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Publication date:
2010

Document Version
Publisher's PDF, also known as Version of record

Citation for published version (APA):
Rand, J., & Tarp, F. (2010). Firm-Level Corruption in Vietnam. Helsinki: UNU-WIDER.

UNITED NATIONS UNIVERSITY

UNU-WIDER

World Institute for Development Economics Research

Working Paper No. 2010/16

Firm-Level Corruption in Vietnam

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March 2010

Abstract

This paper uses a unique panel dataset on firm-level corruption. It contains quantitative information on bribe payments by a sample of formal and informal Vietnamese firms. We show that bribe incidence is highly associated with firm-level differences in (i) visibility, (ii) sunk costs, (iii) ability to pay, and (iv) level of interaction with public officials. Moreover, when informal firms become formal the probability of paying bribes increases. Becoming formal is also associated with a revenue growth premium that is not driven by self-selection of well-performing firms. On average, this premium outweighs the additional bribe cost of formalization. Formalization embodies net benefits in spite of the growth hampering effects of bribes

Keywords: firm performance, corruption, Vietnam
JEL classification: L25, O17, O53

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This study has been prepared within the UNU-WIDER project on New Directions in Development Economics.

UNU-WIDER acknowledges the financial contributions to the research programme by the governments of Denmark (Royal Ministry of Foreign Affairs), Finland (Ministry for Foreign Affairs), Sweden (Swedish International Development Cooperation Agency—Sida) and the United Kingdom (Department for International Development).

ISSN 1798-7237 ISBN 978-92-9230-251-1

Acknowledgements

We are grateful for productive and stimulating collaboration with the survey teams from the Vietnamese Institute of Labor Science and Social Affairs (ILSSA) and staff at Central Institute for Economic Management (CIEM). Special financial assistance from the Royal Danish Embassy in Vietnam for this paper is also acknowledged. The usual caveats apply.

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1 Introduction

The most recent Investment Climate Assessment (ICA) survey for Vietnam (ICA 2005) suggests that two-thirds of firms incur informal payments as part of running their business. Moreover, 79 per cent are expected to give 'gifts' in meetings with tax officials and 40 per cent feel it necessary to pay bribes in order to secure government contracts. The Provincial Competitiveness Index (Malesky 2008) confirms that bribes to public officials remain a major challenge for firms in Vietnam when doing business. Both the frequency and size of bribes have remained at a relatively high level despite recent comprehensive public administration reforms aimed at reducing corruption.[1]

This paper studies bribe incidence in a sample of 1,661 small and medium-sized enterprises (SMEs) in 10 provinces in Vietnam. Our sample includes firm which operate with a formal business registration licence as well as firms (informal) without such a license. We show that bribe incidence is highly associated with firm-level differences in (i) visibility, (ii) sunk costs, (iii) ability to pay, and (iv) the level of interaction with public officials. It also appears that formal registration is positively correlated with bribe incidence. This suggests that 'visibility' dominates the 'bribes-to-hide' effect. Using the panel dimension of our data, we move on to disentangling the causal relationship between bribe incidence and formality, applying a double difference methodology. It emerges that moving from being an informal to a formal firm strongly influences bribe incidence, even when controlling for levels and changes in firm performance. We also find that bribe payments and informality have a negative effect on firm performance, and that the benefit (in real revenue growth) from obtaining a business registration license on average outweighs the additional bribe cost of becoming formal. Since this positive registration effect is not driven by self-selection of well-performing firms into formality, we conclude that formalization is beneficial in spite of the negative effect from increased bribes.

The remainder of this paper is organized as follows. Section 2 provides background and sets up the analytical framework. Descriptive statistics on bribes and the explanatory variables are also provided. Section 3 presents econometric results, and conclusions follow in Section 4.

2 Data and analytical framework

2.1 Data

The two SME surveys on which we rely in this paper were conducted in 2005 and 2007.[2] Both surveys covered around 2,600 enterprises in 10 provinces (Ho Chi Minh

[1] The public administration reform included (i) administrative simplification of procedures and regulations, and (ii) an increase in salaries and quality of civil servants.

[2] The World Bank SME Department currently operates with three groups of SMEs: micro-, small-, and medium-scale firms. Micro-enterprises have between 1 and 10 employees, small-scale enterprises between 11 and 50 employees, and medium-size enterprises between 51 and 300 employees. These definitions are broadly accepted by the Vietnamese Government (see government decree

City (HCMC), Ha Noi and Hai Phong, Long An, Ha Tay, Quang Nam, Phu Tho, Nghe An, Khanh Hoa and Lam Dong). In both years and all areas covered by the surveys, samples were stratified by ownership form to ensure that all types of non-state enterprises, including both officially registered (with a business registration licence) formal household, private, co-operative, limited liability and joint stock enterprises and non-official (informal) household firms, were represented. For reasons of implementation, the surveys were confined to specific areas in each province/city. Subsequently, stratified random samples were drawn from a consolidated list of formal enterprises and an on-site random selection of informal firms.[3] While the sampling was adjusted over time to accommodate the rapidly changing business environment in Vietnam, other aspects, including the questionnaires, were maintained virtually identical.[4] After data cleaning and checking consistency of time-invariant variables between the two survey rounds we were left with a balanced panel of 1,661 firm observations in each year. It is especially lack of financial accounts that reduced the number of observations.[5]

2.2 Informal payments

Before turning to our analytical framework and description of variables associated with the incidence of informal payments, we briefly describe our main variable of interest; i.e., bribe incidence. Table 1 shows the number of enterprises which paid bribes in 2005 and 2007. Some 37 per cent of firms provided an informal payment in 2005, a share which fell to 23 per cent in 2007. Moreover, significant variation in bribe payments is observed across firms over time. Only 38 per cent of the bribe paying firms and 14 per cent of the entire sample provided bribes in both periods under consideration. Also noticeable is that 15 per cent of the 1,048 firms which did not pay bribes in 2005 provided an informal payment in 2007.

No. 90/2001/CP-ND on 'Supporting for Development of Small and Medium Enterprises'). In what follows, we apply these definitions.

3 Appropriate weights for formal household (HH) firms are difficult to obtain as the 2007 Establishment Census is yet to be finalized. The household business sector has experienced enormous changes during the period under study, and it is not reliable to use the establishment census from 2002 (GSO 2004) to generate appropriate weights. Moreover, the establishment census covers only registered individual household business establishments, which have a business licence issued by a district business register office. The non-registered (informal) household firms in our sample have not obtained such a license and are therefore not well covered in official census statistics. Since no reliable HH firm population information exists for 2005 and 2007, we find it most appropriate to report unweighted estimates in the analysis.

4 Additional details on the surveys and sampling procedures can be found at the following website: www.econ.ku.dk/rand.

5 The two surveys cover financial accounts information for 2003, 2004, 2005, 2006, and 2007.

Table 1: Bribe incidence overview

		2007				
		No		Yes		Total
2005	No	892	(85)	156	(15)	1,048
		(70)		(40)		(63)
	Yes	383	(62)	230	(38)	613
		(30)		(60)		(37)
	Total	1,275	(77)	386	(23)	1,661

Note: Number of enterprises (percentage in parenthesis).

Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009).

Enterprise owners and managers were asked about the main purpose for paying bribes. Figure 1 shows that 30 per cent of firms provided informal payments to get easier access to public services. Around 21 per cent pay informally to deal with taxes and tax collectors; whereas 16 per cent give informal payments in order to get favourable conditions in a bid for a government contract. Finally, firms were asked to provide information on the size of the informal payment. In Table 2 we have linked this information to the purpose of bribes and the size distribution of firms. Bribes paid in order to gain government contracts are on average the largest as measured relative to firm revenues.

Figure 1: Purpose of informal payment

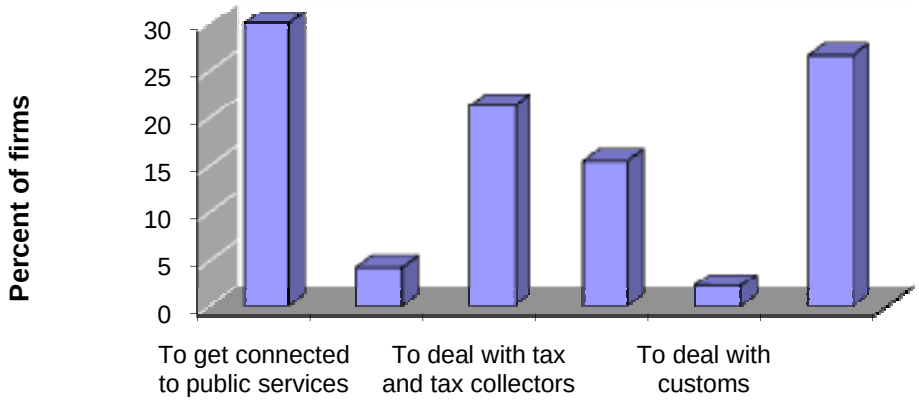

Table 2: Average size of informal payments

	Obs.	Bribe amount (Per cent of total revenues)	Per cent of bribes paid by medium/large firms
To get connected to public services	298	0.30	10
To get licenses and permits	43	0.56	7
To deal with tax and tax collectors	213	0.74	10
To gain government contracts	155	1.09	15
To deal with customs	23	0.33	61
Other reasons	266	0.38	0
Total	998	0.55	13

Source: Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009).

2.3 Analytical framework and determinants

Our analytical framework to study the incidence and level of bribes is based on Shleifer and Vishny (1993, 1994), also adopted by Svensson (2003), and Fisman and Svensson (2007). Moreover, the recent literature on firm-level determinants of informality (Dabla-Norris et al. 2008; McKenzie and Sakho 2010) helped identify the empirical specifications of the link between bribe incidence and firm informality.

We start out in a situation where the firm with some probability faces a public official, who extracts bribes that need to be paid for the business to run smoothly. The corrupt public official may take actions that can either benefit or harm the firm. The beneficial action might be a lax attitude towards rules and regulations. That is, a corrupt public official is ready to work the system in favour of the firm so it obtains information, gets business orders, and remains informal, resulting in increased firm profit ('speed-money' argument).[6] The harmful actions, on the other hand, stem from a discretionary power to harass the firm, which may lead to extra costs and even firm closure. The threat of harassment implies that a corrupt official has some leverage in extracting bribes.

If the corrupt official has discretionary power in implementing, executing, and enforcing rules relevant to firms doing business, this will affect the threat point in the negotiation between the public official and the firm. For example, a firm with full control rights can avoid paying bribes without significant impact on business operations. When public officials maintain some control over firms (through regulation) their bargaining power will be reduced and they may end up paying a bribe. Corrupt officials will in theory act as perfect price discriminators, extracting the highest possible bribe subject to the constraints that they may get caught and that the firm might exit. Accordingly, the probability of bribe payment and the amount paid will depend on a firm's 'ability to pay' and the outside option if not paying.

[6] Firms also affect bribe incidence. Firms benefiting the most from services provided by public officials will be more likely to offer bribes for easier access to a given service. As mentioned by Clarke and Xu (2004) this may lead to public services being allocated according to the value that different enterprises place on the particular services, with bribes acting as an efficient discrimination mechanism.

Firms differ in several aspects affecting for example profitability and choice of technology. These firm characteristics determine a firm's ability to pay bribes and the cost of reallocating its business elsewhere. We therefore proxy firm ability or willingness to pay by profits per employee. Firm refusal power/outside option is proxied by the K/L ratio since capital is at least partly sunk. Technology with a low sunk cost component (low K/L ratio) will strengthen the firm's bargaining position. Exiting becomes more profitable/less costly. As a result, the public official will demand a lower bribe. Summary statistics of both variables are provided in Table 3.

Table 3: Summary statistics

	Total		2005		2007	
	Mean	SD	Mean	SD	Mean	SD
Firm size (log)	1.848	1.077	1.875	1.067	1.820	1.086
Micro	0.689	0.463	0.677	0.468	0.701	0.458
Small	0.256	0.437	0.267	0.442	0.246	0.431
Medium	0.052	0.222	0.055	0.228	0.049	0.215
Large	0.003	0.055	0.002	0.042	0.004	0.065
KL ratio (log)	4.193	1.221	4.065	1.205	4.321	1.224
Profit per employee (log)	2.310	0.866	2.182	0.842	2.437	0.870
State customer	0.144	0.352	0.144	0.352	0.144	0.352
State supplier	0.076	0.264	0.075	0.264	0.076	0.265
Trade	0.058	0.233	0.061	0.240	0.054	0.226
Government assistance	0.269	0.444	0.295	0.456	0.244	0.430
Inspections	0.502	0.500	0.448	0.497	0.556	0.497
Not registered	0.283	0.450	0.261	0.439	0.304	0.460
Total observations	3322		1661		1661	

Note: Monetary figures are measured in millions real VND.

Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009).

As in Svensson (2003) we hypothesize that firm 'exposure/visibility' and the degree of interaction with public officials will influence bribe incidence. We include two visibility proxies: firm size (number of employees), and an indicator variable for not being registered officially (informal). Smaller firms and enterprises without a formal business registration license can hide more easily from public officials and avoid bribes. However, informality may be associated with an opposite effect on bribe incidence. Firms may seek informality to avoid paying taxes.[7] They will offer the relevant public authorities an informal payment to maintain or gain the informal status, as long as the benefits from being informal (not paying taxes) exceed the informal payment provided. The net effect of not having a business registration license is therefore an empirical issue.[8] Table 3 provides summary statistics for the two visibility variables associated with informal payments. Around 69 per cent of the firms in the cleaned sample are categorized as micro, 26 per cent are small, and the remaining 5 per cent are medium-

[7] Svensson (2003 includes a pay tax dummy as a control rights measure. In our data informality (not registered) dominates the pay taxes indicator variable and is therefore excluded in this analysis.

[8] In the data we find that 94 per cent of the firms not paying taxes (491 out of 523 firm observations) do not have a business registration license.

sized firms. Some 28 per cent of the firms are not registered at the district or provincial level, and we actually see a small increase (from 26 to 30 per cent) in the number of informal firms between the two surveys. We include as well a series of variables that capture the degree to which firms interact directly with public officials with summery statistics in Table 3. Hansen et al. (2009) find that having the state sector or a state owned-enterprise (SOE) as customer has a positive and well-determined effect on firm performance. It may be that benefits are informally divided between the firm and the public official responsible for the firm/client contact.

We also include an indicator variable capturing whether SOEs provide the firm with intermediate inputs necessary for production. Table 3 shows that 14 per cent of firms have the state sector as a customer and only 7 per cent of firms had an SOE as their main supplier of inputs. Compared with figures for the 1990s in Hansen et al. (2009) this is a remarkable drop. However, this is as expected as state sector influence has gradually reduced in Vietnam since the 1990s, including the privatization of SOEs.

As Svensson (2003) we include an indicator variable for foreign trade (import of intermediates and/or export of products).[9] From Table 2 we have the number of firms paying bribes to deal with customs. Combining this information with trade information (6 per cent of the sample trade internationally) we estimate that 59 per cent of firms engaging in international trade pay bribes. However, only 18 per cent of the trading and bribe paying companies pay the bribe to the customs authority. This makes it unclear a priori whether it is trade (and interaction with customs) or other firm characteristics of traders that increases the probability of providing informal payments. This issue is addressed in the results section.

Over the years, promotion of SMEs has been a central policy for the Vietnamese government. Government assistance to SMEs can be divided into two sub-groups: (i) financial, and (ii) technical assistance. The former includes various forms of investment incentives and soft policy loans while the latter basically consists of three types of assistance: human resource training, export promotion initiatives, and quality and technology programmes.[10] While the share of firms receiving assistance from government authorities has fallen since the 1990s, Table 3 shows that around 27 per cent of firms received some kind of government assistance in 2005-07. This is in line with the focus of the Vietnamese government on promoting private sector development, but increases the interaction with potentially corrupt public officials.

Besides increasing the interaction between public officials and firms, inspections impose a direct administrative cost on the enterprise (time use of management is strongly correlated with the number of compliance inspections). Table 3 shows that around 50 per cent of enterprises have been inspected, increasing from 45 per cent in 2005 to 56 per cent in 2007.

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9 The survey also provides information on the average amount of time used by customs to handle firm cargo. Seventy-eight per cent of importing firms report that it takes 0-14 days to handle cargo, whereas 50 per cent of exporters experience that it takes 14 days or less.

10 The data provides detailed information on the different kinds of government support. But for the purpose of this paper we aggregate the government support information into one indicator variable. For details about the effects of government support in Vietnam using these data we refer to Hansen et al. (2009).

We include three additional explanatory variables, reflecting legal ownership form, location and sector, among our determinants.[11] The reasons are:

- Household (HH) firms are often less formal than other firm types and subject to different legal requirements. Differences in legal structure are therefore a potential source of variation in informal payments.[12] Legal ownership form is modelled using a set of dummy variables which represent the specific legal form of the firm (HH, private, collective/partnership, limited liability or joint stock enterprise). Appendix Table A shows that 76 per cent of the firms surveyed are in the HH category.
- Nguyen et al. (2007) highlight that Vietnamese provinces are relatively autonomous and have implemented centrally planned initiatives with different pace and enthusiasm. Consequently, bribe incidence may differ across locations. We therefore model location using indicator variables representing each province. Some 37 per cent of the firms are located in urban areas (HCMC, Ha Noi and Hai Phong).
- Sector choice influences firms' relative position on the value-added ladder. This may in turn affect the perceived ability to pay bribes. Sector may also capture additional aspects of the sunk cost component of physical capital (bargaining power) addressed above. On the other hand, relatively specialized and capital intensive sectors at the top of the value-added ladder may attract more corrupt officials thereby increasing the level of competition among these government representatives. The net effect of sector on bribe incidence is therefore indeterminate a priori. We include sector dummies (based on 2-digit level ISIC codes) to control for sector effects. The three best represented ISIC sectors in our sample are: food processing (ISIC 15) (29 per cent), fabricated metal products (ISIC 28) (17 per cent), and wood (ISIC 20) (10 per cent).

3 Econometric Results

We address three issues in our econometric analysis. First, we investigate the determinants of informal payments provided by Vietnamese SMEs. Second, we study the association between bribe incidence and informality, and our analysis suggests that causality runs from formality to bribes. Third, given the level of bribes paid by SMEs and the degree of informality in the private business environment, we are finally interested in finding the net effect of informal payments and informality on firm performance.

3.1 Bribe incidence

We begin by reporting results from a probit model including the potential determinants identified above. Columns 1, 3, 5, and 7 in Table 4 use contemporaneous explanatory

[11] Appendix Table A reports summary statistics.

[12] Note that in the case of Vietnam household firms register at the district level, whereas the government administrative unit for sole proprietorships, partnerships, limited liability companies, joint stock companies is at province level. This means that legal ownership form may matter for the type of public official the firm potentially has to face.

measures,[13] whereas columns 2, 4, 6, and 8 report results from regressing bribe incidence in 2007 on lagged explanatory variables (observations from 2005). The following results emerge. First, the time dummy included in columns 1, 3, 5, and 7 in Table 4 is negative and significant. This indicates that there has been a decrease in the probability of paying bribes over time. Second, the 'exposure/visibility' variable represented by firm size is positive and well-determined in all specifications. Larger firms have a higher probability of paying bribes. Third, the estimates of the variables representing firms' 'ability to pay' (profit per employee) and the outside options captured by the K/L ratio have the expected positive signs although not well-determined in all specifications.

Fourth, zooming in on results the reported in columns 5-8 in Table 4, we note that adding 'interaction with government' controls is important when trying to explain bribe incidence.[14] In column 5 (not controlling for legal structure, sector and location), we see that firms which have the state as customer and firms which are supplied with inputs by SOEs face a higher probability of paying bribes. However, only the supplier effect remains well-determined controlling for legal structure, sector and location (column 7), and in the fixed effects specification in Table 5. And this effect only remains significant in specifications regressing bribe incidence on contemporary explanatory variables. Fifth, the results in column 5-7 of Table 4 indicate that firms engaged in international trade and interacting with customs authorities have a lower probability of paying bribes, a result contrary to the conclusion reached by Svensson (2003). However, this effect is not well-determined in the specifications using lagged independent variables and in the fixed effects specifications in Table 5.[15]

[13] We use within survey lagged explanatory variables meaning that bribe incidence in 2005 is regressed on explanatory variables reported observed in 2003/4.

[14] The correlation matrix of government interaction controls is provided in Appendix B.

[15] Trading firms are found among the larger enterprises in the sample, and almost none of the micro firms import/export directly. Excluding micro-enterprises from the sample results in an insignificant coefficient on the 'trade' indicator variable in columns 5 and 7 in Table 4.

Table 4: Bribe incidence: traditional determinants

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Firm size (log employment)	0.170***	0.121***	0.163***	0.098***	0.119***	0.074***	0.130***	0.072***
	(20.30)	(12.34)	(13.46)	(7.34)	(12.25)	(6.28)	(10.45)	(5.16)
KL ratio (log)	0.049***	0.018*	0.043***	0.012	0.032***	0.003	0.032***	0.003
	(6.40)	(1.82)	(5.07)	(1.14)	(4.27)	(0.34)	(3.88)	(0.26)
Profit/Employee (log)	0.033***	0.027**	0.035***	0.017	0.013	0.012	0.025**	0.016
	(3.15)	(1.98)	(3.06)	(1.22)	(1.25)	(0.87)	(2.23)	(1.22)
Time dummy	-0.167***		-0.171***		-0.161***		-0.171***	
	(10.30)		(10.09)		(9.55)		(9.87)	
State as customer					0.067***	0.017	0.039	-0.004
					(2.80)	(0.60)	(1.60)	(0.14)
State as input supplier					0.155***	0.054	0.133***	0.044
					(4.74)	(1.50)	(4.07)	(1.21)
Deal with customs (export/import)					-0.060*	-0.025	-0.077**	-0.039
					(1.81)	(0.61)	(2.29)	(1.00)
Received government assistance					0.072***	0.079***	0.038*	0.030
					(3.89)	(3.55)	(1.92)	(1.28)
Inspected					0.101***	0.097***	0.103***	0.082***
					(5.58)	(4.44)	(5.31)	(3.51)
Informal/Not registered					-0.177***	-0.159***	-0.169***	-0.150***
					(7.66)	(5.43)	(7.01)	(4.93)
Legal structure dummies included	No	No	Yes	Yes	No	No	Yes	Yes
Sector dummies included	No	No	Yes	Yes	No	No	Yes	Yes
Province dummies included	No	No	Yes	Yes	No	No	Yes	Yes
No of observations	3,322	1,661	3,322	1,661	3,322	1,661	3,322	1,661
Pseudo R^2	0.17	0.10	0.22	0.18	0.22	0.16	0.26	0.21

Note: Dependent variable: bribe Incidence. Probit estimates, marginal effects. t-values (reported in parenthesis) are heteroskedasticity robust. *, **, *** indicate significance at a 10 per cent, 5 per cent and 1 per cent level, respectively.

Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009) and own calculations.

Table 5: Bribe incidence: government interaction

	(1)	(2)	(3)	(4)
	FE	FE	FE	FE
Firm size (log employment)	0.125***	0.125***	0.125***	0.124***
	(4.54)	(4.51)	(4.50)	(4.48)
KL ratio (log)	0.025**	0.023*	0.028**	0.027**
	(2.13)	(1.94)	(2.43)	(2.25)
Profit/Employee (log)	0.014	0.012	0.012	0.010
	(0.87)	(0.74)	(0.80)	(0.66)
State as customer			0.038	0.037
			(1.08)	(1.04)
State as input supplier			0.106**	0.099**
			(2.31)	(2.14)
Deal with customs (export/import)			-0.039	-0.037
			(0.64)	(0.59)
Received government assistance			0.052**	0.052**
			(2.18)	(2.18)
Inspected			0.031	0.032
			(1.24)	(1.28)
Informal/Not registered			-0.086***	-0.087***
			(2.80)	(2.73)
Legal structure dummies included	No	Yes	No	Yes
Sector dummies included	No	Yes	No	Yes
Province dummies included	No	Yes	No	Yes
No of observations	3,322	3,322	3,322	3,322
Pseudo R^2	0.07	0.08	0.08	0.09

Note: Dependent variable: bribe Incidence. Linear probability model. t-values (reported in parenthesis) are heteroskedasticity robust. *, **, *** indicate significance at a 10 per cent, 5 per cent and 1 per cent level, respectively. All estimations included a time dummy. Using a conditional fixed effects logit approach (resulting in 1,078 usable observations for analysis) does not change the main result qualitatively (i.e. the informal indictor variable remains negatively well-determined in all specifications). Results available upon request.

Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009) and own calculations.

Sixth, government assistance and bribe incidence are significantly positively associated in all specifications (including the fixed effects estimations in Table 5) except for column 8. This suggests that the firms are paying informally for the service delivered. Seventh, inspections and informal payments seem to go hand in hand. Firms which are inspected by public officials have an 8 to 10 per cent higher probability of paying bribes than non-inspected firms. This result is well-determined in all OLS specifications. However, controlling for unobserved heterogeneity in Table 5 the impact of inspections on bribe incidence disappears. Finally, informality is negatively associated with bribe incidence in all specifications in Tables 4 and 5. This is contrary to the result obtained by Tenev et al. (2003) for Vietnam, but in line with the hypothesis that hiding (and not interacting with corrupt public officials) is easier when the firm has informal status.

Table 6: Bribes and informality

Panel A: All observations

		Informal				
		No		Yes		Total
Pay Bribes	No	1,444	(62)	879	(38)	2,323
		(61)		(94)		(70)
	Yes	939	(94)	60	(6)	999
		(39)		(6)		(30)
	Total	2,383	(72)	939	(28)	3,322

Panel B: Only 2005

		Informal				
		No		Yes		Total
Pay Bribes	No	654	(62)	394	(38)	1,048
		(53)		(91)		(63)
	Yes	573	(93)	40	(7)	613
		(47)		(9)		(37)
	Total	1,227	(74)	434	(26)	1,661

Panel C: Only 2007

		Informal				
		No		Yes		Total
Pay Bribes	No	790	(62)	485	(38)	1,275
		(68)		(96)		(77)
	Yes	366	(95)	20	(5)	386
		(32)		(4)		(23)
	Total	1,156	(70)	505	(30)	1,661

Note: Number of enterprises (percentage in parenthesis).

Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009) and own calculations.

Given the strong association between bribe incidence and informality we dig further into this relationship. Detailed bribe/informality tabulations by year are shown in Table 6. In panel A (both surveys pooled) we see that only 60 (6 per cent) out of the 999 enterprises which pay bribes are informal. This confirms that the probability of paying bribes is relatively low when a firm is informal. Generally the costs of becoming formal are increased exposure to taxes and a significantly higher probability of having to pay bribes.

Although we control for profits per employee in all specifications, it is possible that poorly performing firms move from formality to informality to avoid taxes and due to lower 'ability to pay' are 'exempted' from the bribe payment even though they are known to the bribe system. Table 7A maps the 573 formal firms which paid bribes in 2005 and shows how changes in formality are associated with changes in bribe

incidence (controlling for levels and/or changes in firm size, K/L ratio and profits per employee).

Table 7A: Bribes and informality

		DD Bribes paid in 2005 Formal in 2005	DD Bribes paid in 2005 Formal in 2005	DD Bribes paid in 2005 Formal in 2005
Firm size (log employment)	Level	-0.084***		-0.102***
		(4.13)		(4.83)
	Difference		-0.163***	-0.192***
			(3.92)	(4.60)
KL ratio (log)	Level	0.038*		0.035
		(1.75)		(1.42)
	Difference		-0.051**	-0.037
			(2.37)	(1.59)
Profit/Employee (log)	Level	-0.036		-0.009
		(1.46)		(0.28)
	Difference		0.010	0.020
			(0.50)	(0.76)
Informal	Difference	0.214***	0.250***	0.200***
		(2.63)	(3.27)	(2.43)
No of observations		573	573	573
Pseudo R^2		0.04	0.04	0.08

Note: Dependent variable: change in bribe incidence conditioned on being formal and paying bribes in 2005. Probit model, marginal effects. t-values (reported in parenthesis) are heteroskedasticity robust. *, **, *** indicate significance at a 10 per cent, 5 per cent and 1 per cent level, respectively.

Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009) and own calculations.

Column 1 shows that firms which become informal have a significantly higher probability of moving out of the bribe system. As expected, larger firms have a lower probability of changing into informality. Surprisingly, we find a positive coefficient on the K/L 2005 level on the probability of becoming informal, but this effect is not well-determined when controlling for differences in the control set (column 3). Finally, the level of profit per employee is not well-determined when controlling for size and sunk cost. Using the pure double difference specification (column 2 in Table 7A) and the double difference specification with level controls (column 3 in Table 7A) we obtain more or less the same results. Thus, we reject the above hypothesis that changes in firm performance (and ability to pay) are driving the positive association between bribes and informality. Table 7B confirms this by focusing on the 394 *informal* firms *not paying bribes* in 2005. Informal non-bribers in 2005 which became formal in 2007 have a significantly higher probability of paying bribes than those remained informal.

Table 7B: Bribes and informality

		DD No bribes paid in 2005 Informal/ Not registered in 2005	DD No bribes paid in 2005 Informal/ Not registered in 2005	DD No bribes paid in 2005 Informal/ Not registered in 2005
Firm size				
(log employment)	Level	0.017**		0.019***
		(2.37)		(3.28)
	Difference		0.006	0.013
			(0.54)	(1.61)
KL ratio (log)	Level	0.003		-0.001
		(0.39)		(0.21)
	Difference		-0.003	-0.006
			(0.53)	(1.03)
Profit/employee				
(log)	Level	0.002		0.009
		(0.19)		(1.10)
	Difference		0.010	0.012*
			(0.98)	(1.95)
Formal	Difference	0.069***	0.078***	0.047***
		(3.20)	(3.62)	(2.86)
No of observations		394	394	394
Pseudo R^2		0.18	0.14	0.22

Note: Dependent variable: Change in bribe incidence conditioned on being informal and not paying bribes in 2005. Probit model, marginal effects. t-values (reported in parenthesis) are heteroskedasticity robust. *, **, *** indicate significance at a 10 per cent, 5 per cent and 1 per cent level, respectively.

Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009) and own calculations.

Finally, reverse causality is a potential issue. Bribes might be paid to become formal (paying public officials in the business registration system and paying bribes when obtaining a tax code with the tax authorities). However, from the bribe use table (Table 2) we note that very few firms pay bribes to obtain licenses and permits. Moreover, none of the firms which moved from informal (2005) to formal status (2007), which paid bribes in 2007, reported the bribe payment as linked to registration purposes. All in all, there seems to be a convincing association between formality and bribe payments, with the visibility nature of running a formal business increasing the probability of paying bribes.

3.2 Revenue growth

We now turn to the association between bribes and informality and subsequent firm growth measured as the real revenue growth between 2005 and 2007.[16] In all columns

[16] We also did the entire analysis using (i) real revenue per employee growth, (ii) real profit per employee growth, and (iii) growth in real assets per employee. The results are qualitatively the same.

we use the panel dimension of our data and include lagged explanatory variables (2005 values) and study their effects on real revenue growth.

Table 8: Firm Growth and bribes

	(1) OLS All	(2) OLS All	(3) OLS All	(4) OLS Bribe05 = 0	(5) OLS Informal05 = 1	(6) OLS Bribe05 = 0 Informal05 = 1
Firm size (log employment) lagged	-0.055**	-0.079***	-0.067***	-0.112***	-0.179***	-0.149**
	(2.19)	(3.13)	(2.58)	(3.34)	(2.92)	(2.30)
Bribes paid in 2005	-0.089**		-0.103**			
	(1.96)		(2.23)			
Informal in 2005		-0.088	-0.107*			
		(1.60)	(1.91)			
Bribe change				0.214***		0.147
				(2.89)		(0.58)
Informal/formal change					0.347***	0.340***
					(2.94)	(2.75)
Legal structure dummies included	Yes	Yes	Yes	Yes	Yes	Yes
Sector dummies included	Yes	Yes	Yes	Yes	Yes	Yes
Province dummies included	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,661	1,661	1,661	1,048	434	394
R^2	0.08	0.08	0.08	0.10	0.17	0.16

Note: Dependent variable: Real revenue growth between 2005 and 2007. t-values (reported in parenthesis) are heteroskedasticity robust. *, **, *** indicate significance at a 10 per cent, 5 per cent and 1 per cent level, respectively. Time dummies included when relevant. Dividing upon bribe use shows that the negative coefficient on bribes is largely driven by bribes paid to gain government contracts and other reasons not well specified.

Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009) and own calculations.

Column 1 in Table 8 shows a negative association between real revenue growth and bribe incidence (controlling for other potential SME revenue growth determinants identified in the literature on firm dynamics, see for example Audretsch and Klepper, 2000). Firms paying bribes in 2005 experienced lower real revenue growth between 2005 and 2007. Firms paying bribes in 2005 had approximately 9 percentage point lower real revenue growth rates than non-bribe paying firms in the sample. The efficient grease (or speed-money) hypothesis is therefore rejected in the sample considered. In column 2 we consider the effect of informality on firm revenue growth and obtain a negative coefficient estimate close to the one found for the bribe indicator variable (although not well-determined). Column 3 in Table 8 includes both variables in focus

and a negative (and significant) association between bribes/informality and firm revenue growth remains.[17]

Although firms face increasing bribes and tax payments when they become formal (the increased visibility effect reported above), column 3 in Table 8 shows that they also experience significantly higher revenue growth rates than informal firms. It may therefore be beneficial for the firm to obtain a business registration license due to formal sector benefits such as (i) increased access to government assistance, (ii) improved access to formal credit, (iii) ability to enter into formal contracts (and improved enforcement of these contracts), (iv) better access to business services, (v) more exposure to potential investors, and (vi) increases in the number of workers considering employment in the firm (due to better compliance with the labour law).[18]

Column 4 in Table 8 only included firms which did not pay bribes in 2005 (the 1,048 observations documented in both Table 1 and Table 6) and it shows differences in growth rates between firms still not providing a bribe in 2007 and firms providing bribes in 2007. We observe a significant positive coefficient on the switching indicator. This suggests that improved firm performance is positively associated with switching from the non-bribe to the bribe paying segment. Considering only formal firms in both 2005 and 2007 reduces the coefficient estimate to 0.138, and this estimate is only significant at the 10 per cent level. Combined with results in columns 1 and 3, we interpret these results as a non-rejection of the 'ability to pay' hypothesis. Similarly, column 5 in Table 8 includes only informal firms in 2005 (434 observations) and it reveals the growth effect of becoming formal. We find a large positive and statistically significant coefficient on the switching indicator variable, suggesting a strong association between formalizing the enterprise and firm growth. In column 6 in Table 8 we include both the bribe and informality switching indicators, and it emerges that the formality treatment indicator dominates the bribe switching variable. This means that the observed move from the non-bribe segment to paying bribes is typically result of a movement out of informality. In this case the performance improvement is driven by the change into formality, not by the bribe payment provided.

Finally, in Table 9 we check confirm that the results in Table 8 are not driven by self-selection of well-performing firms into formality. If so, we would expect indicators of firm performance to be good determinants of registration switching (in and out of formalization). In Table 9 we use within survey financial accounts (accounting book information gathered for 2003, 2004 and 2005) to generate different growth figures for 2005 and use these measures as determinants of observed 2007 changes in registration/formalization.[19]

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[17] Coefficient estimates on contemporary bribe incidence are positive and significant in the real revenue growth equation, suggesting (in combination with the results in Table 8) that an improvement in a firm's 'ability to pay' is an important feature of the Vietnamese bribe system.

[18] For example, in the case of government assistance the data show that 30 per cent of registered firms were offered assistance as compared to 20 per cent of informal firms. Similar results were found for access to credit, however when asked the question 'are you still in need of a loan' the majority of 'yes' answers were among formal firms.

[19] Short-run (within survey) growth in 2005 is defined in terms of (i) revenue, (ii) profits, and (iii) assets, and given by log(real X in 2004) minus log(real X 2003), where X=(i), (ii) or (iii). In addition we used the within survey average: log[(real X 2005 + real X 2004)/2] - log[(real X 2004 + real X 2003)/2]. This did not change the overall results.

Table 9: Informality and firm growth

	(1)	(2)	(3)	(4)	(5)	(6)
	Informal05 = 1	Informal05 = 1	Informal05 = 1	Informal05 = 0	Informal05 = 0	Informal05 = 0
	Revenue	Profits	Assets	Revenue	Profits	Assets
Firm size (log employment)	0.142***	0.139***	0.143***	-0.031***	-0.030***	-0.031***
	(4.88)	(4.77)	(4.95)	(5.02)	(4.91)	(5.08)
Within survey growth 2005	0.097	0.104	0.063	0.000	-0.015	0.000
	(1.17)	(1.54)	(0.35)	(0.00)	(1.02)	(0.00)
Province dummies included	Yes	Yes	Yes	Yes	Yes	Yes
Observations	394	394	394	573	573	573
Pseudo R^2	0.12	0.12	0.12	0.27	0.27	0.27

Note: Dependent variable: Change in formality between 2005 and 2007. Probit model, marginal effects. t-values (reported in parenthesis) are heteroskedasticity robust. *, **, *** indicate significance at a 10 per cent, 5 per cent and 1 per cent level, respectively.

Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009) and own calculations

Columns 1 to 3 focus on informal firms not paying bribes in 2005, and none of the within survey growth variables explains firm changes into formal operation very well (controlling for firm size and province). Columns 4 to 6 limit the analysis to bribe paying formal firms in 2005, and our different growth measures are again not good predictors of changing into an informal business structure.

4 Conclusions

We started out in this paper analysing the determinants of bribe incidence covering 1,661 SMEs in Vietnam. We found that firm-level characteristics capturing visibility (size and formality), sunk costs and bargaining position (capital/labour ratio), ability to pay (profitability), and the level of interaction with public officials (inspections, assistance etc.) affect the probability of having to provide a bribe. Formally registered firms are more likely to provide informal payments. This leads us to concluding that the *visibility* effect dominates the *bribes-to-hide* effect. The implication is that the government's push to combat bribes is well justified.

Using the panel dimension of our data we carefully disentangled the causal relationship between bribe incidence and formality. Applying a double difference methodology, we showed that change in formality strongly influences changes in bribe incidence, even when controlling for levels and changes in firm performance. We also found that bribe payments and informality have a negative effect on firm performance. Thus, anti-corruption measures may not only increase formalization, they can also yield direct growth effects. Moreover, the firm growth increase after obtaining a business registration license on average outweigh the additional bribe cost of becoming formal; and our analysis shows that this positive registration effect is not driven by self-selection of well-performing firms into formality.

In sum, bribes harm firm performance in Vietnam. Registration increases the probability of paying bribes, but this effect is outweighed by the positive growth enhancing effect of registration. Bribes slow down growth and hampers (but does not prevent)

formalization. Overall, anti-corruption measures not only contribute to increasing formalization of the economy, but also have the potential of yielding a double dividend on firm performance through direct profit effects.

Appendix Table A: Summary statistics: legal ownership form, location and sector

	Total		2005		2007	
	Mean	SD	Mean	SD	Mean	SD
Household establishment/business	0.758	0.428	0.764	0.425	0.753	0.432
Private (Sole proprietorship)	0.083	0.277	0.090	0.287	0.076	0.266
Partnership/collective/ co-operative	0.027	0.163	0.026	0.159	0.029	0.168
Limited liability company	0.121	0.327	0.111	0.315	0.131	0.338
Joint stock company	0.010	0.098	0.008	0.091	0.011	0.104
Ha Noi	0.081	0.272	0.081	0.272	0.081	0.272
Phu Tho	0.108	0.310	0.108	0.310	0.108	0.310
Ha Tay	0.172	0.378	0.172	0.378	0.172	0.378
Hai Phong	0.063	0.243	0.063	0.243	0.063	0.243
Nghe An	0.153	0.360	0.154	0.361	0.152	0.359
Quang Nam	0.077	0.266	0.076	0.266	0.077	0.267
Khanh Hoa	0.036	0.187	0.036	0.187	0.036	0.187
Lam Dong	0.037	0.188	0.037	0.188	0.037	0.188
HCMC	0.223	0.416	0.223	0.416	0.223	0.416
Long An	0.051	0.220	0.051	0.219	0.051	0.220
Sector 1	0.293	0.455	0.294	0.456	0.293	0.455
Sector 2	0.002	0.049	0.000	0.000	0.005	0.069
Sector 3	0.038	0.191	0.036	0.187	0.040	0.195
Sector 4	0.030	0.170	0.028	0.166	0.031	0.174
Sector 5	0.018	0.133	0.016	0.124	0.020	0.142
Sector 6	0.109	0.311	0.092	0.288	0.126	0.332
Sector 7	0.024	0.154	0.025	0.155	0.024	0.153
Sector 8	0.020	0.139	0.020	0.142	0.019	0.135
Sector 9	0.002	0.046	0.004	0.065	0.000	0.000
Sector 10	0.014	0.119	0.012	0.109	0.017	0.129
Sector 11	0.054	0.225	0.054	0.225	0.054	0.225
Sector 12	0.065	0.247	0.066	0.248	0.064	0.246
Sector 13	0.008	0.091	0.007	0.085	0.010	0.098
Sector 14	0.172	0.378	0.173	0.379	0.172	0.377
Sector 15	0.029	0.168	0.030	0.171	0.028	0.166
Sector 16	0.006	0.079	0.005	0.069	0.008	0.088
Sector 17	0.004	0.062	0.005	0.069	0.003	0.055
Sector 18	0.108	0.311	0.132	0.339	0.084	0.277
Sector 19	0.002	0.046	0.001	0.025	0.004	0.060
Total observations	3,322		1,661		1,661	

Note: Sector definitions given below.

Source: 2005 and 2007 survey data, see CIEM (2007) and CIEM (2009) and own calculations.

Sector classifications

Sector 1	Food products and beverages
Sector 2	Tobacco products
Sector 3	Textiles
Sector 4	Wearing apparel etc.
Sector 5	Tanning and dressing leather
Sector 6	Wood and wood products
Sector 7	Paper and paper products
Sector 8	Publishing, printing etc.
Sector 9	Refined petroleum etc.
Sector 10	Chemical products etc.
Sector 11	Rubber and plastic products
Sector 12	Non-metallic mineral products
Sector 13	Basic metals
Sector 14	Fabricated metal products
Sector 15	Electrical machinery, office machinery, computers, radio, TV and other machinery and equipment nec.
Sector 16	Vehicles etc.
Sector 17	Transport equipment
Sector 18	Medical and optical equipment, photographic equipment, watches and clocks etc. + furniture, jewellery, musical instruments, sports equipment and games and toys
Sector 19	Recycling

Appendix Table B: Correlation matrix: interaction with government officials

	(1)	(2)	(3)	(4)	(5)	(6)
(1) State as customer	1.0000					
(2) State as input supplier	0.1417	1.0000				
(3) Deal with customs (export/import)	0.1037	0.0415	1.0000			
(4) Received government assistance	0.0843	0.0600	0.1171	1.0000		
(5) Inspected	0.1252	0.0844	0.1255	0.0433	1.0000	
(6) Not registered	-0.1743	-0.1289	-0.1469	-0.0874	-0.4388	1.0000

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