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Article

Local business environment, managerial expertise and tax corruption of small- and medium-sized enterprises

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Local business environment, managerial expertise and tax corruption of small- and medium-sized enterprises

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ABSTRACT

While tax corruption is widespread in many countries with inferior business environments, it is unclear how the characteristics of taxpayers influence their tax behaviour. This study investigates the impact of manager expertise on firms' tax corruption in a transition economy. Using a longitudinal dataset consisting of small- and medium-sized enterprises in Vietnam over the period from 2005 to 2015, we find that firms which are managed by more able managers are more likely to engage in tax corruption and are willing to offer higher amounts of bribe payments. We also find that improving the quality of the local business environment is associated with lower tax corruption. When the quality of the local business environment is improved, managers with greater knowledge of existing laws and regulations, and more working experience, engage less in tax corruption. Our findings imply that improving the quality of the local business environment is important for reducing tax corruption in transition economies.

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Tax corruption; managerial expertise; local business environment; Vietnam; SME

1. Introduction

Tax evasion is rampant in many countries, causing estimated losses of US\$200 billion in annual revenue (Cobham & Janský, 2018). This poses serious challenges on the ability of countries to finance public services as well as to meet their development objectives. One of the major causes of tax evasion is corruption in taxation – a phenomenon where corrupt tax officials and the bribers negotiate to reduce tax liabilities. Arguably, firms have a high incentive to bribe tax officers if the cost of bribery is compensated by the benefit from a reduced tax payment (Gauthier & Goyette, 2014). Nevertheless, this practice can be costly for firms because it may attract the regulators' attention and sanctions. In addition, firms may not get 'good value for their money' due to the unofficial nature of the payment (Rodriguez et al., 2005). At the macro level, tax corruption is deemed as undesirable since it could cause a serious budget deficit and a misallocation

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in budget distribution, which would therefore hamper the ability of a government to provide public goods and services (Ajaz & Ahmad, 2010). Thus, understanding the driving forces behind corporate tax corruption behaviour is important for tackling tax evasion.

Previous studies often attribute the importance of corporate managers for explaining the practice of corruption (De Jong et al., 2012; Powers et al., 2016; Hanousek et al., 2019; Luu et al., 2019). These studies show that firm managers have significant individual effect on various corporate decisions, including the tax strategies (Powers et al., 2016) as well as the decision to bribe corrupt officials (Hanousek et al., 2019). In principle, firm managers consider the cost–benefit trade-off when deciding the extent to which they should involve themselves in tax corruption, and these considerations can largely stem from each manager’s expertise and experience (Chavis, 2013).

However, to what extent managers’ expertise actually shapes the tax corruption practice of individuals firms is still largely controversial. A strand of literature documents a positive association between managers’ expertise and corruption. These studies show that while the risk and uncertainty associated with corruption is high, more able managers can exploit their superior cognitive skills and knowledge of working with government officials to reduce the uncertainties and ambiguities in corruption (De Jong et al., 2012; Luu et al., 2019). In addition, managers with better knowledge about the laws and the legal system can be more knowledgeable of the ambiguities and loopholes in existing laws and regulations to find tax evasion opportunities (Borrego et al., 2017). On the other hand, another strand of the literature suggests that the education and experience of managers are associated with moral development and the ability to use formal strategies in doing business (Karami et al., 2006; Tu, 2012). In this regard, managers with greater expertise are less likely to be involved in tax corruption (Treisman, 2007; Glaeser & Saks, 2006). In a similar vein, several other studies also provide evidence that tax knowledge is positively associated with tax compliance attitudes and behaviour (Newman et al., 2018).

These mixed findings in the relevant literature might be attributable to the fact that most empirical works have thus far failed to take the interaction between the *internal* influence of manager expertise and the *external* impact of the local business environment into account. While doing business, firms would need to operate in the business environment governed by the local government authorities, including the tax authorities. The relationship between tax corruption and local institutions has been documented in prior literature. For example, Tanzi and Davoodi (1998) and Mawejje and Okumu (2016) suggest that tax corruption and institutional quality are negatively related. This is because a complex and fragmented tax system may allow tax officials to make use of the unclear and equivocal interpretation of laws to impose a higher demand for bribery on taxpayers (Awasthi & Bayraktar, 2014). In this context, high tax rates and complicated tax procedures are perceived obstacles to doing business. These obstacles subsequently incentivise firms to pay bribes to relieve their tax burdens (Ajaz & Ahmad, 2010). Given that the manner in which firms’ responses to external influences from the local business environment should be shaped by their managers, failing to take into account the role of the local business environment’s quality when examining the impact of managerial expertise on tax corruption could hamper the breadth and accuracy of the empirical studies. Therefore, in this study, we fill the gap in the literature by investigating how

manager expertise interacts with the local business environment to determine the level of tax corruption practice of firms.

We test model implications with a comprehensive micro-dataset on the Vietnamese private sector. This country provides a natural testing ground for us to examine the impact of manager expertise and local business environment on tax corruption due to its interesting (and representative) institutional background and also due to its neglect in prior empirical research. Vietnam is a socialist country under the sole leadership of the Communist Party. The country has gone through a transition process from a centrally planned economy to a market economy since the 'Doimoi' (Renovation) political and economic reform in 1986. Concurrent with the boom of the private sector, Vietnam has implemented various policy reforms over the past few decades aiming to tackle administrative inefficiencies and facilitate the development of private sectors. However, similar to many former Soviet states, including Azerbaijan, Kazakhstan, Russia and the Baltic countries, Vietnam still has a weak institutional system, widespread corruption and a significant state budget deficit. Despite the tremendous effort by the government, Vietnam still experiences a tax revenue loss of US\$900 million per year due to tax evasion (Nguyen, 2020). Anecdotal evidence shows that corruption in taxation is rampant in Vietnam and is one of the main causes of tax evasion (Nguyen et al., 2017). A survey conducted by the World Bank and the Government Inspectorate of Vietnam (2012) revealed that taxation is among the most corrupt sectors in Vietnam, and the majority of businesses are actively involved in bribery against taxation. Given the fact that small- and medium-sized enterprises (SMEs) accounts for 98% of the total number of registered enterprises in Vietnam (VEN, 2016) and most of the business-government interactions take place at the local jurisdiction level rather than the national level (Bai et al., 2019), our study aims to evaluate how the expertise of Vietnamese SMEs' managers influence their tax corruption practices in different local business environments.

We exploit the unique longitudinal firm-level data of 14,673 firm-year observations covering 4939 SMEs from the SME surveys conducted in Vietnam during the period from 2005 to 2015 to test our models. The result reveals that firms led by more able managers are more likely to engage in tax corruption and are willing to pay a higher bribe to corrupt tax officials. Meanwhile, we also find that tax corruption practice is significantly lowered when the quality of the local business environment improves. More importantly, we demonstrate that firms led by more able managers with a higher level of education, greater knowledge of existing laws and regulation, and more working experience reduce their tax bribery incidences and pay smaller amounts of tax bribery when they operate in a better local business environment.

Our study is closely related to the body of literature that associates the knowledge of taxpayers to tax compliance (Borrego et al., 2017; Newman et al., 2018). As general and specific knowledge (i.e. knowledge of laws and regulations) can both determine a tax briber's benefits and costs associated with corrupt activities (Kaufmann & Wei, 1999; De Jong et al., 2012; Luu et al., 2019), bribers who have different levels of knowledge are likely to behave differently. Although these studies show a common finding that the more knowledgeable taxpayers tend to comply better with tax regulations (Newman et al., 2018), we contribute to this literature by showing that more able managers can take advantage of their knowledge and expertise to spot any non-compliance opportunities and engage in bribery against taxation.

This paper also contributes to the literature by examining how the quality of the business environment can act as an important determinant of corruption. It is widely agreed that a low-quality business environment, characterised by bureaucratic burdens, a lack of financial support, and inefficient court and legal systems, may nurture corruption (Tonoyan et al., 2010; Dutta & Sobel, 2016; Bologna & Ross, 2015). Therefore, when the quality of a local business environment is improved, corruption is less likely to occur (Bjørnskov, 2011). Our study provides support for these propositions. More importantly, we augment the prior literature by documenting that managers with different levels of expertise can exploit the different business environments to determine the extent to which they can become involved in tax corruption.

Although we conduct our studies using a single country setting (i.e. in this case, Vietnam), we believe that our results can have broader implications for other countries with a historic political linkage and a relatively similar institutional environment, such as the post-Soviet states, including Russia and the Baltic countries.

The remainder of the paper is structured as follows: the second section presents a theoretical framework to analyse the effects of a local business environment on tax bribery behaviour of firms' managers. Section 3 presents the methodology and data. Section 4 discusses the empirical results. Section 5 provides several additional analyses, and Section 6 concludes the paper.

2. Theoretical framework

Theoretical work on the motivation for bribery has suggested that enterprises/individuals try to maximise profits/utility when participating in the activity (Becker, 1968; Kaufmann & Wei, 1999). It is reasonable to expect that the willingness of a firm to pay bribes is positively determined by the expected net benefits obtained from the bribe payment. Thus, we propose a model of bribe propensity as follows:

$$p_i = f(EB_i, e_i) \quad (1)$$

in which i denotes firm i , p_i is the probability of firm i engaging in bribery, EB_i is the expected net benefit of the bribe deal and e_i is the unobserved error term. As suggested by the literature on the determinants of corruption (Kaufmann & Wei, 1999; Tanzi & Davoodi, 1998; Treisman, 2007), EB_i can be calculated as follows:

$$EB_i = Pr(b)_i \times B_i - C_i - Pr(p)_i \times P_i, \quad (2)$$

where B_i is the benefit that firms might obtain from public officers if the corrupt deal is successful. These benefits might vary, including the relief of administrative procedures and regulatory burden, policy incentives, government contracts and public support (Lui, 1985; Tanzi & Davoodi, 1998). $Pr(b)$ is the probability that firms successfully obtain the services or favours for which they have paid the bribe. This probability represents the uncertainty and ambiguity associated with corruption, depending on whether the corrupt public officers have adequate power to give firms exactly what they wanted, and whether they keep their promises (Rodriguez et al., 2005; Luu et al., 2019). C_i is the cost of the bribery consisting of both the amount of the payment made to the corrupt public officers, and also the management effort wasted in finding and negotiating with the corrupt public officers (Kaufmann & Wei, 1999). Since such costs are unable to be recovered regardless of the

outcome of the deal, C can be considered as a sunk cost that is independent of $Pr(b)$, which is the probability of the favours being delivered. P_i is the cost of punishment once firms are convicted of the illegal act. The punishment is defined by law in accordance with the degree of severity of the corruption. Hence, we have a reason to assume that the cost of the punishment is consistent across different local business environments. $Pr(p)$ is the probability of the corrupt deal being exposed and firms are subject to punishment by law (Tonoyan et al., 2010). This probability is determined by the strength of the law enforcement by the local business environment in which the firms operate.

A deteriorating business environment which is characterized by regulatory burdens, weak rules of law, an inefficient government, and a lack of transparency and public support can foster corruption from both the demand and supply side (Treisman, 2007; Bjørnskov, 2011). Poor oversight mechanisms, inconsistent enforcement, and varied interpretations of laws and policies can give public officers tremendous discretionary powers over public goods and services so that they can be in a position to demand bribes (Ahrens, 2000; Boly & Gillanders, 2018). On the supply side, as corruption plays an efficient grease-the-wheel role, thus allowing firms to overcome institutional weaknesses, firms generally have a high incentive to bribe (Dutta & Sobel, 2016; Bologna & Ross, 2015). Although there is ample room to take advantage of bribery, the expected benefit of bribery might be contingent upon the knowledge levels of a firm's managers. The knowledge level, which is enhanced through education and working experience (De Jong et al., 2012), refers to the general competence base, the formal knowledge of laws and regulations, and the tacit knowledge of the ways of doing business in the local context.

Under a deteriorating local business environment, legal knowledge allows managers to be aware of loopholes in laws and public policies so that they can be better at bending the rules or pursuing rent-seeking behaviour, which subsequently results in larger benefits being gained from bribery. In addition, the managers with greater cognitive skills, awareness capabilities and the tacit knowledge of doing business can maximise the chances of success by choosing the right public officers who are capable of delivering the requested services and favours (De Jong et al., 2012; Luu et al., 2019). Although the prevalence of corruption can put firms under the risks of bribe extraction by bureaucrats (Rodriguez et al., 2005), a strong local sense might enable the bribers to identify the appropriate amount of payment better and reduce the cost of bribery (Luu et al., 2019). Moreover, through past experience of engaging in bribes, firm managers might develop social ties with local public officers, which facilitates trust and reciprocal obligations (Collins et al., 2009). This might subsequently enhance the likelihood of the officers adhering to the deal while reducing the risk of being exposed. The established social ties also save firms' managerial efforts in first finding and then negotiating with public officers. Thus, the more knowledgeable managers are able to gain a higher benefit (higher B), a greater chance of bribery success (higher $Pr(b)$), a lower cost (C) and a lower probability of being exposed (lower $Pr(p)$); thereby, they have a higher propensity for engaging in bribery.

However, a high-quality local business environment might diminish the intent for bribery, regardless of the knowledge levels of the firm managers. This might be because the opportunities for corruption are substantially restricted under an improved environmental context, so that managers are no longer able to use their competence and experience to make use of bribery. Specifically, laws are clearly codified and implemented consistently across government units, giving public officers no discretionary

power that can be used in exchange for bribe payments. Despite the legal knowledge, firm managers are not able to find loopholes and rent-seeking opportunities which they can use as bribes, so the gains from bribery become limited. In addition, since the expected risk of getting caught and the punishment is high under an efficient law enforcement and court system, few public officers are willing to commit such illegal activities. As a result, the probability of finding a corrupt public officer is low even for firm managers with more knowledge and experience. As for the bribers, strong law enforcement increases the probability of detection and punishment to the extent that it cannot be concealed by social ties with the public officers or tacit knowledge of the business environment. Thus, under an improved business environment, the benefit of bribe B and the chance of success $Pr(b)$ is low, while the risk of punishment $Pr(p)$ is high for both firms either with or without high levels of managers' knowledge; one might therefore expect to observe insignificant differences in bribe propensity between the two groups.

In this paper, we postulate that when a firm operates in an improved-quality local business environment, its managerial expertise is negatively associated with tax corruption. Arguably, an improved quality of the local business environment would limit the chances of managers using their expertise to take advantage of corruption. Previous studies show that the ambiguous interpretation of laws and the inconsistent law enforcement that gives public officials the discretionary power in the delivery of public goods and services are the main causes of corruption (Ahrens, 2000; Boly & Gillanders, 2018). Therefore, in a higher-quality business environment, where the law is clearly codified and strictly enforced, corruption opportunities are limited. In addition, while firms can make use of corruption to overcome rigid and cumbersome regulations (Dutta & Sobel, 2016; Bologna & Ross, 2015), the expected benefit from engaging in bribery is diminished when the regulatory burden is relieved under the local business environment with improved quality. Moreover, under such an environmental context, the risk of being detected and punished associated with the engagement in corruptive activities is also higher due to better law enforcement and a more efficient court system. Thus, involvement in corruption is a costly 'investment activity' with lower expected profits. In this regard, more able managers could have more incentives to focus on their expertise in capturing market opportunities and conducting mainstream business rather than looking around for ambiguous unofficial opportunities such as corruption. Since managers with a high level of expertise are more capable of using formal strategies in doing business (Karami et al., 2006; Tu, 2012), we expect that firms run by more able managers are less eager to commit to tax corruption activities when the quality of the local business environment is improved.

3. Model specification and data

3.1. Model specification

To investigate the impact of managers' expertise and the local business environment on firm tax corruption, we adopt the following standard regression model:

$$\begin{aligned} \text{Tax Corruption}_{it} = & \delta_0 + \delta_1 \text{Manager Expertise}_{it} + \delta_2 \text{Business Environment}_{pt} \\ & + \delta_3 \text{Manager Expertise}_{it} \times \text{Business Environment}_{pt} + \delta_3 \text{Controls}_{it} \\ & + \text{Fixed Effects} + \varepsilon_{it} \end{aligned} \quad (3)$$

where i denotes firm, p denotes province and t denote year. In our study, we consider corporate tax corruption using two aspects: (i) probability of engaging in tax corruption and (ii) amount of tax corruption. The survey data, which will be discussed in more detail in the subsequent section, provide us with sufficient information for our empirical analysis. For instance, firms are asked whether they participate in tax corruption activities: ‘Did you have to pay informal/communication fees?’ and ‘Was the bribe payment/communication fee mainly used for dealing with taxes and taxation?’ Responses to these questions are recoded as binary variables, taking the value of 1 if firms are involved in tax corruption and 0 otherwise. Thus, our first measure of tax corruption is *Bribery*, which is a dummy variable equal to 1 if the firm pays informal fees mainly used for dealing with taxes and taxation, and 0 otherwise.

Meanwhile, firms were also asked about the extent to which they paid funds to a corrupt tax officer: ‘Approximately how much did you pay in total?’ Thus, our second measure of tax corruption is *Bribery Amount*, which is the natural logarithm of the amount of the bribe payment to deal with taxes and tax collection plus 1.¹

In our model, *Tax Corruption* is regressed on *Manager Expertise*, *Business Environment*, and the interaction term between *Manager Expertise* and *Business Environment*. *Manager Expertise*, which will be discussed in the subsequent section, measures firm managers’ general knowledge attained through formal education, specific knowledge of law and knowledge accumulated from working. Higher values indicate higher manager expertise.

Meanwhile, *Business Environment*, which will also be discussed in more detail later, measures the capability of local governments to create a favourable business environment for promoting development of private firms. A higher *Business Environment* value reflects a better business environment for firms in terms of the following aspects: low entry costs, easy land access, high transparency, low corruption and low administrative burden. It also indicates less bias towards state enterprises, governments being more proactive, and high-quality business support services and labour training policies.

Our main variable of interest is the interaction term *Manager Expertise* \times *Business Environment*. It captures the moderating effect of local business environment quality on the relationship between manager expertise and firms’ behaviour in tax corruption. A negative (positive) and significant coefficient on *Manager Expertise* \times *Business Environment* would indicate that, when the business environment quality is improved, firms with a higher manager expertise are less (more) eager to participate in tax corruption.

We also incorporate a list of control variables comprising enterprise characteristics that might influence the bribe behaviour of enterprises as suggested by the appropriate literature. Specifically, we incorporate the vector $Control_{it} = [Firm\ Age, Firm\ Size, ROA, Leverage, Export, Professional\ Staff, Business\ Association, Manager\ Gender, Manager\ Age]$. Table 1 represents the definitions of the main variables. Various types of fixed effects are incorporated into the specifications, including province fixed effects, industry fixed effects, year fixed effects and industry-year fixed effects. Finally, standard errors are clustered at the firm level.

3.2. Measuring managers’ expertise

We measure manager expertise based on the following three aspects: (i) general knowledge acquired through formal education; (ii) specific/informal knowledge of laws and regulations; and (iii) specific/informal knowledge acquired through work. These aspects

Table 1. Variable description.

Variables	Description	Source
<i>Bribery</i>	A dummy variable, equal to 1 if the firm paid bribes to deal with taxes and tax collection, 0 otherwise	SME survey
<i>Bribery Amount</i>	The natural logarithm of the amount of bribe payment to deal with taxes and tax collection plus 1.	SME survey
<i>Manager Expertise</i>	The constructed variables capturing the expertise of a firm's manager in terms of general education, specific knowledge, and work experience.	SME survey
<i>Business Environment</i>	The natural logarithm of provincial competitiveness index (PCI)	PCI data
<i>Firm Age</i>	The natural logarithm of number of years as an establishment plus 1	SME survey
<i>Firm Size</i>	The natural logarithm of total assets	SME survey
<i>ROA</i>	The ratio of revenue to total assets	SME survey
<i>Leverage</i>	The ratio of total debt to total assets	SME survey
<i>Export</i>	A dummy variable, equal to 1 if the firm exported its products, 0 otherwise	SME survey
<i>Professional Staff</i>	The ratio of professionals to total employees	SME survey
<i>Business Association</i>	A dummy variable, equal to 1 if the firm was a member of a business association, 0 otherwise	SME survey
<i>Manager Gender</i>	A dummy variable, equal to 1 if the firm's manager is a male, 0 otherwise	SME survey
<i>Manager Age</i>	The natural logarithm of the age of a firm's manager	SME survey

have been used conventionally in the previous literature to assess how the managers' expertise determines the level of tax compliance and tax corruption practices (De Jong et al., 2012; Borrego et al., 2017). For example, De Jong et al. (2012) suggest that a higher level of education implies greater cognitive skills and awareness capabilities that allow managers to seize bribery opportunities, leading to a higher propensity of more educated managers to bribe. The knowledge of tax laws can be used to discover ambiguities and loopholes in tax laws for tax evasion opportunities and induce non-compliance behaviour (Borrego et al., 2017). Other studies also link the relationship between managers' working experience and the tendency for them to bribe since the experience at work allows managers to acquire the tacit knowledge and information of corruption practices in their business environment (De Jong et al., 2012; Tu, 2012).

In the survey, managers were asked 'What is the highest level of education you have completed?' The answer for this question would indicate the general knowledge acquired from the formal education of the firm managers. We encode the answer for this question so that it equals 1 if the firm manager obtains a university (or higher) education level, and 0 if the manager's education level is lower than the level of a university.

With regard to the managers' specific knowledge of laws and regulations, managers were asked, 'How would you characterise your knowledge about the following laws and government regulations: (a) enterprise law, (b) cooperative law, (c) labour code, (d) customary law, (e) insurance law, (f) tax law, (g) environment law, (h) land law, (i) investment law, (j) social insurance law and (k) gender equality law?' The respondents can choose either one of the following answers: (i) *good*; (ii) *average*; (iii) *poor*; and (iv) *no knowledge/not of my interest*. We encode the answers for this question as 1 if the manager responds as having good knowledge of at least one of the mentioned laws, and 0 otherwise.

Finally, the experience of managers may also constitute the specific knowledge required to participate in tax bribery. In the survey, managers were asked: 'Did the owner of the enterprise work with similar products/services prior to establishing the present enterprise?'.² The respondents can choose to answer either 'Yes' or 'No'. We encode the answer for this question so that it equals 1 if the manager responds that

they had experience of working with similar products/services prior to establishing the business, and 0 if the answer is 'No'.

To capture managers' expertise, we introduce a *Manager Expertise* variable. It is a composite index based on all of the three aspects mentioned above. *Manager Expertise* takes the value ranging from 0 to 3. The value of 0 indicates that the manager's highest level of education is lower than undergraduate; they do not have any specific knowledge of laws and regulations and do not have relevant prior working experience. Meanwhile, the value of 3 indicates that managers have sufficient expertise and knowledge regarding those three aforementioned aspects.³

3.3. Measuring local business environment quality

In our study, we measure the local business environment quality using the Provincial Competitiveness Index (PCI). The PCI was designed to measure and rank the capacity of provincial governments to develop business-friendly regulatory environments for private sector development based on the following criteria: (1) low entry costs for new business; (2) easy access to land and security of business premises; (3) transparency in a business environment and equal access to business information; (4) minimal informal payments in exchange for public services; (5) less time spent on performing bureaucratic procedures and inspections; (6) limits in priorities and privileges given to state-owned, foreign or connected firms which might undermine private business activities; (7) proactivity and creativeness of provincial leadership in addressing the enterprises' problems; (8) the quality of business support services; (9) sound labour training policies; and (10) the ability of the legal and judicial system to settle disputes fairly and effectively.

The indices range from 0 to 100, with a higher score indicating a higher quality of local business environment. This provides a comparable measure of local business environment quality across provinces and has been widely used in previous empirical studies (Nguyen & Van Dijk, 2012; Bai et al., 2019; Nam & Tram, 2021; Vu & Nguyen, 2021). Given its high skewness, we use the natural logarithm of the PCI score to measure the local business environment.

Figure 1 presents the graph which tracks the changes of the PCI scores from 2005 to 2015 in the nine provinces examined in our study (Hanoi, Hai Phong, Ho Chi Minh City, Phu Tho, Nghe An, Quang Nam, Khanh Hoa, Lam Dong and Long An). The thick black line demonstrates the average value of the PCI scores.

3.4. Data and sample overview

This study utilizes two datasets. The first is the longitudinal data retrieved from the surveys of SMEs in Vietnam. The surveys were administered by the UNU-WIDER in cooperation with the Central Institute for Economic Management (CIEM), the Institute of Labour Science and Social Affairs (ILSSA) and the University of Copenhagen. The first round of the survey was conducted in 2005. In this survey, 2821 SMEs were selected from nine (out of 63) provinces in Vietnam. The sampling of provinces was stratified by regions and sub-regions of the country, by city versus rural, inland versus internationally bordered, and more importantly, by the variance in socio-economic conditions and the quality of the local business environment. Subsequently, five more biennial waves of

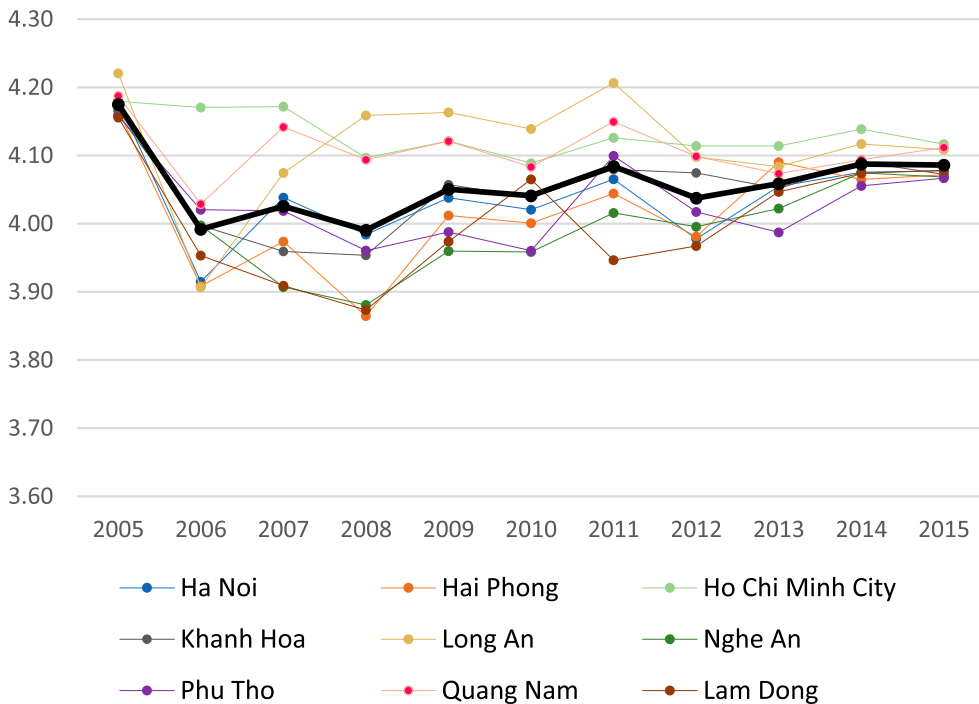


Figure 1. The evolution of PCI scores overtime (in natural logarithms).

surveys were conducted between 2007 and 2015. Because a number of SMEs ceased operating between surveys, additional SMEs were randomly selected and added to the survey to make a sample of roughly equally sized SMEs in each round. In terms of data coverage, this dataset contains several key parts of financial information of the SMEs, including firm size, profitability, leverage and, in particular, tax corruption. It also contains detailed information on the expertise of each of the managers, including formal education, knowledge of various laws, and previous working experience.

The second dataset is from Vietnam's annual Provincial Competitiveness Index (PCI) surveys, which are conducted by the Vietnam Chamber of Commerce and Industry (VCCI) and the United States Agency for International Development (USAID). Constructed from the most meticulously and elaborately conducted annual enterprise survey data in Vietnam, the PCI gathers the perspectives of firms operating across the country about the local business environment of the provinces where they are incorporated. A wide range of local business environment features is assessed, including the quality of economic governance, the ease and friendliness of the business environment and administrative reform efforts of provincial governments in Vietnam. The PCI data has been a useful source of information for both academic researchers and policy makers to identify bottlenecks in economic governance and to conduct governance reforms most effectively.

We combine the first and second sources of data to create a unique panel dataset that allows us to evaluate the impact of manager expertise on the participation of firms in tax corruption and how such behaviour change due to variations in the local business

environment quality. After winsorising all continuous variables at 1st and 99th levels, our final data set consists of 14,673 firm-year observations covering 4939 Vietnamese SMEs during the period from 2005 to 2015.

Table 2 provides descriptive statistics of our main regression variables. On average, roughly 9% of firms are involved in bribery when dealing with taxes and taxation, with an average bribe payment (in natural log of millions of Vietnamese Dong) of 0.703. In addition, firm managers in our sample appear to have moderate levels of expertise as the mean value of *Manager Expertise* is 1.57.

Table 3 presents a correlation matrix of the main explanatory variables. This table shows that all correlations are much smaller than 0.50, indicating no serious multicollinearity among our explanatory variables.

4. Empirical results

4.1. Initial evidence

Before evaluating how manager expertise shapes their tax corruption behaviour under different business environments, we test the impact of manager expertise on corruption behaviour and the impact of the local business environment on the tax corruption practice of firms separately. Sections 4.1.1 and 4.1.2 provide the results and discussions of our preliminary analyses.

4.1.1. Manager expertise and tax corruption

Table 4 shows the estimated results of the regressions examining the effect of manager expertise on tax corruption. Columns 1–3 show the results of the linear probability models estimating the likelihood of firms engaging in tax corruption. It is worth noting that, despite the binary nature of the dependent variable (e.g. *Bribery Probability*), we estimate our model using the Ordinary Least Squares (OLS) estimator. This is because we have a large number of fixed effects along several dimensions, meaning that using maximum likelihood estimators (i.e. logit or probit) could produce an incidental parameters problem (Lancaster, 2000).⁴ Meanwhile, columns 4–6 present the results of the OLS models examining the impact of manager expertise on the amount of tax corruption (e.g. *Bribery Amount*).

Table 2. Summary statistics.

Variable	Obs.	Mean	Std.	Min	p25	p50	p75	Max
<i>Bribery</i>	14,673	0.092	0.289	0.000	0.000	0.000	0.000	1.000
<i>Bribery amount</i>	14,673	0.703	2.259	0.000	0.000	0.000	0.000	13.456
<i>Manager expertise</i>	14,673	1.573	0.891	0.000	1.000	2.000	2.000	3.000
<i>Business environment</i>	14,673	4.030	0.096	3.707	3.978	4.069	4.097	4.159
<i>Firm age</i>	14,673	2.279	0.824	0.000	1.792	2.398	2.833	3.989
<i>Firm size</i>	14,673	13.548	1.838	9.616	12.155	13.611	14.891	17.804
<i>ROA</i>	14,673	2.009	2.476	0.046	0.455	1.071	2.494	12.581
<i>Leverage</i>	14,673	0.180	0.374	0.000	0.000	0.022	0.191	2.375
<i>Export</i>	14,673	0.062	0.241	0.000	0.000	0.000	0.000	1.000
<i>Professional staff</i>	14,673	0.034	0.068	0.000	0.000	0.000	0.036	0.333
<i>Business association</i>	14,673	0.090	0.286	0.000	0.000	0.000	0.000	1.000
<i>Manager gender</i>	14,673	0.642	0.479	0.000	0.000	1.000	1.000	1.000
<i>Manager age</i>	14,673	3.770	0.241	3.178	3.611	3.784	3.951	4.277

Table 3. Correlation matrix.

		1	2	3	4	5	6	7	8	9	10	11	VIF
1	<i>Manager expertise</i>	1.000											1.34
2	<i>Business environment</i>	0.127	1.000										1.10
3	<i>Firm age</i>	−0.167	−0.022	1.000									1.19
4	<i>Firm size</i>	0.407	0.129	−0.090	1.000								1.89
5	<i>ROA</i>	−0.011	0.144	−0.004	−0.426	1.000							1.65
6	<i>Leverage</i>	0.085	0.157	−0.009	−0.130	0.462	1.000						1.31
7	<i>Export</i>	0.191	0.061	−0.050	0.271	0.029	0.058	1.000					1.14
8	<i>Professional staff</i>	0.358	0.071	−0.168	0.396	−0.034	0.099	0.160	1.000				1.32
9	<i>Business association</i>	0.155	−0.056	0.028	0.230	−0.040	0.058	0.203	0.179	1.000			1.12
10	<i>Manager gender</i>	0.008	−0.101	0.024	−0.048	−0.008	−0.018	−0.037	−0.072	0.000	1.000		1.18
11	<i>Manager age</i>	−0.050	−0.024	0.352	−0.064	−0.049	−0.032	−0.055	−0.104	0.039	0.152	1.000	1.04

Table 4. Manager expertise and tax corruption.

	Bribery probability (1)	Bribery probability (2)	Bribery probability (3)	Bribery amount (4)	Bribery amount (5)	Bribery amount (6)
<i>Manager expertise</i>	0.013*** (0.003)	0.014*** (0.003)	0.014*** (0.003)	0.103*** (0.025)	0.112*** (0.025)	0.111*** (0.025)
<i>Firm age</i>	−0.011*** (0.003)	−0.008** (0.003)	−0.008** (0.003)	−0.080*** (0.026)	−0.059** (0.026)	−0.061** (0.026)
<i>Firm size</i>	0.022*** (0.002)	0.021*** (0.002)	0.021*** (0.002)	0.198*** (0.017)	0.183*** (0.015)	0.182*** (0.015)
<i>ROA</i>	0.002* (0.001)	0.002 (0.001)	0.002 (0.001)	0.023** (0.009)	0.018** (0.009)	0.016* (0.009)
<i>Leverage</i>	0.010 (0.008)	0.004 (0.008)	0.002 (0.008)	0.084 (0.064)	0.050 (0.064)	0.032 (0.065)
<i>Export</i>	−0.028** (0.013)	−0.031** (0.013)	−0.030** (0.014)	−0.158 (0.113)	−0.174 (0.117)	−0.170 (0.119)
<i>Professional staff</i>	0.183*** (0.049)	0.193*** (0.051)	0.194*** (0.050)	1.552*** (0.394)	1.633*** (0.405)	1.650*** (0.404)
<i>Business association</i>	−0.028*** (0.010)	−0.024** (0.010)	−0.022** (0.010)	−0.213*** (0.081)	−0.185** (0.081)	−0.170** (0.081)
<i>Manager gender</i>	−0.004 (0.005)	−0.003 (0.005)	−0.003 (0.006)	−0.035 (0.041)	−0.028 (0.043)	−0.024 (0.043)
<i>Manager age</i>	−0.013 (0.011)	−0.007 (0.011)	−0.006 (0.011)	−0.138 (0.088)	−0.107 (0.089)	−0.094 (0.089)
Province FEs	YES	NO	NO	YES	NO	NO
Industry FEs	NO	YES	NO	NO	YES	NO
Year FEs	YES	YES	NO	YES	YES	NO
Industry-year FEs	NO	NO	YES	NO	NO	YES
R-square	0.042	0.035	0.045	0.046	0.042	0.052
Observations	14,673	14,673	14,673	14,673	14,673	14,673
Number of firms	4,939	4,939	4,939	4,939	4,939	4,939

Note: Constants are excluded for brevity. Robust standard errors are in parentheses. ***, **, * represent statistical significance at 1%, 5%, and 10% levels, respectively.

We perform various types of fixed effects throughout our models. Specifically, Columns 1 and 4 use year fixed effects and province fixed effects to control for time-invariant and province-specific factors. In Columns 2 and 5, we substitute province fixed effects with industry fixed effects to control for unobservable industry-specific factors that may influence the tax corruption behaviour of SMEs. In Columns 3 and 6, we employ industry-year fixed effects to capture the unobserved factors that do not vary across firms within a given industry and year.

As can be seen from the first three columns, the estimated coefficients on *Manager Expertise* are always positive and statistically significant. This suggests that more able managers, that is, those who are better educated, have a greater knowledge of the law and regulations, and have sufficient working experience, are more likely to engage in tax corruption. The feasible explanation is that highly educated managers can utilise their greater cognitive skills and awareness capabilities to reduce the uncertainties associated with tax bribery. Meanwhile, their understanding of the law (which includes tax law) allows firm managers to identify loopholes more easily so that they can explore ample bribery opportunities in taxation. In a similar vein, more experienced managers can have a better understanding about the ways of doing business with local governments and establish a network of trustworthy bribe-takers. This subsequently allows

firms to mitigate the risk of not receiving what they ‘paid for’ and therefore, to benefit from corruption. These findings lend support to our proposition that more able managers have higher expected benefits from tax corruption due to their ability to identify the tax evasion opportunities as well as the loopholes in existing laws and regulations.

Columns 4–6 present the results of the models to examine the impact of manager expertise on the amount of tax corruption. We find that SMEs with higher levels of managerial expertise pay more bribery to deal with taxation, as indicated by the positive and significant coefficient of *Manager Expertise* throughout all the columns. This corroborates the provision that more able managers can make use of their knowledge and capabilities to be more eagerly involved in tax corruption activities

Additional findings from Table 4 are that larger firms, firms with less operating experience (indicated by smaller firm age), and firms having a more professional staff are more likely to commit tax corruption and pay more tax bribes to public tax officers. These findings are in line with several previous studies (i.e. Chavis, 2013). On the other hand, being a member of a business association reduces both the probability and the amount of tax bribery, probably due to the concern about the firm’s reputation among its business partners. It is also possible that firms can make use of their business connections to resolve their taxation problems, rather than resorting to corruption. We also find some evidence that more profitable firms engage more in tax corruption, whereas firms that have export activities are less involved in tax corruption.

4.1.2. Local business environment and tax corruption

Previous literature suggests that the quality of the business environment may influence firm incentives to become involved in corruption. Specifically, macro-level institutional constraints, such as market entry barriers (Broadman & Recanatini, 2001), lack of market competition regulations (Ades & Di Tella, 1999), lack of accountability (D’Souza & Kaufmann, 2013), and rigid trade and investment policies (Gerring & Thacker, 2005) are perceived as a prolific breeding ground for corruption. To compensate for a bad-governance and low-quality local business environment, firms may resort to corruption in order to circumvent cumbersome and rigid regulations (Dutta & Sobel, 2016; Bologna & Ross, 2015), and proceed to obtain government contracts and policy incentives (Mironov, 2015). Therefore, we would need to investigate how the local business environment influences SMEs’ tax corruption practices in Vietnam.

Table 5 provides the results of the regressions examining the effect of the quality of the local business environment on tax corruption by SMEs. We sequentially estimate the model using province and year fixed effects (columns 1 and 4), industry and year fixed effects (columns 2 and 5), and industry-year fixed effects (columns 3 and 6). Again, columns 1–3 show the results of the linear probability model to estimate the probability of firms engaging in tax corruption, whereas columns 4–6 report the result of the OLS models which examine the impact of a local business environment on the amount of informal payments which firms made to corrupt tax officials.

As can be seen in Table 5, the estimated coefficients on *Business Environment* are negative and statistically significant across all the models, indicating that local business environment quality and tax corruption are inversely associated. In other words, when the quality of the local business environment increases, firms are less eager to become involved in tax corruption. Our findings are in line with the previous studies, such as in

Table 5. Local business environment and tax corruption.

	Bribery probability (1)	Bribery probability (2)	Bribery probability (3)	Bribery amount (4)	Bribery amount (5)	Bribery amount (6)
<i>Business environment</i>	−0.131** (0.061)	−0.104*** (0.030)	−0.097*** (0.031)	−0.957** (0.462)	−0.724*** (0.227)	−0.651*** (0.237)
<i>Firm age</i>	−0.013*** (0.003)	−0.010*** (0.003)	−0.010*** (0.003)	−0.092*** (0.026)	−0.077*** (0.026)	−0.078*** (0.026)
<i>Firm size</i>	0.024*** (0.002)	0.024*** (0.002)	0.023*** (0.002)	0.215*** (0.016)	0.206*** (0.014)	0.204*** (0.014)
<i>ROA</i>	0.003** (0.001)	0.003** (0.001)	0.002* (0.001)	0.027*** (0.009)	0.024*** (0.009)	0.021** (0.009)
<i>Leverage</i>	0.011 (0.008)	0.006 (0.008)	0.003 (0.008)	0.095 (0.065)	0.063 (0.064)	0.044 (0.065)
<i>Export</i>	−0.026** (0.013)	−0.026** (0.013)	−0.026* (0.014)	−0.140 (0.113)	−0.141 (0.117)	−0.138 (0.118)
<i>Professional staff</i>	0.213*** (0.049)	0.222*** (0.050)	0.223*** (0.050)	1.790*** (0.391)	1.863*** (0.402)	1.881*** (0.401)
<i>Business association</i>	−0.026*** (0.010)	−0.025*** (0.010)	−0.023** (0.010)	−0.201** (0.081)	−0.191** (0.081)	−0.175** (0.082)
<i>Manager gender</i>	−0.003 (0.005)	−0.004 (0.005)	−0.003 (0.006)	−0.025 (0.041)	−0.029 (0.043)	−0.024 (0.043)
<i>Manager age</i>	−0.011 (0.011)	−0.004 (0.011)	−0.003 (0.011)	−0.129 (0.088)	−0.085 (0.088)	−0.073 (0.089)
Province FEs	YES	NO	NO	YES	NO	NO
Industry FEs	NO	YES	NO	NO	YES	NO
Year FEs	YES	YES	NO	YES	YES	NO
Industry-year FEs	NO	NO	YES	NO	NO	YES
<i>R</i> ²	0.041	0.035	0.044	0.045	0.041	0.051
Observations	14,673	14,673	14,673	14,673	14,673	14,673
Number of firms	4939	4939	4939	4939	4939	4939

Note: Constants are excluded for brevity. Robust standard errors are in parentheses. ***, **, * represent statistical significance at 1%, 5%, and 10% levels, respectively.

the literature about the effects of the institutional environment on corruption (Bjørnskov, 2011). The feasible explanation is that, when the quality of local business environment is high, the probability of a corrupt deal being exposed is also greater. In this context, both firms and corrupt officials are subject to a higher risk of being punished by law, and therefore, they have less of an incentive to engage in corrupt activities.

4.2. Manager expertise, local business environment and tax corruption

Table 6 shows the estimated results of the main model (3) examining the impact of manager expertise and the quality of the local business environment on tax corruption of SMEs. As in the previous sections, we assess two aspects of tax corruption: (i) the probability of engaging in tax corruption; and (ii) the amount of tax corruption.

The key independent variable of interest is the interaction terms between *Manager Expertise* and local business environment quality (i.e. *Business Environment*). A positive (negative) coefficient on *Manager Expertise* × *Business Environment* would indicate that, as the quality of the local business environment improve, more able managers are more (less) eager to engage in tax corruption.

We follow the procedure established in the prior sections and estimate model (1) using different types of fixed effects. Specifically, columns 1 and 4 show the results of the model

using province and year fixed effects. Columns 2 and 5 report the results using industry and year fixed effects, while columns 3 and 6 provide the results of the model using industry-year fixed effects.

As can be seen from the first three columns, the estimated coefficients on *Manager Expertise* \times *Business Environment* are always negative and significant, showing that increasing manager expertise in areas characterized as having better business environments have diminishing impacts on the likelihood of engaging in tax corruption. This finding provides support to the proposition that a higher quality local business environment moderates the effects of managerial expertise on tax corruption. Arguably the improved local business environment is associated with better law enforcement and efficient court systems, leading to the risk – and cost – of misconduct incidents being detected and punished being higher for both managers and corrupt tax officials. At the same time, increased business environment quality also implies less rigid and cumbersome regulations, which in turn makes tax bribes and corruption unnecessary (Dutta & Sobel, 2016; Bologna & Ross, 2015). In such an environment, the expected benefit from tax corruption is diminished and more able managers can directly utilize their expertise

Table 6. Manager expertise, local business environment and tax corruption.

	Bribery probability (1)	Bribery probability (2)	Bribery probability (3)	Bribery amount (4)	Bribery amount (5)	Bribery amount (6)
<i>Manager expertise</i>	0.296** (0.117)	0.455*** (0.111)	0.463*** (0.112)	2.164** (0.961)	3.279*** (0.899)	3.451*** (0.904)
<i>Business environment</i>	-0.023 (0.069)	0.048 (0.041)	0.058 (0.042)	-0.170 (0.535)	0.364 (0.308)	0.505 (0.316)
<i>Manager expertise</i> \times <i>Business environment</i>	-0.070** (0.029)	-0.109*** (0.028)	-0.111*** (0.028)	-0.512** (0.239)	-0.786*** (0.224)	-0.829*** (0.225)
<i>Firm age</i>	-0.011*** (0.003)	-0.008** (0.003)	-0.008** (0.003)	-0.078*** (0.026)	-0.062** (0.026)	-0.064** (0.026)
<i>Firm size</i>	0.022*** (0.002)	0.021*** (0.002)	0.021*** (0.002)	0.195*** (0.017)	0.187*** (0.015)	0.185*** (0.015)
<i>ROA</i>	0.002* (0.001)	0.002* (0.001)	0.002 (0.001)	0.022** (0.009)	0.019** (0.009)	0.017* (0.009)
<i>Leverage</i>	0.010 (0.008)	0.005 (0.008)	0.002 (0.008)	0.086 (0.064)	0.056 (0.064)	0.036 (0.065)
<i>Export</i>	-0.027** (0.013)	-0.028** (0.013)	-0.027** (0.013)	-0.150 (0.113)	-0.153 (0.117)	-0.149 (0.118)
<i>Professional staff</i>	0.186*** (0.049)	0.192*** (0.050)	0.193*** (0.050)	1.572*** (0.394)	1.629*** (0.403)	1.646*** (0.402)
<i>Business association</i>	-0.028*** (0.010)	-0.028*** (0.010)	-0.026*** (0.010)	-0.213*** (0.081)	-0.213*** (0.081)	-0.196** (0.082)
<i>Manager gender</i>	-0.004 (0.005)	-0.005 (0.005)	-0.004 (0.006)	-0.036 (0.041)	-0.037 (0.043)	-0.033 (0.043)
<i>Manager age</i>	-0.015 (0.011)	-0.010 (0.011)	-0.009 (0.011)	-0.154* (0.088)	-0.129 (0.089)	-0.118 (0.089)
Province FEs	YES	NO	NO	YES	NO	NO
Industry FEs	NO	YES	NO	NO	YES	NO
Year FEs	YES	YES	NO	YES	YES	NO
Industry-year FEs	NO	NO	YES	NO	NO	YES
<i>R</i> ²	0.042	0.037	0.046	0.046	0.044	0.053
Observations	14,673	14,673	14,673	14,673	14,673	14,673
Number of firms	4939	4939	4939	4939	4939	4939

Note: Constants are excluded for brevity. Robust standard errors are in parentheses. ***, **, * represent statistical significance at 1%, 5%, and 10% levels, respectively.

in value-enhancing business activities rather than colluding with corrupt tax officials to obtain preferential treatments.

Likewise, we also find that the estimated coefficients on *Manager Expertise* \times *Business Environment* are also positive and statistically significant across columns 4–6 of the bribery amount models. Therefore, this reinforces our finding that, as the local business environment quality improves, more able managers engage less in tax corruption. Figure 2 graphically illustrates this interaction effect.

5. Additional analyses

5.1. Different components of manager expertise

In this section, we attempt to shed light on which aspect of managerial expertise affect corrupt tax behaviour. To do so, we break down our *Manager Expertise* measure into its components, capturing the (i) general knowledge acquired through formal education; (ii) specific/informal knowledge of law; and (iii) specific/informal knowledge acquired through a manager's working experience.

We measure the general knowledge acquired from formal education of managers as a dummy variable (*Formal Education*), taking the value of 1 if managers had obtained a university degree or above and 0 otherwise. We also measure a manager's specific knowledge of laws as a dummy variable (*Knowledge of Law*). *Knowledge of Law* equals 1 if the manager responds as having knowledge of at least one of the following: enterprise law, cooperative law, labour code, customary law, insurance law, tax law, environment law, land law, investment law, social insurance law and gender equality law; and 0 otherwise. Finally, we measure the prior working experience of a manager as a dummy variable (*Experience*), taking the value of 1 if the manager has worked with similar products/services before and 0 otherwise. We then augment the baseline model (3) by sequentially replacing the *Manager Expertise* variable with *Formal Education*, *Knowledge of Law* and *Experience* dummies, and re-estimate the model accordingly. The results are presented in Table 7.

As can be seen from Table 7, the estimated coefficients on *Manager Expertise* are not statistically significant in Columns 1 and 2, but positive and significant in Columns 3 and 4 and 5 and 6. This suggests that while a manager's educational level does not exert significant impact on tax corruption, specific knowledge of laws and prior working experience are significantly associated with more tax corruption, both in terms of the probability and amount of tax corruption.

Overall, our results corroborate the strand of empirical works suggesting that more knowledgeable managers, especially those with tax knowledge, might not necessarily exhibit better tax compliance (Maseko, 2014; Bird, 2013). Although tax knowledge allows managers to be aware of what is stated in the laws and expected sanctions (Newman et al., 2018), our results imply that a good knowledge of laws and regulations also allows firm managers to spot any non-compliance opportunities and make use of these opportunities accordingly. These findings are also in line with extant literature, which suggests that tax corruption practices require specific knowledge on tax-related issues and informal knowledge of dealing with public tax officers accumulated through working experience. That kind of knowledge and experience can hardly be acquired through formal education. In addition, education may be associated with

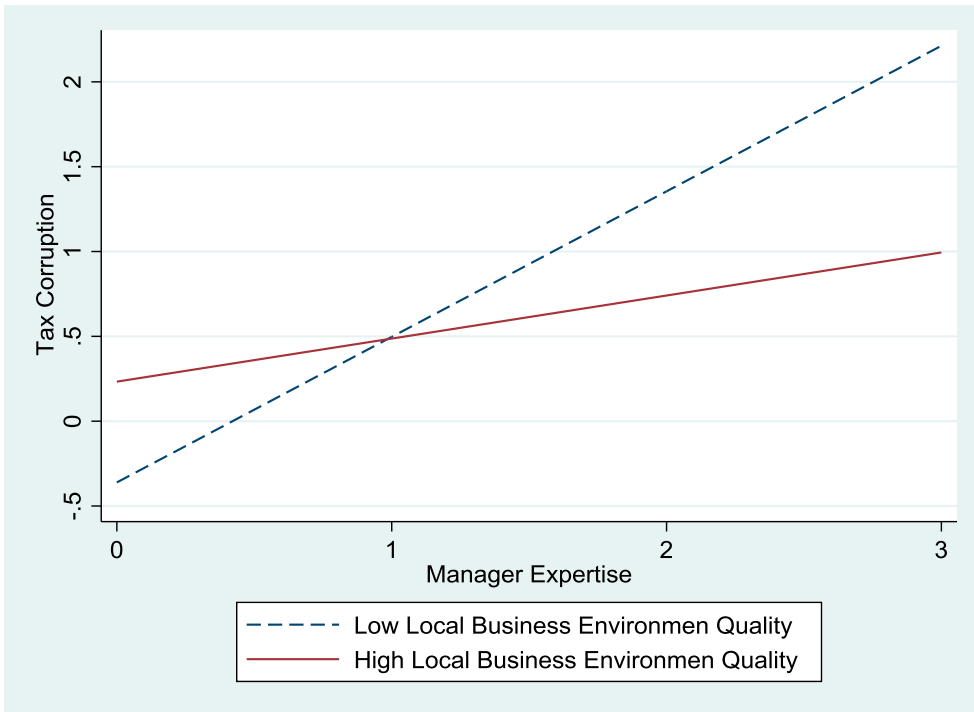


Figure 2. Moderating effect of local business environment.

moral development and the preference for using formal business strategies (Karami et al., 2006; Tu, 2012), which restrains managers from acting corruptly in taxation matters.

5.2. Different components of manager expertise, local business environment and tax corruption

Having pointed out that different aspects of managerial expertise may have different influences on tax corruption, we now extend our analysis and evaluate how a manager's

Table 7. Different components of manager expertise and tax corruption.

	Education		Knowledge of law		Experience	
	Bribery probability (1)	Bribery amount (2)	Bribery probability (3)	Bribery amount (4)	Bribery probability (5)	Bribery amount (6)
<i>Manager expertise</i>	0.008	0.103		0.251***	0.011**	0.090**
	(0.008)	(0.063)	(0.005)	(0.034)	(0.005)	(0.040)
Other controls	YES	YES	YES	YES	YES	YES
Industry-year FEs	YES	YES	YES	YES	YES	YES
R^2	0.043	0.050	0.045	0.052	0.044	0.051
Observations	14,673	14,673	14,673	14,673	14,673	14,673
Number of firms	4939	4939	4939	4939	4939	4939

Note: Constants are excluded for brevity. Robust standard errors are in parentheses. ***, **, * represent statistical significance at 1%, 5%, and 10% levels, respectively.

Table 8. Different components of manager expertise, local business environment and tax corruption.

	Education		Knowledge of law		Experience	
	Bribery probability (1)	Bribery amount (2)	Bribery probability (3)	Bribery amount (4)	Bribery probability (5)	Bribery amount (6)
<i>Manager expertise</i>	0.524* (0.307)	4.387* (2.525)	0.472*** (0.164)	2.834** (1.215)	0.694*** (0.194)	5.634*** (1.503)
<i>Business environment</i>	−0.073** (0.032)	−0.450* (0.234)	−0.021 (0.035)	−0.201 (0.258)	−0.023 (0.034)	−0.046 (0.251)
<i>Manager expertise × Business environment</i>	−0.128* (0.076)	−1.060* (0.624)	−0.108*** (0.041)	−0.642** (0.305)	−0.169*** (0.048)	−1.375*** (0.374)
Industry-year FEs	YES	YES	YES	YES	YES	YES
R^2	0.044	0.051	0.046	0.052	0.045	0.052
Observations	14,673	14,673	14,673	14,673	14,673	14,673
Number of firms	4939	4939	4939	4939	4939	4939

formal education, knowledge of law and working experience interact with the local business environment and affect managers' tax corruption behaviour.

To do so, we slightly augment the model presented in Section 5.1 and sequentially interact each of the measures of manager expertise (i.e. *Formal Education*, *Knowledge of Law* and *Experience*) with *Business Environment*. We adopt procedures similar to those employed in other sections and assess tax corruption both in terms of the probability of engaging in tax corruption and the amount of tax corruption. The regression results of the model to examine how different aspects of managerial expertise affect tax corruption under different business environment are reported in Table 8.

As can be seen from Table 8, the estimated coefficients on *Manager Expertise × Business Environment* are always negative and statistically significant across all the columns (albeit only marginally significant in the first two columns when manager expertise is assessed in terms of the formal education of a manager). Thus, these results reinforce our findings in Section 4.2 that, when the quality of the local business environment improves, managers with a higher level of expertise are less eager to engage in tax corruption.

6. Conclusion

While tax evasion and corruption are rampant among firms in transitional countries, little is known about how knowledgeable managers of these firms behave in different local business contexts. By using a longitudinal dataset from biennial surveys of SMEs in the transition economy of Vietnam over the period from 2005 to 2015, this study shows that the tax corruption behaviour of a firm's managers depends on the managers' expertise, as well as the quality of the local business environment in which the firms operate. Specifically, we find that more able managers are more likely to be involved in tax corruption and are more willing to pay a higher amount of bribes to the public tax officers. This is particularly the case for firms managed by managers having superior knowledge of laws and regulations and who have more working experience. However, we also find that an improved local business environment would lead to lower tax corruption practices.

One of the main contributions of this paper rests on the investigation of how the business environment can shape the tax corruption behaviour of managers with

different levels of expertise. We show in detail that, as the quality of local business environment improves, more able managers tend to engage less in tax corruption and make fewer payments to corrupt tax officials. The feasible explanation is that in a business environment with clearly codified and consistently implemented laws, low regulatory burden and strengthened rule of law, the opportunities and incentives for managers to take advantage of their expertise to engage in tax bribery are lowered while the costs and risks associated with bribery activities are heightened.

Overall, this study contributes to understanding more about tax corruption practices of firms in the context of a transitional country like Vietnam. Our findings suggest that to reduce tax corruption, which is often conducted by more able managers, it is important both to address tax corruption problems directly and also to improve the quality of the local business environment. Enhanced and improved local business environments should be created side-by-side with other policies to fight against tax corruption.

We should acknowledge that this paper has a limitation arising from the potential endogeneity issue in our empirical analysis. Although we have used many strong fixed effects and controlled for various firm-specific characteristics, there can still be unobserved firm-level factors that are simultaneously correlated with manager expertise and the firms' tax corruption behaviour. One possible way is to deal with this is to use an instrumental variable (IV) approach (i.e. IV-2SLS). Unfortunately, finding appropriate IVs for manager expertise is very difficult and a weak instrument that may cause further bias in the estimations (Hahn & Hausman, 2003). Therefore, the results reported in this paper should be considered somewhat exploratory, and future studies would be well advised to find ways to more properly address the endogeneity concern.

Notes

1. To ensure the robustness of the result, we have also re-estimated the model using the natural logarithm of the amount of the bribe payment (without plus 1), and the ratio of bribe payment to total revenues as alternative measures of *Bribery Amount*. The results remain largely unchanged and are available upon request.
2. In our study, we do not distinguish between an owner and manager of an SMEs. Most of prior entrepreneurship or small-business management studies often use terms 'managers', 'owners' and 'owner-managers' interchangeably. This is because, unlike in large firms where managers are often hired by shareholders to run the business, in SMEs, their owners often take the dual role as the managers (Kim, 2021; Nguyen et al., 2020). Jennings and Beaver (1995) also posit that owners play key roles in the management process of small enterprises by directly influencing the firms' operations and activities. In the case of Vietnam, Nguyen (2021) illustrates that most SMEs still largely rely on their owner-managers' personal wealth to make investments.
3. In order to ensure that the three aforementioned components are consistent in terms of indicating manager expertise, we follow the previous literature and conduct a Cronbach's alpha test (Cortina, 1993). The value of the test result is supposed to fall within the range from 0.7 to 0.8. Our test result demonstrates $\alpha = 0.762$, indicating a high level of internal consistency among sub-indicators. To ensure the robustness of our result, we also re-estimate the baseline model using an alternative measure of managerial expertise. Arguably, the managers' specific knowledge of laws can be more directly related to their tax compliance behaviours and the incentives to engage in tax corruption rather than education or working experience.

Thus, we construct a composite index on the manager's knowledge of various laws and government regulations and consider it as an alternative measure of managerial expertise. As discussed, managers were asked to characterise their knowledge about various laws and government regulations. Based on this information, for each type of law, we create a dummy variable equal to 1 if the manager indicates that they have a good knowledge of that specific law. We then construct a composite index *Law Knowledge* as the sum of all of these dummy variables. Thus, the *Law Knowledge* index has a value ranging from 0 to 11. A value of 0 indicates that the manager does not have any knowledge of the laws and regulations, while a higher value indicates that the manager does have a good knowledge of a higher number of laws and government regulations. Overall, the results are largely unchanged and available upon request.

4. To ensure the robustness of our results, we also re-estimate the model using logit and probit models. The results are qualitatively unchanged. For the sake of saving space, these results are not reported, although they are available upon request.

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