Gender and corruption in business

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Abstract

Are women less corrupt in business? We revisit this question using firm-level data from the World Bank's Enterprise Surveys, which measure firms' experience of corruption and the gender of their owners and top managers. We find that women in positions of influence are associated with less corruption: female-owned businesses pay less in bribes and corruption is seen as less of an obstacle in companies where women are represented in top management. By providing evidence that women are, ethically at least, good for business our research contributes to the literature on development, gender equality, and corruption more generally.

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1. INTRODUCTION

Many studies have identified a significant association between women and lower levels of corruption. This basic pattern has been observed in different social contexts, time periods, indicators of corruption, and in a variety of micro and macro-data (Dollar, Fisman & Gatti, 1999; Rivas, 2013). However, recent studies using experimental approaches have presented mixed evidence, arguing that if gender has an effect on corruption it may depend on institutional and cultural context (Frank, Lambsdorff & Boehm, 2011; Armantier & Boly, 2011). We revisit this puzzle using firm-level data from the World Bank's Enterprise Surveys, a series of global surveys that contain data on firms' direct experience of corruption, including bribery and the degree to which corruption is seen an as obstacle to doing business. Such direct evidence is considered by many to be a better way of measuring corruption; one that is far superior to approaches that rely on the perceptions of 'experts' (Reinikka & Svensson, 2006; Treisman, 2007). Our findings suggest that women in business are less corrupt: female-owned businesses tend to pay less in bribes and female managers are associated with a reduction in the perception that corruption is an obstacle to the operations of the company. Furthermore, we observe that cultural and institutional variables moderate the effect of gender on corruption, helping to explain some of the diverse findings in recent experimental studies.

Corruption remains a persistent problem in both developed and developing countries and women are still under-represented in senior management, even in countries that have achieved high levels of development and gender equality.[1] There has been a strong push

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[1] Apart from the debate over the potential for corruption to "grease the wheels" of an economy, most studies argue that it is harmful for development. For example, Gupta, Davoodi & Alonso-Terme (2002) find that corruption is associated with increased poverty and inequality and Breen and Gillanders (2012) find that it damages the quality of business regulation.

within the NGO sector and by global organizations like the World Bank and the United Nations to support gender equality as a way of promoting development and fighting corruption (World Bank, 2010). The need to eradicate corruption and achieve gender equality have prompted France and Norway to enact legislation that requires companies to have 40 per cent female board representation and the European Commission has proposed legislation that would extend this to all publicly listed companies in the European Union except small and medium enterprises.

This paper is organised as follows. First, we review the cross-country empirical literature on gender and corruption, as well recent studies which use survey data and experimental approaches. Second, we discuss the plausible link between gender and lower levels of corruption in the business world. Third, we report our method and empirical analysis. The empirical analysis is presented in two parts: the first presents our findings for the entire sample and the second presents out findings for sub-samples that differ by institutional and cultural context. We conclude with a discussion of our findings and their relevance to the literature on development, gender equality, and corruption.

2. GENDER AND CORRUPTION

As we have seen, many studies have identified a significant and meaningful association between gender and lower levels of corruption. Dollar *et al*. (1999), for example, find that greater female participation in parliament is associated with less corruption. Swamy, Knack, Lee & Azfar (2001), observe that at the macro-level there is less corruption where there are more women in parliament, government bureaucracy, and the work force; at the micro-level, women are less likely to use bribery and less likely to condone bribe-taking. Torgler & Valev (2006) find that men are more likely to be involved in corrupt activities. Notwithstanding

these findings, there are several formidable obstacles that stand between us and a better understanding of the effect of gender on corruption. The first major obstacle is the challenge of measuring corruption. The majority of studies that we have examined tend to use perception-based measures, which have been criticised as suffering potentially from perception biases (Svensson, 2003; Reinikka & Svensson, 2006; Fan, Lin & Treisman, 2009) and a tendency to lag reality (Knack, 2007; Kenny, 2009).

The second major obstacle, highlighted in Treisman's (2007) seminal study, is the problem of ecological inference: in this case the problem of inferring individual behaviour from group-level data. In other words, the statistically significant relationships that we find in the gender and corruption literature may simply be picking up the effects of liberal democracy or some other unidentified factor. Indeed, Sung (2003) finds that gender has a smaller effect on corruption once rule of law, democracy and freedom of the press are introduced as control variables. Researchers are right to question if the macro-relationship between gender and corruption is due to spurious correlation and (or) reverse causality, as these problems are ubiquitous in social science.

The third obstacle is the difficulty of identifying the precise mechanism(s) linking gender and corruption. Risk aversion is by far the most popular mechanism in the literature, and one of the most consistent gender differences identified across many academic disciplines (Eckel & Grossman, 2008; Croson & Gneezy, 2009). However, it has not always been identified as an important mechanism in some recent experimental studies (Frank, Lambsdorff & Boehm, 2011).

Recent studies have addressed these concerns in several ways. First, some have made use of reliable micro-data on corrupt activities from well-designed surveys (see for example Diaby & Sylwester, 2015; Gillanders, 2014). Using data from the Afrobarometer, Justesen &

Bjørnskov (2014) show that males and younger people are more likely to pay bribes in general. Our work can be differentiated from theirs as we focus on bribery within the business world, which differs considerably to bribery by individuals who wish to gain access to public services. Corrupt firms may use bribery to gain competitive advantages in the market place, as well as to gain access to public services.

Second, researchers have used field and lab experiments to explore the relationship between gender and bribery. Unlike many macro studies, experimental work has tended to focus on corrupt transactions rather than perceptions. These studies have also yielded mixed evidence about the effect of gender on corruption. Frank, Lambsdorff & Boehm (2011: 68) report that women are not necessarily more honest or averse to corruption in the lab or the field. Armantier & Boly (2011) present a similar result in their experimental analysis of exam-grading in Burkina Faso. They find that gender does not have a significant effect on the likelihood of accepting a bribe. Alhassan-Alolo (2007) reports no gender difference in terms of condoning gift acceptance by public officials in Ghana's passport office. Alatas, Cameron, Chaudhuri, Erkal & Gangadharan (2009) observe that women in Australia are less tolerant of corruption, but that there are no significant gender differences in India, Indonesia, and Singapore.

While the majority of these studies explore the role of women as bribees, our article is concerned with the effect of women as bribers. In her work, Rivas (2013) explores the role of women as both bribers and bribes. In a controlled environment, participants in her study take the role of a firm or a public official. She finds that both the frequency of bribes and the amount offered are higher if a participant is male and they are assigned to a firm. Rivas concludes that women offer a bribe less frequently than men but even when women do offer a bribe, the amount is still lower than when males offer a bribe.

To summarize, the literature is split between macro studies that usually report that women are associated with lower levels of perceived corruption and studies that use field and lab experiments, which present mixed evidence. Despite some contradictory findings, these studies contain important lessons about how to deal with the theoretical and methodological challenges inherent in the study of gender and corruption. The first lesson is that we must be cautious about whether our data is really measuring corruption, as perception and experience-based indicators are very different (Treisman, 2007; Razafindrakoto & Roubaud, 2010). The second lesson is that corruption occurs at the individual level, so we need to be careful about drawing inferences from macro-level indicators. The third lesson is that we must consider external validity: lab and field experiments take place within a wide array of cultural and institutional contexts, which may explain the diverse findings. More carefully designed cross country studies based on reliable micro-data can complement existing work using lab and field experiments.

Our contribution is complementary to recent experimental studies, and it takes advantage of many of these lessons. However, our firm-level data does not allow us to observe directly the mechanism of action. Nor are we able to resolve the more fundamental debate within and between many academic disciplines about whether the behavioural differences that we observe are due to biology or the social construction of gender roles. Nevertheless, we are able to make theoretically-informed decisions to split our sample by risk of detection and punishment. We are also able to leverage firm-level data that provide an insight into gender, corruption and business practices across the world. Moreover, our firm-level data address many of the concerns identified in the literature, as we are able to make use of experience-based measures of corruption and control for the gender of individual survey respondents.

3. WHO GREASES THE WHEEL? GENDER AND CORRUPTION IN BUSINESS

Corruption can take many forms within the context of the business world. We focus on experienced corruption at the firm-level, namely bribery and the extent to which corruption is considered an obstacle to doing business. We expect that women in positions of influence, specifically female business owners and female top managers, are associated with smaller bribes and a more optimistic outlook regarding the effect of corruption on doing business. In this section, we begin by considering the effect of gender in top management and how this may have implications for corruption. We then consider some of the leading mechanisms in the literature that may explain the relationship between gender and corruption.

Research on the effect of gender in the business world suggests that it is an important source of variation in management practices and firm performance. Soares, Marquis & Lee (2011), for example, find that businesses led by women have higher levels of corporate social responsibility. Labelle, Gargouri & Francoeur (2010) find that boardroom diversity in terms of gender results in a better standard of higher financial reporting. Hafsi & Turgut (2013) report that gender and age have a significant effect on corporate social performance. In particular, 'women, minority or foreign based directors have been shown to be more sensitive to the social performance of the firm' (Hafsi & Turgut, 2013: 466).

Both conventional wisdom and previous research suggests that individuals at the top of the corporate hierarchy have the power to affect corruption (Clarke & Xu, 2002). If top managers support bribery or do not treat the issue seriously, by using policies and procedures to detect, eliminate and sanction illegal activities, this may foster a culture of corruption within an organization. Indeed, corrupt activities are widely tolerated in many contexts and are sometimes considered mandatory for doing business. One study, for example, found that top executives who have engaged in corruption tend to rationalize their actions as a necessity

for being competitive (Collins, Uhlenbruck & Rodriguez, 2009). Nevertheless, by definition, corruption is never a legitimate act, no matter how widely tolerated.

There are several potential channels through which gender may affect corruption. One channel is through its effect on other employees′ expectations. For example, employees that work in companies where women are better represented in upper management may determine that corruption is generally less tolerated within the firm. Another channel is by favouring business strategies that rely on less corruption or focusing business activities in areas where corruption is less prevalent. However, these channels assume that women have a preference for less corruption and that they always tend to support business strategies that are in line with their preferences. Both preference formation and the link between preferences and outcome are not straightforward. Indeed, there is a controversial debate about whether gender differences are socially constructed, biologically determined, or some combination of both (Kohlberg, 1969; Gilligan, 1982).

Within this debate, researchers have identified behavioural differences between men and women that suggest a cluster of behaviours that are somewhat, but we cannot say decisively, inconsistent with corruption. For example, Dreber & Johannesson′s (2008) find that women are less likely to be deceptive in an economic setting than men. Furthermore, studies find that women are more likely to obey the rules and behave more communally and altruistically than men (Betz, O'Connell & Shepard 1989; Beu, Buckley & Harvey, 2003; Andreoni & Vesterlund, 2001; Buchan, Croson & Solnick, 2008); that women take fewer risks in investment decisions (Barber & Odean, 2001; Charness & Gneezy (2011); are more reciprocal (Chaudhri & Gangadharan, 2003; Snijders & Keren, 2001), and are less competitive and aggressive (Loden, 1985; Rosener, 1990; Eagly & Steffen , 1986).

Furthermore, activities that we normally consider corrupt may not be considered corrupt in some contexts, implying that some institutional and cultural arrangements may activate the relationship between gender and corruption (Truex, 2011; Esarey & Chirillo, 2013). The political scientist Samuel Huntington was one of the first exponents of the view that corruption in business might not always be such a bad outcome for society if it 'greases the wheels' of the economy (Huntington, 1968). Corrupt activities like bribery might seem virtuous if they hasten the process of vital business activities like registering property or obtaining permits.[2] At the same time, not engaging in corrupt activities might be a risky strategy. For example, failing to pay a bribe to a corrupt politician or official might be seen to threaten the dominant regime and provoke retaliation. If women have a greater tendency towards risk aversion, then we should expect to see less corruption under institutions where detection and punishment is more likely. As a consequence, our empirical analysis is divided into two sections: the first considers the general relationship between gender and corruption in business and the second focuses on institutional and cultural context.

4. DATA AND METHOD

Like many secretive activities, corruption is difficult to quantify. However, it is possible to obtain reliable data from well-designed surveys and appropriate interview techniques (Reinikka & Svensson, 2006:8). Our data comes from The World Bank's Enterprise Surveys (ES), which document firms' (self-reported) experiences of corruption, as well as information on firms' characteristics and the business environment. The ES, which began in 2002, are

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[2] The most convincing evidence regarding the 'grease the wheels' hypothesis focuses specifically on countries with weak economic and political institutions. Guriev (2004) and Aidt (2009) find against the 'grease the wheels' hypothesis. Méon & Weill (2010) find that corruption is less detrimental under low quality institutions, and Dreher & Gassebner (2013) find that corruption facilitates firm entry in highly regulated economies.

representative firm level surveys that are carefully designed and implemented according to the recommendations in the literature. Our dataset contains observations on over 105 countries, though our sample size depends primarily on our choice of dependent and independent variables.[3] Our first dependent variable (Bribe) is derived from the following survey question:

> *'We've heard 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 percent 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?'*

In line with best practice in corruption studies, the question refers to 'establishments like this' to help elicit truthful responses. From this question, we calculate the total annual informal payment and use this figure as our dependent variable. We decided not to use informal payments as percentage of total annual sales because of the possibility of measurement error; too many non-zero responses to the survey question are in multiples of 5, suggesting that respondents may have been rounding off their estimates. Clarke (2011) reports that firm managers overestimate bribes when they report them in percentage terms. Furthermore, we drop 13 observations of firms that reported bribes in excess of one million dollars. The statistical significance of our findings is not affected when we include these observations, however, they considerably inflate the estimated relationships in most of our samples.

Our second dependent variable (*Obstacle*) is derived from a survey question that asks 'Is [Corruption] No Obstacle, a Minor Obstacle, a Major Obstacle, or a Very Severe Obstacle to the current operations of this establishment?' The question should capture general

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[3] The full methodology is available at the Enterprise Surveys website.

perceptions regarding corruption but it may also capture individuals' lived experience of real corruption in business, such as having to source inputs from connected suppliers. From the answers, we calculate a dummy variable which takes a value of one if the firm feels that corruption is a major or very severe obstacle and zero otherwise. This variable allows us to extend our study to consider firm-level perceptions regarding corruption, which may differ considerably to total bribes paid.

Our explanatory variables of interest come from questions which record gender, including (i) 'are any of the owners female?' and (ii) 'is the top manager female?' Note that the World Bank's manual defines the top manager as the 'highest management individual', and that this 'person may also be the owner if he/she works as the Manager of the firm'.

We control for several important firm characteristics which may potentially affect corruption. First, we control for the degree of foreign ownership. Foreign-owned firms may not have access to same social networks as domestic firms, and may have to pay more bribes to do business. Second, we use a dummy variable that takes a value of one if some of the firm's sales are not national sales, allowing us to control for the possibility that export-oriented firms may come into contact with a greater variety of public officials. Third, we control for firm size using the natural logarithm of sales (see Fan *et al*., 2009). Fourth, we include a variable which measures the extent of state ownership (see Fan *et al*., 2009; Billon and Gillanders, 2014).[4] Like our foreign ownership variable, state-owned companies have access to different social and political networks, potentially affecting the level of bribery. Finally, we control for GDP per capita in the firm's home country, in order to control for likelihood that the level of development contributes to perceptions of corruption (see for

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[4] This variable comes from a survey question that records the percentage of the firm is owned by private domestic entities, private foreign entities, the government/state, and 'others'.

example, Ades & Di Tella, [1999], and Svensson, [2005]) and the possibility that higher income countries may be less prone to tolerating corruption.

[TABLE 1]

Table 1 reports summary statistics. GDP per capita variable comes from the World Development Indicators. All other variables are from the World Bank's Enterprise Surveys (ES). ES monetary responses have been adjusted for prices and converted to US dollars. The average firm in our dataset pays 2746 dollars in informal payments per year though this varies substantially within and between global regions. The average firm with a female owner pays 2179 dollars and the average firm with a female top manager pays approximately 1349 dollars. On face value, these figures suggest that companies where women are in positions of influence pay less in bribes. However, the descriptive statistics mask the important sources of variation in corruption which we described above, as well as the fact that approximately 80 per cent of firms report zero informal payments. Given these constraints (namely a left-censored dependent variable) we use the tobit estimator. Recent firm-level studies that consider corruption have used a similar empirical strategy (Diaby & Sylwester, 2015; Jagger & Shively, 2015).[5] In addition, all of our models include dummies for industry type, as some industries may be more likely to engage in (or be targeted for) bribery. For the same reason, we cluster our standard errors by industry and country groups, allowing errors to be correlated within industry-country groups.

5. DISCUSSION

The findings from our statistical analysis are presented in Table 2. Columns 1-3 report tobit coefficients for our first dependent variable (Bribe). The first column includes a female-

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[5] Jagger & Shively (2015) fit a model using a seemingly unrelated (SUR) bivariate Tobit regression.

owner dummy variable; the second column includes a female top manager dummy variable; the third column includes both owner and manager variables, and columns 4-6 repeat these specifications for our second dependent variable (Obstacle).[6]

With regard to our first dependent variable, we find that female owners, but not female managers, are significantly associated with smaller bribes. This relationship holds even when both variables are added to the same specification.[7] Moreover, the effect of female ownership is substantial: the presence of a female owner is associated with 6,785 dollars less in bribes, a very substantial sum when one considers that the mean bribe in our sample is just 2,746 dollars (standard deviation is 25760 dollars). For our second dependent variable, we find that female managers, but not female owners, are significantly associated with a reduction in the perception that corruption is an obstacle to the operations of the company. This relationship also holds even when both variables are added to the same specification.

From these results, we infer that there is indeed a relationship between gender and corruption in business, but that it varies depending on the specific aspect of corruption that we focus on, and on the specific business role. For example, the top manager, as one of the most visible members of any company, might create the perception of clean operations among other members in the company, while owners may not always take an active role in day-to-day operations. On the other hand, individuals' experience of corruption might be very different to actual bribes paid. Hence, the owner may have the power to constrain bribery, while the top manager may not have as much of an effect unless she is also the owner, as top managers may themselves be constrained by opposing groups within the corporate structure.

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[6] Although there is some conceptual overlap in models which include both female owners and managers together, the VIF statistic indicates that multicollinearity is not a cause for concern.

[7] We ran an additional test where we interacted our female management and ownership variables. The interaction was not statistically significant.

[TABLE 2.]

Even with a well-designed survey, one might doubt self-reported bribes. Therefore, Table 3 reports estimates using a binary variable which measures whether a bribe has been paid or not.[8] The findings, which are presented in columns 1 and 2, show that being a female-owned business reduces the probability of paying a bribe by 4 per cent. The remaining columns introduce an additional control variable: the gender of the ES survey respondent. We lose approximately half of our observations when we include this as a control variable. Columns 3 and 4 present estimates using Bribe and columns 5 and 6 using *Obstacle* as the dependent variable. Female ownership remains a statistically significant determinant of Bribe when we control for the gender of the ES respondent. However, our previous finding regarding the importance of female management for *Obstacle* is not robust to the inclusion of the gender of the ES respondent. All else equal, female respondents to the survey were associated with a reduction in the perception that corruption was an obstacle to the operations of the company, regardless of whether there was a women owner or top manager. Since it causes us to lose approximately half of our sample we do not include this variable in all of our specifications.

[TABLE 3.]

6. CULTURAL AND INSTITUTIONAL CONTEXT

The previous section gives us confidence that, in general, there is a meaningful relationship between gender and corruption at the firm-level. In this section, we ask whether this relationship holds in sub-samples of countries defined by three variables: democracy, the rule

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[8] We also tested our argument using bribes as a percentage of sales. We found only weak evidence –ownership statistically significant at the $p = 0.1$ – that female participation explains variation. This suggests that gender operates on dollar amounts rather than proportional amounts. Alternatively, the tendency identified by Clarke (2011) of managers to misreport bribes in percentage terms is at work.

of law, and religion. We base these choices on previous studies which have found that context matters. Our decision to split the sample, rather than include these variables as additional regressors is motivated by Esarey & Chirillo (2013), who argue that institutional and cultural factors may activate the relationship between gender and corruption, such that we should have different theoretical explanations for different sub-samples. For example, the risk for undertaking bribery under democracy and high rule of law is potentially greater, as detection and punishment is more likely. As a consequence, women, in particular, may be less inclined to engage in bribery in a democracy if risk aversion is the mechanism of action. Under autocracy and low rule of law, an alternative explanation may be work: sometimes not being corrupt might be a risky strategy if it is seen to challenge the regime. Religion is an important source of variation in cultural practices and behaviour, in some cases it prescribes how men and women ought to behave in a business context. Indeed, some religious and cultural traditions may place a greater emphasis or offer more guidance on corruption in the business world.

Table 3 presents our findings from the sub-samples. We report estimates separately using female owners and female managers as including both dramatically reduces the number of observations in many of our sub-samples. The first two columns present estimates where the sample is divided by regime type (democracy vs. autocracy). We use the Polity IV (Marshall, 2013) dataset to measure regime and, following the literature in political science, we code a country as a democracy if its Polity score is greater than or equal to six, and otherwise as an autocracy. Columns three and four present estimates where the sample is divided by rule of law, based on Kaufmann, Kraay & Mastruzzi (2010). If a country's Rule of Law score (ranging from approximately -2.5 to 2.5) is equal to or higher than zero, it is coded as high rule-of-law, and otherwise as low rule-of-law. Like regime type, a low rule of law environment may activate the relationship between corruption and gender, as the ease of

using corruption, as well as the detection and punishment of corrupt activities may differ considerably. Columns five and six divide the sample by religion, our proxy for cultural context, using the Correlates of War World Religion dataset (Maoz & Henderson 2013). We present estimates for Christianity and Islam. A religion is coded as a majority if at least half of the total population is a believer.[9]

[TABLE 4.]

Similar to our findings in Table 2, female management is not significantly associated with less bribery. However, female ownership is significantly associated with smaller bribes in all of our subsamples except the high rule of law group. The effect of female ownership is much greater under democracy or high rule of law than under autocracy or low rule of law, confirming our expectation that risk aversion is an important factor and that gender matters more in countries where the threat of detection is greater and punishment is more likely. On the other hand, female ownership leads to a similar reduction in the amount of bribes in both primarily Islamic and Christian countries, suggesting that this aspect of culture is not as important as the institutional environment.[10]

[TABLE 5.]

Table 5 repeats our models using *Obstacles* as the dependent variable. Like Table 4, the first two columns present estimates where the sample is divided by regime type; columns three

[9] In most countries majority religions do not change during the period of the survey except for Cameroon, Nigeria, Eritrea, and Vietnam, where the majority religious group sometimes failed to pass the threshold of half a population. For Cameroon, Eritrea, and Vietnam, the Enterprise Survey data were collected in 2008, so the 2010 observations of the religion data were used; in Nigeria, the company data were 2006, so the 2005 observation of the religion data was used.

[10] The mean bribe is 2,913 dollars in Christian countries and 2,682 dollars in Muslim countries such that the substantive effect of gender is broadly similar, although the reduction in payment is greater in Muslim countries.

and four present estimates where the sample is divided by rule of law, and columns five and six divide the sample by religion. We find that female ownership is associated with a significant reduction in *Obstacles* but only under autocracy and Islam. Our results for female top management are similar: it is associated with a significant reduction in *Obstacles* under autocracy, low rule of law, and Islam. Therefore, it can be said that under autocracy, low rule of law, and Islam, firms that have women in positions of influence tend to view corruption as less of an obstacle to doing business. While both bribery and perceptions regarding corruption are affected critically by institutional context, the same cannot be said for culture, which affects how respondents think about, rather than utilize corruption in a business context.

7. CONCLUSION

Many supporters of gender equality assert that it has the potential to reduce corruption. Our findings lend empirical support to this assertion: closing the gender gap in the business world may help us to eradicate corruption. Firm-level evidence from the World Bank shows that women are associated with less corruption in the business; female-owned firms tend to pay smaller bribes and are less likely to use bribery in the first place. In addition, firms where women are represented in top management tend to see corruption as less of an obstacle to doing business, although this finding does not hold when we control for survey respondents' gender. Reassuringly, however, all of our findings are robust to the determinants of corruption at the firm-level, including state ownership, foreign ownership, firm size, and exporter status, as well as the home country's level of development.

Although we have not been able to observe directly the mechanism linking gender to corruption, we have established that the effect of gender on corruption varies across different

institutional and cultural contexts. In particular, the association between women and lower levels of bribery was much greater in democracies. The greater risk of detection and punishment under this institutional arrangement is indirect evidence that risk aversion matters (Charness & Gneezy, 2012; Powell & Ansic, 1997). In addition, the association between culture and perceptions regarding corruption suggests that culture is linked more closely to attitudes than outcomes. Taken together, our findings regarding culture and institutions may help to explain the diverse findings in the wider literature, especially recent studies using field and lab experiments, where the problem of external validity is always a challenge.

Finally, it is worth reiterating the point that the negative consequences of corruption are widespread and extend much further than the economy (Brown, Touchton & Whitford, 2015). Efforts to secure gender equality in business may help us to eradicate corruption as well as advancing human development more generally.

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Table 1. Descriptive statistics

Variable	Mean	St. Dev.	Min	Max	N
Bribes	2746.25	25760.07	0	830538.4	17458
Obstacles	0.39	0.48	0	1	53532
Female Top Managers	0.16	0.37	0	1	30705
Female Owners	0.36	0.48	0	1	49239
Gender of Respondent	0.31	0.46	0	1	23346
State Ownership (%)	0.66	6.36	0	100	54470
Foreign Ownership (%)	10.06	28.29	0	100	54457
Exporter Dummy	0.23	0.42	0	1	55086
Sales (log)	13.27	2.36	3.82	22.95	50103
GDP Per Capita (log)	7.42	1.16	4.51	9.69	54743

Sources: World Bank Enterprise Surveys and World Development Indicators

Table 2. Gender and corruption at the firm-level

	Bribe (tobit)			Obstacles (probit)		
	1	2	3	4	5	6
Female Owners	-6,785***		-8,240**	-0.005		-0.016*
	(1,796)		(3,954)	(0.006)		(0.009)
Female Top Managers		-2,839	2,545		-0.036***	-0.026**
		(4,899)	(5,042)		(0.010)	(0.011)
State Ownership (%)	-365.5***	-146.4	-112.6	-0.001***	-0.002***	-0.002***
	(109.1)	(140.8)	(132.6)	(0.000)	(0.000)	(0.000)
Foreign Ownership (%)	-46.77	-76.88	-6.372	-0.000***	-0.000***	-0.000***
	(38.84)	(70.26)	(66.75)	(0.00)	(0.00)	(0.00)
Exporter Dummy	5,964**	7,686*	8,446**	0.00	-0.01	-0.00
	(2,697)	(4,021)	(4,026)	(0.00)	(0.01)	(0.01)
Sales (log)	3,260***	3,160***	3,366***	-0.00	-0.00	-0.00**
	(840.4)	(1,070)	(1,104)	(0.00)	(0.00)	(0.00)
GDP Per Capita (log)	-28,482***	-26,847***	-29,240***	0.026***	-0.02***	-0.00
	(3,668)	(4,824)	(5,398)	(0.00)	(0.00)	(0.01)
Constant	127,596***	76,288***	100,282***			
	(17,286)	(28,432)	(32,134)			
Sector Dummies	YES	YES	YES	YES	YES	YES
Predicted Probability	-	-	-	0.380	0.400	0.383
Observed Probability	-	-	-	0.381	0.401	0.384
Observations	14,184	9,649	9,011	43,013	24,650	21,346

Notes: Columns 1-3 report tobit coefficients. Columns 4-6 report probit marginal effects. Standard errors are clustered at the country-sector level and are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels respectively.

Table 3 Gender and corruption: alternative dependent variable and respondents' gender

	Bribe (Probit) 1	Bribe (Probit) 2	Bribe (Tobit) 3	Bribe (Tobit) 4	Obstacle (Probit) 5	Obstacle (Probit) 6
Female Owners	-0.0407***		-6,954**		-0.0119	
	(0.0102)		(3,449)		(0.0118)	
Female Top Managers		-0.0109		1,458		-0.0148
		(0.00913)		(5,906)		(0.0138)
Respondent Female			-3,458	-7,401	-0.0579***	-0.0773***
			(3,313)	(5,064)	(0.0118)	(0.0130)
State Ownership (%)	-0.0015***	-0.0001	-94.45	-84.23	-0.0014***	-0.0020***
	(0.0005)	(0.0003)	(114.6)	(140.5)	(0.000534)	(0.0005)
Foreign Ownership (%)	-0.0001	-0.0001	33.75	-63.54	-0.0007***	-0.0004***
	(0.0002)	(0.0001)	(52.93)	(79.08)	(0.0001)	(0.0001)
Exporter Dummy	0.0505***	0.0180**	3,391	4,904	-0.0360**	-0.0450***
	(0.0176)	(0.008)	(4,104)	(4,880)	(0.0148)	(0.0150)
Sales (log)	-0.0007	0.0039**	3,679***	3,206**	-0.0065**	-0.0013
	(0.0033)	(0.0019)	(1,178)	(1,345)	(0.0032)	(0.0030)
GDP Per Capita (log)	-0.170***	-0.0591***	-32,490***	-32,575***	0.0125	-0.0247**
	(0.0128)	(0.00831)	(6,376)	(6,274)	(0.0146)	(0.0121)
Constant			131,116***	116,631***		
			(34,701)	(33,601)		
Sector Dummies	YES	YES	YES	YES	YES	YES
Predicted Probability	0.197	0.082	-	-	0.341	0.387
Observed Probability	0.246	0.098	-	-	0.343	0.389
Observations	14,184	9,648	7,613	7,805	13,926	15,386

Notes: Columns 1-2 and 5-6 report probit marginal effects. Columns 3-4 report tobit coefficients. Standard errors are clustered at the country-sector level and are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels respectively.

Table 4. Bribery sample splits

	Democracy		Autocracy		High Law		Low Law		Christianity		Islam	
Female Owners	-8,497***		-5,759***		-13,714*		-6,145***		-8,417***		-9,397**	
	(3,161)		(1,820)		(7,445)		(1,846)		(3,141)		(3,873)	
Top Managers		4,738		-12,715		-8,755		-2,571		-865.8		-11,590
		(6,878)		(8,120)		(16,387)		(5,069)		(7,203)		(13,949)
Constant	191,549*	50,833	53,174**	-6,183	204,910*	-421,570**	119,032*	39,410	179,746*	-60,782	85,186**	-15,755
	(34,615)	(38,397)	(12,002)	(33,277)	(108,918)	(206,618)	(18,449)	(30,906)	(34,592)	(41,417)	(24,005)	(41,786)
Observations	8,923	7,160	5,024	2,272	2,927	2,878	11,257	6,771	8,783	6,914	2,350	1,693

Notes: Estimates from tobit regression. Control variables (same as Table 2) are not displayed. Standard errors are clustered at the country-sector level and are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels respectively.

Table 5. Obstacle sample splits

	Democracy		Autocracy		High Law		Low Law		Christianity		Islam	
Female Owners	-0.000344		-0.0432***		0.0173*		-0.0106		0.00128		-0.0407**	
	(0.00771)		(0.0140)		(0.00962)		(0.00747)		(0.00696)		(0.0204)	
Top Managers		-0.0162		-0.0739***		0.00651		-0.0428***		-0.00530		-0.0923***
		(0.0113)		(0.0259)		(0.0151)		(0.0130)		(0.0115)		(0.0310)
Observations	30,251	17,800	11,759	6,115	8,918	5,763	34,095	18,885	31,433	18,029	6,336	3,898

Notes: Estimates are probit marginal effects. Control variables (same as Table 2) are not displayed. Standard errors are clustered at the country-sector level and are reported in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels respectively.