

Does gender matter for corruption in business? Evidence from Vietnamese SMEs

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Highlights:

- Female-owned firms are less likely to pay bribes than their male-owned counterparts.
- Household businesses and informal firms are less likely to engage in corruption than other firms.
- Spending more time on dealing with government officials is associated with corruption.

Abstract

Corruption has been shown to diminish business climate and gender equality in developing countries. We examine the relationship between corruption and gender in business by using a panel data of Vietnamese SMEs from 2011 to 2015. We find that female owners are more negatively associated with the likelihood of corruption than their male peers. Also, formal firms are more involved in corruption, but household businesses show less corruption incidence. Moreover, firms that spend more management time on working with public officials will be more likely to pay bribes. The paper suggests that an increasing number of female entrepreneurs might be associated with a less corrupt business environment.

1. Introduction

Recent literature has sparked a debate on whether women are less corrupt than men. Most research argues that females are less likely to engage in corruption than males (Dollar et al., 2001, Swamy et al., 2001, Agerberg, 2014, Michailova and Melnykovska, 2009). Corruption is less severe where women hold larger shares of parliamentary seats and senior positions in the government bureaucracy and occupy larger shares in the labor force (Dollar et al., 2001, Swamy et al., 2001, Paweenawat, 2018). Meanwhile, some research argues that institutional structures determine corruption levels and lead to an increase in women's participation in politics (Esarey and Chirillo, 2013, Sung, 2003). Despite the ongoing debate, international organizations, scholars and policymakers have suggested that mainstreaming gender in certain areas is one of the ways to reduce corruption and boost the success of anti-corruption reforms.

Alongside corruption and gender in political life, research on the links between corruption and gender in business is also worth mentioning. Women in a public system play a role of bribe-taking, while their roles in business are bribe giving. Therefore, the underlying mechanism that

affects their corrupt behaviors in business and politics cannot be identical. More research on corruption and business is needed to investigate the roles of women in fighting corruption in business life. Second, systematically different behaviors between females and males will affect their perceptions about corruption or dishonest activities. In return, entrepreneurs' perceptions of corruption affect their decision-making, thereby influence employees and firm development strategies. Third, research with expected results of a clean and fair business climate for women will encourage more women to own businesses. This is one of the ways to raise women's well-being, narrow the entrepreneurship gender gap and thereby enhance gender equality.

However, the research on gender and corruption in business is still limited and shows contradictory results. Jha and Sarangi (2018) show that women affect corruption if their presences are in politics, not in the economic area. In other words, women may be able to diminish corruption only if they are in positions of policymakers. However, women do not have any influence on corruption if they are in power positions in the business. Meanwhile, Breen et al. (2017) and Trentini and Koparanova (2013a) suggest that female owners are less associated with corruption incidence.

Research on corruption is abundant but the relationship between gender and corruption is less studied in Vietnam. Most research focuses on the impact of corruption on business performance. For example, corruption has negative impacts on firm financial performance (Van Vu et al., 2018a), and hampers the growth of private enterprises but not state-owned ones (Nguyen and Van Dijk, 2012). Corruption hurts private investment, employment, and per capita income at the provincial level (Dang, 2016) and is harmful to firm productivity (Tran et al., 2016a). Corruption is the most substantial obstacle for business operation and lessens the firm's satisfaction of the Vietnamese business environment (Maruichi and Abe, 2019). The probability of a firm paying bribe depends on its size, age, formality, capital size, and level of interaction with public officials (Rand and Tarp, 2012, Tu, 2012a).

Corruption is, somehow suitable for business. Nguyen et al. (2016a) suggest that informal payments encourage overall innovation and product improvement. The reason for this is that corruption can be considered "transaction money" when firms are in contact with government officials. Firms probably accept paying bribes because they believe that this expense is insignificant compared to the benefits that they can obtain from innovation. Firms pay bribes because they expect to get benefits in return, such as fewer administrative hassles (Nguyen et al., 2016b).

Among research on corruption in Vietnam, none examines how gender affects corruption in business. De Jong et al. (2012) and Tu (2012b) control for entrepreneur human capital such as

work experience, formal education and non-formal training when examining corruption in business in Vietnam. However, the authors do not refer to the gender of the entrepreneurs in their research. Thus, it is still desirable to examine the question of whether corruption varies across gender in business in a single country, Vietnam.

This paper offers the following contributions to the literature. First, as previously mentioned, our study itself contributes to the literature on corruption and gender in business. Second, the paper also is one of the few papers on corruption at the firm level in a single country. Previous studies use country-level data to analyze the relationship between corruption and firm performance; few use panel data in estimating the gender-corruption relationship (Cheung and Hernández-Julián, 2006). Third, the paper is also among the few papers using a measurement of corruption at the firm level as most previous studies use corruption perceptions index when analyzing the relationship between corruption and gender (Jha and Sarangi, 2018). The research adds to the literature by using corruption measurement at the firm level (Breen et al., 2017, Trentini and Koparanova, 2013a). This is because previous papers mostly use control of corruption index (Samimi and Hosseinmardi, 2011, Dollar et al., 2001, Sung, 2003, Jha and Sarangi, 2018) or control of corruption indicator (Sung, 2012, Hao et al., 2018a) when study gender and corruption.

Our results suggest that women-owned firms are less likely to be corrupted by government officials than male-owned firms. If women own formal firms and non-formal firms, then the formally registered firms will corrupt more than informal ones. It is recommended that female entrepreneurs might be more trustworthy partners for a foreign or local business when they wish to conduct business in Vietnam. In addition, household business is less likely to corrupt due to their nature of less contact with government officials. This can be one of the reasons that firms prefer staying informal, as they fear being corrupted by public officials and avoiding transaction costs. Also, spending time with government officials will increase the chance of being exposed to corruption.

The rest of the paper is presented as follows. Part 2 provides a literature review on the relationship between corruption and gender in general and corruption and gender in business. Part 3 presents the Vietnamese background on corruption and SMEs development. Part 4 describes data, variables and econometrics models. Part 5 presents empirical results on corruption probability and corruption intensity. Part 6 discusses why female-owned firms are less likely to corrupt than male counterparts and other findings. Part 7 concludes the research and provides some policy recommendations for both Vietnamese entrepreneurs and the Vietnamese government.

2. Literature review

2.1. Corruption and gender

Research in the early 2000s suggested that the increasing presence of women in public life is associated with low levels of corruption (Swamy et al., 2001, Dollar et al., 2001). Women can be associated with a reduction in corruption in different ways. First, women tend to be less likely to accept bribes. As a result, the incidence of corruption in legislative systems is lower, where women hold more seats. Second, females holding parliamentary seats may influence corruption laws or promote corruption eradication on the public agenda and at events. In other words, they can influence corruption by encouraging the media and other members of civil society to focus on corruption elimination (Swamy et al., 2001). Jha and Sarangi (2018) argue there may be a lower misappropriation of funds under policies that were proposed by female parliamentarians.

However, other research finds that the relationship between gender and corruption depends on various political and social backgrounds. In particular, Sung (2003) suggest that the association between gender and corruption may be accidental and not causal. This relationship depends on higher political liberalization, which is unstable and mainly caused by liberal democracy. Esarey and Chirillo (2013) find that women are less tolerant of corruption and less likely to engage in corruption in democratic countries but have no effect on corruption in autocratic countries. The relationship between female participation in government and corruption is, therefore, diminished once the influence of democratic institutions is controlled (Sung, 2003).

Another view claims that women are not naturally associated with a low level of corruption. Corruption can be reduced, not because of the higher representation of women, but because a specific political system is capable of fighting corruption (Sung, 2012). Once women became more integrated into political networks, the effects of gender on corruption have faded (Sung, 2012). As women are newcomers or occupy fewer positions in the political or business sphere, they are not familiar with the rules of benefit exchange. Once they can enter a system, they try to assert their position by acting honestly and trustworthily. They could behave the same as men if they are able to access to the positions as men. If there is a fall in corruption after increasing the number of women in positions of power, it may be due to the presence of outsiders (Goetz, 2007). Therefore, if women take up more senior management positions and achieve greater equality, there is no evidence to suggest that women are not involved in corruption (Transparency International, 2014).

On the other hand, results on gender and corruption are mixed (Sung, 2012). Higher female ratios in the legislative systems and labour force can bring a lower level of corruption, but the

female ratio in secondary enrolment is positively related to corruption. Meanwhile, the number of women in the whole population has insignificant impacts on corruption. Thus, the relationship between corruption and gender might vary remarkably when different female groups are mentioned (Hao et al., 2018b). Following Sung (2012), Esarey and Chirillo (2013) find evidence that a gender gap in corruption attitudes and behaviours is noticeable in democracies but that it is less prevalent or does not exist in autocratic systems. Similarly, Cheung and Hernández-Julián (2006) find that states with higher rates of female participation also have lower levels of corruption in cross-section data of the US states, but they find no correlation between gender and corruption when using a panel data and fixed effects.

The mixed relationship between corruption and gender is also expressed in experiments as actual behaviour may be different from survey responses. Alatas et al. (2009) show that the gender and corruption relationship significantly depends on culture and social context. For instance, Australian women accepted fewer bribes than Australian men. Meanwhile, no difference in gender towards corruption was observed in India, Singapore and Indonesia. Thus, the difference in attitudes of men and women toward corruption seems not to be robust, and it depends on cultural context. Another experiment also indicates that there are no clear differences between women and men in terms of bribe acceptance (Rivas, 2013a).

The difference may depend on the risk acceptance of females and males. Females are believed to be more risk-averse than males, and this affects their corruption behaviour. Schulze and Frank (2003) find that women are less willing to accept bribes than men if bribery can be detected and punished, but there is no gender gap in bribe acceptance without knowing the risk in advance. Armantier and Boly (2011) also find that men and women were equally likely to accept a bribe without monitoring. However, women show a significantly lower probability of accepting bribes when being monitored or facing the risk of being caught (Sung, 2003). This may be because women believe they are punished more harshly than men because of different social expectations for their behaviour, which has been shown in American politics (Armantier and Boly, 2008).

In developed countries, there is also considerable evidence that states with a high number of women in government tend to show lower levels of corruption. Women, more often than men choose to withdraw from corrupt activities in Mexico when considering costs and benefits of corruption (Wängnerud, 2010). In Europe, countries with a high number of women elected tend to be less corrupt than countries with a low number of women elected. This pattern is the same across regions in Europe (Wängnerud, 2015). Women's participation in local assemblies is consistent with a lower level of corruption in 20 European Union countries (Bauhr et al., 2019).

The links between the share of women in the national legislature and the level of corruption also exist in developing countries. Female participation in labour markets and governments is usually less involved in corruption than males developing countries including Argentina, Chile, China, Indonesia, Malaysia, and the Philippines (Samimi and Hosseinmardi, 2011). The links are also observed in transition countries such as Central and Eastern Europe countries (Michailova and Melnykovska, 2009). Moreover, female mayors in Brazil are less likely to engage in corruption than their men counterparts (Brollo and Troiano, 2016). In India, villagers are 1.5 percentage points less likely to pay bribes for obtaining service when village leaders are women. In Ghana, limits in opportunities and networking make women less corrupt than men. Hence, culture rather than nature influences the difference between men and women towards corruption (Alolo, 2007).

2.2. Gender and corruption in business

Apart from conducting research on gender and corruption in public life, Swamy et al. (2001) also examine gender and corruption in business. Using an enterprise survey Georgia, they show that firms owned or managed by men are significantly more likely to be involved in bribes when they were in contact with governments. The probable reason is that women are less likely to belong to bribe-sharing “old boy” networks. Hence, women might be less likely to be asked for bribes. Another reason is that women tend to have less individual or group experience in the labour force, and they need time to gain knowledge on how to engage in corruption (Swamy et al., 2001). In contrast, female senior managers and officials have no links to corruption (Brollo and Troiano, 2016). Trentini and Koparanova (2013b) also find that women entrepreneurs have a significantly lower propensity to bribe compared to their men counterparts. They explain that because women mostly run firms that are micro and small, they have limited networks and fewer opportunities to meet public officials. Thus, it is easier for female owners to escape a corrupt official’s attention.

In addition, female and male workers or employers reveal different actions when facing corruption. Both the frequency of bribes and the amount offered are higher if participants are male, and they take the roles as firms in an experiment (Rivas, 2013b). This was confirmed by empirical results from Breen et al. (2017). They find that female owners are associated with a lower percentage of bribery spending over a total annual sale. In contrast, female managers consider corruption as less an obstacle for their companies and female-owned businesses are less prone to the incidence of bribery. Jagger and Shively (2015) find that women in Uganda are less likely to pay bribes than men in charcoal markets. Males gave larger bribes in the private

context than in public, whereas females gave smaller bribes in both situations (Lan and Hong, 2017).

3. Vietnamese SMEs and corruption

Corruption is among the top three concerns in Vietnam, alongside poverty and economic growth. According to the Law on Anti-Corruption, “corruption means office holder’s abuse of his or her official capacity for personal gain” (Vietnam National Assembly, 2018). The 2018 Law on Anti-Corruption is the first law to mention corruption in the private sector as the previous laws mostly focused on the public sector. The 2018 Law refers to corruption committed by enterprises. Accordingly, corruption includes “embezzlement, taking bribes, bribing or brokering bribery for taking advantage of one’s influence over the operation of the enterprise or organization, or for personal gain” in which gifts are illegal by law, but exceptions are made for gifts with a value of less than VND 500,000.

Despite improvements in curbing and detecting corruption over the past few years, corruption is still widespread throughout the country. Businesses relating to land administration, the construction sector, and public administration are most likely to engage in corruption. It is found that up to 58% of domestic enterprises are still harassed by public officials, and 54% of enterprises pay unofficial fees (Mekong Business Initiative, 2016). As such, Vietnam ranked 117 out of 180 countries in 2018 in terms of the Corruption Perceptions Index (CPI). Vietnam is a more corrupt nation than other countries in the region, including Indonesia, Thailand, Malaysia and the Philippines.

Inspection remains a burden for many Vietnamese private businesses. Up to 74% of businesses had an inspection in all fields. The larger the Vietnamese enterprises are, the higher the burden of inspection is. SMEs normally receive one or two inspections during the year. Meanwhile, large-scale enterprises have about three inspections annually. A number of enterprises claims that inspection content was duplicated (VCCI and USAID, 2015). In addition, time used for tax inspections increases with the scale of business. For micro-businesses, the average of each tax inspection takes about 3 hours for a micro firm and 7 hours for small and medium-sized businesses. Meanwhile, large-scale businesses have to spend about 40 hours for each tax inspection (VCCI and USAID, 2015).

Regarding female entrepreneurship, Vietnam’s business climate for women is generally supportive. Vietnam has fewer differences between the legal statuses of men and women compared to many other economies that have similar development status (IFC, 2017). In 2018, women own more than 30% of businesses in Vietnam. The nation is the first ranking in Asia

and sixth out of 53 surveyed economies in the number of women entrepreneurs, ahead most of Europe, the US, and China. However, 99 per cent of women-owned businesses in Vietnam are microenterprises and small-medium enterprises (IFC, 2017). The Vietnamese government has set a target of having one million enterprises by 2020, of which 35 per cent will be owned by women.

4. Method and materials

4.1. Probability of corruption

In this paper, we consider unofficial payments or bribes to be corruption. The corruption probability is estimated by a Probit model and a logit model. Corruption is a dummy variable, which equals 1 if firm pay informal fees and 0 otherwise.

$$Probability (Corruption=1) = \Phi(\beta_0 + \beta_1 * female_{it} + \beta_2 * X_{it} + u_{it})$$

where Φ is the cumulative distribution of the standard normal distribution, u_{it} is error term.

Logit model can be expressed as follows:

$$Log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 * female_{it} + \beta_2 * X_{it} + u_{it}$$

where p is the probability that firms pay bribes, u_{it} is the error term.

Random effect logit model is written as:

$$Log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 * female_{it} + \beta_2 * X_{it} + u_{it}$$

where p is the probability that firms pay bribes, u_{it} is the random effect. It is assumed that u_i follows a normal distribution with mean 0 and variance σ^2 . The random logit model also includes year dummies (y_t) to account for potential time effects.

4.2. Corruption intensity

Corruption intensity is measured by the percentage of corruption spending over firm revenue. We use the Tobit model to estimate the links between the gender of firm owners on corruption intensity. Recent corruption studies have used a Tobit model for their empirical strategy (Diaby and Sylwester, 2015, Breen et al., 2017, Jagger and Shively, 2015). We use this method, not OLS because corruption intensity is numerical and continuous but censored between 0 and 100.

The Tobit model has the following form:

$$Y_t (\text{corruption intensity}) = \beta_0 + \beta_1 * female_{it} + \beta_2 * X_{it} + u_{it}$$

in which

$$Y_t (\text{corruption intensity}) = \beta_0 + \beta_1 * \text{female}_{it} + \beta_2 * X_{it} + u_{it}$$

$$\text{if } 0 < \beta_0 + \beta_1 * \text{female}_{it} + \beta_2 * X_{it} + u_{it} < 100,$$

$$\text{or } Y_t (\text{corruption intensity}) = 0 \text{ if } \beta_0 + \beta_1 * \text{female}_{it} + \beta_2 * X_{it} + u_{it} \leq 0$$

$$\text{or } Y_t (\text{corruption intensity}) = 100 \text{ if } \beta_0 + \beta_1 * \text{female}_{it} + \beta_2 * X_{it} + u_{it} \geq 100$$

in which females equal 1 if owners are females and 0 if owners are males. X_{it} is a vector of control variables, including firm characteristics and owner characteristics.

4.3. Data source

The research extracts panel data from SME surveys in Vietnam. The surveys were conducted in 2011, 2013 and 2015 and cover around 2,600 of private manufacturing firms in 10 cities and provinces. Their topics include firm history, sales, investment, social networks, firm owner characteristics, informal payments, and trade indicators. The food and beverages sector occupies the largest number of enterprises in the survey, followed by fabricated metal products (ISIC 28), and manufacturing of wood products sectors (ISIC 20).

We sort the data in the following ways. First, we only keep firms that have legal status as household and other private ownership since our research only focuses on the private sector. Second, for our empirical strategy of investigating the decision-making position in firms, we only keep firms that have owners who are respondents. After that, we end up with more than 5,000 observations for panel data.

4.4. Variables

Research on corruption in Vietnam employs various ways to measure corruption. The most common measurement is corruption probability and corruption intensity. Corruption is identified as a dummy variable if firms pay informal fees, whilst bribe intensity is measured as the ratio of informal payment over total firm revenue (Bai et al., 2017, Rand and Tarp, 2012, Demenet et al., 2017, Nguyen et al., 2016a, Van Vu et al., 2018b, Tran et al., 2016b). Some papers use Corruption Perceptions Index (CPI) from Transparency International (Anh et al., 2016) or data from provincial competitiveness index (PCI) published every year by the Vietnam Chamber of Commerce and Industry (VCCI) combined with data from General Statistics Office survey (Thi Hoa, 2020, Dang, 2016, Bai et al., 2017, Anh et al., 2016).

Our study uses corruption probability and corruption intensity as dependent variables. The questionnaire allows us to identify whether firms pay informal fees or not. Meanwhile, we measure corruption intensity by the percentage of corruption spending over an annual sale.

Control variables in our research are constructed based on previous literature and Vietnamese firm characteristics. Location is an essential determinant for bribery. Corruption spending in larger cities may be higher since firms in a city can pay more money for corruption than firms in rural areas. Also, more significant and more varied economic transactions in big cities than in provinces and rural areas can lead to an increase in contact with government officials.

Firm size is measured by the number of firm employees. Firm size can affect the ability to pay and determine bargaining power or connections (Swamy et al., 2001). Larger firms might have higher corruption probability or pay more money for corruption due to large economic transactions. Besides, profit per employee represents the ability to pay for corruption of a firm. Formally registered firms are also essential for determining corruption (Svensson, 2003) as it determines the frequency of connection with public sectors. Similarly, the legal status of a firm affects the ability to pay. Household firms are often less formal than other firm types and subject to different legal requirements.

The ability to refuse to pay is represented by the capital-labour ratio. Capital-labour ratio is a proxy for a firm's refusal power since technology will strengthen the firm's bargaining position (Rand and Tarp, 2012). Export and import activities also influence the likelihood of being corrupted. Svensson (2003) finds that firms typically pay bribes when dealing with public officials if firms are exporting, importing, or requiring public infrastructure services. Firm age is also an important variable in the corruption model. Older firms would be more likely to pay bribes since they can accumulate higher sales over time or pay more to invest in machinery (Svensson, 2003).

The propensity for being asked for or offered a bribe also depends on individual characteristics, including age and education. Hirschi and Gottfredson (2000) indicate that age is negatively correlated with rule-breaking. Well-educated entrepreneurs are expected to see and capture bribery opportunities better than less educated entrepreneurs because of their superior cognitive skills (Marvel et al., 2007). Also, highly educated persons are more likely to be asked for a bribe by a government official because of their higher earning capacity (Mocan, 2004).

Table 1 below shows the variable summary and definitions. Table 1 shows that about 36.7% of firms in the sample paid bribes over the study period. However, spending on corruption is quite small. On average, firms only pay 0.106% over their revenue on corruption. The maximum payment for corruption is about 12.308%. This can be explained by the fact that 76% of the firms surveyed are household business. Thus, they do not spend or spend not too much on corruption. In addition, this is only for manufacturing firms, so that corruption may not

compromise much on their total revenue. Therefore, it will affect the average corruption spending over the sample.

Although firms in our sample did not spend much money on corruption, it does not mean that Vietnamese firms pay less for corruption. This might be because household businesses largely occupy our dataset, and they do not pay much for bribery. More generally, another sample shows that 7.1 per cent of firms report that corruption accounted for more than 10 per cent of turnover (VCCI and USAID, 2018).

On average, firms do not have positive profit over the period. More than 60% of firm owners finished high school, but only 15.5% of them have college or university degree. More than 70 per cent of firms are formally registered. This number reflects the fact that in Vietnam, informal firms still are popular and occupy significantly among operating firms. Firm spend 1.8% of management time to work with government officials, and 12.8% of firms have been inspected one time per year during the period. Only a small proportion of firms engage in the export activity, and about 15% of firms import their inputs.

Table 1. Summary of variables

Variables	Min	Max	Mean	SD	Definition
Corruption	0	1	0.367	0.482	Equal 1 if firm pay informal fees, 0 otherwise
Corruption intensity (%)	0	12.308	0.106	0.366	The percentage of corruption spending over annual revenue
Female	0	1	0.098	0.297	Equal 1 if owners are females and 0 if owners are male
Firm size	1.504	11.705	6.63	1.634	Measured by a log of the total number of employees
Profit per employee (in a million VND)	-9.093	2.197	-3.375	0.844	Equal net profit of firms divided by total employees of firms
Firm age	0	74	15.044	10.172	Measured by years from the established years up to the year of survey
Owner age	21	94	48.1	9.951	Age of owners in full years
Capital labour ratio	0.047	9.913	5.37	1.245	Capital labour ratio, measured by total capital of firms over the total number of employees
General education	0	1	0.637	0.481	Equal 1 if firm owner finished high school, and 0 otherwise
Professional Education	0	1	0.155	0.362	Equal 1 if firm owner finished one of the forms of college or university degree, 0 otherwise.
Location	0	1	0.375	0.484	Equal 1 if firms located in cities (Ha Noi, Hai Phong, HCMC) and 0 if located in other provinces (Phu Tho, Ha Tay, Nghe An, Quang Nam, Khanh Hoa, Lam Dong, Long An).
Household	0	1	0.74	0.439	Equal 1 if firms are household enterprises and 0 otherwise
Formal	0	1	0.716	0.451	Equal 1 if firms are formally registered and 0 otherwise
Management time (%)	0	30	1.818	2.209	The percentage of management's working time with government officials each month.
Inspection	0	1	0.128	0.334	Equals 1 if firms are inspected by government officials, 0 otherwise
Export	0	1	0.042	0.201	Equals 1 if firm exported and 0 otherwise
Import	0	1	0.15	0.12	Equals 1 if firm imported and 0 otherwise

Table 2 shows the summary statistics between men and women-owned firms. Female owned firms have most indicators that are less good performance than male-owned firms. However, females have more firms located in cities than males and have household firms than males. It reflects the fact that women in cities have more opportunities to set up their businesses. Women are more likely to set up their firms under the form of household business rather than other legal ownership since household business is involved with less complicated registration procedures. Government official inspects firms owned by women more than men-owned firms. Firms owned by females are slightly smaller in terms of profit, and capital-labour ratio than male-

owned firms are. Women own smaller firms than men, and they own more firms located in cities.

Table 2. Summary statistics by gender

	Female-owned firm (%)	Male-owned firms (%)
Corruption (Yes=1)	0.332	0.382
Percentage of corruption over annual sale (%)	0.1037	0.1065
Firm size (log of the number of employees)	1.41	1.56
Capital-labour ratio (KL)	5.27	5.41
Profit per employee	-3.38	-3.37
Inspection (Yes=1)	0.138	0.125
Management time	1.795	1.827
Formal (Yes=1)	0.716	0.717
Firm age (in years)	15.08	15.03
Location (city=1)	0.411	0.361
Household firm (Yes=1)	0.746	0.738
Owner age (in years)	47.69	48.33
Finish secondary school (Yes=1)	0.59	0.66
Finish college or university (Yes=1)	0.145	0.159
Number of observations	1,551	3,905

5. Results

Table 3 presents the results from the probit model and the logit model. In both models, the coefficient of female-owned firms is negatively significant from 0. It means that women-owned firms are less likely to engage in corruption than their male peers. The logit model indicates that female-owned firms have¹ 45.33% less likely to be less corrupt than male-owned firms. When we control for more firm characteristic in the full regression, the probability of corruption of women is diminished, but still significant, at 44.79%.

¹ $\exp(-0.187)/(1+(\exp(-0.187)))=45.33\%$

Table 3. Corruption probability and gender - Probit and logit model

	<i>Probit</i>				<i>Logistic</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	-0.115*** (0.042)	-0.111*** (0.042)	-0.112*** (0.042)	-0.128*** (0.042)	-0.187*** (0.070)	-0.181** (0.070)	-0.184*** (0.071)	-0.209*** (0.071)
Profit per employer	0.047** (0.024)	0.042* (0.024)	0.042* (0.024)	0.039 (0.024)	0.079** (0.039)	0.071* (0.040)	0.071* (0.040)	0.064 (0.040)
Capital labor ratio	0.077*** (0.017)	0.081*** (0.017)	0.082*** (0.017)	0.065*** (0.017)	0.122*** (0.028)	0.128*** (0.028)	0.129*** (0.028)	0.103*** (0.029)
Firm size	0.337*** (0.024)	0.344*** (0.025)	0.351*** (0.025)	0.311*** (0.026)	0.557*** (0.041)	0.567*** (0.042)	0.579*** (0.043)	0.512*** (0.044)
Household	-0.337*** (0.051)	-0.308*** (0.052)	-0.351*** (0.056)	-0.288*** (0.057)	-0.548*** (0.083)	-0.501*** (0.084)	-0.571*** (0.091)	-0.466*** (0.093)
Location	0.310*** (0.041)	0.286*** (0.042)	0.298*** (0.042)	0.275*** (0.043)	0.506*** (0.067)	0.468*** (0.068)	0.490*** (0.069)	0.449*** (0.070)
Firm age		-0.007*** (0.002)	-0.006*** (0.002)	-0.006*** (0.002)		-0.011*** (0.003)	-0.010*** (0.004)	-0.009** (0.004)
Export		-0.092 (0.097)	-0.090 (0.097)	-0.087 (0.098)		-0.147 (0.161)	-0.145 (0.161)	-0.140 (0.162)
Import		0.084 (0.164)	0.119 (0.165)	0.110 (0.165)		0.148 (0.279)	0.219 (0.280)	0.198 (0.280)
Owner age			-0.002 (0.002)	-0.002 (0.002)			-0.004 (0.003)	-0.004 (0.003)
General education			0.032 (0.043)	0.021 (0.044)			0.055 (0.073)	0.038 (0.073)
Prof education			-0.167*** (0.059)	-0.171*** (0.060)			-0.281*** (0.098)	-0.286*** (0.098)
Formal Firm				0.219*** (0.052)				0.371*** (0.089)
Inspection				0.185*** (0.062)				0.296*** (0.103)
Management time				0.034*** (0.009)				0.056*** (0.015)
year2013	0.185*** (0.045)	0.187*** (0.046)	0.183*** (0.046)	0.203*** (0.046)	0.323*** (0.076)	0.326*** (0.076)	0.320*** (0.076)	0.348*** (0.077)
year2015	-0.017 (0.046)	0.003 (0.047)	-0.004 (0.047)	-0.096* (0.053)	-0.001 (0.077)	0.033 (0.078)	0.022 (0.079)	-0.132 (0.089)
Constant	-1.037*** (0.158)	-1.005*** (0.159)	-0.892*** (0.179)	-1.000*** (0.181)	-1.691*** (0.264)	-1.636*** (0.266)	-1.445*** (0.298)	-1.638*** (0.302)
Observations	5,350	5,330	5,330	5,310	5,350	5,330	5,330	5,310
Log Likelihood	-3,085.077	-3,066.336	-3,061.687	-3,026.161	-3,088.813	-3,070.269	-3,065.470	-3,030.709
Akaike Inf. Crit.	6,188.154	6,156.672	6,153.374	6,088.322	6,195.626	6,164.538	6,160.940	6,097.418

Note:

*p<0.1; **p<0.05; ***p<0.01

The results are in line with most research on gender and corruption. In Vietnam, more male entrepreneurs than female peers bribe authorities to facilitate registration procedures and taxation (Hampel-Milagrosa et al., 2010). Trentini and Koparanova (2013b) suggest that women entrepreneurs have a significantly lower propensity to bribe compared to their men counterparts. They explained that because women mostly run firms that are micro and small, they have limited networks and fewer occasions to meet public officials.

The results show that a firm with a more capital-labour ratio is more prone to corruption. It means capital intensive firms have higher corruption probability. It can explain that firms that invested in capital and machinery to increase productivity must have various transactions with government officials. Accordingly, the probability of paying bribes is higher. In addition, firms having more profit per employee are more likely to corrupt. If firms gain more profit, they are more willing to pay informal fees to “get things done”.

Firm size is also an indicator for the ability to pay of a firm. The results show that larger firms are more likely to pay bribes. Meanwhile, small companies are less likely to be requested to pay bribes for public officials because of their constrained revenues. Smaller firms also have limited activities as well as higher risk aversion. Or larger firms might have more interactions with public officials during their business activities (Svensson, 2003).

Owner age does not matter for corruption probability. Meanwhile, professional education positively affects corruption. Firm owners have finished college or university will be less likely to corrupt than their counterparts who did not obtain this type of degrees. This result is contradictory with the argument of Svensson (1999). He argues that more educated people will be more likely to corrupt as they foresee the benefits of paying bribes. The results can be explained that more professional education in Vietnam might know the cost and risk of corruption. They might obey the law better than less educated owners might.

Other control variables, location of firms indicate that firms in the city are more likely to corrupt than firms in rural areas. Firms in cities have more chances to corrupt than firms located in rural areas because they have more transactions, and the government officials may have more power to influence firms in big cities.

Household firms are also less corrupt than non-household businesses because household firms are small scale and most of them are not formally registered. Thus, they do not have much works or transactions with government officials. They also do not have enough resources to engage in corruption. It is in line with results that household firms are less able to bargain and

ability to pay. Household firms are invisible to public officials, and they do not have many transactions with state employees.

However, the percentage of management's working time with government regulations and officials is positively associated with corruption. Spending time to work with government officials does not only include inspected by a government organization. It also includes the time that firms have to work with paperwork, for example, business registration, dealing with tax officials or applying for grants, etc.

In both models, general education levels have no significant impact on corruption likelihood and corruption spending of firms, but when firm's owners finished college or university or higher degree, their firms are less likely corrupt. Our results are different from the human theory that people that are more educated are more likely to engage in corruption.

Table 4 shows the results from the random effect model. It can be seen that females are still less likely to be corrupt than males, when we control for potential year effects, females are 44.6% less likely to pay bribes than males, but at 1% significant level. The other variables have the same effects on corruption as in the previous model. Inspection time becomes positive significant when controlling for year effect in the random logit model. When firms are inspected, the likelihood of paying bribes will be 57.1% more than firms without being inspected by government officials.

Table 4. Regression results – Random effect logit model

	(1) corruption probability	(2) corruption probability	(3) corruption probability	(4) Corruption probability
Female	-0.199** (0.079)	-0.196** (0.079)	-0.197** (0.079)	-0.215*** (0.080)
Profit per employee	0.088** (0.043)	0.085** (0.043)	0.079* (0.043)	0.060 (0.044)
Capital labor ratio	0.129*** (0.031)	0.127*** (0.031)	0.134*** (0.031)	0.115*** (0.032)
Firm size	0.550*** (0.047)	0.557*** (0.049)	0.570*** (0.049)	0.552*** (0.050)
Household	-0.566*** (0.096)	-0.565*** (0.096)	-0.576*** (0.104)	-0.521*** (0.106)
Formal firm	0.315*** (0.089)	0.312*** (0.089)	0.332*** (0.090)	0.376*** (0.096)
Location	0.497*** (0.078)	0.487*** (0.078)	0.472*** (0.080)	0.496*** (0.081)
Export		-0.142 (0.179)	-0.117 (0.179)	-0.144 (0.181)
Import		0.218 (0.304)	0.281 (0.305)	0.184 (0.305)
Firm age			-0.013*** (0.004)	-0.011*** (0.004)
General education			0.049 (0.080)	0.037 (0.082)
Professional education			-0.307*** (0.108)	-0.311*** (0.109)
Owner age			-0.004 (0.004)	-0.004 (0.004)
Inspection				0.288*** (0.111)
Management time				0.065*** (0.016)
year2013				0.378*** (0.082)
year2015				-0.123 (0.095)
_cons	-1.849*** (0.286)	-1.853*** (0.287)	-1.547*** (0.327)	-1.812*** (0.339)
/lnsig2u	-0.859*** (0.276)	-0.874*** (0.280)	-0.872*** (0.279)	-0.820*** (0.272)
Obs.	5350	5332	5330	5310

Standard errors are in parenthesis

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 5 shows the results regarding corruption intensity that is measured by the informal spending over annual revenue. If firms are owned by females, they spend less than 0.053 per cent on corruption than firms with male owners. Even though this is not much different in terms of amount, but this is a significant effect at 5% level. In our Tobit model, most of the variables have the same effects on corruption intensity as those effects on corruption probability in logit models, except for profit per employee. Particularly, profit per employee is positively

associated with the probability of corruption but negatively associated with corruption intensity. Factors affecting the probability of corruption do not necessarily affect corruption spending with the same trajectory (Rand and Tarp, 2012). When firms have more profit per employee, they could have more bargaining power and can reduce their informal payment amount.

Table 5. Corruption intensity – Tobit model

	(1) Corruption intensity	(2) Corruption intensity	(3) Corruption intensity	(4) Corruption intensity
Female	-0.053** (0.027)	-0.058** (0.025)	-0.060** (0.025)	-0.068*** (0.026)
Profit per employee	-0.028** (0.014)	-0.031** (0.014)	-0.033** (0.014)	-0.040*** (0.014)
Capital labour ratio	0.057*** (0.011)	0.057*** (0.010)	0.061*** (0.010)	0.048*** (0.011)
Firm size	0.097*** (0.015)	0.092*** (0.015)	0.097*** (0.015)	0.070*** (0.016)
Household	-0.197*** (0.032)	-0.183*** (0.030)	-0.203*** (0.033)	-0.158*** (0.033)
Location	0.227*** (0.026)	0.217*** (0.025)	0.221*** (0.025)	0.212*** (0.025)
Export		0.029 (0.054)	0.030 (0.054)	0.032 (0.054)
Import		-0.029 (0.084)	-0.008 (0.084)	-0.015 (0.084)
General education			0.012 (0.027)	0.003 (0.027)
Professional education			-0.090*** (0.034)	-0.090*** (0.034)
Owner age			-0.003*** (0.001)	-0.003*** (0.001)
Formal				0.157*** (0.033)
Inspection				0.088** (0.037)
Management time				0.022*** (0.005)
year2013				0.103*** (0.028)
year2015				-0.055* (0.031)
_cons	-0.855*** (0.098)	-0.843*** (0.094)	-0.686*** (0.107)	-0.808*** (0.110)
/var(e.corruptio~)	0.483*** (0.017)	0.443*** (0.015)	0.442*** (0.015)	0.437*** (0.015)
Obs.	5351	5333	5333	5313
Pseudo R ²	0.060	0.061	0.064	0.073

Standard errors are in parenthesis

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Apart from that, all the coefficients have the same effects on corruption intensity as their effects on the probability of corruption. For example, the capital-labour ratio has a positive impact on corruption amounts. It indicates that a firm with higher capital intensity pays more informal fees than labour intensity firms.

The positive relationship between working time with government, inspections and corruption remains true for corruption value. Spending time on dealing with management authorities increases the total spending on corruption. Firms that are formally registered more objective of corruption than firms that do not register.

Firm size measured by the number of employees indicates that firms with a more significant number of employees will be willing to pay large bribes than firms with fewer workers. It means that a firm with a bigger size will pay more for corruption as they have more transaction with government officials when expanding their business.

The young firms do not have strong bargaining power when dealing with officials. With their young ages, they are more vulnerable to government corruption than old and well-established firms. Svensson (2003) also report that there is a positive association between the ability to pay and the amount of bribery and firm age among Ugandan firms. Corruption may incur additional costs, such as paying large bribes or extra time invested in developing relationships with government officials for newly established companies, (Svensson, 2003).

Formality still positively affects corruption amounts. In Vietnam, firms are formal if they have business registration certificates or tax code. Under the Vietnamese laws, all household businesses having more than ten employees must register to obtain business certificates and tax codes. Registration for household businesses with revenue less than a certain amount is not compulsory, but Vietnamese law encourages firms to register officially. However, firm size, income, professional premises, information access, and protection from corruption influence their registration decision (Cling et al., 2012).

Our study findings are consistent with the results of Rand and Tarp (2012). They argue that informal status helps firms easily hide their visibility from being detected by state workers. When firms are formal, they have spent much more time to work with government officials rather than being informal. Thus, some businesses stay informal to avoid harassment and bribes from state officials.

We include interaction terms in the model to address a possible interaction effect based on gender. We generate interaction term between gender and formal firm, gender and management

time, and gender and inspection probability. We run the regression with interaction terms for both models, and the results are presented in Table 6 below.

Table 6. Regression results with interaction terms

	Logit model		Tobit model	
	(1)	(2)	(3)	(4)
	Corruption probability	Corruption probability	Corruption intensity	Corruption intensity
Female	-0.199*** (0.071)	-0.591*** (0.173)	-0.065** (0.025)	-0.278*** (0.061)
Profit per employee	0.079** (0.039)	0.076* (0.039)	-0.035** (0.014)	-0.037*** (0.014)
Capital labour ratio	0.113*** (0.028)	0.111*** (0.028)	0.052*** (0.010)	0.051*** (0.010)
Firm size	0.498*** (0.044)	0.492*** (0.044)	0.068*** (0.015)	0.064*** (0.015)
Household firm	-0.419*** (0.086)	-0.428*** (0.086)	-0.128*** (0.031)	-0.134*** (0.031)
Location	0.422*** (0.069)	0.419*** (0.069)	0.191*** (0.025)	0.188*** (0.025)
Formally registered firm	0.292*** (0.085)	0.173* (0.094)	0.128*** (0.031)	0.065* (0.035)
Inspection	0.098 (0.092)	0.124 (0.110)	0.022 (0.033)	0.026 (0.039)
Management time	0.058*** (0.015)	0.061*** (0.017)	0.022*** (0.005)	0.024*** (0.006)
Export	-0.136 (0.161)	-0.133 (0.161)	0.038 (0.054)	0.040 (0.054)
Import	0.162 (0.279)	0.172 (0.279)	-0.035 (0.084)	-0.031 (0.084)
Firm age	-0.012*** (0.003)	-0.012*** (0.003)	-0.005*** (0.001)	-0.005*** (0.001)
Female*Formal firm		0.548*** (0.193)		0.282*** (0.069)
Female*Inspection		-0.092 (0.201)		-0.014 (0.072)
Female*Management time		-0.019 (0.032)		-0.006 (0.011)
cons	-1.660*** (0.260)	-1.569*** (0.262)	-0.883*** (0.096)	-0.830*** (0.096)
sigma:_cons			0.662*** (0.012)	0.661*** (0.011)
Obs.	5310	5310	5311	5311
Pseudo R ²	0.125	0.126	0.070	0.072

Standard errors are in parenthesis
 *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The results are still significant and all the coefficients have same sign effects on corruption probability and corruption intensity when we include interaction terms in both models. The interaction term between female owners and formal firms indicates that formally firms are more likely to corrupt than non-formal firms if they are both owned by females. The results suggest that the legal status of firms is essential in determining the probability of corruption.

6. Discussion

Our findings show that women are less corrupt than men when they are in positions of decision-making in business. Our results do not support the view that women are indifferent to corruption with men where corruption is a normal part of doing business or is expected practices (Esarey and Chirillo, 2013). Paying bribes is considered a routine part of doing business in Vietnam, but a different attitude towards corruption between men and women still exists. Corruption in Vietnam lies in poor customs and habits. Giving gifts and money to business partners or government officials is considered customary, or even as “a must”. The result of VCCI survey in 2018 reveals that more than half of enterprises agree to give gifts and money to public servants when working with them (Depocen and VCCI, 2018).

Why are women often less corrupt than men in business? Women possess certain characteristics that are not suitable for corruption and dishonest activities. In general, they seem to be more honest, highly ethical and more likely to obey the rules than men (Buchan et al., 2008, Beu et al., 2003, Andreoni and Vesterlund, 2001). In contrast, males are more likely to engage in criminal activity or be more tolerant of illegal behaviors (Mocan and Rees, 2005, Swamy et al., 2001). Women own businesses that are likely to obey the rules of not paying bribes. Therefore, enhancing knowledge of how to fight corruption for entrepreneurs and their companies may have better effects for female owners than their male counterparts.

Lower risk attitude can be a reason for less bribing behaviour for females. Women are less likely to be risk-takers than men in financial decisions (Charness and Gneezy, 2012, Barber and Odean, 2001). Engaging in bribery is a risky investment, especially for micro and small business due to their limited resources. Besides that, corruption is associated with the probability of being detected and punished. The possibility of detection and punishment increase with the bigger size of bribes (Rose-Ackerman, 1996). The expected results are uncertain and rely on the cooperation of public officials. If the likelihood of detection and punishment is high, bribes might be worthless.

Punishment likelihood is one of the reasons for women being less likely to accept corruption than men (Esarey and Chirillo, 2013). In Vietnam, bribery giving is also a crime and will be examined for penal liability, which was presented in the 1999 Penal Code. Therefore, when business owners are bribe-giving, they also consider the possibility of being caught and punished. Also, the previous Law stated that bribery is a crime but only applying for individuals, not for companies. The New Penal Code that came into effect from January 2018 specifies that companies can face criminal sanctions. The New Penal Code also covers corruption within the private sector that private entities can be criminally liable for bribery that involve other private parties. In Vietnam, the detected number of corruptions has increased recent years that indicate

the government efforts in combating corruption. The enforcement of the Law will have effects on stopping or lessening the intended corruption from both businesses and government officials.

The other possible reason is that corrupt public officials target women less than men (Mocan, 2008). First, women are more likely to accept bribes without providing favour in return (Rivas, 2013a). Therefore, bribe payees prefer offering bribes to men than women and offer higher bribe amounts to male public officials than their female peers. Also, men are more likely to offer bribes, and their offered value tends to be higher than women's (Rivas, 2013a). Second, female workers are less represented in the labor market. Hence, they are less likely to work with government officials, reducing opportunities for women to be exposed to corrupt practices (Mocan, 2008).

The gap of corruption between men and women may be due to gaps in access to corruption networks, or the knowledge of engaging in corrupt practices (Swamy et al., 2001, Goetz, 2007). Women are excluded from male patronage networks, for example, clientelism practice (Tripp, 2001). Women have little contact with business partners, colleagues and people within networks than men do (Rutashobya et al., 2009). Males have more connections than females and have more opportunities to collude with politicians at the local level. Georgian women are less likely to belong to old boy networks, and they have less collective experience in the workforce (Swamy et al, 2001). Female networks are less powerful than male ones due to the strong influence of Soviet rules which brought more power to man than women (Aidis et al., 2007). In Vietnam, women face cultural barriers that discourage them from running a business. Business networking is more challenging for women due to the burden of family responsibilities and limited drink capacity (Mekong Business Initiative, 2016).

Even though several possible reasons can describe how women are less likely to be asked for corruption than men, the links between corruption and gender might not be direct. Putting more women into business and politics does not automatically reduce corruption, but the underlying mechanism is that breaking gender inequality will be associated with lower corruption. This is because gender inequality undermines women to participate in decision-making processes in many areas. Thus, increasing the share of women in male-dominated networks, including business and public institutions will bring more balance and gender equality environment. More women enter business sectors, more chance for them to integrate into the decision-making process will improve the quality of the business environment and with that corruption will be interrupted.

Women can affect corruption in business through potential channels. One is through the influence of the owner on employees' expectations. Employees in companies where their

employers are less corrupt may understand that corruption is less accepted within the firm. It will affect their behaviours towards dishonest activities, including corruption. Another channel is that females are decision-makers who choose to pursue business strategies that involved in less corruption or focus on business activities in less corrupt areas. Most Vietnamese businesses consider corruption as “a must”, and they are voluntarily giving money to "get things done". Hence, anti-corruption cannot be successful if businesses do not stop offering bribes. Fighting corruption must stem from the self-demand of businesses, in which business owners play a key role in building their firm integrity. To do this, firms need to strengthen their legal understanding of the rights and responsibility when working with government officials.

Apart from the gender aspect, other findings are worthy discussed. Our findings suggest that firms that have more employees will be more likely to be corrupt than smaller firms. This finding is contradictory with the findings of Trentini and Koparanova (2017) when they find that medium and large firms are more likely to influence legislators and they might be less likely to pay extra fees or informal fees to obtain a government contract. When firms are big, they can join networks with public officials and their local authority. According to corruption bargaining theory, bigger firms do pay smaller bribes. However, our findings are consistent with the findings of Rand and Tarp (2012). The size of firms is important when considering the gender difference in corruption as women tend to run small firms. Then, firm owners less exposed to contact government officials (Trentini and Koparanova, 2017).

Our findings also indicate that formally registered firms and bigger firms are more likely to pay bribes. Our results are consistent with the outcome of Trentini and Koparanova (2017). A firm that is in contact with the public workers faces a higher probability of being asked for corruption. Similarly, Rand and Tarp (2012) discover that informal status helps firms hide from public officials. In Vietnam, most small and medium scale firms are not willing to transfer to bigger ones as complicated procedure and documents are time-consuming. As the Vietnamese government encourage all household business to register officially to get business certificate or tax code, women might wish to expand their business than men as women entrepreneurs are supposed to obey the law better than men do.

Moreover, women entrepreneurship often start their business at a household business model or informal ones and with a limited initial capital. However, when firms want to expand their business, they are under the risk of being targeted by corrupt public officials. Therefore, the government should reduce administrative burdens and create free-corrupt public services for business.

In the context of Vietnam, burdensome and lengthy administrative procedures tempt firms more stressful and time-consuming when connected to the public sector. Therefore, they wish to use bribery as ‘facilitation money’ or ‘greasing money’ to have a quick and better procedure that brings benefits to their firms. The Vietnamese government needs to reduce the complexity of an over-regulated business environment. The private sector can also make an important contribution to the fight against corruption, by policing its codes of conduct and sticking to high standards of political governance life. The results motivate Vietnam to promote employment opportunities for women in the formal sector and running a business. The state needs to create tools and environment for businesses to operate in a healthy climate instead of choosing bribes. This result suggests that women may be more amenable to ethics training than men (Ritter, 2006).

Older firms are less likely to bribe than younger ones. Firms that have been existed a long time in the market may have experience and set up government officials networks (Sylwester, 2019). These networks can help firms overcome “liabilities of newness” and allow firms to access to economic resources and information. Thus corruption amount is not as large as when they are young (De Jong et al., 2012). On the other hand, inexperienced and smaller firms are more likely to be asked for informal payments (Trentini and Koparanova, 2017). This finding is also in line with the results of Demenet et al. (2017) that younger firms pay bribes more significantly in Vietnam.

In addition, management time on working with government workers increases the likelihood of firms to pay bribes (Okafor, 2017). Our findings are in line with this argument, which indicates the positive sign of inspection and management time variables. Firms inspected by government officials are more likely to pay bribes than firms without inspections. Besides, firms that have spent more time to work with government officials also have to pay more for corruption. These results suggest that reducing time to contact with public workers will be associated with less corruption. Some household businesses do not register their firms, as they want to avoid contacting with government workers. Hence, the government should create and maintain a corruption-free public sector, where entrepreneurs will be able to receive services from all government offices and organisations without bribery.

Corruption in Vietnam occurs sub-nationally since most business-government interactions happen at provincial levels, including business registration, environmental, safety, and labour inspection (Bai et al., 2017). There are more business transactions and contacts with public officials in big cities due to a large number of firms and transactions. In addition, corrupt behaviours of firms within local areas affect the corruption probability of the others. A firm

made unofficial payments when they believe that other firms did the same things because they do not want to be left behind other firms. Therefore, firms will pay less for bribes in a less corruptible environment as in small provinces. Firm located in three big cities, including Ha Noi, Hai Phong and Ho Chi Minh City are more likely to corrupt than the ones in other provinces as Hanoi, and Ho Chi Minh City are among the most mediocre corruption control (CECODES et al., 2018). Moreover, the relationship between individuals and government officials may be less personal in larger cities in comparison to smaller ones (Mocan, 2004). In small provinces, people are getting to know each other well, and the officers might not ask for a gift or informal payments.

Turning back to corruption and gender in Vietnam, the research reaffirms the importance of enhancement of women participation in business and economic activities. More women-owned business will bring a more clean business environment. However, this is not simply that putting women in business, then corruption will be diminished. The key point is that an increasing proportion of women in business will break the dominant male network in business and increase the trust among businesspersons. Entrepreneurs should prepare proper knowledge of their rights, enhancing their bargaining power and ability to refuse, so that public government are less likely to ask for bribes. The government should focus on the main problems that women-owned businesses are facing, such as finding customers and seeking capital as women often start their business with limited capital.

7. Conclusion

This paper has been motivated by the question of whether gender matters for corruption in business in Vietnam. Our results show it does. Women-owned businesses are less likely to corrupt than men-owned businesses in the context of Vietnam. In addition, the level of interaction with government officials leads to an increase in corruption probability and corruption values. Also, household and informal firms are less likely to be corrupted by state workers than non-household business and formal firms, respectively. The paper affirms that women play an important role in addressing corruption. Our research suggests that the government should develop program activities to strengthen women's role in business. In addition, it is necessary to simplify administrative procedures for reducing costs for businesses, and weakening the ability of officials to take bribes. On the other hand, businesses must build their integrity, pursue a non-corrupt business strategy, and contribute to a healthy business environment.

However, the research has some limitations and leaves room for future research. First, we are unable to observe whether firms are passive or active in bribery. Therefore, we cannot identify

whether firms are victims or culprits of corruption. If voluntary bribes were less reported than extortive ones, the results might experience biased downwards (Demenet et al., 2017). Second, the study is unable to observe whether corruption is happening between business and business or within companies. We assume that informal payment is paid due to requests from governmental officials. The study suggests that increasing the share of women in business could disrupt corruption. However, more research is needed to investigate the underlying connections between gender and corruption in business.

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