0.954)	**(0.000)**	**(0.000)**
PressFree	**-0.02*****	**-0.01*****	**-0.01*****	**-0.01*****	**-0.02*****	**-0.03*****	-0.032	**-0.01*****	**-0.01*****	-0.024	**-0.008***	-0.017
	(0.000)	**(0.000)**	**(0.002)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.604)	**(0.001)**	**(0.001)**	(0.759)	**(0.068)**	(0.185)
GDPpcg	0.016	0.031	0.017	0.030	0.023	0.023	0.006	0.001	-0.005	0.034	-0.003	-0.011
	(0.223)	(0.358)	(0.713)	(0.331)	(0.158)	(0.135)	(0.892)	(0.851)	(0.557)	(0.693)	(0.688)	(0.362)
Popg	**-0.41*****	**-0.41*****	**-0.36****	**-0.41*****	**-0.275**	**-0.72***	1.936	-0.083	-0.003	1.025	0.136	0.171
	(0.000)	**(0.002)**	**(0.044)**	**(0.001)**	**(0.251)**	**(0.092)**	(0.654)	(0.514)	(0.978)	(0.863)	(0.419)	(0.460)
TradeFree	0.098	-0.103	0.004	-0.098	**0.55***	0.138	-0.912	0.111	0.036	-0.783	-0.081	-0.031
	(0.442)	(0.357)	(0.975)	(0.459)	**(0.085)**	(0.751)	(0.453)	(0.224)	(0.726)	(0.596)	(0.486)	(0.888)
Gov.Exp.	-0.002	-0.000	-0.001	0.000	-0.005	-0.001	0.0004	---	---	-0.002	---	---
	(0.534)	(0.773)	(0.772)	(0.929)	(0.610)	(0.831)	(0.966)			(0.889)		
FDI	0.023	0.000	-0.000	0.026	0.039	0.026	0.289	---	---	0.141	---	---
	(0.204)	(0.977)	(0.983)	(0.267)	(0.209)	(0.472)	(0.675)			(0.881)		
IHDI	-0.004	0.006	0.002	0.001	**-0.01***	**-0.02*****	-18.80	---	---	-14.03	---	---
	(0.622)	(0.234)	(0.777)	(0.774)	**(0.079)**	**(0.004)**	(0.412)			(0.635)		
NODA	-0.014	0.012	0.004	-0.016	**-0.02***	-0.016	-0.029	---	---	-0.067	---	---
	(0.162)	(0.481)	(0.810)	(0.202)	**(0.086)**	(0.419)	(0.649)			(0.487)		
Low-Income	0.251	0.024	-0.008	0.227	0.103	**0.502***	-4.306	-0.210	**-0.32****	-2.965	**-0.5*****	-0.177
	(0.124)	(0.923)	(0.977)	(0.174)	(0.730)	**(0.090)**	(0.492)	(0.116)	**(0.029)**	(0.724)	**(0.001)**	(0.692)
Adjusted R^2	0.721	0.482	0.446	0.466	0.513	0.519	0.345	0.502	0.480	-0.227	0.352	0.357
Fisher	**19.9*****	**---**	**---**	**---**	**---**	**---**	1.632	**---**	**---**	**---**	**---**	**---**
Quasi-LR	**---**	**73.5*****	**81.5*****	**109*****	**105*****	**91.7*****	**---**	**58.3*****	**76.1*****	**17.3***	**49.9*****	**32.8*****

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. PolFree: Political Freedom. GQIndex: Government Quality Index. EconFree: Economic Freedom. PressFree: Press Freedom. GDPpcg: GDP per capita growth. Popg: Population growth. TradeFree: Trade Freedom. NODA: Net Official Development Assistance. Gov. Exp: Government Expenditure. FDI: Foreign Direct Investment. IHDI: Inequality adjusted Human Development Index. Low-Income: Low Income Countries. P values in brackets. LR: Likelihood Ratio test.

Based on the results, the following could be established. (1) Political and trade freedoms only reduce CC in Christian dominated countries while press freedoms has a mitigation effect in both religious cultures (though more consistent across quantiles of Christian-oriented countries). (2) Government quality is more pro-CC in Christian than in Muslim-dominated countries. (3) While economic freedom has a scanty negative nexus with CC (in the 0.75^{th} quantile) in Christian-oriented countries, the effect is positive for their Islam-dominated counterparts. However this comparison should be treated with caution because, owing to issues with degrees of freedom, not all socio-economic indicators of control were used in the latter set of countries. (4) Having a low-income status in countries with Christian common-law tradition improves CC. (5) Most of the significant control variables have the right signs. Financial globalization (foreign aid) improves (mitigates) CC (Lalountas et al., 2011; Asongu, 2013d; Asongu, 2012a).

The results on the dominance of English common-law and Christian-oriented countries in CC are broadly consistent with recent African law-finance (Asongu, 2013ef; Asongu, 2012d, p. 191) and law-piracy (Asongu, 2012c) literature. Our findings demonstrate that blanket corruption-control policies are unlikely to succeed equally across countries with different legal-traditions, religious-influences and political wills in the fight against corruption. Thus to be effective, corruption policies should be contingent on the prevailing levels of corruption-control and tailored differently across the best and worst corruption-fighting countries especially with respect to freedom channels.

3.3 Further discussion and policy implications

Before we dive into further discussing the results, it is important to recall that this paper has provided a fivefold contribution to existing literature already discussed in the introduction. Accordingly, two cultural scenarios have been investigated: legal origin and religious-domination.

In the first (legal origin) scenario, the following findings are worth discussing to elaborate detail. Firstly, whereas political freedom increases CC in a bottom quantile of English common law countries, there is no such evidence in their French civil law counterparts. This finding is broadly consistent with the legal origin theory which postulates that English common law countries enjoy more freedom than French civil law countries (La Porta et al., 1998), which ultimately leads to higher levels of CC (La Porta et al., 1999). This interpretation should be treated with caution and not generalized to the entire English common law sample because; the appealing effect on CC is only present in a bottom threshold. This implies English common law countries with high initial levels of CC may be an exception to the finding. Secondly, the explanation above is in accordance with the finding that government quality consistently improves CC across all quantiles in English common law countries but fails to exert the same incidence in the middle quantiles of their French civil law counterparts. Thirdly, the fact that economic freedom improves CC only in English common law countries with low existing CC is still consistent with the explanation provided above from La Porta et al (1998, 1999). Fourthly, the absence of significant evidence of a positive 'press freedom'-CC nexus could be explained by the low journalistic reporting standards in most of the sampled countries (Ndangam, 2006). Accordingly, we even find significant negative relationships between press freedom and CC

(Table 3). Hence, policy makers should do more to encourage press reporting that is not motivated by unhealthy practices, which ultimately mitigate CC.

The second scenario on religious domination has also uncovered interesting findings that are worth elucidating. Firstly, the fact that press freedom has a mitigating effect on CC in both religious cultures is consistent with the explanation provided in the preceding paragraph. Hence, the same policy implication applies. On the other hand, the tendencies for political freedom to reduce CC only in Christian dominated countries could be traceable to the lower degree of ethnic fractionalization in Islam dominated countries. Accordingly, rent seeking and lobbying increase with ethnic fractionalization (Banerjee & Pande, 2007) especially in Africa (Asongu & Kodila-Tedika, 2013). Secondly, the fact that government quality is more pro-CC in Christian oriented countries could be traceable to the dominance of English common law in the sample. Accordingly, the law literature has shown that English common law countries have better government quality in terms of CC than their French civil law counterparts (La Porta et al., 1999).

For both cultural scenarios, foreign aid is broadly detrimental to CC. This broadly confirms the Asongu (2012a, 2013a) position on 'the effect of foreign aid on corruption' in the debate with Okada & Samreth (2012).

4. Conclusion

This paper has assessed the determinants of corruption-control with freedom dynamics (economic, political, press and trade), government quality and a plethora of socio-economic factors in 46 African countries using updated data. Results from fundamental cultural characteristics of legal-origin and religious-domination (which have broadly demonstrated the edge of English common-law and Christian-dominated countries) indicate that, blanket

corruption-control policies are unlikely to succeed equally across countries with different legal-traditions, religious-influences and political wills in the fight against corruption. Thus to be effective, corruption policies should be contingent on the prevailing levels of corruption-control and tailored differently across the best and worst corruption-fighting countries especially with respect to freedom channels.

With the legal origin fundamental characteristic, the following findings have been established. (1) While political freedom increases corruption-control (CC) in a bottom quantile of English common law countries, there is no such evidence in their French civil law counterparts. (2) Government quality consistently improves CC across all quantiles in English common law countries but fails to exert the same effect in the middle quantiles of French civil law countries. (3) Economic freedom ameliorates CC only in common law countries with low existing CC levels (bottom quantiles). (4) We find no significant evidence of a positive 'press freedom'-CC nexus and having the status of Low income English common law (French civil law) countries decreases (increases) CC.

From a religious domination scenario, we have also found the following. (1) Political and trade freedoms only reduce CC in Christian dominated countries while press freedom has a mitigation effect in both religious cultures (though more consistent across quantiles of Christian-oriented countries). (2) Government quality is more pro-CC in Christian than in Muslim-dominated countries. (3) While economic freedom has a scanty negative nexus with CC in Christian-oriented countries, the effect is positive in their Muslim-dominated counterparts. However this comparison should be treated with caution because, owing to issues with degrees of freedom, not all socio-economic indicators of control were used in the latter set of countries. (4) Having a low-income status in countries with Christian common law tradition improves CC.

Appendices

Appendix 1: Summary Statistics and Presentation of Countries

Panel A: Summary Statistics

	Variables	Mean	S.D	Min.	Max.	Obs
Dependent Variable	Corruption –Control	-0.612	0.561	-1.694	1.086	414
Main Independent Variables of Interest	Political Freedom	2.903	3.896	-8.000	10.000	414
	Government Quality Index	-0.000	1.992	-3.915	5.230	414
	Economic Freedom	5.863	0.869	2.390	7.820	282
	Press Freedom	58.509	19.160	17.000	94.000	287
	Trade Freedom	5.916	0.900	2.401	7.600	280
Control Variables	GDP per capita growth	2.257	4.966	-33.073	34.243	413
	Population growth	2.262	0.815	-0.143	4.477	414
	Inflation	78.656	1263.2	-9.797	24411	374
	Development Assistance (NODA)	11.232	14.267	-0.251	148.30	365
	Government Expenditure	5.156	12.216	-57.815	80.449	239
	Foreign Direct Investment	4.202	5.410	-4.972	46.829	289
	Human Development	0.611	2.553	0.129	45.139	307
	Low Income countries	0.608	0.488	0.000	1.000	414

Panel B: Presentation of Countries (46)

Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Congo Democratic Republic, Congo Republic, Côte d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Swaziland, Togo, Tunisia, Uganda, Zambia, Zimbabwe, Tanzania.

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

Appendix2: Correlation Analysis

Independent Variables of Interest					Control Variables								CC	
PoFree	GQI	EFree	PrFree	TFree	GDP	Popg	Infl.	NODA	Gov.E	FDI	IHDI	LowI		
1.000	0.601	0.385	-0.662	0.264	0.092	-0.094	-0.028	-0.014	0.038	-0.0007	0.087	0.032	0.452	PoFree
	1.000	0.741	-0.817	0.506	0.123	-0.273	-0.103	-0.237	0.020	-0.091	0.123	-0.292	0.849	GQI
		1.000	-0.569	0.621	0.159	-0.006	-0.235	-0.229	0.028	0.089	0.113	-0.273	0.643	EFree
			1.000	-0.46	-0.06	0.110	0.114	0.155	0.004	0.149	-0.138	0.139	-0.637	PFree
				1.000	0.245	0.041	-0.250	-0.268	0.050	0.231	0.116	-0.298	0.404	TFree
					1.000	0.122	-0.079	-0.039	0.066	0.010	0.011	-0.119	0.006	GDP
						1.000	-0.170	0.512	-0.026	0.130	-0.074	0.511	-0.292	Popg
							1.000	-0.001	0.065	0.291	-0.010	0.048	-0.078	Infl.
								1.000	0.016	0.389	-0.066	0.487	-0.145	NODA
									1.000	0.122	-0.002	0.031	0.017	Gov.E
										1.000	-0.034	0.119	-0.047	FDI
											1.000	-0.108	0.117	IHDI
												1.000	-0.259	LowI
													1.000	CC

PoFree: Political Freedom. GQI: Government Quality Index. EFree: Economic Freedom. PrFree: Press Freedom. TFree: Trade Freedom. GDP: GDP per capita growth. Popg: Population growth. Infl: Inflation. NODA: Net Official Development Assistance. Gov.E: Government Expenditure. FDI: Foreign Direct Investment. IHDI: Inequality adjusted Human Development Index. LowI: Low Income countries. CC: Corruption-Control.

Appendix 3: Variable definitions

Variables	Signs	Variable definitions	Sources
		Dependent Variable	
Corruption-Control	CC	Control of corruption (estimate): captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as 'capture' of the state by elites and private interests.	ADI (World Bank)
		Main Independent Variables	
Political Freedom	PoFree	Democracy index: the form of government in which all eligible citizens have an equal say in the decisions that affect their lives.	ADI (World Bank)
Government Quality Index	GQI	1st Principal Component of: RL; RQ;V&A; PS; GE	PCA
Press Freedom	PrFree	The right to publish newspapers, magazines and other printed matter without government restriction and subject only to the laws of libel, obscenity, sedition..etc	Freedom House
Trade Freedom	TFree	Freedom of Trade Index. 'Freedom to trade internationally' is an index representing: taxes on international trade (international trade tax revenues as % of trade sector; mean tariff rate and standard deviation of tariff rates); regulatory trade barriers (non tariff trade barriers and compliance cost of exporting and importing); size of trade sector relative to expected; black market exchange rates and international market capital controls ('foreign ownership /investment' restrictions and capital controls).	Gwartney et al. (2011) Economic Freedom Dataset
Economic Freedom	EFree	Economic Freedom Index. Economic freedom broadly represents: freedom to trade internationally; legal structure and security of property rights; access to sound money; size of government (expenditures, taxes and enterprises) and; regulation of credit, labor and business.	
		Control Variables	
Per Capital Economic Prosperity	GDP	GDP per capita growth rate (annual %)	ADI (World Bank)
Population Growth	Popg	Population growth rate (annual %)	ADI (World Bank)
Inflation	Infl.	Consumer Price Index (Annual %)	ADI (World Bank)
Development Assistance	NODA	Net Official Development Assistance (% of GDP)	ADI (World Bank)
Government Expenditure	Gov.E	Government Final Expenditure (% of GDP)	ADI (World Bank)
Financial Openness	FDI	Foreign Direct Investment(% of GDP)	ADI (World Bank)
Human Development	IHDI	Inequality adjusted Human Development Index	ADI (World Bank)
Low Income Countries	LowI	Countries with a GNP per capita of less than $786	FDSD (World Bank)
Legal origins		English Common Law and French Civil Law Countries	La Porta et al. (2008, p. 289)
Religious dominations		Christians & Muslims	CIA The WFB(2011)

WDI: World Bank Development Indicators. FDI: Foreign Direct Investment. GDP: Gross Domestic Product. PC: Principal Component. RL: Rule of Law. RQ: Regulation Quality. V& A: Voice & Accountability. PS: Political Stability. GE: Government Effectiveness. FDSD: Financial Development and Structure Database. NODA: Net Official Development Assistance. GNP: Gross National Product. PCA: Principal Component Analysis. CIA: Central Intelligence Agency. WFB: World Factbook.

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