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THE IMPACTS OF CORRUPTION ON FIRM PERFORMANCE: SOME LESSONS FROM 40 AFRICAN COUNTRIES

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The current evidence-base regarding the impacts of corruption on firm performance is based largely on studies of individual countries and contains mixed results. Therefore, the aim of this paper is to achieve a better insight into this relationship by reporting the results of a firm-level analysis of the impacts of corruption on firm performance using World Bank Enterprise Survey (WBES) data across 40 African countries. The clear result is that corruption significantly enhances rather than harms annual sales, employment and productivity growth rates. The outcome is to re-theorize participation in acts of corruption as beneficial for the individual firms engaged in such activity, while recognizing the wider evidence that this is not an optimal strategy at the aggregate country level. The outcome will be to advance knowledge about how corruption needs to be tackled. To eliminate corruption, it is shown here to be necessary for public authorities to recognize that corruption is an efficient strategy at the firm level and to adopt measures to alter the cost/benefit ratio confronting individual enterprises, and at the same time, to address the country-level formal institutional deficiencies that characterize many developing countries and result in the prevalence of corruption.

Keywords: Entrepreneurship; corruption; bribery; firm performance; institutional theory; development economics; Africa.

1. Introduction

Corruption is widely recognized as an enduring and extensive phenomenon not only in the developing world but well beyond (Aidis and Van Praag, 2007; Aliyev, 2015; Khan and Quaddus, 2015; Osipian, 2012; Round et al., 2008; Svensson, 2003; Tonoyan et al., 2010). The dominant "moral" view that this is a negative phenomenon that needs to be eliminated is widely accepted and finds support in a multitude of studies, which reveal that the higher the level of corruption in countries, the lower is the level of economic development and growth (Ades and Di Tella, 1999; Baumol, 1990; Méndez and Sepúlveda, 2006; Méon and Sekkat, 2005). Until now, however, fewer studies have evaluated its firm-level impacts. The studies to have done so, mostly in individual

countries, reveal mixed results, with some revealing that engaging in acts of corruption boosts firm performance and others that it harms performance (Athanasouli et al., 2012; De Rosa et al., 2010; Donadelli et al., 2014; Dutta and Sobel, 2016; Fisman and Svensson, 2007; Gaviria, 2002; Kauffmann and Wei, 2000; Teal and McArthur, 2002; Williams et al., 2016a, b). To start to provide a better insight into this relationship between corruption and firm performance, the aim of this paper is to provide a more comprehensive cross-national analysis at the firm-level of whether engaging in corruption to get things done has an impact on firm performance and if so, whether it has a harmful or beneficial impact.

Therefore, to advance understanding of the impacts of corruption on firm performance, section 2 commences by re-reading corruption through the lens of institutional theory as resulting from formal institutional imperfections and then reviews both the dominant "moral" theorization, which portrays corruption as having negative impacts on firm performance, as well as the competing "greasing the wheels" theorization, which views corruption as having positive impacts on firm performance. Revealing the mixed results of existing studies in individual nations and sub-regions, and the lack of comprehensive assessments of the relationship between corruption and firm performance, the third section then outlines the dataset here used, namely World Bank Enterprise Survey data collected in 40 out of 54 African countries, and the econometric framework adopted. The fourth section then reports the findings. This will reveal there is a positive significant relationship between corruption and firm performance; corruption enhances rather than harms annual sales, employment and productivity growth rates across these 40 African countries. The fifth and final section then explores the theoretical and policy implications. This will re-theorize participation in acts of corruption as beneficial for the individual firms engaged in such activity while recognizing this may not be an optimal strategy at the aggregate country level. Corruption is not seen to hinder performance at the firm level but nevertheless to do so at the country level. Therefore, to eliminate corruption, it will be necessary for public authorities to recognize this and adopt measures to alter the cost/benefit ratio confronting individual enterprises as well as the country-level formal institutional deficiencies that result in the prevalence of corruption.

However, before commencing this analysis corruption needs to be defined. Corruption here refers to the "misuse of public office for private gain" (Bardhan, 1997; Pope, 2000; Shleifer and Vishny, 1993; Svensson, 2005). This commonly used and accepted definition is appropriate here given the focus of this paper on the practice whereby government officials demand or receive gifts, bribes and other payments (e.g., a portion of a given contract) from private sector firms and provide a service in return. This might include speeding up the granting of an operating license, not producing a negative outcome from a workplace inspection, or helping them avoid delays in some other regulatory process requiring the approval of public sector officials such as the granting of a construction permit. However, it should be noted that although such low-level public sector corruption involving the payment of relatively small amounts by firms to public officials is the focus of both this paper as well as the vast majority of the literature on

corruption, other forms of corruption exist that have been less studied. These include state capture, whereby firms influence the formulation of laws and other government policies to their own advantage through illicit or non-transparent means (Fries et al., 2003), and corruption where consumers use payments and connections to gain preferential access to public goods and services and/or to circumvent formal procedures, including the gaining of access to educational and health services (Williams and Onoshchenko, 2014a, b, 2015).

2. Corruption and Firm Performance: Competing Perspectives

Considerable advances have been made in explaining corruption in developing countries in recent years by scholars adopting the lens of institutional theory. From this institutionalist perspective, institutions are "the rules of the game," which prescribe, monitor, enforce and support what is socially acceptable (Baumol and Blinder, 2008; Denzau and North, 1994; Mathias et al., 2014; North, 1990; Webb et al., 2009). All societies have codified laws and regulations (i.e. formal institutions) that define the legal rules of the game (Baumol and Blinder, 2008; Denzau and North, 1994; Mathias et al., 2014; North, 1990; Williams and Horodnic, 2015a, b, c; Williams et al., 2015, 2016c). However, all societies also have informal institutions, which can be defined as the "socially shared rules, usually unwritten, that are created, communicated and enforced outside of officially sanctioned channels" (Helmke and Levitsky, 2004). Although corruption is illegal in terms of the formal institutions, in many developing economies, because of formal institutional imperfections, the circumvention of burdensome administrative requirements by making payments to public officials is often deemed acceptable and a socially legitimate activity (De Soto, 1989; Williams and Shahid, 2016; Williams et al., 2016b, c).

Therefore, from this institutional perspective, corruption is a by-product of formal institutional imperfections, which leads to an asymmetry arising between formal and informal institutions. Two main types of formal institutional imperfection result in the prevalence of corruption. On the one hand, there are formal institutional inefficiencies, or resource misallocations by formal institutions (Qian and Strahan, 2007), such as when formal institutions seek to protect or maximize economic rents for elites (Acemoglu and Robinson, 2012), resulting in overly burdensome taxes, registration and licensing regulations and costs, which act as an entry barrier for new entrepreneurs (De Soto, 1989). On the other hand, there is formal institutional weakness and instability, manifested in a lack of capacity to enforce policies (Webb et al., 2009), poor public sector pay and continuous alterations in laws and regulations (Levitsky and Murillo, 2009; Williams and Vorley, 2015). Indeed, the reason corruption is often found to be greater in developing countries, which by definition are countries that are developing their formal institutions, is because the deficiencies of formal institutions are greater (Williams et al., 2016b).

However, to explain corruption, it is not only the role and quality of formal institutions that needs to be considered. These formal institutional failings lead to

incongruence between what is defined as legitimate by formal and informal institutions, resulting in entrepreneurs drawing upon existing norms, values and beliefs to govern and structure their behavior instead of relying on formal codified laws and regulations. These then become the basis for collective shared rules, whether implicitly held or formally codified (London et al., 2014; Mair et al., 2012). The result is that engaging in informal payments to corrupt public officials becomes viewed as socially legitimate even if formally illegal (Williams and Martinez-Perez, 2016; Williams et al., 2016a). Therefore, the greater prevalence of corruption in developing economies than developed economies is because of the greater formal institutional deficiencies that lead to incongruence between formal and informal institutions (Mair et al., 2012).

Therefore, what are the impacts on firms of engaging in such corrupt practices? Until now, two contrasting perspectives have been adopted. Here, each is reviewed in turn.

2.1. *Corruption 'sands' the wheel*s of commerce

A number of macro-level and cross-country studies have shown that corruption is detrimental to economic growth, such as by measuring its impact on growth through transmission mechanisms including private and public investment as well as military spending (d'Agostinoa et al., 2016; Asiedu and Freeman, 2009; Baliamoune-Lutz and Ndikumana, 2007; Ndikumana, 2007; Ades and Di Tella, 1999; Méon and Sekkat, 2005). It is similarly the case that numerous country-level studies provide evidence at the macro-level that countries with a high level of corruption display relatively lower levels of firm performance (Faruq and Webb, 2013; Mauro, 1995; De Rosa et al., 2010; Gaviria, 2002; Lavallée and Roubaud, 2011; Teal and McArthur, 2002). As Myrdal (1968) explains, corrupt civil servants cause delays that would not otherwise occur simply to provide themselves with the opportunity to receive a corrupt payment to speed up the process.

Until now, however, the firm-level evidence that corruption harms firm performance has been limited to a small number of studies of single countries or sub-regions. Teal and McArthur (2002) find that African firms engaging in payments to corrupt public officials have twenty percent lower levels of output per worker. Fisman and Svensson (2007) similarly find that a one percentage point increase in the bribery rate is associated with a reduction in firm growth of three percentage points. Again in the African context, Faruq and Webb (2013) find that less productive firms are more likely to engage in payments to corrupt public officials and that corruption reduces firm productivity. There are similar findings from other parts of the developing and developed world. For instance, Athanasouli et al. (2012) in Greece, using firm level data, reveal that corruption is negatively associated with sales growth, while Gaviria (2002) finds that engaging in payments to corrupt public officials substantially reduces sales growth in Latin America. To evaluate this view that corruption harms firm performance, the following proposition can be tested:

H1: Corruption sands the wheels of commerce: enterprises viewing it as necessary for enterprises like theirs to give gifts or payments to public officials to get things done

display lower levels of firm performance, after controlling for the endogeneity of corruption and other key determinants of firm performance.

2.2. *Corruption 'greases' the wheels of commerce*

An alternative perspective is that corruption enhances rather than harms firm performance. This is consistent with the "efficient grease thesis" (Kaufmann and Wei, 1999; Mawuli and Stinchfield, 2013) in which corruption is argued to reduce the heavy bureaucratic burden and resultant long delays in environments with formal institutional imperfections. Such payments firms give to public officials in return for services help them navigate the market failures induced by the failings of formal institutions. Therefore, at a country-level corruption is seen to boost economic development (Huntington, 1968; Jian and Nie, 2014; Leff, 1964). "Grease" money circumvents the distortions caused by an inefficient bureaucracy (Wei, 1998) and at a firm-level helps businesses overcome not only bureaucratic barriers to growth but also for nascent entrepreneurs, their liabilities of "newness" or "smallness" (Stinchcombe, 1965) by developing favorable relationships with public officials, which increases their legitimacy and decreases their likelihood of failure. Thus, such arguments share a presumption that corruption contributes positively to firm performance because it compensates for the consequences of an ineffective institutional framework and/or the weak rule of law (Webb et al., 2009).

Most of the existing evidence on the positive association between corruption and firm performance covers a single country (Ayaydin and Hayaloglu, 2014; Delavalled, 2012; Vial and Hanoteau, 2010). Ayaydin and Hayaloglu (2014) analyze the relationship between firm growth and corruption in 41 manufacturing firms in Turkey, and find that making corrupt payments to public officials has a positive effect on firm growth, mainly because such 'speed money' enables enterprises to circumvent bureaucratic delays. Using panel data of Indonesian manufacturing firms, Vial and Hanoteau (2010) also find a positive relation between corruption and firm output and labor productivity. However, this is not always the case. Lavallée and Roubaud (2011) find no association between corruption and firm output and Fisman and Svensson (2007) find only a weak association with sales growth.

Only three known cross-national studies analyze the firm-level impacts of corruption on firm performance. First, Blagojevic and Damijan (2012) examine data from the Business Environment and Enterprise Performance Survey (BEEPS) for 27 transition countries for the period 2002-2009. They find that private firms (domestic and foreign owned) are more involved in making payments to corrupt public officials and that those firms making such payments have higher productivity growth, especially foreign-owned firms. Second, Williams et al. (2016a), in an analysis of 132 countries, find that bribery enhances firm performance with firms that pay public officials to get things done having 13.9 percent and 48 percent higher average annual sales and productivity growth rates respectively. Finally, Méon and Weill (2010) used data from 69 developed and developing countries find supporting evidence for the "grease the wheels" hypothesis in

contexts where institutions are ineffective. Based on these findings, therefore, the following hypothesis can be tested:

H2: Corruption greases the wheels of commerce hypothesis: enterprises viewing it as necessary for enterprises like theirs to give gifts or payments to public officials to get things done display higher levels of firm performance, after controlling for the endogeneity of corruption and other key determinants of firm performance.

3. Data and Methodology

3.1. Data and sample

To evaluate the association between corruption and firm performance, evidence is reported here from World Bank Enterprise Survey (WBES) data collected using a harmonized questionnaire and common methodology in 40 African countries surveyed between 2006 and 2013 (see Table 1). In each country, data is collected from a stratified random sample of formal private sector businesses with five or more employees, stratified by business sector, firm size and geographic region, covering 1200-1800 business owners and top managers in larger countries, 360 in medium-sized countries and 150 in smaller countries. Given that firm performance and other data was not collected on all firms, the result is a sample of 5,743, 7,520 and 5,608 surveyed firms associated with sales, employment and productivity performance indicators respectively.

Table 1. List of 40 African Countries Surveyed

Angola	Ethiopia	Mozambique	Togo
Burundi	Gabon	Mauritania	Tanzania
Benin	Ghana	Mauritius	Uganda
Burkina Faso	Guinea	Malawi	South Africa
Botswana	The Gambia	Namibia	DRC
C. African Republic	Guinea-Bissau	Niger	Zambia
Cote d'Ivoire	Kenya	Nigeria	Zimbabwe
Cameroon	Liberia	Rwanda	
Congo, Rep.	Lesotho	Senegal	
Cape Verde	Madagascar	Sierra Leone	
Eritrea	Mali	Swaziland	

3.2. Dependent variables

To evaluate the association between corruption and firm performance, the dependent variables are three indicators of firm performance expressed in percentage terms. These are real annual sales growth rates (using GDP deflators); annual employment growth rates of permanent full-time workers and annual productivity growth rates. The productivity indicator is the annualized growth in labor productivity defined as real sales (using GDP deflators) divided by full-time permanent workers. All values for sales are converted to USD using exchange rates in the corresponding fiscal year of the survey.

3.3. Key independent variable

To evaluate the impact of corruption on firm performance, the answer given by entrepreneurs to the following question is examined: "It is said that establishments are sometimes required to make gifts or informal payments to public officials to 'get things done' with regard to customs, taxes, licenses, regulations, services construction permits, etc. On average, what percentage of total annual sales, or estimated total annual value, do establishments like this one pay in informal payments or gifts to public officials for this purpose?" Here, value 0 signifies either no payments or gifts are paid, while value 1 is when they state a percentage share of a certain contract or total annual informal payment of any amount. Given the sensitive nature of the topic under investigation, the advantage of this question is that it asks enterprises about their payment to corrupt public officials in an indirect manner, enabling them to state that payments have been made without incriminating themselves or any public official(s) involved.

3.4. Control variables

To measure the impact of corruption on firm performance, it is necessary to control for other key determinants of firm performance. Here, we include the following correlates:

- Starting-up unregistered—registered firms are often viewed as more productive than unregistered firms (La Porta and Schleifer, 2014; Williams, 2013, 2015; Williams et al., 2016b). To capture the likely impact of this variable, we use a dummy indicating firms' registration status.
- Firm age—this is widely believed to be an important determinant given the fact new ventures and young firms may lack legitimacy and under-perform relative to more established ventures (Ranger-Moore, 1997). In addition, long established firms are more likely to have access to some advantages such as access to bank finance mainly because of their relatively stronger contacts with officials (Fisman and Svensson, 2007).
- Firm size—this is included to control for the conventional conjecture that larger firms perform better than smaller ones (La Porta and Schleifer, 2014).
- Ownership structure and legal status—these are strongly associated with firm performance, including whether a firm is state- or privately-owned, foreign- or domestic-owned and an open- or closed-shareholding, partnership or sole proprietorship (Barbera and Moores, 2013). Given that export-oriented firms are viewed as displaying higher levels of firm performance, a variable indicating export-orientation is also included.
- Economic sector—firm performance varies across economic sectors (Siqueira et al., 2014). In addition, because the incidence of corruption varies across sectors, it is necessary to control for sectoral differences. We controlled for fourteen sectors in our analysis, taking the textile sector as a reference category.
- Access to credit—this is strongly correlated with firm performance and lack of access to credit is often considered one of the top constraints to firm growth and performance (Buyinza and Bbaale, 2013).
- Level of technological innovation—this is also often closely associated with firm performance especially considering it can be the key driver of the productivity gap between firms as well as countries (Palmade, 2005). Here, three dummy variables capture

the presence of quality certification, a website and the use of e-mail to interact with clients and suppliers.

- Human capital factors—firm performance is determined by educational level, the skills and experience of the owners, managers and the workforce, the level of professionalism and whether there is numerical flexibility in the workforce, impact on firm performance (Black and Lynch, 1996). We used six variables, namely: top manager's years of experience; the average number of temporary workers; the average number of permanent full-time workers; the share of permanent full-time workers that are female; female involvement in ownership and whether or not firms use an external auditor (e.g. annual review of firms' financial statements).
- Constraints—the data includes two important firm performance barriers in the form of transport and electricity constraints, both of which determine firm performance.

In addition, unobserved heterogeneity across countries is controlled for by including time dummies. This enables us to capture any systematic pattern the countries might exhibit for the period under consideration; in particular, concerning any business cycle movements driven by prevailing macroeconomic conditions.

3.5. Analytical methods

3.5.1. Pooled OLS regression without controlling for endogeneity

To evaluate the impact of corruption and other control variables on the performance of African firms, we apply a pooled OLS regression technique. Therefore, we adopt the equation:

$$y_i = \beta_0 + \beta_1 x_1 + ... + \beta_n x_n + \beta_j C_j + \varepsilon_i \qquad (3.1)$$

where y_i is the measure of firm performance (i.e., annual growth rates of sales, employment and productivity), C_j is a binary variable capturing incidence of corruption mediated through bribes and other informal payments as detailed in the ten corruption indicators discussed earlier (see more details below), the $x's$ capture other key drivers of firm performance (e.g. firm size, foreign ownership, human capital, credit availability, firm age…etc.) and ε_i is the error term that follows a normal distribution with zero mean and constant variance.

3.5.2. Instrumental variables (IV) regression accounting for endogeneity

The above OLS framework can generate baseline estimates but it potentially leads to biased predictions because of contamination of estimates by endogeneity, which makes the model unidentified. This is driven by the fact firms make a conscious decision to collude with corrupt officials rendering the corruption measure endogenous. Therefore, further refinement of the above specification through an instrumental variable (IV) equation needs to be considered (Bardhan, 1977). We implemented an IV regression model through two-stage least squares (2SLS). We also subject the resultant estimation to robustness checks by implementing the IV regression model through LIML (limited

information maximum likelihood) and GMM (generalized method of moments). For identification, two orthogonality conditions need to be satisfied, namely the instrument of choice should be correlated with the endogenous variable (i.e., corruption) and uncorrelated with the error term of equation (1) above. In the data we have two candidate variables that can serve as instruments. One is a variable that captures the state of trust by firms. This variable is related to firms' beliefs about the fairness, impartiality and uncorrupted nature of the court system. We argue that the trust firms have about the quality of institutions in a given economy affects their behavior and propensity to engage in corrupt practices (Williams et al., 2016b). Equally, their perception about trust is not necessarily and directly associated with firm performance. The second variable is the gender of the owner of firms. There is evidence supporting the risk-averse tendency of females compared to males (Black and Lynch, 1996). Relative to men, women are believed to be less likely to engage in risky behaviors such as bribing, giving gifts and other payments to get things done. The particular variable we focus upon here to use for instrumentation is the average percentage of female ownership of firms. Owners are not necessarily managers of firms who can directly influence firm performance indicators. However, we acknowledge women's critical role in making fundamental decisions pertaining to firms they own that might affect firm performance. We believe these two instruments satisfy the orthogonality conditions for identification and we verify this based on statistical tests of their validity. Among our instruments we have stronger priority on the trust variable than the female ownership variable. Therefore, we experimented with our specification with and without the female ownership variable in the instrument set. This did not change the final results that shape our key findings.

4. Results

Examining the formal private sector businesses with five or more employees surveyed in the WBES across these 40 African countries between 2006 and 2013, 32.9 percent believe enterprises like theirs need to bribe public officials to get things done. This clearly displays the prevalence of informal payments in Africa. However, there are marked cross-national variations, ranging from 79.8 percent in the Republic of Congo through to less than one percent in Eritrea.

To evaluate the association between corruption and firm performance, Table 2 reports the results of the pooled OLS regression model. The findings show a negative association between corruption and employment growth but a positive and statistically significant correlation with sales and productivity growth rates. As the coefficient in models 1 and 3 display, annual sales and productivity growth rates are higher in enterprises viewing informal payments to public officials as necessary to get things done compared with those who do not. Therefore, this confirms hypothesis 2 that corruption enhances the firm performance measures of annual sales and productivity (i.e., sales per worker) growth rates. Thus, these baseline results intimate that corruption promotes sales growth for corruption-participating firms by limiting competition from non-corruption participating

firms and creates barriers to entry for firms operating in a legitimate manner (Djankov et al., 2002; Bliss and Di Tella, 1997).

Table 2. Pooled OLS Regressions for the Impact of Corruption on Firm Performance in Africa

	Model 1 Sales Growth	**Model 2 Employment growth**	**Model 3 Productivity growth**
Constant	16.07*** (4.10)	11.45*** (1.88)	38.95*** (4.72)
Corruption	6.27***(1.49)	-1.94***(0.68)	6.63***(1.54)
Years spent unregistered	0.43*** (0.14)	0.15*** (0.06)	0.40*** (0.13)
Firm age	-0.24*** (0.04)	-0.26*** (0.01)	-0.08** (0.04)
Exporter	-0.01 (0.02)	-0.00 (0.00)	-0.01 (0.02)
Foreign ownership	2.21* (1.32)	-0.21 (0.59)	2.55* (1.37)
Workforce			
Top manager´s experience	-0.02 (0.05)	-0.08*** (0.02)	0.04(0.05)
Temporary workers	0.01 (0.02)	0.01 (0.01)	-0.01 (0.01)
Permanent full-time workers	0.01 (0.01)	0.01* (0.00)	0.00 (0.00)
Female full-time workers	-0.02 (0.02)	-0.03*** (0.01)	0.02(0.02)
Female participation ownership	0.02** (0.01)	0.01 (0.01)	0.01 (0.01)
Bank loan/credit	-0.04*** (0.01)	0.01(0.01)	-0.04*** (0.01)
Major constraints			
Transport	-0.00 (0.01)	0.00 (0.00)	0.00 (0.01)
Electricity	0.01 (0.01)	0.00 (0.00)	0.01 (0.01)
Innovation & technology			
Quality certification	0.01 (0.01)	0.00 (0.01)	0.02 (0.02)
External auditor	-0.04*** (0.01)	0.00 (0.00)	-0.03*** (0.01)
Website	-0.02** (0.01)	0.02*** (0.00)	-0.03*** (0.01)
E-mail	-0.013 (0.01)	-0.01** (0.00)	-0.01 (0.01)
Firm size (R.C.: Small)			
Medium	2.16** (1.14)	2.04*** (0.50)	0.45 (1.18)
Large	3.14 (2.20)	-4.24*** (0.97)	0.27 (2.28)
Legal status (R.C.: Open shareholding)			
Close shareholding	-7.28** (2.92)	-1.50 (1.19)	-6.79** (3.05)
Sole proprietorship	-9.71*** (2.86)	0.69 (1.17)	-11.16*** (2.99)
Partnership	-8.86*** (3.15)	-0.08 (1.31)	-9.62*** (3.28)
Limited partnership	-10.54*** (3.04)	-3.51*** (1.21)	-10.76*** (3.17)
Other form	-10.61** (4.38)	2.92 (1.89)	-13.05*** (4.52)
Sector dummies	YES	YES	YES
Year dummies	YES	YES	YES
R-squared	0.14	0.08	0.11
Model F test (P-value)	21.4(0.00)	15.03(0.00)	16.72(0.00)
No of observations	5743	7520	5608

Significant at $p < 0.1$*, ** $p < 0.05$ and *** $p < 0.01$. Standard errors in parentheses.
Source: WBES 2006-2014 data set. Own calculations.

Meanwhile, model 2 displays that annual employment growth rates are lower in enterprises making corrupt payments compared with those who do not, and this difference is significant. When firms pay corrupt officials, it is an additional burden on them above and beyond their labor and non-labor costs. This burden is induced by the weak institutional situation under which firms are operating. Corruption can bring a deadweight loss that is detrimental to firm growth (e.g., through employment expansion), subsequently leading to a loss of welfare and social surplus. This is because informal payments firms make can act as an extra tax. Not only a decline in employment growth

but also an increase in prices to consumers might ensue because of the extra cost faced by firms. The negative impact of corruption on employment is also a critical indicator of its distortionary impact on resource allocation away from productive use. Enterprises viewing corruption of public officials as necessary to get things done can survive in the business but also damage the long-term investment vision of aspiring firms (both domestic and foreign) that are forced to exit because of the unofficial taxing burden of corruption and the uncertainty it generates. This in turn limits overall future long-term aggregate economic growth (De Rosa et al., 2010, Wei, 1997). However, and as will now be shown, this negative association no longer remains the case when we control for the endogeneity of corruption, indicating the dangers of making a spurious association by assuming the exogeneity of corruption.

Table 3 below presents our preferred set of 2SLS results because they are produced after controlling for the endogeneity of corruption. When we run IV regression implemented through LIML and GMM, we obtain qualitatively similar results for the coefficients. The findings show a statistically significant positive association of corruption not only with higher annual sales and productivity growth rates but also annual employment growth rates in Africa. Hence, all the estimated equations render support to the prediction that corruption enhances firm performance, confirming hypothesis 2. It needs to be noted these associations are observed in a weak institutional setting. Corruption is a typical route for the prevalence of resource misallocation and inefficiency, which leads to the destruction of firms less able to pay kickbacks than others. Although beneficial to the individual firms to make such informal payments in terms of their firm performance, this is overall at the aggregate country level damaging to long-term investment and development because it is more likely to weaken the survival chances of small and medium enterprises (SMEs) that act legitimately.

We run a battery of tests to check the validity of our instruments (i.e., trust in institutions and female ownership of firms). According to the statistically significant p-values of the Wu-Hausman, we reject the null (H0) hypothesis of the exogeneity of the instruments. Hence, this rejection of the null hypothesis indicates the corruption variable is endogenous. In addition, the F-statistics are greater than twenty, confirming that the instruments are jointly highly correlated with the respective firm level corruption. Finally, the test of our over-identifying restrictions, both the Sargan statistic (via 2SLS) as well as the Hansen J statistic (via GMM), fail to reject the null hypothesis of the validity of our instruments. This means the trust variable and the gender of the owner of the firm are valid instruments for corruption.

Table 3. 2SLS[a] Regression Estimates of the Effect of Corruption on Firm Performance in Africa

Variables	Model 1 Sales growth (%) Coefficient (z-stat)	Model 2 Employment growth (%) Coefficient (z-stat)	Model 3 Productivity growth (%) Coefficient (z-stat)
Constant	5.524 (1.03)	6.893*** (3.02)	2.573 (0.48)
Corruption	41.70 (2.79)***	12.20 ((1.71)*	29.71** (2.03)
Years Spent Unregistered	0.349** (2.40)	0.125* (1.94)	0.36** (2.45)
Firm Age	-0.22*** (5.18)	-0.25*** (14.48)	-0.07* (1.63)
Exporter	-0.01 (0.53)	-0.00 (0.31)	-0.01 (0.66)
Foreign Ownership	2.50* (1.79)	-0.09 (0.15)	2.745* (1.95)
Workforce			
Top Manager's Experience	0.00 (0.03)	-0.07*** (2.97)	0.05 (0.97)
Temporary Workers	0.01 (0.46)	0.01 (0.93)	-0.00 (0.03)
Permanent Full-time Workers	0.01(1.19)	0.01 (1.54)	0.01 (0.86)
Female full-time workers	0.02 (0.72)	-0.02* (1.95)	0.05** (2.15)
Bank loan/credit	-0.03*** (2.59)	0.01 (1.31)	-0.03*** (2.92)
Major constraints			
Transport	-0.01 (0.40)	-0.00 (0.63)	0.00 (0.10)
Electricity	-0.00 (0.21)	-0.00 (0.21)	0.00 (0.03)
Innovation and Technology			
Quality Certification	0.01 (0.83)	0.00 (0.18)	0.01 (1.05)
External Auditor	-0.03** (2.40)	0.00 (0.58)	-0.03** (2.20)
Website	-0.02 (1.52)	0.02*** (3.90)	-0.03** (2.45)
E-mail	0.01 (0.44)	-0.00 (0.44)	0.00 (0.32)
Firm size(R.C.: small)			
Medium	1.92* (1.60)	1.93*** (3.76)	0.26 (0.21)
Large	3.88** (1.67)	4.43*** (4.40)	0.74 (0.32)
Legal status (R.C: Open shareholding)			
Closed Shareholding	-8.88*** (2.86)	-2.145* (1.70)	-7.95** (2.52)
Sole Partnership	-11.38*** (3.77)	0.14 (0.11)	-12.35*** (4.02)
Partnership	-7.84** (2.36)	0.41 (0.30)	-9.13*** (2.71)
Limited Partnership	-11.40*** (3.57)	-3.64***(2.93)	-11.35*** (3.51)
Other Form	-12.01*** (2.60)	2.44 (1.25)	-14.08*** (3.03)
Sector Dummies	YES	YES	YES
Year Dummies	YES	YES	YES
R-squared	0.05	0.02	0.08
Wu-Huasman (p-value)	0.01	0.04	0.10
Sargan statistic (p-value)	0.13	0.12	0.11
F-stat	31.3	35.9	32.3
Observations	5743	7520	5608

N.B.: Absolute value of z statistics in parentheses:* significant at 10%; ** significant at 5% and *** significant at 1%.

5. Discussion and Conclusions

The finding that nearly one-third (32.9%) of enterprises surveyed in these 40 African countries believe it is necessary for enterprises like theirs to give gifts or payments to public officials to get things done indicates the prevalence of corruption across the

[a] There are also no qualitative changes to the results of the tests for the validity and relevance of our instruments. The Hansen J statistic following GMM yields the same conclusion about the validity of our identifying restrictions.

African continent at the firm level. Analyzing whether this enhances or reduces firm performance, the above analysis reveals that once other determinants of firm performance are taken into account and the endogeneity of corruption, participating firms have significantly higher average annual sales, employment and productivity growth rates. This confirms the "grease the wheels" of commerce hypothesis 2 that corruption enhances firm performance.

The theoretical implication is that this paper advances knowledge by revealing that at the firm level, corruption is positively associated with firm performance. Participation in corrupt practices with public officials is thus a rational economic choice which benefits individual enterprises. From an institutional perspective, this is because in developing economies characterized by formal institutional deficiencies, engaging in corruption compensates for these deficiencies (e.g., inefficient public administration), but without compromising the legitimacy of entrepreneurs because this activity, although illegal in terms of the formal institutions, is deemed socially legitimate in terms of the norms, values and beliefs that comprise the informal institutions. Nevertheless, although engaging in corruption is an efficient strategy for individual firms in terms of enhancing firm performance, there is considerable evidence this is not an optimal and efficient strategy at the aggregate country level. A wealth of studies reveal that at the aggregate country level, corruption is harmful to economic growth and development (e.g., Méndez and Sepúlveda, 2006; Méon and Sekkat, 2005). Therefore, what is an efficient and effective strategy for an individual enterprise is not an efficient and effective strategy at the aggregate country level.

Examining the policy implications, there is thus a need to persist with efforts to eliminate corruption. However, the contribution to knowledge of this paper is that it reveals how the approach adopted by public authorities needs to recognize that making informal payments to corrupt public officials is a rational economic decision for individual entrepreneurs. Consequently, one option, drawing upon the classic utilitarian theory of crime, is to understand entrepreneurs as rational actors who evaluate the opportunities and risks confronting them and decide to make informal payments to corrupt officials if the expected penalty and probability of being caught is less than the benefits to be gained (Allingham and Sandmo, 1972; Becker, 1968). To change this cost/benefit ratio so that not making payments to corrupt public officials is the rational choice, public authorities have two choices. On the one hand, the costs (i.e., the risks and sanctions) can be increased such as by increasing the probability of detection and the penalties for doing so. On the other hand, the benefits of not engaging in corruption can be improved. The problem in developing countries is that formal institutional imperfections hinder the ability of public authorities to implement such an approach. Not only are the benefits of being legitimate fewer than in developed countries but it is more difficult for public authorities to increase the risks of detection because of the weak formal institutions in existence. However, altering the costs and benefits confronting entrepreneurs is not the only way of reducing corruption.

In recent years, grounded in institutional theory, recognition has emerged that corruption directly results from formal institutional failings. The outcome is that entrepreneurs' norms, values and beliefs often differ to the codified laws and regulations (De Castro et al., 2014; Williams and Shahid, 2015). Therefore, public authorities should perhaps shift away from a punitive approach that seeks to improve the detection and increase the penalties for engaging in corruption. After all, this only deals with the effects, not the causes, of corruption. Instead, the formal institutional deficiencies that lead to the prevalence of corruption in the developing world need to be addressed. On the one hand, this requires measures to alter informal institutions (i.e., norms, values and beliefs) regarding the acceptability of corruption so the asymmetry between informal and formal institutions (and thus corruption) is reduced, such as by raising awareness through advertising campaigns about the costs of corruption. On the other hand, and perhaps more importantly, this re-alignment also requires alterations in formal institutions. Corruption has been shown to be a product of formal institutional deficiencies, including the salaries paid to public officials, and to decrease as the efficiency and quality of governance improves (Méon and Weill, 2010). To make progress in combating corruption, the regulatory or governance environment needs to improve significantly, as the 2016 African Governance Report argues (ECA, 2016). Institutions should be designed in a manner that does not encourage rent-seeking tendencies from public officials (i.e., by being disorganized, discretionary and taxing firms time-wise) and with enforcement mechanisms that discourage opportunities for corruption. Corruption payments crowd out money that could have been allocated to productive investment initiatives and long-term growth by enterprises.

However, these two policy approaches of changing the cost/benefit ratio confronting enterprises and tackling the formal institutional deficiencies are not mutually exclusive. Indeed, there are at least two ways of combining them. First, a "responsive regulation" approach starts out by helping entrepreneurs self-regulate themselves in a manner consistent with the law by reducing formal institutional failings and pursuing campaigns to change entrepreneurs' norms, values and beliefs so they align with the laws and regulations. This facilitating of voluntary compliance is then followed by persuasion through incentives (e.g., enhancing the benefits of not engaging in corruption) and only as a last resort for the small minority still refusing to comply does it use punitive measures based on increasing the costs of corruption (Braithwaite, 2009; Job et al., 2007). A second approach is the "slippery slope framework" (Kirchler et al., 2008), which pursues both voluntary and enforced compliance concurrently by developing both greater trust in authorities (e.g., by decreasing formal institutional deficiencies) and the greater power of authorities by increasing the penalties and risks of detection as well as the incentives to operate legitimately. Until now however, there has been little comparative evaluation of which sequencing and/or combination is the most effective means of reducing corruption in the developing world.

In sum, if this paper encourages recognition that making informal payments to corrupt public officials is a rational economic choice for entrepreneurs that results in

higher firm performance in Africa, despite corruption having an overall detrimental negative impact at the country-level, then one intention of this paper will have been fulfilled, especially if this hypothesis is also now evaluated in other global regions. If this then results in public authorities recognizing the firm-level benefits and encourages them not only to pursue alterations in the cost-benefit ratio confronting individual firms but also the formal market deficiencies that lead to the non-alignment of entrepreneurs' norms, values and beliefs with the laws and regulations regarding corruption, then this paper will have fulfilled its wider intention. Indeed, unless what is beneficial for the individual entrepreneur and what is beneficial for the country is aligned, what is for certain is that progress will not be made toward eliminating corruption in these African countries or the wider developing world.

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