Globalization, (fighting) corruption and development: how are these phenomena linearly and nonlinearly related in wealth effects?

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Globalization, (fighting) corruption and development: how are these phenomena linearly and nonlinearly related in wealth effects?

Purpose – Is globalization instrumental in fighting corruption? Do wealth effects matter in this fight? Are findings valid when linearity assumptions are dropped? This paper assesses the Lalountas et al.(2011) hypotheses in the African context.

Design/methodology/approach – Though not form, yet in substance the intuition and motivation are compatible with those of Lalountas et al.(2011). Four hypotheses are tested from different methodological and contextual standpoints. In the analysis, while the economic and social dimensions of globalization are reflected in the HDI, the political dimension is captured by good governance indicators. A TSLS-IV estimation technique is applied where-in globalization instruments of trade and financial liberalization are instrumented on human-development and government-quality to account for corruption (corruption-control) effects. Thus the intuition is assessing how globalization is instrumental in the fight against corruption through human development(economic and social dimensions) and government quality(political dimension).

Findings – *Hypothesis 1*: Globalization is a powerful tool in fighting corruption (True). *Hypothesis 2*: Globalization is an important tool in fighting corruption only in Middle and High income countries(Partially True). *Hypothesis 3*: For Low income countries globalization has no significant impact on corruption(True). *Hypothesis 4*: Hypotheses 1 and 2 are valid only under linearity(False).

Social Implications – In countries with high levels of per capita, emphasis is placed on the political and social dimensions of globalization and as a result the effects of this phenomenon on corruption-control are significant. Conversely, in nations with low levels of per capita income, emphasis is given to the economic dimension of international integration and as a result the effect of globalization on corruption is limited. As a policy implication, persistent globalization as an effective means to reduce corruption in developing countries might lead to inappropriate policies in low income countries.

Originality/value – This paper has tested the Lalountas et al.(2011) hypotheses in the continent where concerns of globalization, human development and corruption are most acute.

JEL Classification: F10; F30; I30; O10; O55
Keywords: Globalization; Corruption; Wealth effects; Africa

1. Introduction

Is globalization a tool in the fight against corruption? How does globalization in terms of trade openness and financial liberalization affect corrupt practices and the fight against corruption through human development in developing countries? How are these phenomena related in wealth effects? Are findings different under linear and nonlinear conditions? This paper addresses the above concerns within the context of Africa in the light of Lalountas et al.(2011) hypotheses: *"Thus, our main conclusion is that globalization could be a powerful means of fighting corruption, only for middle and high income countries. For low income countries however, globalization has no significant impact on corruption. We might therefore conclude that at low levels of per capita income emphasis is given to the economic dimension of international integration and as a result the effect of globalization on corruption is limited. Persistence on globalization as an effective means to reduce corruption in developing countries might lead to inappropriate policies. On the contrary, at high levels of per capita income emphasis is given to the political and social dimensions of globalization and as a result the effects of this phenomenon on corruption control are significant"*(Lalountas et al., 2011, p.645).

There is abundant literature on the determinants of corruption(La Porta et al.,1999; Treisman,2000; Iwasaki & Suzuki,2012) and effects of globalization on corruption(Gatti, 1999; Das & DiRienzo, 2009). However very few studies have been dedicated to the indirect relationship between corruption and globalization despite a substantial bulk of literature on the indirect link between the two phenomena(Bonaglia et al.,2001; Lalountas et al.,2011). This paper therefore assesses how globalization affects corruption via human development. But on what foundations are the phenomena choices of the paper based? Firstly, the choice of human development as a globalization channel is based on the fact that globalization upholds a global commitment to continuing and accelerating the pace of human development. In fact

the phenomenon is the dominant force in the economic universe as it upholds economic prosperity in its lusty, ineluctable and historical process whose march can be stopped only by endangering the prosperity of peoples and nations. Globalization also threatens to disfigure human development in the manner it is evolving as it seeks a victory of market over government and self-interest over altruism(Asongu,2012a). Therefore not surprisingly, the public support for globalization has waned in both developed and developing countries with a frantic search for a third-way out of the morally enervating regime of unvarnished capitalism. This has prompted universal demands to recapture some of its attractive glow and lofty ambitions; that the superior claims of globalization be given a 'human face" by saddling the increasingly ungovernable world of trade and finance with a global civic ethic. With the choice of human development as a channel cemented, we turn to a justification for the context of the study. Secondly, the choice of Africa is most relevant giving the continent's appalling statistics in development(human and economic) and corruption.

This paper on a first note contributes to existing literature by examining the four concerns highlighted at the first paragraph of this introduction. Secondly, the use of much recent data(2002-2010) provides more updated policy implications. Thirdly, the focus on Africa where the human development and corruption debates are most tensed, helps elicit some glaring issues on structural adjustment policies(liberalization for the most part) imposed by the International Monetary Fund(IMF) and World Bank(WB) in bid to improve human development. Fourthly, we cut adrift arbitrary income cut-off limits(Lalountas et al., 2011)[1] by examining wealth effects from four dimensions: low income, middle income, upper middle income and lower middle income.

[1] Whereas Lalounta et al.(2011) use a threshold of : GDP>825 US Dollars, we use four levels of income distribution in accordance with the World Bank Income group setting. The groups include: low income, $1,005 or less; lower middle income, $1,006 - $3,975; upper middle income, $3,976 - $12,275; and high income, $12,276 or more.

The rest of this paper is organized as follows. We review existing literature on globalization, human development and corruption in Section 2. Data and methodology are presented and discussed respectively in Section 3. Empirical analysis is covered in Section 4. Section 5 concludes.

2. Globalization, human development and corruption

2.1 Theoretical highlights

2.1.1 Globalization and human development

Borrowing from Thai(2006) two theories prevail in the debate over how globalization affects human well-being: the neoliberal and the hegemony schools of thought. The second school sees globalization as a new hegemonic project. According to Petras & Veltmeyer (2001), globalization demonstrates the creation of a new world order architecture by global powers(industrial countries, international financial institutions…etc), with main objective of facilitating capitalist accumulation in an environment of unconstrained market transactions. Petras & Veltmeyer(2001,p.24) predict '*a world-wide crisis of living standards for labor*': since the brunt of the capitalist openness process has been borne by the working class as '*technological change and economic reconversion endemic to capitalist development has generated an enormous growing pool of surplus labor, an industrial reserve army…with incomes at or below the level of subsistence'*. Another strand of this school upholds that contemporary global systems on their neoliberal course have imposed a 'flexible' mode of production that undermine the redistributive mechanisms that were constructed through Keynesian social democracy. As noticed by Smart(2003) globalization features a 'market ethos' whose fervent pursuit of private interest operates without regard for persons(Thai, 2006). In acknowledging this assertion Scholte(2000) posits, an unequal allocation of benefits is generated that favors the already advantaged. Though this radical stance is not explicitly

shared by Sirgy et al.(2004), they do predict several negative effects when asserting globalization has 'double-bladed' outcomes.

The neoliberal thesis(first school) contends globalization is an omnipresent power of 'creative destruction' in that global trade, cross-border investment and technological innovation improve production efficiency and generate extraordinary prosperity despite replacement of old jobs and fall in wages for unskilled workers. Openness manages these potential threats by signaling to the latter group about the pay-offs from acquiring new skills. Rewards can stretch over to the masses '*if the labor market is responsive to changes in supply and demand*'(Grennes, 2003). Empirical studies have also documented that globalization is fashioned to spread industrialization to developing countries and hence mitigate global income inequality(Firebaugh, 2004). Rodrik et al.(2004) find foreign trade to be closely tied to societal institutional building; which constitute a decisive factor in economic growth.

2.1.2 Globalization and corruption

How does openness influence the level of perceived corruption in a country? According to Klitgaard(1988), corruption thrives when monopoly power is combined with discretion and low accountability. Incentives to bribery do not arise in a society where all economic activities are carried out in a perfect competition setting and no single agent is able to affect the price or the quantity of the commodity he/she sells or buys. In the same line of thought, corruption is mitigated when economic rents do not depend on the discretionary power of some public officials or when monopolistic economic activities as well as governments are objects of strict rules of accountability. As emphasized by Treisman(2000) in Bonaglia et al.(2001) political openness to protestant traditions leads to a higher quality of government. Conversely, corruption is more pervasive when the state is federal, when a country's democratic basis is still young(less than 20 years) or when a country is less open to trade; consistent with Klitgaard(1988).

2.2 Factors linking globalization and corruption

In line with Bonaglia et al.(2001) from Krueger (1974), financial and trade openness may alter the balance between corruption costs and benefits through the following mechanisms(strands).

The first mechanism focuses on rent-seeking activities caused by quantitative restrictions to imports. Contrary to tariffs, quotas and other official permissions, imports generate considerable economic rents due to the monopolistic power they grant to legal importers. In a bid to appropriate these rents, agents may legally compete or embark in illegal rent-seeking activities, corruption, bribery, smuggling and black markets. Krueger(1974) demonstrates that these rent-seeking activities induce an economy to operate at a level below its optimal, generate a divergence between private and social costs and thus entail a welfare cost additional to that due to tariff restrictions. In successive papers Kreuger's original idea was generalized to a theory of tariffs(Bhagwati, & Srinivasan,1980) and Direct Unproductive Profit-Seeking(DUP) activities(Bhagwati,1982) in which further arguments were provided in favour of trade and capital liberalizations. In a later study, Gatti(1999) presented some empirical evidence on the link between 'restrictions to openness'(trade & capital) and corruption. The empirical analysis disentangled two effects of inward-oriented policies on corruption: the 'direct policy distortion' and the 'foreign competition effect'. High walls to international transactions directly encourage private agents to bribe public officials in exchange for favoritism(the first distortion) and through the second effect, reduce competition between domestic and foreign firms so that margins for rent-seeking and corruption are kept high.

Ades & Di Tella(1999) provide evidence for the second competition-reducing mechanism. They posit that the level of rents in general and market structure in particular determine corruption intensity in an economy. They further postulate that changes in rents

size due to variations in the degree of competition may have ambiguous effects on corruption. On the one hand, larger rents resulting from a low competition environment increase the amount bureaucrats can extract as bribes; on the other hand, under such circumstances, it becomes more valuable to a society to increase accountability and monitoring of its bureaucracy. Computing the correct sign of the net effect of corruption due to these two opposing tendencies may be theoretically relevant. Real world cases like the situation in Nigeria provide examples of a positive connection between rents and corruption. Since the 1980s, about 80% of government revenue in this country originate from oil exports. Resulting construction and import booms have been favorable only to ruling party officials, thus validating how rents cause corruption. Based on these facts Ades & Di Tella(1999) built a model that directly associates product market competition to fewer rents and lower corruption levels. This model identifies three set of variables that determine corruption: wages of the bureaucracy, monitoring degree, and the profit levels that in turn depend on the degree of competition. Bureaucracy wages and monitoring are indirectly captured by a society's level of political(respect of political rights) and economic(GDP per capita, schooling) developments, while competition is measured by the share of imports in GDP, the sector-concentration of exports and distance from the world's major exporters. Given the same level in the other variables, countries less exposed to foreign imports(or with a large share of exports due to natural resources) should suffer higher levels of corruption than those countries more integrated in world markets and with a differentiated export basis.

In the third mechanism linking globalization to institutional quality, Wei(2000) explicitly considers differences in the cost of monitoring public officials due to the high level of international integration. The basic idea is plain: improving the quality of institutions and their capacity to fight corruption depend on the amount of resources a society allocates to this end. If a society invests more into building good institutions the larger the benefits it gets or

smaller costs it incurs. Given that foreign producers may divert their exports or investments from a national market to another with more ease than domestic producers, one would expect bad governance and corruption to be more detrimental to international trade and capital than domestic commerce and investment. The differential effect of corruption induces stronger incentives towards good governance investments for those economies that are open(in trade and capital). Ceteris paribus, due to the resulting interesting benefits an economy more exposed to international markets would allocate more resources to fighting corruption and end-up with a lower corruption-level than one in isolation or autarky.

In the last strand we argue that, the three mechanisms(strands) elucidated above culminate in human development. Thus human development is a mechanism through which trade and financial globalization affect government quality (in the respect of corruption). This paper therefore focuses on the fourth strand. While assessing the relations of these phenomena we shall also be testing the Lalountas et al.(2011) hypotheses cited at the introduction of this work.

2.3 Testable hypotheses

In line with Lalountas et al.(2011): *"The estimation results indicate that, under the assumption of a linear model, a positive correlation between corruption and globalization exists, while when linearity is dropped there seems to be no significant effect of globalization on corruption. According to our analysis, linearity is a good approximation only for middle and high income countries. Hence, our main conclusion is that globalization is a powerful weapon against corruption only for middle and high income countries, while for low income countries globalization has no significant impact on corruption. For such countries fighting corruption requires additional global action aiming at the reduction of poverty*"(p.636). The following resulting hypotheses will be tested in the empirical section of this paper.

Hypothesis 1: Globalization is a powerful tool in fighting corruption.

Hypothesis 2: Globalization is an important tool in fighting corruption only in Middle and High income countries.

Hypothesis 3: For Low income countries globalization has no significant impact on corruption.

Hypothesis 4: Hypotheses one and two are valid only under linearity.

3. Data and Methodology

3.1 Data

We examine a sample 30 countries from African Development Indicators(ADI) of the World Bank(WB) disaggregated into 4 panels: Low income, Middle income, Lower middle income and Upper middle income countries[2]. Owing to constraints in data availability and in a bid to obtain more updated policy implications, the data-set spans from 2002-2010[3]. Details of summary statistics(Appendix 1), correlation analysis(Appendix 2), variable definitions (Appendix 3) and presentation of countries (Appendix 4) are in the appendices. In the selection of variables, while the economic and social dimensions of globalization are reflected in the HDI, the political dimension is captured by good governance indicators.

3.1.1 Endogenous variables

The dependent variables are the 'corruption-control' indicator and Corruption Perception Index(CPI); consistent with the corruption literature(Billger & Goel,2009; Okada & Samreth,2012; Asongu,2012b). While Lalountas et al.(2011) have used only the CPI, in a bid for robustness we complement this measure with the 'corruption-control' indicator. For the CPI, scaling is from 0 to 10 with 0 showing the maximum corruption level. This implies,

[2] Whereas Lalounta et al.(2011) use a threshold of : GDP>825 US Dollars, we use four levels of income distribution in accordance with the World Bank Income group setting. The groups include: low income, $1,005 or less; lower middle income, $1,006 - $3,975; upper middle income, $3,976 - $12,275; and high income, $12,276 or more.

[3] While Lalounta et al.(2011) use cross sectional data for the year 2006, the present paper is based on panel data between 2002-2010.

as the index increases there is the perception of lower corruption in the country. The corruption-control measure varies for the most part between -1 and 1. With -1 for the least measure in the fight against corruption.

3.1.2 Exogenous variable

The endogenous-explaining(exogenous) variable is the inequality adjusted Human Development Index(HDI). The HDI is a comparative measure of life expectancy, literacy, education and standards of living for countries worldwide. This index has been widely used in the globalization (Mohammad et al.,2010; Rabbanee et al.,2010) and corruption(Nielsen & Hauguaard, 2000; Akçay, 2006) literature.

3.1.3 Instrumental variables

Borrowing from Lalountas et al.(2011) the instrumental variables in linear estimations include indicators of trade and financial liberalizations (in levels and first differences) as well as the first difference of the HDI. While trade liberalization is measured by the economic openness indicator(Trade), financial openness is proxied by Foreign Direct Investment(FDI), in line with the globalization literature(Mohammad et al.,2010; Asongu, 2012a). Both FDI and '*Trade*' are in percentages of GDP. Under the assumption of nonlinearity, the squares of the HDI, '*Trade*' and FDI are added to the level and first difference instruments: consistent with Lalountas et al.(2011). For further robustness in the nonlinearity assumption, nonlinear combinations of instrumental variables are complement with nonlinear combinations of endogenous explaining variables(see Table 4 below on: extension of the nonlinearity assumption with HAC standard errors).

3.1.4 Control variables

In accordance with Lalountas et al.(2011) and recent African government-quality literature(Asongu, 2011a, Asongu, 2012c) we control for good governance in terms of

democratic institutions and voice & accountability. Thus we expect these indicators to increase the CPI as well as the control of corruption. Note should taken of the fact that, an increase in the CPI amounts to a decrease in corruption level.

3.2 Methodology

3.2.1 Endogeneity

The concern for endogeneity could be emphasized on three main counts. (1)Though there is an implicit assumption that human development affects government quality in the perspective of (the fight against) corruption, the reversed effect cannot be ruled-out since, human development is also contingent on corrupt practices. Thus the strict exogeneity of the human development channel is questionable. (2) The CPI is a synthesis of perception based measures which are often subject to bias resulting from media propaganda or other factors. Therefore there is glaring evidence of omitted variables. (3) From a topical consideration, we seek to assess the relationship between three phenomena, which by definition inherently requires an Instrumental Variable(IV) estimation technique.

3.2.2 Estimation technique

In line with Lalountas et al.(2011) we use Two-Stage Least Squares(TSLS) as estimation approach. We adopt the following steps in this approach. Firstly, we justify the choice of the estimation technique(TSLS over OLS) with the Hausman test for endogeneity. Secondly, we demonstrate that instrumental variables(globalization indicators) are exogenous to the endogenous components of the human development channel, conditional on other covariates(control variables). Lastly we investigate the validity of the globalization instruments with the Sargan-OIR(Over Identifying Restrictions test)[4]. The TSLS-IV estimation method adopted by this study will entail the following steps.

[4] The Hausman and Sargan OIR tests are absent in Lalountas et al.(2011). However we argue these two are indispensable for the selection of the IV approach and validity of the instruments respectively.

First-stage regression:

$$HD_{it} = \gamma_0 + \gamma_1(Trade)_{it} + \gamma_2(FDI)_{it} + \alpha_i X_{it} + \upsilon \quad (1)$$

Second-stage regression:

$$Corruption_{it} = \gamma_0 + \gamma_1(HD)_{it} + \beta_i X_{it} + \mu \quad (2)$$

The independent control variables are represented by X in the two equations. In Eq.(1) and Eq.(2), v and u respectively denote the disturbance terms. Trade and financial openness (FDI) represent globalization instruments. '*HD'* stands for human development while corruption entails the CPI or corruption-control indicator.

3.2.3 Robustness checks

For robustness purposes, the empirical analysis: (1) uses alternative indicators of corruption ; (2) makes use of four distinct income levels to emphasis wealth effects; (3) accounts for endogeneity; (4) models under both linear and nonlinear hypotheses; (5) estimates with and without HAC(Heteroscedasticity and Autocorrelation Consistent) standard errors.

4. Empirical Analysis

This section addresses the ability of the exogenous components of human development to account for differences in the CPI and corruption-control; the ability of the globalization instruments to explain variations in the endogenous components of human development and the possibility of the globalization instruments to account for the CPI and corruption-control beyond human development channels. To make these assessments, we use the panel TSLS-IV estimation method with financial and trade liberalization measures as instrumental variables.

4.1 Development and globalization

Table 1 below assesses the validity of the globalization instruments in explaining cross-country differences in human development and government-quality control variables. Clearly, it could be observed that distinguishing African countries by trade and financial liberalizations help explain cross-country differences human development and government quality. Based on the Fisher-test, the instruments taken together enter significantly in all regressions at the 1% significance level for the most part. It is worth noting this is the first-stage of the IV estimation approach where-by globalization instruments must be exogenous to the endogenous components of human development and second-stage regression control variables, conditional on other covariates(first-stage control variables). Most of the coefficients are significant with the right signs and the following could be established. (1) While trade openness improves human development, financial openness does the contrary. These findings are consistent with recent African openness literature(Asongu, 2012a). The positive effect of trade on human development could be elucidated by the cheap imports in basic human needs flooding African markets from China and beyond. On the other hand, the negative effect of financial openness confirms the relative lack of a financial service comparative advantage in the African financial industry. The negative financial liberalization effect can also be elucidated by rate of capital flight (approximately 39%) from Africa due to corruption and risky investments in the continent(Collier et al.,2001). From a global view-point, the results of financial openness are consistent with empirical investment-inequality literature(Pan-Long,1995; Basu & Guariglia, 2007; Kai & Hamori, 2009; Asongu, 2011b) and theoretical postulations(Greenwood & Jovanovic, 1990). All these have emphasized the disequalizing redistributive income effect of foreign investment, which in contextual terms depict decrease in inequality adjusted human development. (2) GDP per capita growth has a positive effect on human development. This is consistent with its constituency in the HDI. (3)

Development assistance is detrimental to human development: in line with the aid-development literature on developing countries (Boone,1996; Reichel,1995; Ghura,1995; Pedersen,1996; Asongu, 2012d). (4) Financial globalization improves government quality: in accordance with Klitgaard(1988). (5) From common sense to a certain extent economic theory, regulation quality(autocracy) improves(decreases) government quality. Given the validity of joint significance(Fisher test) in estimated coefficients, we proceed with the second-stage of the TSLS approach.

Table 1: Human development and globalization instruments

		Development Channel			**Government Quality Control Variables**					
		Human Development(HDI)			**Democracy**			**Voice and Accountability**		
	Constant	**0.421*** (0.000)**	**0.435*** (0.000)**	**0.525*** (0.000)**	**1.613** (0.018)**	**2.581*** (0.002)**	**4.271*** (0.000)**	**-0.172** (0.023)**	0.015 (0.745)	**-0.16** (0.048)**
	Trade	**0.001*** (0.000)**	**0.0009*** (0.000)**	---	**0.017** (0.037)**	**0.015** (0.030)**	---	0.001 (0.109)	---	**0.002*** (0.009)**
	FDI	**-0.005*** (0.001)**	0.001 (0.248)	---	0.002 (0.965)	0.073 (0.167)	---	**0.015** (0.013)**	---	---
Globalization Instruments	d_Trade	---	---	**0.006*** (0.006)**	---	---	0.025 (0.277)	---	0.003 (0.226)	---
	d_FDI	---	---	0.0007 (0.313)	---	---	0.101 (0.181)	---	**0.016*** (0.080)**	0.012 (0.187)
	GDPpcg	---	**0.005** (0.030)**	0.002 (0.391)	---	---	---	---	---	---
	NODA	---	**-0.004*** (0.000)**	**-0.004*** (0.000)**	---	---	---	---	---	---
Control Variables	GDPg		---	---	---	**0.215** (0.021)**	**0.194* (0.055)**	---	---	---
	R Q		---	---	---	**4.537*** (0.000)**	**4.580*** (0.000)**	**0.964*** (0.000)**	**0.969*** (0.000)**	**0.951*** (0.000)**
	Autocracy		---	---	---	---	---	**-0.077*** (0.000)**	**-0.08*** (0.000)**	**-0.08*** (0.000)**
Adjusted R^2		0.114	0.374	0.265	0.015	0.323	0.282	0.636	0.623	0.635
Fisher		**14.065***	**29.641***	**15.894***	**2.637***	**25.22***	**18.33***	**89.788***	**73.98***	**77.70***
Observations		204	192	166	204	204	177	204	177	177

*,**,***: significance levels of 10%, 5% and 1% respectively. Trade: Economic Openness. FDI: Financial Openness. d_FDI: first difference in FDI . d_Trade: first difference in Trade. GDPpcg: GDP per capita growth. NODA: Net Official Development Assistance. GDPg: GDP growth. R Q: Regulation Quality.

4.2 Corruption, human development and globalization

Tables 2-3 investigate two main issues: (1) the ability of the human development channel to explain changes in the CPI and corruption-control and; (2) the possibility of the globalization instrumental variables explaining changes in the CPI and corruption-control beyond the human development channel. Whereas we address the first issue by investigating the significance of estimated coefficients, the second is assessed by the Sargan-OIR test for

instrument validity. The null hypothesis of the Sargan test is the view that the instruments account for corruption dynamics only through the human development channel. Thus a rejection of the null hypothesis is the rejection of the view that the instruments explain corruption dynamics through no other mechanisms than human development channels. The Hausman-test for endogeneity precedes every TSLS-IV regression and thus justifies the choice of the estimation approach. The null hypothesis of this test is the stance that OLS estimates are consistent and efficient. Thus a rejection of the null hypothesis points to the concern of reverse causality (endogeneity) we have elucidated earlier (see Section 3.2.1) and hence lends credit to the TSLS-IV estimation approach. Else, we model by OLS under strict exogeneity in the human development channel. While panel A of Tables 2-3 is under the assumption of linear globalization instrumental variables(first and second set of instruments), panel B is on the premise of nonlinear instruments (third and fourth set of moment conditions).

Table 2 presents second-stage results with HAC standard errors. While findings of panel A are under a linear assumption, those of Panel B are under a nonlinear hypothesis. But for three estimations in panel A and one in panel B the null hypothesis of the Hausman test is overwhelmingly rejected in models of Table 2, confirming the presence of endogeneity and hence the choice of the TSLS-IV approach. As concerns the first issue, based on results in panel A and B, the following could be established. (1) Human development reduces corrupt practices and improves the fight against corruption when instrumental globalization variables are linear and nonlinear. (2) While human development increases(decreases) corruption(the control of corruption) in Upper middle income countries, the opposite effect is noticed for Lower middle income countries. (3) Overall findings for Middle income countries reflect those of Lower middle countries while results of Low income countries are insignificant. (4)

Control variables are significant with the right signs since democracy and voice & accountability improve corruption-control and decrease corrupt activities.

Table 2: IV regressions without HAC standard errors

Panel A: Linear Instrumental Variables

	Corruption Perception Index(CPI)					Corruption-Control				
	Data	**UMI**	**LMI**	**MI**	**LI**	**Data**	**UMI**	**LMI**	**MI**	**LI**
Constant	0.677	**11.27*** **	0.078	3.180	**3.615*** **	**-1.84*** **	**3.95*** **	-0.077	**-2.348***	0.414
	(0.410)	**(0.000)**	(0.960)	(0.273)	**(0.003)**	**(0.000)**	**(0.000)**	(0.966)	**(0.083)**	(0.563)
IHDI	**2.849***	**-11.3*** **	**8.041*** **	-0.890	-1.694	**1.660***	**-6.07*** **	1.934	2.877	-2.429
	(0.076)	**(0.000)**	**(0.003)**	(0.863)	(0.506)	**(0.097)**	**(0.000)**	(0.528)	(0.218)	(0.133)
Demo	**0.278*** **	**0.20*** **	---	**0.276*** **	---	**0.173*** **	**0.106*** **	---	**0.144*** **	---
	(0.003)	**(0.000)**		**(0.000)**		**(0.000)**	**(0.000)**		**(0.000)**	
V& A	---	---	**1.479*** **	---	0.519	---	---	**1.610*** **	---	0.046
			(0.000)		(0.266)			**(0.000)**		(0.899)
Hausman	**8.550*** **	**9.596*** **	**13.05*** **	**6.722*** **	1.208	**15.66*** **	**11.68*** **	**58.55*** **	4.378	2.447
	(0.013)	**(0.008)**	**(0.001)**	**(0.034)**	(0.546)	**(0.000)**	**(0.002)**	**(0.000)**	(0.112)	(0.294)
Sargan-OIR	**2.297**	**2.303**	**4.220**	**0.376**	**4.761**	**2.397**	**2.334**	**1.550**	**1.821**	**1.386**
	(0.513)	**(0.316)**	**(0.238)**	**(0.828)**	**(0.190)**	**(0.494)**	**(0.311)**	**(0.670)**	**(0.402)**	**(0.500)**
Adjusted R^2	0.346	0.903	0.713	0.376	0.185	0.376	0.975	0.510	0.620	0.008
Fisher	**6.899*** **	**62.68*** **	**24.29*** **	**6.751*** **	0.666	**10.07*** **	**253.0*** **	**9.515*** **	**9.681*** **	1.125
Observations	157	21	62	83	74	177	21	66	87	90
Instruments	1st Set	2nd Set	1st Set	1st Set	1st Set	1st Set	2nd Set	1st Set	1st Set	2nd Set

First Set of Instruments	Constant, FDI, Trade, d_FDI, d_Trade , d_IHDI
Second Set of Instruments	Constant, FDI, Trade, d_FDI, d_Trade

Panel B: Nonlinear Instrumental Variables

	Corruption Perception Index(CPI)					Corruption-Control				
	Data	**UMI**	**LMI**	**MI**	**LI**	**Data**	**UMI**	**LMI**	**MI**	**LI**
Constant	-0.028	**11.03*** **	0.271	-1.232	**2.821*** **	**-1.81*** **	**3.827*** **	**-1.62*** **	**-2.41*** **	-0.425
	(0.951)	**(0.000)**	(0.508)	(0.158)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.169)
IHDI	**4.265*** **	**-11.0*** **	**7.771*** **	**6.932*** **	-0.056	**1.636*** **	**-5.88*** **	**3.963*** **	**2.96*** **	-0.649
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	(0.944)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.317)
Demo	**0.276*** **	**0.206*** **	---	**0.235*** **	---	**0.165*** **	**0.104*** **	---	**0.152*** **	---
	(0.001)	**(0.000)**		**(0.000)**		**(0.000)**	**(0.000)**		**(0.000)**	
V& A	---	---	**1.533*** **	---	0.250	---	---	**1.087*** **	---	-0.157
			(0.000)		(0.293)			**(0.000)**		(0.575)
Hausman	**11.18*** **	**10.93*** **	**32.89*** **	**24.58*** **	1.829	**14.88*** **	**4.896***	**20.23*** **	**19.66*** **	**6.448*** *
	(0.003)	**(0.004)**	**(0.000)**	**(0.000)**	(0.400)	**(0.000)**	**(0.086)**	**(0.000)**	**(0.000)**	**(0.039)**
Sargan-OIR	**7.479**	**3.601**	**4.840**	**5.937**	**6.947**	**3.971**	**6.115**	15.66**	**3.706**	**6.628**
	(0.278)	**(0.462)**	**(0.564)**	**(0.203)**	**(0.325)**	**(0.680)**	**(0.190)**	(0.015)	**(0.447)**	**(0.356)**
Adjusted R^2	0.404	0.903	0.697	0.576	0.215	0.378	0.976	0.724	0.620	0.071
Fisher	**25.04*** **	**69.45*** **	**50.93*** **	**21.58*** **	0.568	**20.93*** **	**280.3*** **	**39.93*** **	**22.43*** **	0.677
Observations	157	21	62	83	74	177	21	66	87	90
Instruments	3rd Set	4th Set	3rd Set	3rd Set	3rd Set	3rd Set	4th Set	3rd Set	3rd Set	3rd Set

Third Set of Instruments	Constant, FDI, Trade, d_FDI, d_Trade , d_IHDI, FDI^2, $Trade^2$, $IHDI^2$
Fourth Set of Instruments	Constant, FDI, Trade, d_FDI, d_Trade , FDI^2, $Trade^2$

*,**,***: significance levels of 10%, 5% and 1% respectively. HAC: Heteroscedasticity and Autocorrelation Consistent. UMI: Upper Middle Income. LMI: Lower Middle Income. MI: Middle Income. LI: Lower Income. IHDI: Inequality Adjusted Human Development Index. Demo: Democracy. V& A: Voice and Accountability. OIR: Over-identifying Restrictions test. FDI: Foreign Direct Investment. Trade: Openness. d_FDI: first difference in FDI . d_Trade: first difference in Trade. FDI^2: FDI Square. $Trade^2$: Trade Square.

As concerns the second-issue, failure to reject the null hypothesis of the OIR test in 15 of the 16 'Fisher-significant' regressions implies that globalization instruments explain corruption through no other mechanisms beside human development and good governance channels. Thus the globalization instruments are valid as they are not correlated with the error term in the equation of interest. All four regressions pertaining to Low income countries have

insignificant Fisher statistics; which is why the Sargan-OIR test analysis is based on 16 regressions.

Table 3: IV regressions with HAC standard errors

Panel A: Linear Instrumental Variables

	Corruption Perception Index(CPI)					Corruption-Control				
	Data	**UMI**	**LMI**	**MI**	**LI**	**Data**	**UMI**	**LMI**	**MI**	**LI**
Constant	0.677	**11.27*** **	0.078	3.180	**3.615*** **	**-1.846***	**3.951*** **	-0.077	-2.348	0.414
	(0.601)	**(0.000)**	(0.979)	(0.487)	**(0.000)**	**(0.069)**	**(0.000)**	(0.986)	(0.341)	(0.588)
IHDI	2.849	**-11.3*** **	**8.041***	-0.890	-1.694	1.660	**-6.07*** **	1.934	2.877	-2.429
	(0.269)	**(0.000)**	**(0.084)**	(0.913)	(0.430)	(0.412)	**(0.000)**	(0.761)	(0.512)	(0.235)
Demo	**0.278** **	**0.209*** **	---	0.276	---	**0.173** **	**0.106*** **	---	**0.144*** **	---
	(0.047)	**(0.000)**		(0.194)		**(0.026)**	**(0.000)**		**(0.003)**	
V& A	---	---	**1.479***	---	**0.519*** **	---	---	1.610	---	0.046
			(0.061)		**(0.001)**			(0.217)		(0.888)
Hausman	**8.550** **	**9.596*** **	**13.05*** **	**6.722** **	1.208	**15.66*** **	**11.68*** **	**58.55*** **	4.378	2.447
	(0.013)	**(0.008)**	**(0.001)**	**(0.034)**	(0.546)	**(0.000)**	**(0.002)**	**(0.000)**	(0.112)	(0.294)
Sargan-OIR	**2.297**	**2.303**	**4.220**	**0.376**	**4.761**	**2.397**	**2.334**	**1.550**	**1.821**	**1.386**
	(0.513)	**(0.316)**	**(0.238)**	**(0.828)**	**(0.190)**	**(0.494)**	**(0.311)**	**(0.670)**	**(0.402)**	**(0.500)**
Adjusted R^2	0.346	0.903	0.713	0.376	0.185	0.376	0.975	0.510	0.620	0.008
Fisher	**2.623***	**105.8*** **	**14.26*** **	0.905	**5.086*** **	**2.724***	**655.3*** **	**12.80*** **	**4.400** **	1.112
Observations	157	21	62	83	74	177	21	66	87	90
Instruments	1st Set	2nd Set	1st Set	1st Set	1st Set	1st Set	2nd Set	1st Set	1st Set	2nd Set

First Set of Instruments: Constant, FDI, Trade, d_FDI, d_Trade , d_IHDI
Second Set of Instruments: Constant, FDI, Trade, d_FDI, d_Trade

Panel B: Nonlinear Instrumental Variables

	Corruption Perception Index(CPI)					Corruption-Control				
	Data	**UMI**	**LMI**	**MI**	**LI**	**Data**	**UMI**	**LMI**	**MI**	**LI**
Constant	-0.028	**11.03*** **	0.271	-1.232	**2.821*** **	**-1.81*** **	**3.827*** **	**-1.62*** **	**-2.41** **	-0.425
	(0.974)	**(0.000)**	(0.699)	(0.443)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.014)**	(0.511)
IHDI	**4.265*** **	**-11.0*** **	**7.771*** **	**6.932** **	-0.056	**1.636** **	**-5.88*** **	**3.96*** **	2.965	-0.649
	(0.000)	**(0.000)**	**(0.000)**	**(0.042)**	(0.971)	**(0.019)**	**(0.000)**	**(0.000)**	(0.132)	(0.694)
Demo	**0.276** **	**0.206*** **	---	**0.235*** **	---	**0.165** **	**0.104*** **	---	**0.152*** **	---
	(0.015)	**(0.000)**		**(0.008)**		**(0.014)**	**(0.000)**		**(0.001)**	
V& A	---	---	**1.533*** **	---	0.250	---	---	**1.087*** **	---	-0.157
			(0.006)		(0.262)			**(0.000)**		(0.570)
Hausman	**11.18*** **	**10.93*** **	**32.89*** **	**24.58*** **	1.829	**14.88*** **	**4.896***	**20.23*** **	**19.66*** **	**6.448** **
	(0.003)	**(0.004)**	**(0.000)**	**(0.000)**	(0.400)	**(0.000)**	**(0.086)**	**(0.000)**	**(0.000)**	**(0.039)**
Sargan-OIR	**7.479**	**3.601**	**4.840**	**5.937**	**6.947**	**3.971**	**6.115**	15.66**	**3.706**	**6.628**
	(0.278)	**(0.462)**	**(0.564)**	**(0.203)**	**(0.325)**	**(0.680)**	**(0.190)**	(0.015)	**(0.447)**	**(0.356)**
Adjusted R^2	0.404	0.903	0.697	0.576	0.215	0.378	0.976	0.724	0.620	0.071
Fisher	**6.193*** **	**205.9*** **	**16.03*** **	**13.70*** **	0.821	**4.354** **	**4015*** **	**23.20*** **	**12.16*** **	0.197
Observations	157	21	62	83	(0.443)	177	21	66	87	90
Instruments	3rd Set	4th Set	3rd Set	3rd Set	3rd Set	3rd Set	4th Set	3rd Set	3rd Set	3rd Set

Third Set of Instruments: Constant, FDI, Trade, d_FDI, d_Trade , d_IHDI, FDI^2, $Trade^2$, $IHDI^2$
Fourth Set of Instruments: Constant, FDI, Trade, d_FDI, d_Trade , FDI^2, $Trade^2$

*,**,***: significance levels of 10%, 5% and 1% respectively. HAC: Heteroscedasticity and Autocorrelation Consistent. UMI: Upper Middle Income. LMI: Lower Middle Income. MI: Middle Income. LI: Lower Income. IHDI: Inequality Adjusted Human Development Index. Demo: Democracy. V& A: Voice and Accountability. OIR: Over-identifying Restrictions test. FDI: Foreign Direct Investment. Trade: Openness. d_FDI: first difference in FDI . d_Trade: first difference in Trade. FDI^2: FDI Square. $Trade^2$: Trade Square.

For robustness purposes, regressions in Table 2 are replicated in Table 3 with HAC standard errors. The two issues on significance of estimated coefficients and validity of the instruments still apply in the interpretation of the regression output. Results in Table 3 are robust to those in Table 2, both in terms of significance in estimated coefficients and validity of the instruments.

4.3 Further robustness tests on nonlinearity

For further robustness purposes, in line with Lalountas et al.(2011) we extend the nonlinearity hypothesis from globalization instruments to the human development endogenous explaining variable. Thus we use the squared HDI and level good governance variables as explaining variables. With these nonlinear interactions in both instrumental and endogenous explaining variables, findings do not appear to differ from those in Tables 2-3.

Table 4: Extension of the nonlinearity assumption with HAC standard errors

Panel A: Nonlinear endogenous variable with linear instruments

	Corruption Perception Index(CPI)					Corruption-Control				
	Data	**UMI**	**LMI**	**MI**	**LI**	**Data**	**UMI**	**LMI**	**MI**	**LI**
Constant	**1.178****	**7.288*****	**2.380*****	**1.852****	**2.802*****	**-1.41*****	**1.87*****	-0.367	**-1.11*****	-0.603
	(0.030)	**(0.000)**	**(0.000)**	**(0.016)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.518)	**(0.006)**	(0.118)
IHDI²	**3.964*****	**-7.57*****	**6.850*****	2.372	-0.046	**1.511****	**-4.26*****	**3.82*****	1.065	-0.695
	(0.000)	**(0.000)**	**(0.000)**	(0.266)	(0.980)	**(0.025)**	**(0.000)**	**(0.000)**	(0.314)	(0.745)
Demo	**0.238****	**0.172*****	---	**0.272****	---	**0.170****	**0.096*****	---	**0.161****	---
	(0.027)	**(0.000)**		**(0.043)**		**(0.024)**	**(0.000)**		**(0.016)**	
V& A	---		**1.508*****	---	0.241	---	---	**1.374*****	---	-0.221
			(0.007)		(0.223)			**(0.009)**		(0.428)
Hausman	**12.77*****	0.339	**29.37*****	**42.84*****	1.542	**16.46*****	**5.023***	**44.67*****	**58.13*****	**5.867***
	(0.001)	(0.843)	**(0.000)**	**(0.000)**	(0.462)	**(0.000)**	**(0.081)**	**(0.000)**	**(0.000)**	**(0.053)**
Sargan-OIR	**4.371**	9.832**	**3.781**	**1.628**	**5.453**	**2.278**	**6.300**	**4.549**	**5.844**	**2.738**
	(0.358)	(0.043)	**(0.436)**	**(0.803)**	**(0.243)**	**(0.684)**	**(0.177)**	**(0.336)**	**(0.211)**	**(0.602)**
Adjusted R²	0.423	0.901	0.713	0.515	0.216	0.377	0.975	0.696	0.582	0.090
Fisher	**6.58*****	**3763*****	**16.57*****	**4.607****	0.798	**4.108****	**33599*****	**8.395*****	**4.725****	0.346
Observations	157	21	62	83	74	177	21	66	87	90
Instruments	5th Set	5th Set	5th Set	5th Set	5th Set	5th Set	5th Set	5th Set	5th Set	5th Set

Fifth Set of Instruments Constant, IHDI, FDI, Trade, d_FDI, d_Trade , d_IHDI

Panel B: Nonlinear endogenous variable with nonlinear instruments

	Corruption Perception Index(CPI)					Corruption-Control				
	Data	**UMI**	**LMI**	**MI**	**LI**	**Data**	**UMI**	**LMI**	**MI**	**LI**
Constant	**1.127****	**7.31*****	**2.392*****	**1.841*****	**2.844*****	**-1.38*****	**1.831*****	**-0.553***	**-1.11*****	**-0.463***
	(0.031)	**(0.000)**	**(0.000)**	**(0.001)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.068)**	**(0.005)**	**(0.071)**
IHDI²	**3.966*****	**-7.61*****	**6.877*****	**2.836***	-0.076	**1.506****	**-4.21*****	**3.442*****	1.103	-0.825
	(0.000)	**(0.000)**	**(0.000)**	**(0.091)**	(0.965)	**(0.020)**	**(0.000)**	**(0.000)**	(0.277)	(0.607)
Demo	**0.253****	**0.171*****	---	**0.209***	---	**0.162****	**0.099*****	---	**0.158****	---
	(0.013)	**(0.000)**		**(0.051)**		**(0.012)**	**(0.000)**		**(0.017)**	
V& A	---	---	**1.529*****	---	0.336	---	---	**1.054*****	---	0.022
			(0.006)		(0.119)			**(0.000)**		(0.930)
Hausman	**14.55*****	1.090	**28.40*****	**43.37*****	0.167	**14.79*****	3.170	**16.07*****	**82.94*****	1.000
	(0.000)	(0.579)	**(0.000)**	**(0.000)**	(0.681)	**(0.000)**	(0.204)	**(0.000)**	**(0.000)**	(0.317)
Sargan-OIR	**8.570**	**10.343**	**4.254**	22.42***	**8.815**	**4.21**	**7.824**	18.11***	11.518*	12.837*
	(0.199)	**(0.110)**	**(0.642)**	(0.001)	**(0.266)**	**(0.648)**	**(0.251)**	(0.005)	(0.073)	(0.076)
Adjusted R²	0.414	0.901	0.711	0.541	0.216	0.380	0.975	0.724	0.584	0.033
Fisher	**6.644*****	**3956*****	**16.29*****	**5.061*****	1.491	**4.575****	**13569*****	**27.70*****	**4.659****	0.154
Observations	157	21	62	83	74	177	21	66	87	90
Instruments	6th Set	6th Set	6th Set	6th Set	6th Set	6th Set	6th Set	6th Set	6th Set	6th Set

Sixth Set of Instruments Constant, IHDI, FDI, Trade, d_FDI, d_Trade , d_IHDI, FDI², Trade²

*,**,***: significance levels of 10%, 5% and 1% respectively. HAC: Heteroscedasticity and Autocorrelation Consistent. UMI: Upper Middle Income. LMI: Lower Middle Income. MI: Middle Income. LI: Lower Income. IHDI: Inequality Adjusted Human Development Index. Demo: Democracy. V& A: Voice and Accountability. OIR: Over-identifying Restrictions test. FDI: Foreign Direct Investment. Trade: Openness. d_FDI: first difference in FDI . d_Trade: first difference in Trade. FDI²: FDI Square. Trade²: Trade Square. IHDI²: IHDI Square.

4.4 Discussion, policy implications and limitations

4.4.1 Retrospect to hypotheses and policy implications

Before delving into the discussion of results, it is vital to highlight the hypotheses motivating this paper. Lalountas et al.(2011) state: *"Thus, our main conclusion is that globalization could be a powerful means of fighting corruption, only for middle and high income countries. For low income countries however, globalization has no significant impact on corruption. We might therefore conclude that at low levels of per capita income emphasis is given to the economic dimension of international integration and as a result the effect of globalization on corruption is limited. Persistence on globalization as an effective means to reduce corruption in developing countries might lead to inappropriate policies. On the contrary, at high levels of per capita income emphasis is given to the political and social dimensions of globalization and as a result the effects of this phenomenon on corruption control are significant"*(Lalountas et al., 2011, p.645). We have tested these hypotheses in Africa from different methodological and contextual standpoints. Though not form, yet in substance our intuition and motivation are compatible with those of Lalountas et al.(2011). In the analysis, while the economic and social dimensions of globalization have been reflected in the HDI, the political dimension has been captured by good governance indicators. For clarity in elucidations, we shall dissect the hypotheses in the light of our empirical results.

Hypothesis 1: Globalization is a powerful tool in fighting corruption. *True*

Our analysis demonstrates that globalization(in terms of trade and finance) instrumented on human development mitigates(ameliorates) corruption(the control of corruption) in Africa. In plainer terms, globalization is an instrumental tool in fighting corruption through human development and good governance. As a policy implication, there is need for human development and government quality to go hand in glove before such an achievement could be discounted. As we have observed from findings in Table 1, trade

liberalization is the component of globalization that improves human development. This positive outcome could emanate from cheap imports in basic human needs flooding African markets from China and beyond(Asongu, 2012a). It follows that cheap imports increase consumer purchasing power, thus decreasing incentives to subsistence-oriented corruption. Therefore this finding broadly confirms the theoretical underpinning from Klitgaard(1988) in which corruption thrives when monopoly is combined with discretion and low accountability. The positive effect of trade openness on human development diminishes incentives to bribery common to societies governed by monopolistic activities.

Hypothesis 2: Globalization is an important tool of fighting corruption only in Middle and High income countries. *Partially True*.

While globalization is an important tool in the fight against corruption in Middle income countries, this hypothesis is valid only for Lower middle income countries. The hypothesis is a subject to controversy in Upper middle income(UMI) countries. Three countries make-up the UMI bracket of the data: Libya, Botswana and Mauritius(see Appendix 4). To elucidate the unexpected outcome of UMI results, we regress the HDI on 'Trade' and FDI conditional on other covariates(GDP per capita and development assistance) for UMI countries and find the following: (1) the positive effect of trade openness on the HDI is insignificant ; (2) the negative effect of FDI on the HDI is four times greater in comparison to the African average. We therefore only partially concur with Lalountas et al.(2011) in the assertion that at high levels of per capita, emphasis is given to the political and social dimensions of globalization and as a result the effect of this phenomenon on corruption-control is significant.

Hypothesis 3: For Low income countries globalization has no significant impact on corruption. *True*

Our analyses concur with this hypothesis, which is robustly valid. Thus we join Lalountas et al.(2011) in concluding that at low levels of per capita income, emphasis is placed on the economic dimension of international integration and as a result the effect of globalization on corruption is limited. As a policy implication, persistent globalization as an effective means to reduce corruption in low income countries might lead to inappropriate policies.

Hypothesis 4: Hypotheses one and two are valid only under linearity. *False*

According to Lalountas et al.(2011), linearity is a good approximation only for middle and high income countries because under the assumption of a linear model, a positive correlation between corruption and globalization exists, while when linearity is dropped there seems to be no significant effect of globalization on corruption(p.636). We are skeptical of the validity of this hypothesis on two counts. (1) Firstly, the last column of Table 4 on page 644 in Lalountas et al.(2011), runs counter to the premise of the hypothesis, since globalization (KOF indicator) still has a significant positive effect on the CPI when GDP> 825 under nonlinear endogenous and instrumental variables. (2) Secondly, using nonlinear globalization instrumental variables independently as well as collectively with endogenous nonlinear explaining variables, we have not found the substance of this hypothesis in the context of Africa.

4.4.2 Further discussions and limitations

Over the past decades, the issue of corruption and the search for strategies to fight its corrosive effects have grown in importance as a topic of public debate and a criterion by which the civil society evaluates leadership. This increased attention is motivated by the realization among international development experts that development requires above all good governance. The combat against corruption remains an important priority of policy making bodies in the African continent.

Globalization is the dominant force in the economic universe as it upholds economic prosperity in its lusty, ineluctable and historical process whose march can be stopped only by endangering the prosperity of people and nations. This phenomenon has also been alleged to disfigure human development in the manner it is evolving as it seeks a victory of market over government and self-interest over altruism(Asongu, 2012a). The public support for globalization has waned and prompted universal demands to recapture some of its attractive glow and lofty ambitions, so that the phenomenon be given a human face.

Many international institutions consider globalization as a powerful tool to fighting corruption since it presupposes structural and institutional reforms such as liberalization of commodity markets, strengthening of competition, extended transfer of technology and managerial expertise, securing of property rights, rule of law, transparency and increased quality of public services that improve country attractiveness with respect to trade and investment. These reforms constitute the transmission channel via which globalization affects the control of corruption.

This paper has assessed the Lalountas et al.(2011) hypotheses and results(as elucidated in the previous section) are in line with the neoliberal school, contrary to the hegemony thesis on globalization. Thus, we may firmly conclude from a corruption-control standpoint that globalization is an omnipresent power of 'creative destruction' and side with Rodrik et al.(2004) in postulating that the phenomenon is closely tied to human development; which constitutes a decisive factor in societal institutional building(fighting corruption).

An important limitation to take into account is that studies of this kind depend to a great extent on the integrity of the proxy for corruption obtained from perception-based measures. Thus omitted variables and media-effect may substantially influence perceptions on corruption and consequently bias the link between globalization instruments, the human development indicator and corruption measures. However, to the best of our knowledge there

are no better measurements of corruption than those from African Development Indicators of the World Bank. The paper has limited the ills of this draw-back by using two different measures of corruption. Also, the application of an estimation approach that accounts for endogeneity addresses the concerns of omitted variables and bias in the perception based measures.

5. Conclusion

Is globalization instrumental in fighting corruption? Do wealth effects matter in this fight? Are findings valid when the linearity assumption is dropped? This paper has assessed the Lalountas et al.(2011) hypotheses in the African context. Though not form, yet in substance the intuition and motivation are compatible with those of Lalountas et al.(2011). Four hypotheses have been tested from different methodological and contextual standpoints. In the analysis, while the economic and social dimensions of globalization have been reflected in the HDI, the political dimension has been captured by good governance indicators. A TSLS-IV estimation technique has been applied where-in globalization instruments of trade and financial liberalization are instrumented on human-development and government-quality to account for corruption(corruption-control) effects. Thus the intuition has been to assess how globalization is instrumental in the fight against corruption through human development(economic and social dimensions) and government quality(political dimension).

Findings could be summarized in the following. *Hypothesis 1*: Globalization is a powerful tool of fighting corruption (True). *Hypothesis 2*: Globalization is an important tool of fighting corruption only in Middle and High income countries(Partially True). *Hypothesis 3*: For low income countries globalization has no significant impact on corruption(True). *Hypothesis 4*: Hypotheses 1 and 2 are valid only under linearity(False).

In terms of policy implications: (1) in countries with high levels of per capita, emphasis is placed on the political and social dimensions of globalization and as a result the

effect of this phenomenon on corruption-control is significant; (2) on the other hand, in nations with low levels of per capita income, emphasis is given to the economic dimension of international integration and as a result the effect of globalization on corruption is limited; (3) persistent globalization as an effective means to reduce corruption in developing countries might lead to inappropriate policies for low income countries.

Appendices

Appendix 1: Summary Statistics

	Variables	Mean	S.D	Min.	Max.	Observations
Dependent Variables	Corruption Perception Index	2.930	0.986	1.500	6.400	225
	Corruption Control Indicator	-0.591	0.559	-1.535	1.086	270
Independent Variables	Human Development Index	0.468	0.128	0.242	0.809	270
First-Stage Control Variables	GDP per capita growth	2.398	3.941	-33.07	29.06	269
	GDP growth	4.701	4.126	-31.30	33.62	270
	Development Assistance	11.728	16.058	-0.251	148.30	237
	Regulation Quality	-0.594	0.556	-1.895	0.905	270
	Autocracy	1.707	3.535	-8.000	9.000	270
Second-Stage Control Variables	Democracy	2.807	4.306	-8.000	10.00	270
	Voice & Accountability	-0.695	0.710	-1.969	0.947	270
Instrumental Variables	Low Income	0.600	0.490	0.000	1.000	270
	Middle Income	0.400	0.490	0.000	1.000	270
	Lower Middle Income	0.300	0.459	0.000	1.000	270
	Upper Middle Income	0.100	0.300	0.000	1.000	270

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

Appendix 2: Correlation Analysis

Dependent Variables		Ind Vble	2nd Stage Control Vles		First Stage Control Variables					Instrumental Variables				
CPI	CC	IHDI	Demo	V &A	GDPpcg	GDPg	NODA	RQ	Auto	LI	MI	LMI	UMI	
1.000	0.919	0.536	0.401	0.575	0.039	-0.089	-0.241	0.799	0.014	-0.393	0.393	0.042	0.549	CPI
	1.000	0.462	0.482	0.633	0.124	0.025	-0.223	0.811	0.088	-0.354	0.354	0.078	0.459	CC
		1.000	0.073	0.056	0.091	-0.041	-0.508	0.470	0.434	-0.674	0.674	0.291	0.655	IHDI
			1.000	0.758	0.139	0.121	-0.038	0.498	0.066	0.074	-0.074	-0.241	0.247	Demo
				1.000	0.055	0.041	-0.025	0.703	-0.293	0.032	-0.032	-0.200	0.253	V& A
					1.000	0.979	-0.013	0.157	0.212	0.010	-0.010	-0.048	0.057	GDPpcg
						1.000	0.088	0.075	0.152	0.141	-0.141	-0.135	-0.024	GDPg
							1.000	-0.393	-0.331	0.427	-0.427	-0.322	-0.212	NODA
								1.000	0.070	-0.304	0.304	0.090	0.358	RQ
									1.000	-0.258	0.258	0.237	0.059	Auto
										1.000	-1.000	-0.801	-0.408	LI
											1.000	0.801	0.408	MI
												1.000	-0.218	LMI
													1.000	UMI

CPI: Corruption Perception Index. CC: Control of Corruption. IHDI: Inequality Adjusted Human Development Index. Demo: Democracy. V&A: Voice and Accountability. GDPpcg: GDP per capita growth. GDPg: GDP growth. NODA: Net Official Development Assistance. RQ: Regulation Quality. Auto: Autocracy. LI: Low Income. MI: Middle Income. LMI: Lower Middle Income. UMI: Upper Middle Income. Ind Vble: Independent Variable.

Appendix 3: Variable Definitions

Variables	Signs	Variable Definitions	Sources
Corruption	CPI	Corruption Perception Index	World Bank(WDI)
Control of Corruption	CC	Corruption Control Indicator	World Bank(WDI)
Development	HDI	Inequality Adjusted HDI	World Bank(WDI)
GDP per capita growth	GDPpcg	GDP per capita growth(annual %)	World Bank(WDI)
GDP growth	GDPg	GDP growth(annual %)	World Bank(WDI)
Development Assistance	NODA	Net Official Development Assistance(% of GDP)	World Bank(WDI)
Regulation Quality	RQ	Regulation Index	World Bank(WDI)
Autocracy	Auto	Autocracy Index(-10 to 10)	World Bank(WDI)
Democracy	Demo	Democracy Index (-10 to 10)	World Bank(WDI)
Freedom and Accountability	V & A	Voice and Accountability	World Bank(WDI)

WDI: World Bank Development Indicators.

Appendix 4: Presentation of Countries

Instruments	Instrument Category	Countries	Num.
Income Levels	Low Income	Benin ,Burkina Faso, Burundi, Central African Republic, Chad, Congo Republic, Congo Democratic Republic, Djibouti, Ethiopia, Ghana, Kenya, Liberia, Mali, Mozambique, Rwanda, Togo, Uganda, Zambia.	18
	Middle Income	Botswana, Cameroon, Egypt, Ivory Coast, Lesotho, Libya, Mauritius, Morocco, Senegal, Sudan, Swaziland, Tunisia.	12
	Lower Middle Income	Cameroon, Egypt, Ivory Coast, Lesotho, Morocco, Senegal, Sudan, Swaziland, Tunisia.	9
	Upper Middle Income	Botswana, Libya, Mauritius.	3

Num: number of countries

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