



Bribery, Corruption and Bureaucratic Hassle: Evidence from Myanmar



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Abstract

Corruption has been found to be the most severe obstacle to business operations, according to a recent survey of over 3,000 firms in Myanmar. This paper sets out to understand the structure of corruption through an econometric analysis of this survey. It finds that firms with higher 'ability to pay' (proxied by sales revenue and employee growth) are more likely to pay bribes. While firms with lower 'refusal power' (i.e those dependent on bureaucratic permissions to export and import) are more likely to find corruption to be an obstacle. A distinct but related question is whether bribes act as 'efficiency grease' by allowing firms to circumvent red tape. No evidence is found to support this hypothesis, in fact firms that pay bribes report greater bureaucratic hassle compared to firms that do not. This result fits in more closely with the view that red tape could be used to extract bribes from firms.

Key words: Bribery, corruption, red tape, Myanmar, private firms, efficiency grease.

JEL codes: D73, L25, O12

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Introduction

The economy of Myanmar is at a critical juncture on its path to prosperity. After decades of military rule, central planning and international isolation the country is implementing much needed economic and political reforms. Myanmar has many advantages including vast natural resources, a young population and geostrategic location. The neighbouring markets of China, India and an integrated ASEAN Economic Community offer the potential of rapid growth by forming regional business and production networks. However, the persistence of corruption threatens to derail the process as international partners increasingly demand a level playing field.

In many developing countries, corruption has been shown to affect the domestic economy and society in various ways. Firms report facing higher costs and greater uncertainty which impacts their production and investment decisions (Olken and Pande, 2011). The cost of government provided goods and services increases due to leakage for private gain (Reinikka and Svensson, 2004); or through the provision of substandard goods (such as roads) that have to be replaced frequently (Bardhan, 1997). It also undermines the rule-of-law and the government's ability to correct externalities such as pollution (Olken and Pande, 2011).

As corruption can have a detrimental effect on growth and development, researchers have sought to understand the mechanisms of corruption with a view to developing remedies. Early studies relied on perception based indexes which were used in cross-country empirical studies to examine the relationship between corruption and various country characteristics. Treisman (2000) shows that exposure to democracy for a long period reduces perceived levels of corruption. Chowdhury (2004), Brunetti and Weder (2003) and Lederman et al. (2005) find that press freedom reduces corruption. Trade openness and ensuing competition has been associated with reduced corruption (Kreuger, 1974; Ades and Di Tella, 1999; Treisman, 2000). Institutional structure is found to be important as more decentralized states have lower levels of corruption (Fisman and Gatti, 2002; Arikan, 2004). Social norms and culture are expectedly important determinants of culture though they can be hard to measure. One notable exception is Fisman and Miguel (2007) who draw a link between unpaid parking tickets by diplomats in New York and levels of corruption in their home countries.

Although these studies provided useful insights into the macro-determinants of corruption they are inherently limited in their ability to explain within-country variation. Recent methodological advances have incorporated firm-level surveys to obtain self-reported information on the incidence of corruption. The World Bank Enterprise Survey and the

International Crime Victim Survey are two widely used sources of data that allow researchers the ability to understand the dynamics of corruption on a micro level.

As Myanmar was closed to the outside world for decades, little is known on the nature of corruption as experienced by firms on the ground. Previous cross-country research has demonstrated the importance of local context in terms of institutional environment and culture and so the experience of other developing countries may or may not be relevant for understanding corruption in Myanmar. Further evidence of corruption in Myanmar is of course required. Although an Enterprise Survey was conducted for Myanmar by the World Bank in 2014 it was limited to just 632 firms in five geographic regions and mostly in manufacturing.

This study contributes to the literature by utilizing a unique survey of over 3000 firms across most industrial sectors and all geographic regions. This rich dataset gives a comprehensive picture of the situation on the ground. It allows firm specific characteristics to be linked to bribe payments, ratings on corruption and bureaucratic hassle. The key research questions that can now be examined in the context of Myanmar are: (1) What type of firms are more likely to engage in bribery?, (2) What type of firms are more likely to find corruption to be an obstacle to their business operations?, and (3) Are bribes paid to reduce bureaucratic hassle or is bureaucratic hassle used to extract bribes?

It should be noted that the purpose of this analysis is not to lay blame on either officials or firms for engaging in corruption. Rather it is to study the overall pattern of corruption in Myanmar, with a view to developing policies to address it.

1. Literature overview

As the use of firm surveys is a relatively recent phenomenon, there are not many studies that analyze corruption at this level. Nevertheless, a few important firm-specific characteristics that are related to corruption have been highlighted in the literature. These factors include profit or sales revenue, firm size, ownership structure, exposure to officials, institutional environment and bureaucratic hassles (Clarke and Xu, 2004; Gaviria, 2002; Kaufman and Wei, 2000; Svensson, 2003; Wu, 2009; Rand and Tarp, 2010). Those factors, the variables used to measure them and their effect on corruption in various countries, are discussed below. Many of these variables are found to be significant in some countries but not in others. Thus, their relevance for Myanmar is ultimately an empirical issue which will be tested subsequently.

1.1. Profits or sales revenue

Svensson (2003), using the World Bank's Enterprise Survey for Uganda, finds current and expected future profits, to be significantly correlated with bribe amounts. Clarke and Xu (2004) obtain similar results in their analysis of 21 transition economies in Eastern Europe and Central Asia. Wu (2009) in a study of 12 Asian countries finds that firms with higher growth pay a lower proportion of revenue as bribes compared to firms with less growth. Rand and Tarp (2010) finds limited evidence that firms with higher profit per employee are more likely to pay bribes in Vietnam.

1.2. Firm size

Wu (2009) finds that smaller firms in Asia are more likely to pay bribes. Gaviria (2002) examines 29 Latin-American countries and finds that smaller firms are more likely to perceive corruption as an obstacle. Svensson (2003) finds that there is no significant relationship between firm size and corruption in Uganda. While Rand and Tarp (2010) find that larger firms are more likely to pay bribes in Vietnam. Thus, whether large firms are more or less likely to pay bribes is ultimately an empirical issue.

1.3. Ownership structure

Firms that are owned by an individual or family are statistically more likely to pay a bribe (Wu, 2009; Gaviria, 2002) finds limited evidence that firms with at least some government ownership are less likely to find corruption an obstacle. However, this result is not statistically robust. Gaviria (2002) also finds no statistical difference between corruption perceptions of firms with some foreign ownership compared to those with none.

1.4. Exposure to officials

Some studies suggest that the more firms have to deal with public officials for permissions or contracts the more they are prone to corruption. In his study of Uganda, Svensson (2003) uses proxies such as infrastructure services, involvement in trade and types of taxes as measures of interaction with officials. These are all found to be positive and significant determinants of bribery (Svensson, 2003). Gaviria (2002) tests whether firms that require licenses for exports or those that sell to government are more likely to complain that corruption is an obstacle. However, he finds no evidence that these firms are more likely to be affected by corruption (Gaviria, 2002). Rand and Tarp (2010) examine the extent to which firms have the state as a customer or as a supplier of inputs and finds these firms are more likely to pay bribes in some cases.

1.5. Institutional environment

While aggregate cross-country studies have long acknowledged the importance of the institutional environment, it has also been demonstrated in recent firm-level studies. Wu (2009) uses firm ratings on the court system, government efficiency, licensing, taxation and regulatory interpretation and finds that they significantly affect the incidence and amount of bribes. Gaviria (2002) uses as a control the average rating for five infrastructure services—roads, postal, telecommunications, power and water—and finds similar results.

1.6. Bureaucratic hassle

Kaufman and Wei (2000) set out to test whether firms that pay bribes are likely to face fewer bureaucratic hurdles. They use three different World Bank Enterprise surveys covering over 50 countries. Measures such as ‘time spent by managers with bureaucrats’ and ratings on regulatory burden are used to quantify harassment. They find firms that pay bribes are in fact likely to face greater bureaucratic obstacles. Gaviria (2002) performs a similar test for Latin-American countries. He finds that the time spent by managers dealing with red tape is more in firms that find corruption an obstacle. The same result holds for firms that report bribes were requested by public officials.

2. Theoretical framework

There are several reasons why some firms might be more likely to pay bribes than others. Some managers or public officials might have different valuations on the moral cost of engaging in illicit activities. Or they might differ in their perception of the likelihood of getting caught and the severity of punishment. This paper will follow Svensson’s (2003) framework where the decision to bribe is the outcome of a bargaining negotiation between profit-maximizing firms and rent-maximizing public officials. The ability to extract bribes, or control rights, stem from existing regulations, licensing, permissions, taxes, exemptions and discretionary power in implementing and enforcing them (Svensson, 2003). These control rights determine the threat point in the negotiation between a public official and a firm (Shleifer and Vishny, 1994).

When the official retains control rights, the firm must either pay a bribe or exit¹ the market. While this control cannot be directly observed, we can determine the extent to which firms are more likely to deal with the public sector. Certain sectors, such as mining, are likely to

¹ Exit could mean shifting to another sector, location or reorganizing the business to avoid contact with officials (Svensson, 2003)

have greater government oversight. Although this is often necessary for environmental and safety concerns, it also gives discretionary power to officials which could potentially be misused to extract bribes. In addition, firms that export, import, sell to government or receive inputs from government are all more likely to require permissions, licenses or deal with the public sector in some way. These firms would find it costly to refuse payment and therefore be more likely to pay bribes. Firms with less need for government permissions and services would have greater “refusal power” as they could avoid bribes without a significant impact on their business.

For firms in the same industry, operating under similar rules and exposure to public officials, only firm specific factors can explain any difference in the propensity to bribe (Svensson, 2003). Rent-maximizing officials are modelled as targeting firms based on their “ability to pay” in order to extort as high a bribe as possible subject to the constraints of getting caught and the refusal power of firms (Svensson, 2003). This ability to pay could be proxied using firm level data on sales revenue, size and employee growth. The more successful the firm the lower its bargaining position as the official can demand a higher bribe (knowing that the firm’s opportunity cost of exit is higher) and because the firm can afford to pay it (Svensson, 2003). Thus, firms with a higher ability to pay will be deliberately targeted and therefore more likely to pay bribes.

When using this framework, it is important not to automatically cast public officials as villains out to maximize their personal wealth at the expense of helpless firms. It could also be the case that firms pay bribes to skirt safeguards on for example environmental and social issues and thereby earn higher revenue. Reverse causality arises as it could either be the case that firms with high revenue are targeted for bribes or that firms that pay bribes earn higher revenue. This problem of reverse causality is addressed subsequently.

A distinct but related question is whether paying bribes can lower the red tape or bureaucratic harassment faced by firms. Supporters of the affirmative such as Samuel Huntington and Nathaniel Leff argue that the possibility of bribery reduces the negative effects of red tape as it makes it less “real” (Kaufman & Wei, 2000). Kaufman and Wei (2000) refer to this as the “efficiency-grease” hypothesis. If corruption can grease the wheels of the economy and so is efficiency enhancing, any attempts to reduce corruption would be counter-productive according to this view.

However, the “efficiency-grease” view rests on the crucial assumption that regulation is exogenous and not affected by the incentive of public officials to extract bribes (Kaufman and Wei, 2000). Relaxing this assumption leads one to a view, akin to that of Svensson’s

espoused earlier, that excessive regulation is endogenously exploited to maximize bribe collection. This counter-position also has many supporters. Gunnar Myrdal referred to this as 'endogenous harassment' in his epic *Asian Drama* (1968). Shleifer and Vishny (1998) refer to this as the "grabbing-hands" hypothesis. Banerjee (1997) provides a theoretical model of this relationship while Kaufman and Wei (2000) and Gaviria (2002) provide empirical evidence.

The efficiency-grease hypothesis implies that firms who pay bribes are likely to face fewer bureaucratic hassles compared to firms that do not while the grabbing-hands hypothesis implies that the severity of regulations will be high for bribe paying firms. These hypotheses can be tested using firm-level data on bribery incidence and perceptions of the regulatory environment.

3. Data description

The data used in this analysis comes from the first-ever nation-wide survey on businesses in Myanmar. It was conducted jointly by the Organization for Economic Cooperation and Development (OECD), United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the Union of Myanmar Federation of Chambers of Commerce and Industry (UMFCCI). The survey covers over 3000 firms in almost all industries including agriculture, extractive industries, manufacturing, services and most other economic activities categorized under the UN's International Standard Industrial Classification system (ISIC) Rev. 4. The survey is also comprehensive in its geographic coverage as all states and regions were included.

The survey questionnaire was drafted by ESCAP, OECD and UMFCCI with technical inputs from The Asia Foundation, the German Institute for Development Evaluation (DEVal) and the Swiss Agency for Development and Cooperation (SDC). The questionnaire was developed following Dillman's total design method for surveys in order to enhance the quality of the data while increasing the response rate (Dillman, 1978). The survey itself consists of over 70 questions on a wide range of issues as well as information on various characteristics and operational aspects of the firm.

Within the survey, the question on bribery was phrased indirectly in order to avoid implicating the respondent of any wrongdoing. The question asked was: "How much would a firm like yours have to offer, in addition to official charges to the authorities, to obtain a business registration, license or permit?". The responses took the form of a ten point interval-scale which ranged from zero at the lowest point to 'Over 1,000 lakhs' (USD 100,000) at the

highest point of the scale. This phrasing appears to have been remarkably successful as it resulted in a 98% response rate.

An important set of questions pertaining to the firm's business environment seeks to ascertain the extent to which various issues are perceived to be an obstacle to the firm's operations. The question asks: "To what degree does each of the following issues present an obstacle to the current operations of your firm?" The question then lists 34 issues including: 'Corruption', 'Business registration, licensing & permits', 'Tax collection process' and various infrastructure related issues amongst others. Responses are on a six point Likert-scale which ranges from 'No obstacle' to 'Very severe obstacle'.

One potential drawback of this survey is that the sample is not strictly representative in a statistical sense although it covers a very large number of firms in all geographic regions. The unique circumstances of Myanmar have made information on businesses a scarce commodity. There exists no information on the total business population and region characteristics, making conventional sampling methods unviable. In fact, Myanmar has only recently completed its first census in over 30 years. Furthermore, several key enterprises are still controlled by the public sector and its associates which make access challenging for international surveys such as this one. As a result of these issues, even the best sampling methods would likely introduce unintentional bias. Although the sample may not be strictly speaking representative, it still provides the most comprehensive view currently available, of the situation on the ground, for many firms in Myanmar².

4. Specification

The econometric analysis employed in this paper sets out to determine which types of firms are most likely to engage in bribery or find corruption an obstacle. To this end, the framework described previously is used to categorize various firm characteristics into one of two main processes that are likely to drive this behaviour. This provides a useful way to conceptualize the pattern of corruption in Myanmar.

The first model is a probit estimation following Svensson (2003) with a few alterations.

$$\Pr(\text{bribe}_i = 1 | w, z) = \Phi(X'_w w_i + X'_z z_i)$$

Where $\text{bribe}_i = 1$ is the event that firm 'i' admits to the necessity of paying unofficial charges to obtain a business registration, license or permit. $\text{Bribe}_i = 0$ implies that no payment was made

² The World Bank Enterprise Survey for Myanmar 2014 does provide comparable data but it has a limited sample size and is restricted to firms in five regions that are mostly in manufacturing.

or necessary. To proxy for refusal power (w), several measures of the extent to which a firm must deal with public officials are used. These include dummies if the government is a major customer, if the firm exports, if the government is a major supplier, and if the firm receives inputs from overseas. In addition to these market characteristics, firm's ownership structure has also been shown to be important. Hence, dummies were included for firms with some state ownership, some foreign ownership and some collective ownership. These will be judged relative to firms with some domestic ownership.

The ability to pay (z) is proxied by indicators of firm success such as sales revenue and a dummy indicating whether the firm increased the number of employees in the previous 12 months. Revenue is measured on a ten-point interval scale. The mid-point of each interval was used as a numerical measure of revenue. The open-ended top interval category was coded at the lower bound. There are only a few observations in this category (50) so they are not likely to bias the results heavily and if they did it would be in the opposite direction of the result hypothesized here.

It has been argued elsewhere that small firms have less refusal-power and therefore more likely to pay bribes (Gaviria, 2002; Wu, 2009). Alternatively, large firms may have a greater ability to pay and therefore more likely to pay bribes. To test this, dummy variables for firms that are Micro (1-9 employees); Small (10-49 employees); Medium (50-249 employees) and Large (250+ employees) are used with Micro serving as the reference category.

The institutional environment is proxied using ratings on the overall business environment. This comes from a survey question asking firms to rate their overall business environment on a six-point Likert scale from 'Very unfavourable' to 'Very favourable'. These ratings were then averaged by sector and geographical location in order to give a more comprehensive view of the environment in which the firm operates and to prevent individual firm perceptions from biasing the results³. A dummy is also used to indicate if a firm is operating with an industrial zone, as presumably their environment is different.

Additional controls include a dummy for each of the following sectors- Agriculture; Extractive industries; Manufacturing; Trade; Hotels & Restaurants; and Other Services. As well location dummies for each of the 15 regions in which a firm has its headquarters.

The second model used in this paper, closely follows Gaviria (2002), where the firm's rating on the severity of corruption as an obstacle is the dependent variable. The responses are in the form of a six-point Likert scale ranging from 'No obstacle' to 'Very severe obstacle'. As

³The average was only calculated if 3 or more firms were present in each sector-region pair. 15 observations that didn't meet this criteria were dropped from the regression.

this is ordered discrete data, an ordered probit is the appropriate estimator. The independent variables are the same as the ones used for bribery. This allows a useful a comparison between factors that drive bribery and those that influence the degree to which corruption is an obstacle.

The model can be written as:

$$\begin{aligned}
 P(\text{corr}=1|w,z) &= \Phi [\alpha_1 - (X'_w w_i + X'_z z_i)] \\
 P(\text{corr}=2|w,z) &= \Phi [\alpha_2 - (X'_w w_i + X'_z z_i)] - \Phi [\alpha_1 - (X'_w w_i + X'_z z_i)] \\
 &\cdot \\
 &\cdot \\
 P(\text{corr}=6|w,z) &= \Phi [\alpha_6 - (X'_w w_i + X'_z z_i)] - \Phi [\alpha_5 - (X'_w w_i + X'_z z_i)]
 \end{aligned}$$

The test of the efficiency-grease hypothesis follows Kaufman and Wei (2000). The model uses an ordered probit similar to the one used previously. The dependent variables here are two measures of bureaucratic hassle. These come from questions asking firms to rate the severity of (1) fees and (2) administrative procedures relating to business registrations, licensing and permits. Responses are again in the form of a six-point Likert scale ranging from 'No obstacle' to 'Very severe obstacle'. The independent variables include an indicator for firms that paid a bribe in addition to the other ability-to-pay and refusal-power measures used previously.

All dependent and independent variables studies in this paper are summarized in the Appendix.

5. Results

In Tables 1 and 5, the first column includes as regressors firm characteristics such as size, sector, revenue, employee growth, age and ownership. The second column adds in market characteristics such as information on customers and suppliers. The third column adds indicators of the institutional environment. This includes sector-region averaged ratings on the overall business environment and a dummy indicating that a firm is located in an industrial zone. Tables 2, 3 and 4 display the results of only the third and final regression as they are broadly consistent with the first two.

Table 1. Determinants of bribery (marginal effects)

Variables	bribe	bribe	bribe
Small	0.050**	0.048**	0.053**
	[2.32]	[2.23]	[2.41]
Medium	0.14***	0.14***	0.13***
	[4.36]	[4.04]	[3.67]
Large	0.14**	0.12*	0.097
	[2.05]	[1.75]	[1.36]
Extractive industries	0.19***	0.19***	0.20***
	[4.01]	[4.08]	[3.71]
Hotels and restaurants	-0.065	-0.060	-0.051
	[-1.46]	[-1.33]	[-1.09]
Manufacturing	-0.016	-0.012	-0.020
	[-0.52]	[-0.37]	[-0.62]
Other services	-0.043	-0.038	-0.040
	[-1.28]	[-1.11]	[-1.18]
Trade	-0.092***	-0.090**	-0.080**
	[-2.63]	[-2.53]	[-2.24]
Age (log)	0.0047	0.0057	0.0032
	[0.40]	[0.49]	[0.27]
Sales revenue	4.5e-07***	4.3e-07***	4.1e-07***
	[2.96]	[2.82]	[2.68]
Employee growth	0.046**	0.044*	0.048**
	[1.98]	[1.93]	[2.09]
State ownership	0.10	0.10	0.11
	[1.13]	[1.15]	[1.18]
Foreign ownership	-0.10	-0.12*	-0.12*
	[-1.54]	[-1.71]	[-1.80]
Collective ownership	0.14***	0.14***	0.14***
	[3.52]	[3.52]	[3.34]
Sells to Gov		-0.034	-0.034
		[-0.83]	[-0.82]
Inputs from Gov		0.047	0.066
		[0.95]	[1.31]
Inputs from overseas		0.034	0.034
		[1.16]	[1.18]
Sells overseas		0.027	0.031
		[0.72]	[0.82]
Overall Biz S-R Avg			0.055
			[0.99]
Industrial zone			0.14***
			[2.62]
Observations	2,508	2,508	2,470

Notes: z-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.

Micro, Agriculture and Domestic ownership are the baseline groups.

Estimates for location dummies are not reported but available on request.

Table 1 shows the average marginal effects from the first model which uses probit regressions to estimate the type of firms more likely to pay bribes. Small firms are 5% more likely to pay bribes compared to Micro firms while Medium firms are more greatly affected as they are 14% more likely to pay bribes. The coefficient for Large firms is only slightly significant if at all. This may be due to the variation being captured by sales revenue which is expectedly higher for large firms and also because of location dummies- 80% of large firms are located around Yangon, the commercial centre of Myanmar.

Firms in the Extractive industries are almost 20% more likely to pay bribes compared to firms in Agriculture, while firms in wholesale and retail trade are 9% less likely to pay bribes.

Proxies for ability to pay such as sales revenue and employee growth (dummy) are both found to be positively and significantly associated with firms that pay bribes. A 100,000 kyat (USD 100) increase in revenue increases the probability of paying a bribe by 4.1 to 4.5%. Firms with employee growth are 4.4 to 4.8% more likely to pay bribes compared that did not hire new employees in the last year.

There is limited evidence that firms with some foreign ownership are less likely to pay bribes. However, it could also be the case that firms with foreign ownership are less likely to admit to paying bribes as they have the additional concern of breaking bribery laws in the host country.

Finally, firms located in an Industrial zone are 14% more likely to pay bribes.

Table 2. Determinants of corruption as an obstacle (marginal effects)

Variables	No obstacle					Very severe obstacle
	(1)	(2)	(3)	(4)	(5)	(6)
Small	-0.015	-0.0070	-0.0050	-0.000013	0.0074	0.020
	[-1.45]	[-1.44]	[-1.43]	[-0.035]	[1.44]	[1.44]
Medium	-0.018	-0.0083	-0.0060	-0.00013	0.0087	0.023
	[-1.10]	[-1.06]	[-1.03]	[-0.18]	[1.10]	[1.05]
Large	-0.040	-0.020	-0.016	-0.0028	0.020	0.060
	[-1.46]	[-1.31]	[-1.18]	[-0.56]	[1.52]	[1.23]
Extractive industries	-0.081***	-0.053***	-0.052***	-0.033**	0.030***	0.19***
	[-4.32]	[-3.84]	[-3.36]	[-2.23]	[4.41]	[3.28]
Hotels and restaurants	0.018	0.0081	0.0057	-0.00019	-0.0089	-0.022
	[0.80]	[0.81]	[0.82]	[-0.18]	[-0.80]	[-0.82]
Manufacturing	0.0014	0.00068	0.00050	0.000038	-0.00070	-0.0019

	[0.094]	[0.094]	[0.094]	[0.088]	[-0.094]	[-0.094]
Other services	0.0047	0.0022	0.0016	0.000088	-0.0024	-0.0063
	[0.30]	[0.29]	[0.29]	[0.22]	[-0.30]	[-0.29]
Trade	0.024	0.011	0.0074	-0.00055	-0.012	-0.029
	[1.37]	[1.34]	[1.32]	[-0.59]	[-1.37]	[-1.34]
Age (log)	-0.0085	-0.0040	-0.0028	-0.000058	0.0042	0.011
	[-1.54]	[-1.54]	[-1.53]	[-0.30]	[1.54]	[1.54]
Sales revenue	-8.7e-08	-4.0e-08	-2.9e-08	-5.9e-10	4.3e-08	1.1e-07
	[-1.36]	[-1.36]	[-1.36]	[-0.30]	[1.36]	[1.36]
Employee growth	0.0074	0.0034	0.0025	0.000051	-0.0036	-0.0097
	[0.68]	[0.68]	[0.68]	[0.28]	[-0.68]	[-0.68]
State ownership	0.020	0.0095	0.0068	0.00014	-0.0100	-0.027
	[0.51]	[0.51]	[0.51]	[0.26]	[-0.51]	[-0.51]
Foreign ownership	0.018	0.0082	0.0059	0.00012	-0.0086	-0.023
	[0.55]	[0.55]	[0.55]	[0.26]	[-0.55]	[-0.55]
Collective ownership	-0.0021	-0.00097	-0.00070	-0.000014	0.0010	0.0027
	[-0.12]	[-0.12]	[-0.12]	[-0.11]	[0.12]	[0.12]
Sells to Gov	0.028	0.013	0.0094	0.00019	-0.014	-0.037
	[1.48]	[1.48]	[1.47]	[0.30]	[-1.48]	[-1.48]
Inputs from Gov	0.017	0.0078	0.0056	0.00011	-0.0082	-0.022
	[0.74]	[0.74]	[0.74]	[0.28]	[-0.74]	[-0.74]
Inputs from overseas	-0.036***	-0.017***	-0.012***	-0.00025	0.018***	0.048***
	[-2.66]	[-2.65]	[-2.65]	[-0.30]	[2.66]	[2.67]
Sells overseas	-0.030*	-0.014*	-0.010*	-0.00021	0.015*	0.040*
	[-1.77]	[-1.77]	[-1.77]	[-0.30]	[1.77]	[1.78]
Overall Biz S-R Avg	-0.053**	-0.025**	-0.018*	-0.00036	0.026*	0.070**
	[-1.96]	[-1.96]	[-1.95]	[-0.30]	[1.96]	[1.97]
Industrial zone	-0.027	-0.012	-0.0090	-0.00018	0.013	0.035
	[-1.12]	[-1.12]	[-1.12]	[-0.29]	[1.12]	[1.12]
Observations	2,313	2,313	2,313	2,313	2,313	2,313

Notes: z-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1
Micro, Agriculture and Domestic ownership are the baseline groups.
Estimates for location dummies are not reported but available on request.

Table 2 reports the average marginal effects for the second model which is an ordered probit on the severity of corruption as an obstacle. The dependent variable, ratings of corruption as an obstacle, is an ordered categorical value that takes values from 1 (No obstacle) to 6 (Very severe obstacle). Average marginal effects from the full model are reported for each of the 6 outcome levels.

The pattern observed here is quite different to that of bribery seen earlier.

Firms in Extractive industries are 20% more likely to rate corruption as a 'very severe obstacle' compared to firms in Agriculture. They are also 8% less likely to rate corruption as 'no obstacle'.

Interestingly, indicators of firm success such as revenue and employee growth, as well as ownership types are not found to be statistically significant. This does not mean that these firms do not find corruption to be an obstacle. Rather, it reveals that these variables do not have explanatory power. In other words firms with more revenue are just as likely to find corruption an obstacle compared with firms with less revenue.

Market characteristics however are found to be important. Firms that receive inputs from overseas or export their products are 4.8% and 4% more likely, respectively, to rate corruption as a very severe obstacle. This fits in with the control rights thesis as firms engaging in trade are more likely to deal with officials to obtain licenses and permissions and therefore are more prone to corruption. Firms in an environment where the overall business conditions are unfavourable are also found to be more likely to rate corruption as an obstacle.

Table 3. Determinants of bureaucratic hassle in terms of business fees (marginal effects)

Variables	No obstacle			Very severe obstacle		
	(1)	(2)	(3)	(4)	(5)	(6)
Bribe	-0.13***	-0.085***	-0.028***	0.065***	0.095***	0.085***
	[-13.4]	[-13.5]	[-7.34]	[12.8]	[13.1]	[11.1]
Small	0.0010	0.00067	0.00022	-0.00052	-0.00075	-0.00067
	[0.11]	[0.11]	[0.11]	[-0.11]	[-0.11]	[-0.11]
Medium	-0.0030	-0.0020	-0.00067	0.0015	0.0022	0.0020
	[-0.20]	[-0.19]	[-0.19]	[0.20]	[0.19]	[0.19]
Large	-0.014	-0.0092	-0.0035	0.0066	0.010	0.0094
	[-0.47]	[-0.45]	[-0.41]	[0.48]	[0.46]	[0.44]
Extractive industries	-0.025	-0.015	-0.0034	0.013	0.017	0.014
	[-0.80]	[-0.76]	[-0.59]	[0.81]	[0.77]	[0.73]
Hotels and restaurants	-0.036*	-0.022*	-0.0063	0.018*	0.025*	0.022*
	[-1.78]	[-1.72]	[-1.38]	[1.80]	[1.74]	[1.65]
Manufacturing	-0.026*	-0.016*	-0.0037*	0.013*	0.018*	0.015*
	[-1.67]	[-1.74]	[-1.92]	[1.65]	[1.73]	[1.78]

Other services	-0.030*	-0.018*	-0.0047**	0.015*	0.021*	0.017**
	[-1.86]	[-1.93]	[-2.02]	[1.84]	[1.92]	[1.96]
Trade	-0.028*	-0.017*	-0.0042*	0.014*	0.019*	0.016*
	[-1.66]	[-1.70]	[-1.69]	[1.65]	[1.69]	[1.70]
Age (log)	0.0087*	0.0056*	0.0018	-0.0043*	-0.0063*	-0.0056*
	[1.66]	[1.66]	[1.63]	[-1.66]	[-1.66]	[-1.66]
Sales revenue	1.5e-08	9.9e-09	3.3e-09	-7.6e-09	-1.1e-08	-9.8e-09
	[0.25]	[0.25]	[0.25]	[-0.25]	[-0.25]	[-0.25]
Employee growth	-0.00046	-0.00030	-0.000098	0.00023	0.00033	0.00030
	[-0.045]	[-0.045]	[-0.045]	[0.045]	[0.045]	[0.045]
State ownership	-0.024	-0.016	-0.0052	0.012	0.018	0.016
	[-0.65]	[-0.65]	[-0.65]	[0.65]	[0.65]	[0.65]
Foreign ownership	-0.062**	-0.040**	-0.013**	0.031**	0.045**	0.040**
	[-2.05]	[-2.05]	[-2.00]	[2.04]	[2.05]	[2.04]
Collective ownership	0.028	0.018	0.0059	-0.014	-0.020	-0.018
	[1.63]	[1.63]	[1.60]	[-1.63]	[-1.63]	[-1.62]
Sells to Gov	0.00056	0.00036	0.00012	-0.00028	-0.00041	-0.00036
	[0.031]	[0.031]	[0.031]	[-0.031]	[-0.031]	[-0.031]
Inputs from Gov	0.041*	0.027*	0.0088*	-0.020*	-0.030*	-0.027*
	[1.89]	[1.89]	[1.85]	[-1.89]	[-1.89]	[-1.89]
Inputs from overseas	-0.016	-0.011	-0.0035	0.0081	0.012	0.011
	[-1.27]	[-1.27]	[-1.26]	[1.27]	[1.27]	[1.27]
Sells overseas	-0.0068	-0.0044	-0.0015	0.0034	0.0049	0.0044
	[-0.42]	[-0.42]	[-0.42]	[0.42]	[0.42]	[0.42]
Overall Biz S-R Avg	-0.051**	-0.033**	-0.011**	0.025**	0.037**	0.033**
	[-2.03]	[-2.03]	[-1.98]	[2.03]	[2.03]	[2.02]
Industrial zone	0.053**	0.034**	0.011**	-0.026**	-0.038**	-0.034**
	[2.41]	[2.41]	[2.32]	[-2.40]	[-2.41]	[-2.39]
Observations	2,372	2,372	2,372	2,372	2,372	2,372

Notes: z-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1
Micro, Agriculture and Domestic ownership are the baseline groups.
Estimates for location dummies are not reported but available on request.

Tables 3 and 4 report results on the efficiency-grease hypothesis. The regressions in Table 3 have as the dependent variable ratings from 1 (No obstacle) to 6 (Very severe obstacle) on fees related to business registration, licensing and permits.

Firms that pay bribes are 8.5% more likely to rate business fees as a 'very severe obstacle' and 13% less likely to rate it as 'no obstacle'.

There is some limited evidence that firms in hotels and restaurants, manufacturing, trade and other services are more likely to find fees an obstacle compared with firms in Agriculture. Interestingly, older firms are less likely to find fees an obstacle. Perhaps over time managers at these firms have found ways to reduce the burden of these fees. However this effect is quite small. A 1% increase in the age of a firm leads to a 0.8% increase in the probability of rating fees as 'no obstacle'.

Firms with some foreign ownership are 4% more likely to rate fees a 'very severe obstacle' and 6.2% less likely to rate it as 'no obstacle'.

There is some evidence that firms receiving supplies from government and firms located in an industrial zone are less likely to find fees an obstacle.

Table 4. Determinants of bureaucratic hassle in terms of business administration (marginal effects)

Variables	No obstacle					Very severe obstacle
	(1)	(2)	(3)	(4)	(5)	(6)
Bribe	-0.13***	-0.091***	-0.028***	0.064***	0.097***	0.086***
	[-13.4]	[-13.9]	[-7.35]	[12.8]	[13.2]	[11.2]
Small	-0.015	-0.011	-0.0031	0.0076	0.011	0.0098
	[-1.60]	[-1.58]	[-1.54]	[1.59]	[1.59]	[1.59]
Medium	-0.020	-0.014	-0.0044	0.0099	0.015	0.013
	[-1.35]	[-1.29]	[-1.14]	[1.37]	[1.30]	[1.26]
Large	-0.031	-0.023	-0.0084	0.015	0.025	0.023
	[-1.21]	[-1.09]	[-0.86]	[1.28]	[1.11]	[1.01]
Extractive industries	-0.018	-0.012	-0.0032	0.0094	0.013	0.011
	[-0.63]	[-0.60]	[-0.51]	[0.64]	[0.61]	[0.59]
Hotels and restaurants	-0.0035	-0.0023	-0.00046	0.0018	0.0025	0.0020
	[-0.17]	[-0.17]	[-0.16]	[0.17]	[0.17]	[0.17]
Manufacturing	-0.027*	-0.019*	-0.0054**	0.014*	0.020*	0.017**
	[-1.83]	[-1.92]	[-2.12]	[1.80]	[1.91]	[1.98]
Other services	-0.014	-0.0092	-0.0022	0.0071	0.0099	0.0082
	[-0.89]	[-0.91]	[-0.96]	[0.89]	[0.91]	[0.92]
Trade	-0.012	-0.0076	-0.0018	0.0059	0.0082	0.0067

	[-0.70]	[-0.71]	[-0.73]	[0.70]	[0.71]	[0.71]
Age (log)	0.011**	0.0076**	0.0023**	-0.0054**	-0.0082**	-0.0072**
	[2.13]	[2.13]	[2.08]	[-2.13]	[-2.13]	[-2.12]
Sales revenue	4.4e-08	3.1e-08	9.3e-09	-2.2e-08	-3.3e-08	-2.9e-08
	[0.73]	[0.73]	[0.73]	[-0.73]	[-0.73]	[-0.73]
Employee growth	-0.00085	-0.00060	-0.00018	0.00042	0.00064	0.00056
	[-0.086]	[-0.086]	[-0.086]	[0.086]	[0.086]	[0.086]
State ownership	-0.037	-0.026	-0.0079	0.018	0.028	0.025
	[-1.01]	[-1.01]	[-1.00]	[1.01]	[1.01]	[1.01]
Foreign ownership	-0.036	-0.025	-0.0077	0.018	0.027	0.024
	[-1.23]	[-1.23]	[-1.22]	[1.23]	[1.23]	[1.23]
Collective ownership	0.014	0.010	0.0030	-0.0071	-0.011	-0.0094
	[0.86]	[0.86]	[0.86]	[-0.86]	[-0.86]	[-0.86]
Sells to Gov	0.025	0.018	0.0054	-0.013	-0.019	-0.017
	[1.43]	[1.44]	[1.42]	[-1.43]	[-1.43]	[-1.43]
Inputs from Gov	0.022	0.016	0.0047	-0.011	-0.017	-0.015
	[1.06]	[1.06]	[1.05]	[-1.06]	[-1.06]	[-1.06]
Inputs from overseas	-0.018	-0.012	-0.0038	0.0088	0.013	0.012
	[-1.42]	[-1.42]	[-1.40]	[1.42]	[1.42]	[1.41]
Sells overseas	-0.0022	-0.0016	-0.00048	0.0011	0.0017	0.0015
	[-0.14]	[-0.14]	[-0.14]	[0.14]	[0.14]	[0.14]
Overall Biz S-R Avg	-0.048**	-0.034**	-0.010*	0.024**	0.036**	0.032**
	[-1.97]	[-1.97]	[-1.92]	[1.96]	[1.97]	[1.96]
Industrial zone	0.052**	0.037**	0.011**	-0.026**	-0.039**	-0.035**
	[2.43]	[2.44]	[2.36]	[-2.43]	[-2.44]	[-2.42]
Observations	2,367	2,367	2,367	2,367	2,367	2,367

Notes: z-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1
Micro, Agriculture and Domestic ownership are the baseline groups.
Estimates for location dummies are not reported but available on request.

Table 4 presents the results for regressions which have as the dependent variable ratings on administrative procedures related to business registration, licensing and permits.

Once again firms that pay bribes are significantly more likely to find these administrative procedures an obstacle compared to firms that do not. The magnitude of these effects is broadly similar to those found for business fees.

There is some evidence that manufacturing firms are more likely to find administrative procedures an obstacle compared with Agricultural firms. Manufacturing firms are 17% more likely to rate this as a very severe obstacle. Older firms and those in industrial zones are less likely to find administrative procedures an obstacle.

6. Robustness test

An important concern that must be addressed in this empirical analysis is the possibility that reverse causality might drive the results. Endogeneity, arising from reverse causality, must be addressed as it would lead to estimates that are not only biased but also inconsistent. For example, the claim made in the first set of models reported in Table 1 is that higher revenue leads to a higher probability of paying a bribe as successful firms are targeted by rent-maximizing officials. However, it could also be the case that the payment of bribes allows higher revenues to be achieved as favourable treatment is “acquired” (Svensson, 2003).

The direction of causality is not a chief concern here as the purpose of this analysis is not to distinguish between whether blame lies with officials or firms for engaging in corruption. Rather it is to analyze the pattern of corruption in order to understand its overall structure. Both approaches predict a positive relationship between revenue and corruption and empirical evidence that confirms this still conveys useful information. Furthermore, most firms in this sample are small. It is usually the case that, if the regulatory process is captured, it is done so by large, politically powerful enterprises (Svensson, 2003).

Nevertheless, it is important to address this reverse causality to ensure that estimates are consistent. For this robustness test firm revenue is replaced by the average revenue in that firm’s sector-region. This addresses the reverse-causality concern as it is highly unlikely that bribe payments by a single firm would increase average revenue to all firms in a particular sector and region. Furthermore, one could argue that as public officials lack detailed information on each particular firm’s revenue, they may in fact target firms based on characteristics of the average firm in each sector-region⁴.

⁴ A second robustness test using an instrumental variables approach was also attempted. Following Svensson (2003), sector-region averages of revenue was used to instrument for the firm’s revenue. However the Wald test of the exogeneity of the instrumented variable reported p-values that were border line. The p-values ranged from 0.0983 to 0.1435 in the specifications used. As null could not be rejected conclusively, this suggests that sales revenue is not endogenous and therefore the results from the regular probit are more appropriate as they have smaller standard errors. The results of this test are not reported here but are available on request.

Table 5. Robustness test for the determinants of bribery (marginal effects)

Variables	bribe	bribe	bribe
Small	0.054**	0.052**	0.052**
	[2.48]	[2.37]	[2.39]
Medium	0.16***	0.15***	0.13***
	[4.75]	[4.32]	[3.82]
Large	0.17***	0.15**	0.13*
	[2.77]	[2.32]	[1.88]
Extractive Industries	0.23***	0.23***	0.21***
	[4.82]	[4.96]	[3.88]
Hotels and restaurants	-0.058	-0.050	-0.040
	[-1.27]	[-1.09]	[-0.85]
Manufacturing	-0.013	-0.0070	-0.015
	[-0.42]	[-0.22]	[-0.45]
Other services	-0.032	-0.024	-0.028
	[-0.93]	[-0.70]	[-0.79]
Trade	-0.078**	-0.073**	-0.065*
	[-2.16]	[-2.00]	[-1.78]
Age (log)	0.0030	0.0042	0.0031
	[0.25]	[0.36]	[0.26]
Sales revenue S-R Avg	1.4e-06*	1.4e-06*	1.3e-06*
	[1.89]	[1.95]	[1.75]
Employee growth	0.047**	0.045*	0.050**
	[2.02]	[1.95]	[2.16]
State ownership	0.097	0.099	0.10
	[1.10]	[1.12]	[1.18]
Foreign ownership	-0.096	-0.11*	-0.12*
	[-1.42]	[-1.65]	[-1.69]
Collective ownership	0.14***	0.14***	0.14***
	[3.53]	[3.51]	[3.32]
Sells to Gov		-0.040	-0.037
		[-0.96]	[-0.88]
Inputs from Gov		0.065	0.071
		[1.30]	[1.41]
Inputs from overseas		0.039	0.040
		[1.35]	[1.38]
Sells overseas		0.036	0.038
		[0.98]	[1.03]
Overall Biz S-R Avg			0.053
			[0.95]
Industrial zone			0.13**
			[2.42]
Observations	2,500	2,500	2,470

Notes: z-statistics in brackets. *** p<0.01, ** p<0.05, * p<0.1
 Micro, Agriculture and Domestic ownership are the baseline groups.
 Estimates for location dummies are not reported but available on request.

Table 5 reports the average marginal effects of this test applied to the models in Table 1. The average sector-region revenue is still found to be positive and significantly associated with bribe payments. It is only significant at the 10% level, which is understandable considering that this is a weaker measure of firm success. A 100,000 kyat (USD 100) increase in average revenue leads to a 14% increase in the probability the firm pays a bribe. All other variables retain their sign and significance and have marginal effects that are broadly consistent with the first model.

7. Conclusion: Implications, limitation and future study

The results reveal an interesting pattern of corruption in Myanmar. Firms that are more successful are more likely to pay bribes but are just as likely as other firms to find corruption an obstacle. While firms that require permission to export and import are more likely to find corruption an obstacle. Firms in certain sectors such as extractive industries are more likely to pay bribes as well as report higher levels of corruption as an obstacle. This suggests that bribe discrimination is at play as firms with certain characteristics are affected more than others.

7.1. Implications

An important policy implication that flows through is that collective action on the part of the business community may be helpful in strengthening their bargaining position (Svensson, 2003). Svensson (2003) suggests practices such as disseminating information about standards, guidelines, norms of service provision and corruption practices together with recognition for those that resist corruption. Furthermore, it would be useful to collect ratings of public agencies by individuals and firms akin to customer satisfaction surveys. This would provide necessary feedback on which agencies are performing well and which are in most need of improvement.

Another implication of this analysis, which often goes unremarked in the literature, is that if a public official has discretionary power in the implementation of regulation and can use this power to extract bribes, then the position of the official becomes quite valuable. In fact, the value of the position would be the expected present value of the stream of bribe payments. The person who decides which individual should occupy this position then has an incentive to extract some of that rent for themselves by charging a bribe for that appointment. This seemed to be the case in India where valuable bureaucratic positions or promotions, particularly in urban areas, require bribe payments (Wade, 1982). This then exacerbates the

need to collect bribes from businesses and so the vicious cycle continues. If this is the case careful attention must be paid to the structure of incentives and accountability in the institution as a whole rather than simply targeting individuals. Alternatively it could be possible that a senior manager looking to hire an inspector does her best to find the most competent, honest person for the job. The individual agent, however, may ignore the wishes of the principal and use their discretion to extract bribes to enrich themselves.

7.2. Limitations

The firm-level data employed here allows us to observe one side of this process but it is necessarily incomplete without further data on the government's role. The government may have good intentions when designing regulation to address market failures, even if they inadvertently allow some corruption in their implementation.

7.3. Future study

Further evidence is of course required before reaching a conclusion. This would require a survey of bureaucrats to identify the obstacles they face in carrying out their duties. Data on various aspects such as corporate culture, resource constraints, organizational structure, incentives, bribes and compensation, would be necessary to give a complete picture of the situation from multiple perspectives.

The sensitive nature of these questions make surveys of public officials on this topic challenging but not impossible. A recent UNDP survey of men who have committed violence against women used electronic devices that allowed respondents to anonymously self-report their mis-deeds and motivations (Fulu et al., 2013). A similar approach could be used to determine obstacles faced *by* public officials within bureaucracies.

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Appendix

Variable names and definitions

Variable name	Definition
Bribe	Binary variable taking the value 1 if firm responded with a positive value to the question “How much would a firm like yours have to offer, in addition to official charges to the authorities, to obtain a business registration, license or permit?”
Corruption	Rating from 1 (No obstacle) to 6 (Very severe obstacle) on whether corruption is an obstacle to the current operations of the firm.
Business fees	Rating from 1 (No obstacle) to 6 (Very severe obstacle) on whether fees relating to business registration, licensing and permits are an obstacle to the current operations of the firm.
Business administration	Rating from 1 (No obstacle) to 6 (Very severe obstacle) on whether administrative procedures relating to business registration, licensing and permits are an obstacle to the current operations of the firm.
Micro	Binary variable taking the value 1 if the firm has between 1 to 9 employees
Small	Binary variable taking the value 1 if the firm has between 10 to 49 employees
Medium	Binary variable taking the value 1 if the firm has between 50 to 249 employees
Large	Binary variable taking the value 1 if the firm has 250 + employees
Age (log)	Age of the firm
Sales revenue	Sales revenue over the last fiscal year. As data was recorded on an interval scale, the mid-point of each interval was used except for the last interval which used the lower bound.
Employee growth	Binary variable taking the value 1 if the firm increased the number of employees in the last fiscal year.
Domestic ownership	Binary variable taking the value 1 if the firm has at least some domestic ownership.

State ownership	Binary variable taking the value 1 if the firm has at least some state ownership.
Foreign ownership	Binary variable taking the value 1 if the firm has at least some foreign ownership.
Collective ownership	Binary variable taking the value 1 if the firm has at least some collective ownership.
Sells to Gov	Binary variable taking the value 1 if the firm sells to the government
Inputs from Gov	Binary variable taking the value 1 if the firm receives inputs from the government
Inputs from overseas	Binary variable taking the value 1 if the firm imports inputs
Sells overseas	Binary variable taking the value 1 if the firm exports
Overall Biz S-R Avg	Sector-region average ratings of the overall business environment
Industrial zone	Binary variable taking the value 1 if the firm is located in an industrial zone

Tabulation of categorical variables

Variable groups	Corruption perception		Bribery incidence	
	No of firms	Average	No of firms	Percent
Agriculture, forestry and fishing	385	3.898701	402	62.44%
Extractive Industries	97	4.701031	119	84.87%
Hotels and restaurants	201	3.661691	211	54.98%
Manufacturing	926	3.933045	1,000	60.80%
Other services	675	3.863704	711	59.63%
Trade	515	3.662136	532	49.81%
Micro (1-9)	1,345	3.722677	1,445	52.80%
Small (10-49)	1,019	3.944063	1,085	62.40%
Medium (50-249)	343	4.09621	348	71.84%
Large (250+)	104	4.317307	108	74.07%
Employee growth	771	3.944228	789	66.54%
No employee growth	2,039	3.84257	2,194	56.79%
Some state ownership	38	4.157895	42	80.95%
No state ownership	2,729	3.866251	2,901	58.98%
Some foreign ownership	93	4.333333	95	62.11%
No foreign ownership	2,674	3.854151	2,848	59.20%
Some collective ownership	203	4.073892	211	74.41%

No collective ownership	2,564	3.854134	2,732	58.13%
Some domestic ownership	2,535	3.848915	2,704	58.47%
No domestic ownership	232	4.103448	239	68.62%
Within industrial zone	142	4.288733	154	74.03%
Outside industrial zone	2,673	3.849981	2,836	58.53%



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