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Does bribery have a negative impact on firm performance? a firm-level analysis across 132 developing countries

Introduction

Bribery is now recognised to be a widespread problem across the developing world and well beyond (Aidis and Van Praag, 2007; Round et al, 2008; Svensson, 2003; Williams and Onoschenko, 2004a,b, 2015). Reflecting and reinforcing the dominant "moral" theorisation of bribery as a negative phenomenon, many studies have revealed how at the aggregate national level, bribery has a deleterious impact on economic development and growth (Ades and Di Tella, 1999; Baumol, 1990; Méndez and Sepúlveda, 2006; Méon and Sekkat, 2005). Is it also the case at the firm level however, that enterprises who view it as necessary to pay bribes to public officials suffer from worst firm performance than those who do not? Or conversely, do they witness higher performance? Rather than allow moral attitudes to act as a substitute for evidence, the aim of this paper is to evaluate whether it is indeed the case at the firm level that bribery has negative impacts on firm performance. Until now, the few studies conducted in individual nations and regions have produced mixed results (Athanasouli et al., 2012; De Rosa, Gooroochurn and Görg, 2010; Donadelli et al., 2014; Gaviria, 2002; Teal and McArthur, 2002). The intention in this paper, therefore, is to provide the first firm-level analysis of the relationship between bribery and firm performance across the developing world. This will reveal that when adopting a moral attitude towards bribery, great care needs to be taken not to bias understanding of its firm-level impacts by failing to recognise how bribery is often beneficial to the individual firms involved.

To show this, section 2 will review the competing theories that variously view bribery as having either negative or positive impacts on firm performance. Revealing the mixed results in studies of individual nations and regions, and the lack of a comprehensive assessment of the relationship between bribery and firm performance across the developing world, the third section then outlines the cross-national dataset here used, namely the World Bank Enterprise Survey conducted in 132 countries, and analytical method, namely random intercept and random slopes multilevel models. The fourth section then reports the findings. This will reveal that the dominant negative theorisation of bribery propounded by supra-national institutions, national governments and many academics, fails to recognise how bribery has beneficial impacts on firm performance across the developing world. The fifth and final section then explores the theoretical and policy implications. This will re-theorise participation in acts of bribery as beneficial for the individual firms engaged in such activity, whilst recognising that this may not be an optimal strategy at the aggregate country level. To eliminate bribery, therefore, it will be necessary for public authorities to recognise this and to adopt measures to alter the cost/benefit ratio confronting individual enterprises as well as the institutional deficiencies that result in the prevalence of bribery.

Before commencing however, bribery needs to be defined. The most widely used and accepted definition of bribery is the "misuse of public office for private gain" (Alatas, 1990; Bardham, 1997; Johnston, 1996; Philp, 1997; Pope, 2000; Rodriguez *et al*. 2006; Rose-Ackerman, 1975, 1978; Shleifer and Vishny, 1992, 1993; Svensson, 2005; Treisman, 2000; World Bank, 1997). Given the focus of this paper on the practice whereby government officials demand or receive bribery from firms and provide a service in return such that the firms can circumvent unfavourable regulation or survive competitive pressure in marketplace, this definition is appropriate for our purposes here.

Such firm-level bureaucratic bribery is widespread in developing countries and differs significantly to the much less studied but nevertheless common phenomenon of state capture, where firms influence the formulation of laws and other government policies to their own advantage through illicit or non-transparent means (Fries et al., 2003). Here, therefore, bribery refers to the giving of gifts or informal payments to public officials with the aim of influencing their actions and to obtain a benefit (Rose-Ackerman, 1975, 1999). This involves payments of relatively small amounts by firms to public officials to for example speed up receiving an operating license, avoid negative outcomes from inspections or avoid delays when dealing with bureaucratic processes.

Competing theories of the impacts of bribery

Until now, bribery has been dominantly theorised from a moral standpoint as a negative phenomenon, which has been reinforced by studies at the aggregate country level that display how bribery has a deleterious impact on economic development and growth; the greater the level of bribery, the lower the level of economic development and growth (Ades and Di Tella, 1997, 1999; Brown, 2006; Hellman *et al.*, 2000; La Porta *et al.*, 1997, 1999; Mauro, 1995; Persson *et al.*, 2003; Treisman, 2000; Wei, 1997). Rather fewer studies have been conducted at the firm-level of the relationship between bribery and firm performance. When this has been considered, two competing theories exist. On the one hand, and reflecting the dominant moral theorisation, bribes are theorised as hindering firm performance and on the other hand, bribes can be theorised as greasing the wheels of commerce and thus enhancing firm performance. Here, each is reviewed in turn.

Bribery harms firm performance perspective

Reinforcing the moral theory of bribery that views it as a deleterious phenomenon, country-level studies have revealed firstly, that bribery directly deters economic growth and development (e.g., Ades and Di Tella, 1999; Méndez and Sepúlveda, 2006; Méon and Sekkat, 2005) and secondly, that countries with a high level of bribery display relatively lower levels of firm performance (Donadelli et al., 2014; Doh *et al.*, 2003; Faruq and Webb 2013; Frye and Schleifer, 1997; Gray et al., 2004; Knack and Keefer, 1995; Mauro, 1995; Rodrik et al. 2002; Wieneke and Gries, 2011). As Myrdal (1968) explains, corrupt civil servants can cause delays that would not otherwise occur just to give themselves an opportunity to extract a bribe. The result is that rather than improving efficiency, bribery is theorised as increasing overall costs at both the firm and aggregate level.

When considering the firm-level impacts of bribery on enterprise performance, therefore, a moral representation of bribery as deleterious has dominated. Individual enterprises engaged in bribery have been theorised as having lower levels of firm performance (Athanasouli et al., 2012; De Rosa et al., 2010; Donadelli et al., 2014; Faruq and Webb, 2013; Gaviria, 2002; Lavallée and Roubaud, 2011; Teal and McArthur, 2002). Until now, however, the evidence supporting this firm-level theorisation of enterprises engaged in bribery as having lower levels of firm performance has been limited to a small number of studies of single countries or regions. Teal and McArthur (2002) discover in Africa at the firm level that enterprises paying bribes have 20 per cent lower levels of output per worker, as do 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 bribery and that bribery reduces firm productivity. Athanasouli et al. (2012) in Greece, meanwhile, using firm level data, reveal that bribery is overall negatively associated with sales growth, whilst in Latin America, Gaviria (2002) finds that bribery substantially reduces sales growth. To evaluate this negative association between bribery and firm performance more broadly across the developing world, the following proposition can be therefore tested:

> *Bribery harms firm performance hypothesis* H1: enterprises asserting that it is necessary for enterprises like theirs to give gifts or payments to public officials in order to get things done display lower levels of firm performance than those who do not, after controlling for other key determinants of firm performance.

Bribery enhances firm performance perspective

An alternative perspective is that bribery enhances rather than harms firm performance. This is similar to the country-level theorisation of bribery as boosting economic development, or what has been termed the "efficient grease" thesis (Kaufmann & Wei, 1999), which explains bribery as an efficient way to reduce effective red tape in an environment of heavy bureaucratic burden and long delays, and therefore boosts economic development (Huntington, 1968; Jian and Nie, 2014; Leff, 1964). In this "grease the wheels" thesis, therefore, some "grease" money may help circumvent in a second best world the distortions caused by an inefficient bureaucracy (Wei, 1998). Bribes may also help overcome liabilities of "newness" or "smallness" (Stinchcombe, 1965) by enabling the development of favourable relationships with public officials so as to increase legitimacy and decrease the risk of failure. Such arguments thus share a presumption that bribery contributes positively to productivity because it compensates for the consequences of a defective institutional framework, such as an inefficient administration or the weak rule of law (Webb et al., 2009).

However, it is only in recent years at the firm level that the positive theorisation of bribery as enhancing firm performance has started to be tested. Ayaydin and Hayaloglu (2014) analyse the relationship between firm growth and bribery in a sample of 41 manufacturing firms in Turkey, and find that the effect of bribes on firm growth is positive, mainly because illegal practices and payments as "speed money" by-pass bureaucratic delays. Using unique panel data of Indonesian manufacturing firms during the Suharto era, Vial and Hanoteau (2010) also find a positive relation between bribery and firm output as well as labour productivity. Yet this is not always clear cut. Lavallée and Roubaud (2011) find no association between bribery and firm output, and Fisman and Svensson (2007) only a weak association between rates of bribery and firm performance, measured by growth in firm sales.

Indeed, the only known cross-national study of the relationship between bribery and firm performance using firm-level data is by Blagojevic and Damijan (2012) who use 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 bribe payments and that those firms making such bribe payments have higher productivity growth, especially foreign-owned firms making such informal payments. To evaluate whether this positive association between bribery and firm performance is more widely valid across the developing world, the following hypothesis can be therefore tested:

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Bribery enhances firm performance hypothesis H2: enterprises asserting that it is necessary for enterprises like theirs to give gifts or payments to public officials in order to get things done display higher levels of firm performance than those who do not, after controlling for other key determinants of firm performance.

Methods

Data and Variables

Data. To evaluate these competing theories on the relationship between bribery and firm performance, World Bank Enterprise Survey (WBES) data is analysed collected since 2006 in 132 developing countries using a harmonized questionnaire and common methodology, which assures the cross-national and temporal comparability of the data. 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. The result is a sample of 106,805 surveyed enterprises.

 Dependent Variables. To evaluate the association between bribery and firm performance, the dependent variables are the three indicators of firm performance on which data is collected in the WBES, namely:

- *Real annual sales growth* (using GDP deflators) (%): this is a derived variable in the WBES measuring the change in sales reported in the current fiscal year from a previous period. For most countries the difference between the two fiscal year periods is two years. However, for some countries the interval is three years. Hence, an annualized measure is used. All values for sales are converted to USD using the exchange rate in the corresponding fiscal year of the survey. Sales are deflated to 2009 using the USD deflator;
- *Annual employment growth* (%): this is a derived variable in the WBES measuring the annualized growth of permanent full-time workers expressed as a percentage. Annual employment growth is the change in full-time employment reported in the current fiscal year from a previous period. For most countries the difference between the two fiscal year periods is two years. However, for some countries the interval is three years. Hence, an annualized measure is used; and
- *Annual productivity growth* (%)*:* this is a derived variable that measures annualized growth in labour productivity where labour productivity is real sales (using GDP deflators) divided by full-time permanent workers. Annual productivity growth is the change in labour productivity reported in the current fiscal year from a previous period. For most countries the difference between the two fiscal year periods is two years. However, for some countries the interval is three years. Hence, an annualized measure is used. All values for sales are converted to USD using exchange rate in corresponding fiscal year of the survey. Sales are then deflated to 2009 using the USD deflator.

 Key Independent Variable. To evaluate the impact of bribery on firm performance we focus on the answer given by entrepreneurs to the following question: "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, 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

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or gifts are paid, whilst value 1 is when they state a percentage or total annual informal payment. Given the sensitive nature of the topic under investigation (i.e., bribery), the advantage of this question is that it asks entrepreneurs about their payment of bribes to public officials in an indirect manner, enabling them to state that payments have been made without incriminating themselves.

Control Variables. To measure the impacts of bribery on firm performance, it is necessary to control for other key determinants of firm performance. Here, nine characteristics are examined that previous studies reveal influence firm performance:

- *Starting-up unregistered* – this is widely viewed as reducing firm performance (La Porta and Schleifer, 2008; Perry et al., 2007). Here, we use a firm-level measure regarding whether the business was registered when it started operations. This is a dummy variable with value 1 indicating that the firm started operations in the country without formal registration and 0 when the firm was formally registered.

- *Firm age* – this is widely deemed a determinant of firm performance, with the long-standing concept of liabilities of newness (Stinchcombe, 1965) displaying that new ventures lack legitimacy and under-perform relative to more established ventures (Barron *et al*., 1994; Choi & Shepherd, 2005; Delmar & Shane, 2004; Ranger-Moore, 1997; Wiklund *et al*. 2010; Zimmerman & Zeitz, 2002). Here, this is a continuous variable measuring firm age in years with a minimum value of 0 for start-ups and a maximum of 195 years for the oldest firms (the average firm age across countries and years is 19 years).

- *Firm size* – this is controlled for since larger firms perform better than smaller ones (Hsieh and Olken, 2014; La Porta and Schleifer, 2014), not least due to the lower average unit costs in larger firms. Firm size is a categorical variable with value 1 for small firms with less than 20 employees, value 2 for medium size firms between 20 and 99 employees, and value 3 for large firms with more than 100 employees.

- *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; Baghdasaryan and la Cour, 2013). Here, legal status is a categorical variable indicating whether the enterprise is an open shareholding, a closed shareholding, a sole proprietorship, a partnership, a limited partnership, or any other form. In addition, whether the organization is foreign- or domestic-owned is examined using a dummy variable with value 1 indicating if the share of the firm's ownership held by foreign individuals or enterprises is larger than 49% and 0 otherwise. Given that export-oriented firms are viewed as displaying higher levels of firm performance (La Porta and Schleifer, 2008), export-orientation is also included as a control using a dummy variable with value 1 indicating firms exporting directly at least 1% of sales and 0 for those who sell only domestically.

- *Economic sector* - firm performance varies across economic sectors (Nabar and Yan, 2013; Siqueira *et al.*, 2014). Sector is here a categorical variable indicating the sector of the firm (i.e., textiles, leather, garments, food, metals and machinery, electronics, chemicals and pharmaceuticals, wood and furniture, non-metallic and plastic materials, auto and auto components, other manufacturing, retail and wholesale trade, hotels and restaurants, and others).

- *Access to finance* – this is strongly correlated with firm performance since enterprises in its absence enterprises substitute (low skilled) labour for physical capital (Amaral and Quintin, 2006; Cull *et al.*, 2007). Access to bank loans or credit is here a dummy variable with value 1 indicating whether the firm has access to bank loans or to a line of credit to finance its activities and 0 otherwise.

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- *Level of technological innovation* – this is also often closely associated with firm performance (Mansury and Love, 2008), especially given that some argue that this is the key reason for the productivity gap between developed and developing economies (Farrell, 2004; Palmade, 2005). Here, three basic control variables available in the WBES are used: quality certification, a dummy variable with value 1 indicating that the firm has an internationally-recognized certification and 0 otherwise; presence of a website, a dummy variable with value 1 when the firm uses a website for business related activities and 0 otherwise, and the use of e-mail, a dummy variable with value 1 when the firm uses e-mail to interact with clients and suppliers and 0 otherwise.

- *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; Gennaiolo *et al.*, 2013; La Porta and Schleifer, 2014; Van der Sluis *et al.*, 2005). Here, six control variables available in the WBES are used: top manager's experience, a continuous variable of the years of experience the top manager has working in the sector; temporary workers, a variable measuring the average number of temporary workers in the firm; permanent full-time workers, a continuous variable of the average number of permanent full-time workers in the firm; female full-time workers, examining the share of permanent full-time workers that are female; female involvement in ownership, a dummy variable with value 1 indicating whether women are involved in the ownership of the firm and 0 otherwise; and as a signal of professionalism, whether they use an external auditor, a dummy variable with value 1 indicating that the firm has its annual financial statement reviewed by an external auditor and 0 otherwise.

- *Wider business environment* – to control for how this determines firm performance, two control variables are used, namely: transport, a dummy variable with value 1 indicating that transportation is a major constraint for the firm's activity and 0 otherwise, and electricity, a dummy variable with value 1 indicating that electricity supply is a major constraint for the firm's activity and 0 otherwise.

Analytical Methods

Multiple Imputation of Missing Values. As cross-country datasets like WBES suffer from missing information which undermines the representativeness of the sample, this is addressed by applying multiple imputation methods (through a system of chained equations) to the sample used in the estimation. In this dataset, the average number of imputed missing values across variables with missing information is 11,056 (with a maximum of 45,551 and a minimum of 297). Based on the classical methodological literature on multiple imputation (Schafer and Graham 2002; Collins et al 2001; Rubin 1987), 10 imputations have been employed, that is, 10 data copies with the values computed using the observed variables. This increases the reliability of the imputed dataset compared with the original one.

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Multilevel Modeling. To evaluate the impact of bribery on firm performance across the 132 countries surveyed in the WBES dataset for the period 2006 to 2014, we apply multilevel techniques. Given that the surveyed enterprises in the WBES are clustered across country-year subsamples, multilevel modelling is the optimal technique to elicit unbiased standard errors as well as reliable statistical comparisons. In the standard regression model, a single random residual adjusts the prediction to the observed value for each individual observation.

$$y_i = \beta_0 + \beta_1 x_1 + \cdots + \beta_n x_n + \varepsilon_i$$

In contrast, the *random intercept model* decomposes the residual into two random terms, one for the individual and the other for the aggregate level (Snijders and Bosker, 2012):

$$y_{ij} = \gamma_{00} + u_{0j} + \varepsilon_{ij}$$

where ε_{ij} remains the individual-level (in our case firm-level) error term and γ_{00} the average intercept of all countries considered. Here, the constant term (β_{0j}) is the result of two separate components; u_{0j} is the random noise correcting the average intercept to each country observation. This second random term is a type of latent variable capturing the specificity of each cluster that can eventually be explained by modelling the variation existing within and across clusters under a full model specification. The decomposition of the regression error into u_{0j} and ε_{ij} allows for a proper quantification of the effect of the clustering of individual observations and a reliable estimation of the effect of the individual variables (that can be placed at either Level 1, Level 2 or both). Random effects can be added to the slope of individual-level independent variables. This relaxes the assumption that the effect of a given predictor is equal across aggregate level units of analysis. In this case, the slope of a given predictor β_{1j} is decomposed into an average impact (γ_{10}) and a group-specific one (u_{ij}). The complete model specification is thus the following:

$$y_{ij} = \gamma_{00} + u_{0j} + \gamma_{10} x_{1j} + u_{1j} + \cdots + \beta_n x_n + \varepsilon_{ij}$$

Here, we use random slope and random constant models to estimate the average impact of bribery on firm performance across countries, accounting for how the size of bribery varies between countries. The number of countries in the analysis is not drawn from a random sample to infer regularities in the broader population, but represents the universe. This means that we do not need to treat combinations of country-years as the Level 2 units but that the average effect of time can be estimated. That is, our Level 2 only considers the clustering of firms at the country-level while, as mentioned above, the multilevel regressions include year dummies to control for time fixed effects at the firm-level. Finally, as is customary in multilevel modelling, to interpret the results we centre all control variables around each country at the aggregate level (group mean centring). While centring independent variables is advisable in random intercept models to interpret the average constant in the model, it is of key importance in random slopes models used here to give a substantive interpretation to the intercept and the random components of the constant (Cebolla, 2013). The only key explanatory variable not centred around the group mean is the indicator of bribery as the value 0 has a substantive interpretation for the purpose of this paper (bribery has taken place).

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Results

Of the 106,805 formal private sector businesses with five or more employees surveyed in the WBES between 2006 and 2014, 25.3% viewed the payment of bribes to public officials as necessary to get things done across these 132 developing countries. However, there are marked cross-national variations in the share of enterprises viewing the payment of bribes to get things done as necessary, ranging from 84.5% in Guinea, 83.8% in the Syrian Arab Republic and 79.8% in the Republic of Congo through to 2.7% in St Lucia, 1.3% in Israel and no enterprises in Dominica, Eritrea and Micronesia.

To start to analyse the impact of bribery on firm performance, we here report post-estimation estimates from multiple imputation bivariate linear regressions, with clustered standard errors at the country-level and including year fixed effects. As Figure 1 displays, when no control variables are taken into account, enterprises stating that it is necessary for businesses like theirs to bribe public officials to get things done have 4.6% lower average annual sales growth rates than those who do not view bribes as necessary (8.4% compared with 8.8%), have 22.3% lower annual productivity growth rates (2.8% compared with 3.6%), but 12.5% higher annual employment growth rates (6.3% compared with 5.6%). These results, nevertheless, are a descriptive snapshot based on a bivariate relationship and do not take into account and control for other determinants of firm performance.

INSERT FIGURE 1 ABOUT HERE

To test the relationship between bribery and firm performance, we therefore carry out a series of multilevel analyses in which we control for other key firm-level determinants of firm performance (e.g., firm size, age of firm, technology and innovation and sector). Table 1 reveals the results of the random intercept and random slopes multilevel models for the dummy indicator of the bribery variable on annual sales, employment and productivity growth. To recall, a random intercept specification allows one to take into account country-level specific differences on firm performance whereas the introduction of random slopes for the key independent variables allows for the varying impact of bribery on firm performance that are due to country-specific differences.

INSERT TABLE 1 ABOUT HERE

The finding is that the impacts of bribery on firm performance (after controlling for other firm-level key determinants of firm performance) partially confirms hypothesis 2 and no evidence is found to support hypothesis 1. As the coefficient in model 1 displays, annual sales growth rates are 1.1 percentage points (i.e., 9.0% compared with 7.9%) and thus 13.9% higher in enterprises viewing bribe payments to public officials as necessary to get things done compared with those who do not, and this difference is significant. This, therefore, confirms hypothesis 2 that bribery enhances the firm performance measure of annual sales growth rates.

Model 2, meanwhile, displays that annual employment growth rates are -0.4 percentage points (5.7% compared with 6.1%) and thus 7% lower in enterprises viewing bribes as necessary to get things done. However, this neither confirms hypothesis 1 or 2 since this difference is not significant.

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Model 3, finally, reveals that annual productivity growth rates are 1.2 percentage points (3.7% compared with 2.5%) and thus 48% higher in enterprises viewing bribe payments to public officials as necessary to get things done, and this difference is significant. This, therefore, again confirms hypothesis 2 that bribery enhances firm performance.

The outcome is that this multivariate evaluation reveals a positive association between bribery and firm performance. Enterprises viewing bribery of public officials as necessary in order to get things done have both significantly higher annual sales and productivity growth rates than enterprises who do not view bribery as necessary, and there is no significant difference in annual employment growth rates between enterprises who view bribery as necessary or not.

Discussion and Conclusions

The finding that over a quarter (25.3%) of enterprises believe that it is necessary for enterprises like theirs to give gifts or payments to public officials in order to get things done provides an indicator of the prevalence of bribery across the developing world. Analysing whether this enhances or reduces firm performance, the firm-level analysis reveals that once other determinants of firm performance are taken into account and held constant, enterprises believing that it is necessary for enterprises like theirs to give gifts or payments to public officials in order to get things done have 13.9% higher average annual sales growth rates (i.e., 9.0% compared with 7.9%) and 48% higher annual productivity growth rates (i.e., 3.7% compared with 2.5%), confirming H2 that bribery enhances firm performance. Although annual employment growth rates are 7% lower (5.7% compared with 6.1%) in enterprises viewing bribes as necessary, this is not statistically significant. Overall, therefore, this analysis of the three indicators of firm performance confirms hypothesis 2 that bribery enhances firm performance, and no evidence is found at the firm-level to support hypothesis 1 that bribery is deleterious to firm performance.

This paper advances theory by displaying that at the firm level, bribery is positively associated with firm performance. This might be seen to challenge the existing dominant "moral" theory of bribery as harmful. After all, enterprises believing that it is necessary for enterprises like theirs to give gifts or payments to public officials in order to get things done display significantly higher firm annual sales and productivity growth rates than enterprises who do not believe that this is necessary. However, some care must be taken when interpreting this finding as challenging the dominant moral theory of bribery as harmful. This study reveals that participation in acts of bribery is beneficial for individual firms engaged in such activity. Nevertheless, and as discussed above, bribery is not an optimal strategy at the aggregate country level. Indeed, a voluminous literature reveals that bribery harms economic growth and development (e.g., Méndez and Sepúlveda, 2006; Méon and Sekkat, 2005) and that countries with a high level of bribery display relatively lower levels of firm performance (e.g., Donadelli et al., 2014; Faruq and Webb 2013; Wieneke and Gries, 2011). Hence, although there is a need to theorise acts of bribery as beneficial for individual entrepreneurs in terms of firm performance, this does not refute the "moral" theory at the aggregate country level that bribery is harmful.

The policy implication, therefore, is that there is thus a need to continue with efforts to eliminate bribery and the original contribution of this study is that it reveals that if this is to be achieved, there is a need to recognise that engaging in acts of bribery is beneficial for individual entrepreneurs. One potential way forward, therefore, and

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drawing upon the classic utilitarian theory of crime, is to view entrepreneurs engaged in bribery as rational actors who evaluate the opportunities and risks confronting them and decide to bribe if the expected penalty and probability of being caught is small relative to the benefits to be gained (Allingham and Sandmo, 1972; Becker, 1968). Hence, to alter the costs of engaging in bribery and the benefits of not doing so in order to ensure that not bribing becomes the rational choice for citizens, there is a need to increase the risks and sanctions so as to make bribery irrational behaviour. The problem in developing countries, however, is that weak formal institutions currently hinder the effectiveness of such an approach.

Nevertheless, changing the cost/benefit ratio confronting entrepreneurs is not the only means of reducing bribery. It assumes that entrepreneurs are purely rational economic actors. In recent years, however, recognition has emerged, grounded in institutional theory, that entrepreneurs are also often social actors whose norms, values and beliefs often differ to the codified laws and regulations and this influences their behaviour (De Castro *et al.*, 2014; Webb *et al.*, 2014; Williams & Horodnic, 2016; Williams & Shahid, 2016). Based on this view, another potential way forward is to adopt measures to align entrepreneurs' norms, values and beliefs (informal institutions) regarding the use of bribery with the codified laws and regulations (formal institutions). On the one hand, this requires measures to alter informal institutions (i.e., norms, values and beliefs) regarding the acceptability of paying bribes so that the asymmetry between informal and formal institutions (and thus bribery) is reduced, such as by raising awareness about the costs of bribery. On the other hand, this re-alignment also requires alterations in formal institutions. Bribery has been shown to be a product of institutional deficiencies, including the wage rates of public officials, and to decrease as the efficiency and quality of the regulatory framework of government improves (Méon and Weill, 2010).

These different policy approaches towards bribery based on rational economic actor and social actor approaches, however, are not mutually exclusive. Indeed, there are at least two ways of combining them. Firstly, a "responsive regulation" approach starts out by openly engaging entrepreneurs to self-regulate and not engage in bribery. This is then followed by persuasion not to do so through incentives and only as a last resort for the small minority continuing to pay bribes does it use punitive measures (Braithwaite, 2009). A second approach is the "slippery slope framework" (Kirchler *et al.*, 2008) which pursues both voluntary and enforced tools concurrently by developing both greater trust in authorities through improving formal institutions as well as the greater power of authorities by improving their capabilities to detect and punish bribery (Kogler *et al.*, 2015). Until now however, there has been little comparative evaluation of which sequencing and/or combination is the most appropriate and/or effective means of reducing bribery.

In sum, if this paper encourages recognition that engaging in bribery at the individual firm level results in higher firm performance, despite bribery having an overall detrimental negative impact at the country-level, then one of the intentions of this paper will have been fulfilled. If this then leads governments to pursue policies that recognise the individual firm-level benefits of engaging in bribery and thus seek to change not only the cost-benefit ratio confronting individual enterprises but also the institutional deficiencies that lead to a lack of alignment of entrepreneurs norms, values and beliefs with the codified laws and regulations regarding bribery, then this paper will have achieved its fuller intention. What is certain, however, is that unless there is an alignment between what is beneficial for the country in terms of engaging in bribery and

what is beneficial for the individual firm, little progress will be made towards eliminating the widespread prevalence of bribery in the developing world.

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Author Biographies:

Professor Colin C. Williams is Professor of Public Policy in the Management School at the University of Sheffield in the United Kingdom. His research interests are in entrepreneurship, the informal economy and economic development, subjects on which he has published some 20 books and 350 journal articles over the past 25 years.

Dr Alvaro Martinez-Perez is a Lecturer in International and Comparative Social Research Methods in the Department of Sociological Studies at the University of Sheffield. His interests are in advanced multivariate methods and labour markets.

Dr Abbi Kedir is a Research Fellow in the Management School at the University of Sheffield in the United Kingdom. His research interests are in entrepreneurship, the informal sector, and economic development in Africa.

Figure 1 Cross-country average difference in firm performance: by whether firms engage in bribery when doing businesses
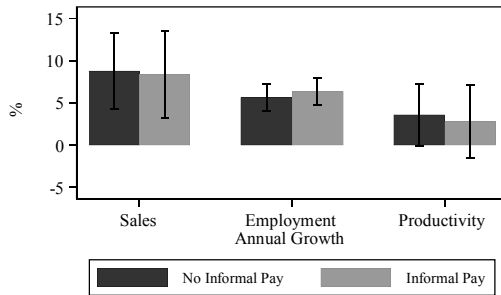
Source: WBES 2006-2014. Own calculations

Table 1. Linear multilevel regression for the impact of bribery on firm performance (combined multiple imputation results after 10 imputations)

	Model 1 Sales Growth	Model 2 Employment growth	Model 3 Productivity growth
Bribery	1.139** (0.449)	0.005 (0.235)	1.187*** (0.433)
Started unregistered	1.254** (0.507)	1.597*** (0.247)	-0.005 (0.500)
Firm age	-0.195*** (0.012)	-0.211*** (0.007)	-0.008 (0.013)
Firm age (squared)	0.002*** (0.000)	0.002*** (0.000)	0.000 (0.000)
Exporter	0.211 (0.168)	0.018 (0.044)	0.205 (0.169)
Foreign ownership	-0.363** (0.147)	0.037 (0.038)	-0.380** (0.149)
Workforce			
Top manager´s experience	-0.031*** (0.011)	-0.058*** (0.006)	0.021* (0.011)
Temporary workers	0.010*** (0.004)	0.004** (0.002)	0.007* (0.004)
Permanent full-time workers	0.005*** (0.001)	0.005*** (0.000)	0.001 (0.001)
Female full-time workers	-0.006 (0.004)	-0.039*** (0.002)	0.029*** (0.005)
Female participation ownership	0.198*** (0.076)	-0.005 (0.020)	0.215*** (0.076)
Bank loan/credit	-0.196** (0.092)	0.026 (0.024)	-0.232** (0.092)
Major constraints			
Transport	0.034 (0.133)	0.057 (0.035)	-0.011 (0.134)
Electricity	-0.034 (0.071)	-0.033* (0.019)	-0.008 (0.071)
Innovation & technology			
Quality certification	0.155 (0.126)	0.087*** (0.032)	0.078 (0.127)
External auditor	-0.046 (0.062)	-0.017 (0.016)	-0.043 (0.063)
Website	0.005 (0.116)	-0.041 (0.030)	0.059 (0.117)
E-mail	-0.043 (0.114)	0.024 (0.029)	-0.079 (0.116)
Firm size (R.C.: Small)			
Medium	0.301 (0.193)	0.032 (0.051)	0.288 (0.194)
Large	0.118 (0.203)	-0.028 (0.053)	0.122 (0.204)
Legal status (R.C.: Open shareholding)			
Close shareholding	-0.253* (0.149)	0.064 (0.041)	-0.333** (0.151)
Sole proprietorship	-0.209 (0.145)	0.087** (0.039)	-0.309** (0.146)
Partnership	-0.444** (0.201)	0.103* (0.053)	-0.550*** (0.202)
Limited partnership	-0.405*** (0.157)	-0.026 (0.043)	-0.409*** (0.158)
Other form	-0.560** (0.226)	0.079 (0.062)	-0.650*** (0.229)
Industry Sector (R.C.: Textile)			
Leather	0.475** (0.239)	0.066 (0.064)	0.392 (0.241)
Garments	0.786*** (0.278)	-0.034 (0.074)	0.805*** (0.280)
Food	0.070 (0.247)	-0.062 (0.065)	0.139 (0.249)
Metals and Machinery	0.417 (0.300)	0.098 (0.078)	0.349 (0.301)
Electronics	0.160 (0.916)	-0.151 (0.235)	0.331 (0.923)
Chemicals, pharmaceuticals	0.122 (0.478)	0.210* (0.123)	-0.070 (0.483)
Wood, furniture	-0.140 (0.374)	0.319*** (0.099)	-0.424 (0.378)
Non-metallic, plastic materials	-0.935** (0.365)	-0.091 (0.095)	-0.886** (0.368)
Auto, auto components	1.047 (1.196)	0.080 (0.303)	0.927 (1.206)
Other manufacturing	0.254 (0.218)	0.015 (0.059)	0.228 (0.220)
Retail and wholesale trade	0.348** (0.173)	-0.004 (0.047)	0.362** (0.175)
Hotels and restaurants	0.018 (0.327)	0.125 (0.087)	-0.111 (0.331)
Other services	0.736*** (0.245)	0.179*** (0.067)	0.579** (0.248)
Other unclassified	0.281 (0.190)	0.172*** (0.051)	0.115 (0.191)
Year dummies	YES	YES	YES
Constant (fixed)	5.592*** (1.168)	4.672*** (0.290)	1.479 (1.180)
Random disturbance			
Constant	9.144	2.226	9.183
Slope: Bribery indicator	3.304	1.660	3.040
ICC (%)	24	11	23
Observations	106,805	106,805	106,805
Countries	132	132	132
Model F test	16.37	57.80	4.23

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Prob > F	0.00	0.00	0.00

Significant at $p < 0.1$*; ** $p < 0.05$; and *** $p < 0.01$.
Standard errors in parentheses.

Source: WBES 2006-2014 data set. Own calculations.

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