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Article

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ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | LETTER

Firm bribery and revenue dependence on state-owned enterprises: evidence from a socialist-oriented economy

Khanh Hoang^{1*}

Abstract: This study explores the relationship between corporate bribery cost and revenue dependence on contracts from state-owned enterprises (SOEs) in Vietnam, a country with a high level of corruption and a dominant public sector. Using the multiple fixed effect estimator and the entropy balancing technique, our empirical results suggest that firms that depend on contracts from SOEs and the government must bear a higher cost of bribery relative to their counterparts. After clearly classifying firms that depend on SOEs from firms that depend on government contracts, we show that the cost of bribery of SOE-dependent firms is 23.07% higher than average firms. The finding implies general firms pay bribes to SOEs' management to secure their contractual status. Further analysis shows that the effect of revenue dependence on firm bribery cost is sensitive to corruption norms. Our findings provide several implications for policymakers, business strategy, and future research.

Subjects: Corporate Finance; Corporate Governance; Business Ethics

Keywords: bribery; corruption norm; rent extraction; revenue dependence; state-owned enterprises

1. Motivation

Previous studies suggest that government contracts are crucial to a large number of firms in the economy, so that in some contexts, firms bribe in order to secure government contracts (D'Souza & Kaufmann, 2013; Wu, 2018). In those cases, firms that are more dependent on government spending are more likely to engage in bribery, especially in less developed countries with weak institutions and higher corruption (Shleifer & Vishny, 1993). While most studies in the literature focus on the linkage between government contracts and firm bribery (Beck & Maher, 1989; Pham et al., 2021; Sanyal, 2005; Ufere et al., 2020), little is known about another aspect of public corruption: bribery to state-owned enterprises (SOEs) to secure contracts as an indirect access to state capital. In countries with economically dominant public sector and weak institutions such as Vietnam, SOEs is arguably constraining economic development (TV Nguyen & Freeman, 2009) and fostering corruption within the firms (Cheng, 2004). Based on this understanding, we suggest that there might be a channel of public corruption manifested in bribes by average firms to SOEs to indirectly exploit state capital invested in those firms. In that case, we expect an increase in firm bribery cost if firms depend more on contracts from SOEs. How does revenue dependence on SOEs affect the cost of bribery, especially in the context of public sector dominance in Vietnam? How does the effect differ from when firms bribe for government contracts? How does the effect differ

across different corruption norms? Those compelling questions have yet to be addressed in the literature.

Given the high level of corruption in Vietnam, firms generally use bribes to achieve business goals or to fit into the social norms (Malesky et al., 2020). Previous studies in the literature indicated that revenue dependence on government contracts is likely associated with bribes (Malesky et al., 2020; TV Nguyen & Freeman, 2009; Pham et al., 2021), meaning that they focus on the state agents as the bribe receivers but neglecting state-owned businesses. In the context of the dominance of the public sector in the economy such as the cases of Vietnam, SOEs are generally larger than private firms and directly invested by the state. The state uses SOEs as tools to achieve economic and social goals by injecting capital for their operations. As a result, government capital can be indirectly transferred to other firms in the economy via SOEs. As corruption is contagious, we cannot rule out the possibility that private firms resort to bribery to gain preferential access to state capital granted via SOEs in the form of SOEs' contracts. However, there is no direct evidence showing that firms bribe the management of SOEs to secure their contracts. To motivate our argument, we borrow the findings from (Nguyen, 2021) about corruption of SOEs' managers in Vietnam (Nguyen, 2021). suggests that managers of SOEs generally seek to obtain bribes just before retirement by recruiting significantly more employees without any corresponding improved performance. Knowing that the state is the capital provider to SOEs, corruption norms might also be spilt over to SOEs, and it is evident with empirical findings from (Nguyen, 2021). Following this line of argument, we argue that firms may also bribe to secure their contractual connections with SOEs.

Using data from a unique and comprehensive firm survey funded by United States Agency for International Development (USAID) and conducted by the Vietnam Chamber of Commerce and Industry (VCCI), we attempt to examine how firm bribery cost differ across different levels of revenue dependence on contracts from the public sectors and private sectors in the context of Vietnam, an emerging economy with a high level of corruption (Gueorguive & Malesky, 2012; Tromme, 2016). The survey data well show the size of bribes relative to their sales that firms pay as rents to the bribe receivers. By identifying groups of firms whose revenues are dependent on contracts from the public sectors and the private sector, we set up a set of three baseline models to empirically investigate the patterns of firm bribery cost when revenues are heavily dependent on contracts from state-owned enterprises (SOEs), state agencies, and firms from the private sector. The setting is to compare the patterns and approach firm bribery cost from a fresh perspective: bribes to SOEs to maintain revenue dependence. Our research setting is well fit into the context of Vietnam, a socialist-oriented developing country where the public sector is dominant. By testing and comparing the effect of revenue dependence on SOEs with that of revenue dependence on government contracts, we can address the existence of a form of corruption in socialist developing countries.

The empirical analysis supports our argument. While the average cost of bribery of Vietnamese firms is approximately 2.996% of total revenues, firms that depend on contracts from SOEs and government contracts generally pay 23.07% and 30.18% more rent than other firms. By contrast, we find that firms that depend on contracts from the private sector, on average, pay 26.13% less rent compared to their counterparts. To establish causality of the newfound effects, we employ the entropy balancing method (Chen et al., 2022; Hainmueller, 2012) to reweight the sample and re-estimate the baseline regressions with weights generated from the balancing process. Entropy balancing is found to be doubly robust compared to the propensity score matching technique regarding linear outcome regressions (Zhao & Percival, 2017). After the regressions using balanced samples, our results still hold with very small variations in the coefficients-of-interest. Based on the empirical findings, we argue that firms with close transactional relationship to SOEs bribe the management of SOEs to maintain their contractual status. The findings demonstrate the state of corruption in the public sector in Vietnam from the business perspective, where government contracts seem to be costlier to get.

Further analyses indicate the heterogeneity in the effect of social norms on how bribery cost varies with revenue dependence. We find that in cases firms actively pay rents (i.e., collusive bribery), their overall cost of bribery increases significantly if their major customers are from SOEs and state agencies, while no incremental effect is found if the firms' customers are from the private sector. Interestingly, if corrupt officials request bribes (i.e., coercive bribery, or rent extraction), all firms suffer increased bribery cost, which is much higher than that in the cases of collusive bribery. Based on the results, we argue that rent extraction stimulates firm bribery regardless of their connection to SOEs and state agencies. There is a note that the frequency of coercive bribery is quite low in the sample (e.g., 3.1% of the responded firms) relative to that of collusive bribery (e.g., 17% of the responded firms).

This study contributes to literature in three specific ways. First, the study provides fresh evidence of corporate bribery when firm revenues are dependent on contracts from SOEs. That is, SOE-dependent firms generally engage more in bribery regarding the size of bribes compared to firms that do not depend on contracts from the public sector. The finding corroborates the literature on corruption in state-owned businesses (Hoang et al., 2022; Nguyen, 2021; Tkachenko et al., 2017) and sheds light on corruption at firm-level in the context of the SOEs-dominant economy of Vietnam. Second, we show the impact of corruption norms in how revenue dependence affects corporate bribery cost to SOEs' management, corrupt government officials. Our study demonstrates the severe impact of coercive bribery in the contemporary Vietnam, while suggesting that bribery cost of firms with major customers from the private sector does not increase in a context of collusive bribery. Last but not least, we highlight the role of the private sector in enhancing transparency and lowering the informal cost of doing business compared to that in the public sector in Vietnam.

The rest of the paper proceeds as follows: Section 2 presents the research methodology and data; Section 3 reports and discusses empirical results; Section 4 concludes the study.

2. Research methodology and data

2.1. Model specification

The model to investigate the revenue dependence—bribery cost is as follows:

$$Bribery_cost_{i,t} = \alpha + \beta Maincust_type_{i,t} + \sum Control_{i,t} + \gamma_i + \theta_t + \lambda_t + \varepsilon_{i,t} \quad (1)$$

where $Bribery_cost_{i,t}$ is the size of bribery of firm i during period t relative to the firm's revenues in the same period; $Maincust_type_{i,t}$ are dummy variables representing each of the types of main customers that firm i depend on during period t ; $\sum Control_{i,t}$ stands for a vector of control variable at firm-level during the same period t . Following previous studies in the literature (Ayyagari et al., 2014; Malesky et al., 2020; Nguyen, 2021; TT Nguyen & van Dijk, 2012), we include sector fixed effects, province fixed effect, and year fixed effect to control heterogeneity and potential unobserved factors at sector-level, province-level, and in the time dimension. Standard error is clustered by firm, in other words, at the same level as $Maincust_type$, the variable-of-interest.

To investigate the relationship between revenue dependence and firm bribery cost across different customer strategies, we alternatively use three different forms of main customer-type dummy in Model (1): SOEs ($Maincust_SOE$), state agencies ($Maincust_state$), and firms from the private sectors ($Maincust_private$). More specifically, $Maincust_SOE$ is the dummy variable that equals one if a majority of the firm's revenues come from contracts signed with SOEs, zero otherwise. Similarly, $Maincust_state$ is the dummy variable that equals one if a majority of the firm's revenues come from government contracts, zero otherwise. $Maincust_private$ is the dummy variable that equals one if a majority of the firm's revenues come from contracts signed with private firms, zero otherwise. Control variables include firm size ($Equity_size$), employee size (Emp_size), business expansion plan ($Expansion$), firm performance ($Performance$), land-use rights certificate dummy ($Lurc$), and firm age ($Firm_age$).

Table 1. Variable description

Variable	Description
<i>Bribery_cost</i>	Share of bribes in revenue
<i>Maincust_SOE</i>	Dummy variable that equals one if the largest customers of the firm are state-owned enterprises in Vietnam
<i>Maincust_state</i>	Dummy variable that equals one if the largest customer of the firm is the state in Vietnam
<i>Maincust_private</i>	Dummy variable that equals one if the largest customers of the firm are domestic private firms in Vietnam
<i>Equity_size</i>	Equity capital in time t-1 (1–8 scale)
<i>Emp_size</i>	Employee size in time t-1 (1–8 scale)
<i>Expansion</i>	Business expansion plan of the firm for the next two years (1–6 scale).
<i>Performance</i>	Firm's overall performance (1–5 scale).
<i>Lurc</i>	Dummy variable that equals one if the firm has Land-use Rights Certificate(s).
<i>Firm_age</i>	Age of the firm
<i>Collusive</i>	Dummy variable that equals one if the firm is offering bribes
<i>Coercive</i>	Dummy variable that equals one if a government official is requesting a bribe

To address the effect of different corruption norms on the studied relationship, we generate two dummy variables representing the bribing firm groups: *collusive* and *coercive*. Specifically, *collusive* equals one if a firm belongs offer bribes to government official(s), and zero otherwise. By contrast, *coercive* equals one if the firm is requested to pay rents by a government official, zero otherwise. To disentangle the impact of collusive bribes and coercive bribes, we alternatively include the interaction term between newly created dummies (*collusive* and *coercive*) and revenue dependence variables into Model (1), then re-estimate the model. Table 1 presents the descriptions of variables used in this study.

2.2. Data and sample

We use anonymous firm data from the Provincial Competitiveness Index (PCI) Survey to conduct the empirical analysis. The survey is administrated by VCCI and funded by USAID. The total number of surveyed firms was 13,299, from all provinces of Vietnam during the 2006–2017 period. The PCI Survey is one of most comprehensive and systemic firm surveys in Vietnam that was cited by Vietnamese government agencies, businesses, and researchers (Malesky et al., 2020). The initial sample consists of 93,586 firm-year observations, with response rate varies for each of the variables. The data is accessible from Harvard dataverse. To ensure there are no overlapping between the groups of SOEs-dependent firms (*Maincust_SOE* = 1) and government-dependent firms (*Maincust_state* = 1), we exclude all observations at which the firms have both SOEs and the government as major customers when we regress Model (1). Table 2 presents the descriptive statistics of the variables from the PCI Survey used in this study.

From the summary statistics, it is observable that average bribery cost of Vietnamese firms is 2.996% of their revenues, which is substantial, while the maximum value of bribery cost is 25.000%. These statistics demonstrate the inefficient institutions and corruption status in Vietnam during the study period (2006–2017). With a 2.996% portion of revenues being paid out as rents, Vietnamese firm performance is likely deteriorated. Appendix Table A1 further shows the mean and standard deviation of *Bribery_cost* by province. From Appendix Table A1, it is observable that the mean of *Bribery_cost* seems to be highest in the provinces in the North-West part of

Table 2. Descriptive statistics

Panel A. Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Bribery_cost</i>	73,905	2.996	4.846	0.000	25.000
<i>Maincust_SOE</i>	93,586	0.251	0.434	0.000	1.000
<i>Maincust_state</i>	72,809	0.239	0.426	0.000	1.000
<i>Maincust_private</i>	93,586	0.678	0.467	0.000	1.000
<i>Equity_size</i>	79,025	2.982	1.257	1.000	8.000
<i>Emp_size</i>	80,887	2.628	1.184	1.000	8.000
<i>Expansion</i>	90,721	4.764	1.093	1.000	6.000
<i>Performance</i>	84,586	3.476	1.008	1.000	5.000
<i>Lurc</i>	93,586	0.384	0.486	0.000	1.000
<i>Firm_age</i>	90,377	6.504	6.034	0.000	106.000
<i>Collusive</i>	16,145	0.170	0.376	0.000	1.000
<i>Coercive</i>	8,192	0.031	0.175	0.000	1.000

(Continued)

Table 2. (Continued)

Panel B. Correlation matrix												
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Bribery_cost	1.000											
(2) Maincust_SOE	0.034***	1.000										
(3) Maincust_state	0.179***	0.249***	1.000									
(4) Maincust_private	-0.074***	0.083***	-0.013***	1.000								
(5) Equity_size	0.010**	0.010***	0.024***	-0.041***	1.000							
(6) Emp_size	-0.009**	0.091***	0.071***	-0.077***	0.564***	1.000						
(7) Expansion	-0.029***	0.145***	0.073***	0.040***	0.108***	0.171***	1.000					
(8) Performance	-0.039***	0.033***	0.076***	-0.017***	0.114***	0.174***	0.159***	1.000				
(9) Lurc	-0.036***	0.036***	-0.014***	0.033***	0.132***	0.127***	0.055***	0.075***	1.000			
(10) Firm_age	-0.020***	-0.009***	0.022***	0.014***	0.238***	0.257***	-0.079***	0.146***	0.169***	1.000		
(11) Collusive	-0.001	0.026***	0.015*	0.018**	0.047***	0.058***	0.044***	0.024***	0.054***	0.029***	1.000	
(12) Coercive	0.115***	0.027**	0.015	0.033***	-0.019	-0.018	-0.002	-0.012	0.004	-0.025**	0.035***	1.000

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

Vietnam, where firms generally pay more than 4% of their revenues as bribes. By contrast, firms in the province in southern part of Vietnam seems to pay less bribes.

By closely looking at the corruption norm variables, *collusive* and *coercive*, we see that the mean of *collusive* is 0.170 while the mean of *coercive* is 0.031. The statistics indicate that 17% of surveyed firms actively offered and paid rents to the officials, while 3.1% of them were requested to pay rents by corrupt officials.

Looking at the statistics of the revenue dependence variables, we see that 25.1% and 23.9% of the surveyed firms disclosed that they are dependent on the contracts from state-owned businesses and state agencies, respectively. However, not all firms can access contracts from the public sector as we document 67.8% of the surveyed firms are dependent on contracts from the private sector. There is a note that we observe overlaps between a certain number of firms that have access to contracts in both public and private sectors. Therefore, in the regression, we exclude all firm-year observations between the main customer dummies (*Maincust_SOEs*, *Maincust_state*, and *Maincust_private*).

3. Empirical analysis

3.1. Baseline results and discussion

Table 3 reports the baseline regression results. Columns 1–3 present the reduced-form regression results of Model (1) with fixed effects included, while Columns 4–6 show the results of the full model regressions. The variables of interest are *Maincust_SOE*, *Maincust_state*, and *Maincust_private*, respectively.

In Table 3, the coefficients of *Maincust_SOE* in Column 1 and Column 4 are 0.4524*** and 0.4652***, respectively. The coefficients of *Maincust_state* in Columns 2 and 5 are 1.4640*** and 1.5436***, respectively. However, the coefficients of *Maincust_private* remain negative and significant in Columns 3 and 6, with values of –0.2665*** and –0.2717***, respectively. On the one hand, the regression results suggest a positive association between revenue dependence on state agencies and cost of bribery of Vietnamese firms. On the other hand, the empirical results imply a negative association between firm bribery cost and revenue dependence on firms from the private sector. Using a log-transformed measure of *Bribery_cost*, we see that on average, bribery cost increases 23.07%, 30.18% and decreases 26.17% of its mean when the firm depend on revenues from SOEs, state agencies, and private firms as the major customers, respectively. On average, those changes are equivalent to 0.69%, 0.90%, and –0.78% of average revenues, respectively.

Following (Hainmueller, 2012), we use entropy balancing to establish causality on the relationship between our variable of interest and the dependent variable. First, we alternatively use each of the revenue dependence dummies to classify treated groups, that are: firms with SOEs as major customers (*Maincust_SOE* = 1), firms with the state as the major customer (*Maincust_state* = 1), and firms depend on customers from the private sector (*Maincust_private* = 1). Then, we use entropy balancing to calibrate unit weights so that the reweighted treated and control groups satisfy a set of balance conditions regarding firm characteristics: firm size, firm age, business expansion plan, firm performance, and land use rights. Table 4 shows the balancing results, while Table 5 shows the regression results using the balanced samples.

From the regression results in Table 5, we see that the coefficients of *Maincust_SOE*, *Maincust_state*, and *Maincust_private* follow similar patterns with those in the baseline regressions in Table 3. The differences between the coefficients of the variables of interest in Table 5 compared to those in Table 3 are relatively small, thus implying the robustness of the empirical results. Generally, the results bolster our confidence on the causal effects of revenue dependence on corporate bribery to Vietnamese SOEs. Specifically, firms that are dependent on contracts from SOEs and state agencies

Table 3. Baseline regression

VARIABLES	(1)	(2)	(3)	(5)	(6)	(7)
	Bribery_cost	Bribery_cost	Bribery_cost	Bribery_cost	Bribery_cost	Bribery_cost
Maincust_SOE	0.4524*** (0.0414)			0.4652*** (0.0479)		
Maincust_state		1.4640*** (0.0566)			1.5436*** (0.0616)	
Maincust_private			-0.2665*** (0.0412)			-0.2717*** (0.0481)
Equity_size				0.0140 (0.0199)	0.0219 (0.0227)	0.0192 (0.0200)
Emp_size				0.0252 (0.0211)	0.0216 (0.0244)	0.0211 (0.0211)
Expansion				-0.0857*** (0.0214)	-0.1005*** (0.0244)	-0.0698*** (0.0214)
Performance				-0.1852*** (0.0210)	-0.2469*** (0.0255)	-0.1804*** (0.0210)
Lurc				-0.0215 (0.0410)	0.0082 (0.0484)	-0.0247 (0.0410)
Firm_age				-0.0087*** (0.0032)	-0.0107*** (0.0036)	-0.0079** (0.0032)

(Continued)

Table 3. (Continued)

	(1)	(2)	(3)	(5)	(6)	(7)
VARIABLES	Bribery_cost	Bribery_cost	Bribery_cost	Bribery_cost	Bribery_cost	Bribery_cost
Constant	2.8715*** (0.0203)	2.8064*** (0.0234)	3.1824*** (0.0346)	3.9586*** (0.1204)	4.0964*** (0.1343)	4.1758*** (0.1249)
Sector fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	73,783	56,117	73,783	57,933	46,741	57,933
Adjusted R-squared	0.0827	0.0962	0.0818	0.0914	0.1067	0.0904

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

Table 4. Entropy balancing statistics
Panel A. Maincust_SOE as the treatment

Maincust_SOE	Treated			Control (without weighting)			Control (with weighting)		
	Mean	Variance	Skewness	Mean	Variance	Skewness	Mean	Variance	Skewness
Equity_size	3.031	1.490	0.583	2.987	1.587	0.529	3.031	1.665	0.538
Emp_size	2.828	1.219	0.847	2.574	1.445	1.042	2.828	1.776	1.186
Expansion	4.981	1.091	-0.855	4.636	1.185	-0.537	4.981	0.996	-0.570
Performance	3.539	1.060	-0.603	3.462	0.999	-0.686	3.539	0.968	-0.724
Lurc	0.418	0.243	0.332	0.386	0.237	0.468	0.418	0.243	0.332
Firm_age	6.935	41.760	3.443	6.966	35.590	2.668	6.935	36.140	2.765

Panel B. Maincust_state as the treatment

Maincust_state	Treated			Control (without weighting)			Control (with weighting)		
	Mean	Variance	Skewness	Mean	Variance	Skewness	Mean	Variance	Skewness
Equity_size	3.117	1.358	0.432	3.053	1.672	0.559	3.117	1.739	0.565
Emp_size	2.742	1.086	0.687	2.552	1.467	1.082	2.742	1.711	1.195
Expansion	4.768	1.141	-0.626	4.585	1.170	-0.493	4.768	1.055	-0.414
Performance	3.635	0.834	-0.989	3.463	0.997	-0.728	3.635	0.874	-0.900
Lurc	0.347	0.227	0.644	0.372	0.234	0.528	0.347	0.227	0.644
Firm_age	7.348	39.950	3.044	7.116	38.81	2.702	7.348	43.290	2.838

(Continued)

Table 4. (Continued)

Panel C. Maincust_private as the treatment

Maincust_private	Treated			Control (without weighting)			Control (with weighting)		
	Mean	Variance	Skewness	Mean	Variance	Skewness	Mean	Variance	Skewness
Equity_size	2.967	1.527	0.546	3.073	1.641	0.521	2.967	1.561	0.518
Emp_size	2.574	1.264	0.862	2.788	1.687	1.057	2.574	1.429	0.898
Expansion	4.750	1.159	-0.594	4.659	1.236	-0.618	4.750	1.177	-0.613
Performance	3.469	1.033	-0.639	3.511	0.972	-0.708	3.469	0.982	-0.663
Lurc	0.400	0.240	0.409	0.381	0.236	0.491	0.400	0.240	0.409
Firm_age	6.974	37.700	2.979	6.922	35.790	2.714	6.974	38.240	2.743

Table 5. Regression using entropy balanced samples

	(1)	(2)	(3)
VARIABLES	<i>Bribery_cost</i>	<i>Bribery_cost</i>	<i>Bribery_cost</i>
<i>Maincust_SOE</i>	0.4743*** (0.0487)		
<i>Maincust_state</i>		1.3930*** (0.0599)	
<i>Maincust_private</i>			-0.2352*** (0.0471)
<i>Equity_size</i>	-0.0121 (0.0228)	-0.0159 (0.0303)	0.0023 (0.0237)
<i>Emp_size</i>	-0.0357 (0.0235)	0.0191 (0.0317)	0.0637*** (0.0244)
<i>Expansion</i>	-0.0413 (0.0255)	-0.1803*** (0.0334)	-0.0617** (0.0248)
<i>Performance</i>	-0.1676*** (0.0245)	-0.2639*** (0.0352)	-0.1847*** (0.0248)
<i>Lurc</i>	-0.0249 (0.0474)	-0.0000 (0.0651)	-0.0461 (0.0486)
<i>Firm_age</i>	-0.0080** (0.0037)	-0.0100** (0.0048)	-0.0082** (0.0036)
<i>Constant</i>	3.8946*** (0.1452)	4.9313*** (0.1877)	4.1826*** (0.1404)
Sector fixed effect	Yes	Yes	Yes
Province fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Observations	57,922	46,719	57,928
Adjusted R-squared	0.0884	0.1325	0.0978

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

bribe more than their counterparts on average. By contrast, firms that have customers mostly from the private sector generally bribe less than other firms. Our findings corroborate the rent-seeking hypothesis that firms pay bribes to corrupt officials as they get more contracts from the government (Beck & Maher, 1989; Fisman & Svensson, 2007; TT Nguyen & van Dijk, 2012). However, we extend the literature to a case where SOE-dependent firms engage more in bribery to maintain preferential contracts from SOEs. Interestingly, the test using *Maincust_private* as the variable-of-interest shows that is not the case if firms' major customers come from the private sector. This test serves as a placebo test using the private-dependent firm groups in which bribery is least likely to occur. While most studies in the literature focus on bribery to government officials in the context of countries with strong private sector, our analysis provides evidence of another fact of bribery to the management of state-owned businesses to establish and maintaining contractual status.

To summarize, the outcomes of the empirical analysis suggest a causal effect of revenue dependence on firm bribery cost. Our findings complement the findings of the previous literature by providing an approach from the revenue dependence perspective.

3.2. Collusive versus coercive bribery

In this section, we take one step further to address one channel of effect that is very important in corruption literature: rent-extraction versus rent-seeking. Drawing on findings of previous studies

(Malesky et al., 2020; Mauro, 1998; Shleifer & Vishny, 1993; Svensson, 2003), we attempt to disentangle the effects of rent-seeking (i.e., collusive bribery) and rent-extraction (i.e., non-collusive bribery, or coercive bribery) to see how the impact is different across different cases of bribery. The current literature on the corruption norms classifies corruption norms into collusive and coercive corruption norms (Hoang et al., 2022; Malesky et al., 2020; Svensson, 2003). On the one hand, in an economy where collusive corruption is the norm, firms actively seek rent from government officials and politicians to gain preferential treatments, government contracts, or easier access to public bank loans (Hoang et al., 2022). On the other hand, politicians and government officials may play the role of the main players who demand rents from firms; firms must pay the rents without asking for preferential treatments in advance; this pattern is called coercive bribery. Regarding the findings in the literature that firms actively engage in collusive bribery to stimulate firm growth (TT Nguyen & van Dijk, 2012; Shaheer et al., 2019), and coercive bribery is detrimental to economic growth (Stratford, 2020), we expect that both collusive and coercive bribery would increase the cost of bribery of Vietnamese firms on average. However, the cost of bribery might be higher in cases of coercive bribery because it might not be associated with corresponding increases in firm revenues.

Fortunately, the PCI Survey allows us to classify firms into different groups: firms that actively seek rents by offering bribes to officials (i.e., collusive bribes), firms that are passively paying rent following the request of government officials (i.e., coercive bribes), and other firms.

Table 6 presents the estimation results of collusive bribery analysis. Columns 1–3 show the estimation results of firm bribery cost on revenue dependence on SOEs, state agencies, and private firms and their interactions with the collusive bribe dummy (*collusive*), respectively. On the one hand, we find that the coefficients of the interaction terms $Maincust_SOE \times collusive$ and $Maincust_state \times collusive$ are 0.6612*** and 1.4896*** in Columns 1–2, respectively. These results suggest an incremental effects of collusive bribery on the impact of revenue dependence on firm bribery cost in firms with the state and SOEs as major customers. In other words, apart from firms that depend on government contracts ($Maincust_state = 1$), firms that in close transactional relations to SOEs might also resort to collusive bribes to maintain their contracts. On the other hand, the coefficient of $Maincust_private \times collusive$ seems to be statistically insignificant in Column 3, implying that rent-seeking does not significantly affect bribery cost of firms whose sales depend on the private sector.

Table 7 reports the estimation results of coercive bribery analysis and tells a different story. The coefficients of all three interaction terms $Maincust_SOE \times coercive$, $Maincust_state \times coercive$, and $Maincust_private \times coercive$ are 3.8885***, 6.2691***, and 3.0130***, respectively, suggesting a strong incremental effect of rent-extraction on how revenue dependence affect firm bribery cost. Moreover, the coefficient of *coercive* remains positive and significant in all model specifications, implying a strong positive standalone impact of rent-extraction on the cost of bribery. Collectively, the results suggest that all firms suffer when the corruption norm is non-collusive. By comparing the coefficients of the interaction terms in Table 6 and 7, we argue that the effect of corruption is more severe in the case of rent-extraction relative to the cases of rent-seeking. The findings are in line with our prediction and support the previous discussion in the literature that non-collusive bribes add significantly to firm costs with minimal benefits in return or non-exclusive access to government contracts or services (Argandona, 2005; Bailes, ; Malesky et al., 2020). Even when the major partners of firms are from the private sector, the effect is still prevalent, hence, the findings corroborate the persistent impact of corruption on corporate behavior (Hoang, 2022; Smith, 2016).

To conclude, the findings of our additional analyses show evidence of the differences between coercive and collusive bribery regarding their impact on the revenue dependence—cost of bribery relationship. Based on the empirical analysis, we argue that rent-extraction stimulates firm bribery regardless of their dependence on SOEs, government contracts, and firms that depend on contracts from the private sector are also affected.

Table 6. The effect of collusive bribery

	(1)	(2)	(3)
VARIABLES	<i>Bribery_cost</i>	<i>Bribery_cost</i>	<i>Bribery_cost</i>
<i>Collusive</i>	0.0021 (0.1353)	0.2682** (0.1268)	-0.2713 (0.1933)
<i>Maincust_SOE</i>	0.2760** (0.1398)		
<i>Maincust_SOE</i> × <i>Collusive</i>	0.6612*** (0.2333)		
<i>Maincust_state</i>		1.8252*** (0.1450)	
<i>Maincust_state</i> × <i>Collusive</i>		1.4896*** (0.2374)	
<i>Maincust_private</i>			-0.1068 (0.1221)
<i>Maincust_private</i> × <i>Collusive</i>			0.2086 (0.1693)
<i>Equity_size</i>	-0.0642 (0.0476)	-0.0556 (0.0469)	-0.0629 (0.0477)
<i>Emp_size</i>	0.0145 (0.0562)	-0.0133 (0.0557)	0.0171 (0.0562)
<i>Expansion</i>	-0.1128** (0.0535)	-0.1347** (0.0529)	-0.1019* (0.0535)
<i>Performance</i>	-0.0988* (0.0539)	-0.1400*** (0.0534)	-0.0901* (0.0538)
<i>Lurc</i>	-0.1777 (0.1094)	-0.0926 (0.1091)	-0.1863* (0.1095)
<i>Firm_age</i>	-0.0022 (0.0084)	-0.0063 (0.0083)	-0.0020 (0.0085)
<i>Constant</i>	4.6022*** (0.2844)	4.4120*** (0.2801)	4.6488*** (0.2881)
Sector fixed effect	Yes	Yes	Yes
Province fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Observations	10,995	10,995	10,995
Adjusted R-squared	0.0861	0.1024	0.0856

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

4. Concluding remarks

This study provides novel empirical evidence of revenue dependence on SOEs affect bribery in the context of Vietnam, a country with an economy dominated by state-owned businesses. Our findings complement current literature on corruption and provide new insights into corrupt deeds surrounding SOEs in Vietnam. We do not imply that firms should not seek for contracts from SOEs or government agencies in Vietnam, but they provide a reference for the institutional quality and business environment in the country.

Table 7. The effect of coercive bribery

	(1)	(2)	(3)
VARIABLES	<i>Bribery_cost</i>	<i>Bribery_cost</i>	<i>Bribery_cost</i>
<i>Coercive</i>	3.0418*** (0.5706)	2.3162*** (0.5312)	3.8037*** (1.0801)
<i>Maincust_SOE</i>	0.2708 (0.1854)		
<i>Maincust_SOE</i> × <i>Coercive</i>	3.8885*** (0.9821)		
<i>Maincust_state</i>		1.5321*** (0.1858)	
<i>Maincust_state</i> × <i>Coercive</i>		6.2691*** (0.9801)	
<i>Maincust_private</i>			-0.0026 (0.1582)
<i>Maincust_private</i> × <i>coercive</i>			3.0130*** (0.5630)
<i>Equity_size</i>	-0.0946 (0.0701)	-0.0842 (0.0694)	-0.0919 (0.0700)
<i>Emp_size</i>	-0.0768 (0.0792)	-0.1011 (0.0784)	-0.0746 (0.0790)
<i>Expansion</i>	-0.2427*** (0.0845)	-0.2441*** (0.0839)	-0.2355*** (0.0847)
<i>Performance</i>	-0.1204 (0.0782)	-0.1553** (0.0776)	-0.1169 (0.0780)
<i>Lurc</i>	-0.2778* (0.1589)	-0.1438 (0.1586)	-0.2887* (0.1591)
<i>Firm_age</i>	0.0228 (0.0139)	0.0171 (0.0137)	0.0234* (0.0140)
<i>Constant</i>	5.3279*** (0.4269)	5.0854*** (0.4224)	5.3346*** (0.4306)
Sector fixed effect	Yes	Yes	Yes
Province fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Observations	5,388	5,388	5,388
Adjusted R-squared	0.0955	0.1114	0.0950

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

Our findings have implications for policymaking, corporate strategy and future research. From our analysis, there is an evident relationship between corporate bribery and SOEs' contract granted. Therefore, it is crucial to discourage SOEs' managers from such corrupt deeds by improving governance, transparency and accountability, and increasing enforcement on corrupt agents in SOEs. Given the understanding of corporate bribery behavior and how SOEs are constraining economic development in Vietnam, enhancing the institutions, business environment and legal enforcements on corruption will serve well in improving total factor productivity of the country, an important determinant of economic growth. Businesses need to be aware of the increased informal cost of doing business with SOEs, especially the risk of being extracted by corrupt officials.

Last but not least, future research may extend this promising line of literature by exploring firm bribery to SOEs' managers in other aspects of business and finance, for example, bank loan access, corporate financing, and more.

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Appendix A1. Statistics of bribery cost variable (*Bribery_cost*) by province

Province	Obs	Mean	Std.dv
An Giang	1,056	2.857	4.864
Ba Ria—Vung Tau	1,174	2.763	4.636
Bac Giang	1,145	3.017	4.520
Bac Kan	924	4.758	6.301
Bac Lieu	855	2.695	4.529
Bac Ninh	1,136	3.041	5.115
Ben Tre	1,063	1.832	3.747
Binh Dinh	1,254	2.758	4.744
Binh Duong	1,466	2.330	4.306
Binh Phuoc	962	3.371	5.476
Binh Thuan	1,056	2.298	4.065
Ca Mau	957	2.698	4.568
Can Tho	1,195	2.752	4.660
Cao Bang	959	4.234	5.666
Da Nang	2,008	2.322	3.931
Dak Lak	1,082	3.641	5.285
Dak Nong	899	3.602	5.432
Dien Bien	822	4.576	6.451
Dong Nai	1,538	2.547	4.161
Dong Thap	954	2.271	4.002
Gia Lai	1,028	3.894	5.869
Ha Giang	878	4.753	6.102
Ha Nam	976	2.448	3.971
Ha Noi	2,416	3.376	5.046
Ha Tinh	1,082	3.781	5.544
Hai Duong	1,522	2.733	4.407
Hai Phong	1,922	2.962	4.619
Hau Giang	804	3.254	5.719
Ho Chi Minh City	3,357	2.753	4.421
Hoa Binh	1,091	3.566	5.196
Hung Yen	1,061	2.590	4.309
Khanh Hoa	1,181	2.975	4.866
Kien Giang	1,003	1.910	3.681
Kon Tum	960	4.085	5.762
Lai Chau	672	4.899	6.750
Lam Dong	1,329	3.086	4.864
Lang Son	1,064	3.517	5.354
Lao Cai	914	3.397	5.265
Long An	966	2.196	3.556
Nam Dinh	1,453	2.445	4.172
Nghe An	1,456	3.721	5.532
Ninh Binh	1,014	2.630	4.348
Ninh Thuan	1,132	3.387	5.367
Phu Tho	1,125	2.779	4.575

(Continued)

Province	Obs	Mean	Std.dv
Phu Yen	991	3.402	5.282
Quang Binh	1,057	3.497	5.191
Quang Nam	1,313	2.385	4.055
Quang Ngai	1,057	2.990	4.996
Quang Ninh	1,177	2.788	4.729
Quang Tri	1,031	3.783	5.538
Soc Trang	853	2.362	4.054
Son La	1,041	3.261	4.504
Tay Ninh	953	2.119	3.960
Thai Binh	1,143	2.560	4.367
Thai Nguyen	1,201	3.003	4.842
Thanh Hoa	1,266	3.339	5.168
Thua Thien Hue	1,156	2.890	4.379
Tien Giang	1,016	2.139	3.924
Tra Vinh	955	1.909	3.655
Tuyen Quang	940	3.824	5.452
Vinh Long	1,042	2.338	4.381
Vinh Phuc	1,293	2.640	4.369
Yen Bai	1,032	3.134	5.077



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