Does 'Grease Money' Speed Up the Wheels of Commerce?

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Abstract

In an environment in which bureaucratic burden and delay are exogenous, an individual firm may find bribes helpful to reduce the effective red tape it faces. The "efficient grease" hypothesis asserts therefore that corruption can improve economic efficiency and that fighting bribery would be counter-productive. This need not be the case. In a general equilibrium in which regulatory burden and delay can be endogenously chosen by rent-seeking bureaucrats, the effective (not just nominal) red tape and bribery may be positively correlated across firms.

Using data from three worldwide firm-level surveys, we examine the relationship between bribe payment, management time wasted with bureaucrats, and cost of capital. Contrary to the "efficient grease" theory, we find that firms that pay more bribes are also likely to spend more, not less, management time with bureaucrats negotiating regulations, and face higher, not lower, cost of capital.

1. Introduction

The United States' Foreign Corrupt Practice Act (FCPA) of 1977 has made it a crime for American firms to bribe foreign government officials. In December 1997, the OECD member countries signed a convention that also criminalizes bribery of foreign officials by firms from the member countries.[1] It went into effect in February, 1999, after it had been ratified by a sufficient number of individual parliaments of the signatory countries. Would laws of this kind reduce the incidence of bribery by multinational firms? Do they promote economic efficiency?

Over thirty years ago, rather elegantly, the respected political scientist Samuel P. Huntington stated that "...in terms of economic growth, the only thing worse than a society with a rigid, over-centralized, dishonest bureaucracy is one with a rigid, over-centralized and honest bureaucracy." (1968, p. 386) To paraphrase, excessive taxes and regulation on the books (nominal red tape) would remain excessive without bribery; but with the possibility of bribery, they may be transformed to less "real" red tape (i.e., officials not enforcing all the rules and regulations in exchange for bribes). In other words, bribery is tantamount to deregulation.

That view has not been an exception, and political scientists have not been alone over the past three decades in pointing out that, ethical considerations aside, corruption may in fact improve efficiency, particularly in developing countries. Indeed, theories that see some economic efficiency virtues in corruption have been published by some well-respected scholars in academic journals. Nathaniel H. Leff (1964, p. 11) stated in unequivocal terms, "...if the government has erred in its decision, the course made possible by corruption may well be the better one." A rigorous economic model published in the Journal of Political Economy (Lui, 1985) demonstrated the efficiency-enhancing role of corruption: in a queuing model, the size of bribes by different economic agents could reflect their different opportunity cost. Better firms are more able/willing to buy lower effective red tape. Hence, like an auction, a license or contract awarded on the basis of bribe size could achieve Pareto-optimal allocation.

We label the theory that bribery leads to lower effective red tape as the "efficient grease" hypothesis. If bribes "grease the wheels of commerce," then campaigns by governments or international organizations to combat corruption in the international arena, such as the U.S. FCPA or the OECD anti-bribery convention, would be counter-productive. We argue that this "efficient grease" theory rests on a crucial assumption that should not be taken for granted. The assumption is that the red tape/regulatory burden (tax, licenses, delay, and so on) can be taken as exogenous, independent of the incentive for officials to take bribes. Because of the assumption, the theory is a partial equilibrium in nature, and may not hold in a general equilibrium.

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[1] The OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions.

This point is not new. In sharp contrast to the views of Huntington, Leff and others at the time, Myrdal in his epic *Asian Drama* (1968) suggested already a possible perverse relationship between bureaucratic regulations and bribery. More recently Banerjee (1997) has formalized certain aspects of that relationship, while Bardhan (1997) in his excellent survey paper on corruption, states:

> In the second-best case made above, it is usually presumed that a given set of distortions are mitigated or circumvented by the effects of corruption; but quite often these distortions and corruption are caused or at least preserved or aggravated by the same factors. The distortions are not exogenous to the system and are instead often part of the built-in corrupt practices of a patron-client political system.

There is already a considerable literature on the consequences of corruption. On theoretical ground, Krueger (1974), Susan Rose-Ackerman (1975, 1978), Shleifer and Vishny (1993 and 1994), and Bliss and Di Tella (1997), among others, have modeled problems of corruption. In particular, Shleifer and Vishny also make the point that a country's regulatory burden may be endogenously exploited by corruption-prone officials for the purpose of extracting bribes. We extend their argument one step further, arguing that even within a country, because the bureaucrats have discretionary power with a given regulation, corruption-prone officials can often "customize" the nature and amount of harassment on firms to extract maximum bribes possible. In other words, they would charge according to "ability to pay." In equilibrium, firms that pay more bribes could still face higher, not lower, effective red tape.

Empirical studies by Mauro (1995), Hines (1995), Kaufmann(1997a), Tanzi (1998), and Wei (1997a, 1997b) have shown the negative effects of corruption on economic growth, business development, public expenditures, domestic and foreign investment, and the effect of corruption on driving firms to the unofficial economy.

There is also a substantial non-technical and illuminating work on the consequences of corruption, such as in Klitgaard (1990). Also, Andvig (1991) and, more recently, Bardhan (1997), Rose-Ackerman (1998), Ades and Di Tella (1997), Kaufman (1997b), Eliott (1997), and Tanzi (1998) provide excellent surveys on analytical and empirical issues related to the economics of corruption.

In this paper we first develop a simple model that builds on the insight that bureaucratic harassment may be endogenous. In addition, the model also stresses the role of firms' different commitment ability (not to tolerate certain levels of bribery request) as a function of their characteristics. We then turn to some statistical evidence. The empirical literature has generally employed selective country-level corruption perception indexes and investigated the consequences of corruption on various measures of economic performances for the overall economies. This paper uses data from three firm-level surveys, focusing on the interaction at the micro-level between firms and public officials.

The organization of the paper is as follows. Section 2 presents a model which challenges the "efficient grease" theory. Section 3 describes the data set. Sections 4-6 discuss various empirical results. Section 7 concludes.

2. A Simple Model

Our simple model is a Stackleberg game between a rent-seeking government official and a representative firm k. The official moves first to choose harassment or bureaucratic delay in order to maximize bribe intake, and the firms which is a price-taker moves next to choose the bribe payment in order to maximize the after-bribe profit.

We solve for the equilibrium levels of bribe and red tape by backward induction. Consider first the problem faced by the firm.

Firm:

Suppose b_k is the amount of bribery firm k has to pay to a corruption-prone government official, and B_k is the profit the firm would have attained without any harassment from government officials. Let h_k be the (nominal) harassment that the official imposes on the firm (e.g., nominal tax assessment, fire safety standards on the book, or the maximum number of days for a given license application). We make the nominal harassment firm-specific to emphasize that the official has discretion over the actual implementation of a given regulation. In other words, red tape can be customized (to some extent).

We make a distinction between effective or "real" harassment—the red tape that a firm actually faces after paying a bribe, and the nominal harassment—the red tape announced by the bureaucrat or "on the book" before the firm pays the bribe. Let r_k be the "real" or effective harassment—the red tape the firm actually faces after making a bribe payment.

$$r_k = h_k - s(b_k)$$

where s(.) is a function describing how bribe payment helps to reduce effective harassment. We assume $s_b > 0$ and $s_{bb} < 0$. In other words, holding the nominal harassment, h, constant, more bribery leads to lower effective red tape, but there is a decreasing return to paying bribes. Notice here that a narrow version of "efficient grease" hypothesis—if nominal harassment is constant, then bribery and effective harassment are negatively correlated—holds by assumption.

To simplify the story, we assume that the pre-bribery profit, B_k, is predetermined. The representative firm's objective is to maximize its post-bribe and post-harassment profit, which is given by

$$\prod_{k,a} = g(r_k) \prod_k - b_k .$$

The first order condition yields an implicit function that relates the optimal amount of bribe firm k would pay (if without any constraint on the maximum bribe) and the nominal rate of harassment, h:

$$-g_r(h_k\ ,\ b_k)\ ?_k\ s_b(b_k) = 1$$

This defines an optimal bribery schedule:

$$b_k = B(h_k)$$

Totally differentiating the first-order condition, we can see that the bribery schedule is upward-sloping,

$$\frac{db_k}{dh_k} = \frac{g_{rr}\ s_b}{g_{rr}\ s_b^2 - g_r\ s_{bb}} > 0$$

In other words, as nominal harassment increases, so does the bribe the firm finds optimal to give.

The above bribery schedule assumes that the firm has to tolerate any level of harassment and give bribes accordingly. We now consider the more relevant case that every firm has an exit option, and therefore a maximum amount of harassment it is willing to tolerate. Suppose h_k^* denotes the maximum harassment that firm k would tolerate (at which point it is indifferent between exiting or not). That is, it can decide not to tolerate anything above h_k^* because of the characteristics of the firm, the industry it is in, or the source country it is from. With this commitment, the firm will no longer solve the above unconstrained problem. Consequently, the actual bribe the firm will be willing to pay is:

$$b_k = \min\left\{B(h_k^*), B(h_k)\right\}.$$

Bureaucrat:

For now, let us assume that the bureaucrat sets the harassment rate, h_k, (e.g., tax, license, regulation and delay) solely for the purpose of extracting a bribe. Assuming that the bureaucrat's utility is an increasing function of bribe intake, she would choose to impose just enough harassment to induce the firm to pay the maximum amount of bribe it is willing to tolerate, namely, h_k^*. In equilibrium, the firm would pay exactly $b_k^* \equiv B(h^*)$. This implies that nominal harassment and bribery are positively correlated across firms.

That is not the end of the story. We can examine the relationship between the *effective* rate of harassment and the bribery in equilibrium,

$$\frac{dr_k^*}{db_k^*} = \frac{dh_k^*}{db_k^*} - s_b(b_k^*)$$

$$= -\frac{g_r s_{bb}}{g_{rr} s_b} > 0$$

Therefore, in this model, firms that pay more bribes not only face a higher nominal rate of harassment in equilibrium, but also have to deal with a higher effective rate of harassment. This is in sharp contrast with the "efficient grease" hypothesis.

To sum up, if one allows regulation, tax, and bureaucratic red tape and their discretionary enforcement to be endogenously chosen by rent-seeking officials, the officials may charge according to the firms' "ability to pay" by raising the nominal harassment sufficiently. In terms of empirical prediction, we may observe a positive, rather than a negative, correlation between the "effective" red tape and bribe in equilibrium across firms.

3. Data

In the empirical part of the paper, we examine the relationship between bribe payments and some measures of effective bureaucratic harassment. There are many types of harassment one can think of. Our primary focus will be a proxy for the (actual) time senior managers of firms spend negotiating with bureaucrats on regulations, but we will also look at proxies for effective regulatory burden and extent of regulatory discretion, and the (reported effective) cost of capital as other measures of effective harassment.

We will explore data from three different surveys: (1) the *1997 Global Competitiveness Report* (GCR97 for short), (2) the *1996 Global Competitiveness Report* (GCR96 for short), and (3) the *1997 World Development Report* (WDR97 for short).

The two GCR surveys were conducted in late 1995 and 1996, respectively, under the auspices of the Geneva-based World Economic Forum (WEF) and the Harvard Institute for International Development (HIID). The 1997 Report surveyed 2,827 firms in 58 countries, of which 2,381 firms respond both to the questions on corruption and on time spent by firm managers with bureaucrats. The publicly released GCR report publishes the country average of the survey responses to all the survey questions. For our study, we largely use the unpublished individual firm level responses. Further, we also use the data from the GCR 1996, where 1,537 firms (1,503 non-missing observations for the questions of our interest) were surveyed in 48 countries. Both survey instruments differ in terms of some of the questions covered, and we find that for our purposes there are some relevant questions in each survey.

The WDR97 survey was conducted by the World Bank in 3,866 firms covering 73 countries in preparation of its Annual Report in 1997.

There are three main reasons for using these three surveys. First, these surveys have differences in coverage in terms of countries surveyed and questions asked. For example, the GCR97 survey covers ten more countries than the GCR96, and contains 26 countries not in the WDR97 survey, whereas the WDR97 survey contains 41 countries that are not covered by GCR97. Second, because some of the key variables such as corruption are perception-based subjective measures, we would like to see if our basic findings can be corroborated across different, independently conducted surveys. Finally, the characteristics of respondents are different between the GCR surveys and the WDR survey. The GCR surveys are distributed among member firms of the World Economic Forum which tend to be large, sometimes multinational, firms. The WDR survey, on the other hand, may have more medium- and even small-sized firms in the sample.

We now turn to an explanation of the key variables we attempt to measure.

Corruption. The GCR 1997 does not ask directly for the magnitudes of bribe payment made by the respondents. All questions in that survey are about subjective ratings by the respondent on a scale of one to seven. Specifically, for corruption, the survey asks the respondents, in question 8.02, to rate the level of corruption, on a one-to-seven scale, according to the extent of "irregular, additional payments connected with imports and exports permits, business licenses, exchange controls, tax assessments, police protection or loan applications." To check the reliability of this indicator, we correlated the country means of that variable in the GCR survey with the corruption rankings in Business International and Transparency International. The pairwise correlations are 0.77 and 0.83, respectively, indicating a broad agreement on corruption ranking across countries among different sources. This was similarly the case for the variable rating corruption in the GCR1996.

For the empirical work, we make the assumption that individual firm's rating is correlated with their individual experience in bribery payment. Hence, firms that give a worse rating on their reported perceived incidence of bribery in the survey do indeed find themselves paying more bribes in their business operation. This assumption will be maintained for much of the statistical work. We will discuss the implication of relaxing it later in the paper.

In the WDR97 Private Sector Survey of 3,700 firms, question 14 asks "Is it common for firms in my line of business to have to pay some irregular, 'additional' payments to get things done?" The respondent is asked to rate corruption on a one-to-six scale with one meaning "always" and six "never."

Time spent by managers with bureaucrats. The GCR 1997 survey asks the respondents, in question 2.06, on a one-to-seven scale, whether the "senior management of your company" spends more or less than "30 percent of its time dealing with government bureaucracy." An answer of "4" (in the scale of one-to-seven) is calibrated to mean the management has spent roughly 30 percent of time. We use the answer to this question to measure the time the management of the firm has wasted in dealing with regulation, negotiating tax relief, and so on. This question was not asked in GCR 1996.

In the WDR97 Private Sector survey, question 21 asked, "what percentage of senior management time is spent on negotiation with officials about changes and interpretations of laws and regulations? (1) less than 5 percent, (2) 5-15 percent, (3) 15-25 percent, (4) 25-50 percent, (5) 50-75 percent, and (6) more than 75 percent." In our regressions, we re-code the answer (1) to 2 percent. From (2) to (5), we use the midpoint. For (6), we use 80 percent.

Unpredictability. The unpredictability index is based on the answers to three questions (15, 16 and 17) in the WDR97 Private Sector Survey. Question 15 asked respondents how much they agree with the statement that, "firms in my line of business usually know in advance about how much this 'additional payment' is." Question 16 assessed agreement with the statement that "even if a firm has to make an 'additional payment' it always has to fear that it will be asked for more, e.g., by other officials." And question 17 assessed agreement with the statement that "if a firm pays the required 'additional payment' the service is usually also delivered as agreed." All three questions were answered on a one-to-six scale.

Cost of capital. Only in GCR 1996 was there a question (4.09) asking firms to rate on a scale of one-to-six whether the cost of capital was too high/does not hinder competitive business development. For purposes of comparability with the estimations of the regressions using the GCR 1997 data we rescaled this variable to range between one and seven.

Regulation. We extract two aspects of government regulations from the GCR97 survey. The first one, which we label as "regulatory burden," is derived from question 2.02, which asks the respondents to rate on a one-to-seven scale the degree to which "government regulations impose a heavy burden on business competitiveness."

The second one, which we label as "regulatory discretion," is derived from question 2.08, which asks the respondents to rate on a one-to-seven scale the degree to which the "government regulations are vague and lax."

4. Evidence from the Firm Surveys for the Global Competitiveness Reports

Using the data from the two GCR surveys, we now examine the empirical relationship between corruption payment and effective bureaucratic harassment. There are many types of bureaucratic harassment we can imagine. Many are not in the surveys. We focus as our primary measure of effective harassment the time cost that the firms' management has to incur with government official negotiating interpretations of regulations. The "efficient grease" hypothesis suggests a negative correlation between bribes and the effective wasted time: firms that pay more bribes would need to spend less time getting the officials to certify compliance with the (nominal) regulations and/or to secure licenses. That is why many of the "grease payments" are also called "speed money."

In addition, we look into the regulatory burden and cost of capital as alternative measures of the effective harassment.

Let us start with a cross-country comparison between average time wasted and average bribery tendency using the GCR 1997 data. If we regress the country-level measure of time wasted by senior managers of firms with public officials on a constant and the country-level measure of bribery,[2] we obtain a slope coefficient of 0.29 which is statistically significant at the 5 percent level (not reported). Therefore, countries that allow corruption and bribery to flourish are, on average, also those with firms that waste more, not less, time with government officials haggling over regulations.

Of course, cross-country regressions based on average indices can have serious drawbacks, both masking the richness of individual observations and also potentially biasing the results. For instance, there may be differences in country characteristics (e.g., the extent of regulation) that may be correlated both with corruption and wasted time.

Thus, we turn next to examine if, within a country, there is any association at the firm level between time wasted and the bribe burden (as measured by firm-specific bribery level). Table 1 reports on a basic set of regressions of the determinants of time spent by the firm's management with public officials. Column 1 reports the most basic regression without the country fixed effects, based on all 2761 firms in the GCR 1997 survey. The coefficient (0.33) is positive and statistically significant. Once we control for the country fixed effects (Column 2), the point coefficient declines to 0.27, but remains to be positive and statistically significant. This is consistent with our model, but inconsistent with the "efficient grease" hypothesis.

[2] A country-level measure of time wasted for a particular country is the equally weighted average of all individual responses for that country on the relevant question. The country-level measure of bribery is constructed in the same way.

Table 1. Time Wasted and Bribery, Firm Level Evidence from the GCR97 Survey
(Country fixed effects, sector dummies)

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
	Time wasted[a]		*Regulatory burden*		*Regulatory discretion*		*Time wasted*		
Dependent variable								*High bribery countries*	*High regulatory burden*
Bribery	.33* (.02)	.27* (.02)	.22* (.02)	.21* (.02)	.26* (.02)	.26* (.02)	.17* (.02)	.17* (.05)	.25*
Regulatory burden							.23* (.02)	.19* (.04)	.35* (.12)
Regulatory discretion							.21* (.02)		
Firm size (large=1)				.01 (.08)		.00 (.07)	–.13# (.08)	–.11 (.37)	–.08 (.18)
Foreign investor				–.04 (.06)		–.05 (.05)	–.14* (.07)	–.50## (.38)	–.01 (.18)
Country fixed effects	No	Yes (58)	Yes (58)	Yes (58)	Yes (58)	Yes (58)	Yes	Yes	Yes
Sector dummies	No	No	No	Yes	No	Yes	Yes	Yes	Yes
N	2,761	2,761	2,765	2,765	2,768	2,756	2748	1,103	590
Adj. R2	.12	.12	.06	.06	.30	.31	.21	.05	.19

*, #, and ## denote significance at the 5, 10, and 15 percent levels, respectively.

Note: Constant term not shown. Standard deviation in parentheses.

1. The question on bribery to over 2760 firms in the GCS97 survey was: "Irregular, additional payments connected with import and export permits, business licenses, exchange controls, tax assessments, police protection or loan applications are common/not common" (scale of 1 to 7); question on the time spent by management (dependent variable) was: "Senior management of your company spends over/less than 30% of its time dealing with government bureaucracy (scale of 1 to 7).

2. Sectoral dummies: agriculture; natural resources; construction and real estate; services; manufacturing; utilities, and social services.

As a check of robustness, we also look at two alternative measures of effective red tape: the degree of effective regulatory burden and regulatory discretion from the same survey. Here, we regard the cross-firm differences in these measures as true differences in regulation that firms experience. The possibility that the reported difference is just difference in firms' perception will be examined in a later section.

Columns 3-6 in Table 1 report regressions with effective regulatory burden and effective regulatory discretion as the dependent variables, respectively. We see again, there is a clear positive relationship between bribery and effective red tape the firms face.

In Column 7, we go back to focusing on time wasted as the dependent variable. In addition to country and sector fixed effects, we also control for the relationship between regulations and bribery, and we also add two other firm characteristics (whether the firm is large, and whether it is a foreign investor). There is some evidence that a large or foreign firm, on average, experiences less time wasted with government officials. Most crucial to our discussion, we see that the coefficient on bribery declines (relative to

Column 2) to 0.17, but remains positive and statistically significant. In Columns 8 and 9, we perform the regression on two subsamples of countries (those with high average bribery, and those with high average effective regulatory burden). Again, we see that firms that pay more bribes, in equilibrium, experience more, not less, time wasted with the officials on matters related to regulations. Overall, there is no evidence that would support the "efficient grease" hypothesis.

Asian Exceptionalism?

Some writers have long conjectured that—even if it is shown that overall bribery and corruption is inimical to growth and business development—the Asian experience suggests that there is something special about that region, where in fact the "grease" argument may have had more currency and validity. One often hears the view that corruption has been part of the Asian culture for a long time and does not seem to hamper the business there.

We now undertake an explicit examination of the Asian exceptionalism hypothesis. Focusing on the subsample of the Asian countries, we replicate the key regressions in Table 1 and report the results in Table 2. We see that bribery is positively correlated with all three measures of effective red tape. If anything, the slope coefficient tends to be bigger for the Asian subsample than for all countries together. Thus, the evidence rejects overwhelmingly the Asian exceptionalism hypothesis.

Table 2. East Asian Exceptionalism

Dependent variable	*Regulatory burden*		*Regulatory discretion*		*Time wasted*		
Bribery	.25*	.25*	.35*	.35*	.35*	.36*	.25*
	(.05)	(.05)	(.05)	(.05)	(.05)	(.05)	(.05)
Regulatory burden							.14*
							(.05)
Regulatory discretion							.24*
							(.05)
Firm size (large=1)		.30##		.24		–.06	–.15
		(.21)		(.21)		(.23)	(.22)
Foreign investor		–.08		–.17		–.18	–.11
		(.14)		(.14)		(.16)	(.15)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector dummies	No	Yes	No	Yes	No	Yes	Yes
N	479	479	484	484	483	483	478
Adj. R^2	.02	.04	.24	.25	.16	.14	.19

* Significant at the 5 percent level.
Note: See footnotes to Table 1.

Corruption and Cost of Capital

As another check on the relationship between bribery and effective red tape, we now look at a measure of (firm-specific) cost of capital from the 1996 GCR survey.[3] Government officials may have discretionary power over which firm receive subsidized loans and at what terms. The "efficient grease" hypothesis suggests that firms which pay more bribes should have better access to cheaper credit and hence have a lower cost of capital. Table 3 presents the regressions of the cost of capital on bribery. Column 1 presents a simple regression where corruption is the only regressor (other than the intercept). The coefficient on bribery is positive and significant. In later columns where different specifications and subsamples are experimented, we always obtain the same qualitative result. Therefore, firms that have paid more bribes also have a higher, not lower, cost of capital. This is inconsistent with the "efficient grease" hypothesis.

Table 3. Cost of Capital and Bribery

Dependent variable	*1*	*2*	*3*	*4*	*5*	*6*
Cost of capital	*All sample*			*East Asia*	*Low-income countries[a]*	*High regulatory burden*
Bribery	.22*	.14*	.12*	.29*	.27*	.22*
	(.03)	(.03)	(.05)	(.14)	(.06)	(.03)
Regulatory burden		.21				
		(.03)				
Dummy high regulatory burden (DHB)			.37*	.65		
			(.17)	(.75)		
DHB x bribery			.07*	–.05		
			(.05)	.16)		
Country fixed effects	Yes (48)	Yes (48)	Yes (48)	Yes (9)	Yes	Yes
N	1,503	1,494	1,503	237	393	942
Adj. R^2	.27	.27	.27	.17	.05	.20

* Significant at the 5 percent level.

Note: Data on cost of capital, bribery, and bureaucracy are from GCR 96 survey.

a. Per capita GDP<$3,000.

5. Evidence from the Firm Survey for the 1997 World Development Report

The time wasted variable in the GCR97 survey is a qualitative measure. In comparison, the same variable in the WDR97 survey asks far more precise, quantitative questions. The two surveys are also different in terms of country coverage and methodology. So, in this section, we examine the link between bribery and effective red tape based on the data from the WDR97 survey.

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[3] The GCR96 survey did not ask the question on time spent with government officials, whereas the GCR97 survey did not ask the question on the cost of capital.

Table 4 re-examines the relationship between corruption frequencies and effective red tape. The first two columns look at the extent of regulatory burden. As in the GCR survey, there is again a positive correlation between bribe frequency and regulatory burden.

The remaining part of the table reports regressions with time spent with government officials as the dependent variable. We see that the frequency of corruption and managers' time spent with officials are positively correlated, just like in the GCR samples. That is, firms that report paying more bribes also spend more time negotiating with the bureaucracies, which is inconsistent with the beneficial grease hypothesis. This is true after we control for country fixed effects, regulatory burden, predictability of bribe transaction, and firm size. The same pattern holds when we restrict our attention to the subsample of all foreign firms, or all domestic firms (Columns 6 and 7). Again the same pattern appears in the subsample of countries in which bribe payments are high, or in the sample of Latin American and the Caribbean, and Asian countries (not reported).

Table 4. Bribery and Time Wasted, Firm-level Evidence from the WDR Survey

	1	*2*	*3*	*4*	*5*	*6*	*7*
Dependent variable	*Regulatory burden*		*Time wasted*				
Time spent by management with bureaucrats	*All sample*					*Foreign participation sample*	*Domestic firms samples*
Bribery	.11*	.12*	.023*	.019*	.020*	.016*	.023*
	(.01)	(.01)	(.002)	(.003)	(.003)	(.006)	(.004)
Unpredictability				.014*	.015*	.008	.018*
				(.005)	(.005)	(.009)	(.007)
Regulatory burden				.018*	.018*	.016*	.019*
				(.003)	(.003)	(.005)	(.004)
Large firm		.04			.008		
		(.04)			(.007)		
Foreign participation		.06			–.012#		
		(.04)			(.007)		
Country fixed effects	Yes(73)	Yes	Yes(73)	Yes(73)	Yes(73)	Yes(71)	Yes(73)
Sector fixed effects	No	Yes	No	Yes	Yes	Yes	Yes
No. obs	3642	3498	3564	2993	2932	1048	1897
Adj. R^2	.05	.05	.082	.102	.105	.127	.087

See note to Table 1.

6. Possible Perception Bias

A potential problem with the above regression is the possibility of perception biases that may correlate across survey questions. Suppose that firms A and B pay exactly the same amount of bribes, and their managers spend the exactly the same amount of time with government officials. If the manager in firm A happens to have a bad feeling toward the government, he may give a worse rating on both corruption and management time questions in the survey. If this happens, we may mistakenly think that the answers from these firms indicate a positive relationship between bribery and the time managers spend with officials even though none exists by our initial assumption. Note that such a perception bias could be a problem for many survey-based research efforts.

To address this concern, we construct a measure of perception bias at the level of individual respondents based on how the respondents rate the quality of arguably identical public goods. We label our measure as "Kvetch[4]," after the Yiddish expression for habitual complainer.

Let us start with the GCR97 survey. In order to ensure robustness of our subsequent regression results we construct three Kvetch measures using incrementally more questions from the survey. "Kvetch1" is the deviation of individual respondent's answer to question 4.01, "overall infrastructure in your country" is "worse than in your major trading partners," from the average answer from all respondents in that country. A high number implies a greater tendency to gripe.

"Kvetch2" is an equally weighted average of the individual answer's deviations from the mean for question 4.01 (described above) and question 4.12 ("government budget neglects infrastructure investment").

"Kvetch3" is an equally weighted average of the individual answers from the national mean for four questions, 4.01 and 4.12 described above, plus 4.09 ("your country suffers from severe power shortage") and 4.11 ("warehousing, storage facilities, and distribution networks are grossly inadequate"). Again, a high number implies a greater tendency to gripe.

We include these measures, one by one, in our regressions in order to control for the possibility that some respondents are more likely than others to exaggerate how bad government officials are on every question. The objective is to see if the positive association between the time managers spend with government officials and perceived corruption level reported earlier would go away with this control.

Note that the quality of the public goods covered by the Kvetch measures, particularly "Kvetch3," may, to some degree, be "customized" for exactly the same reason as our theoretic story. Therefore, these measures may over-correct the perception bias. In other words, there is a risk that the positive association between the time managers spend and corruption disappears when the Kvetch measures are added into the regressions even when the true relationship is positive.

Table 5 reports the regression results. All three kvetch measures have positive coefficients in all regressions, and eight out of nine of them are statistically significant. Including the Kvetch measures in the regressions tends to reduce the point estimates on the bribery coefficient relative to the comparable specifications without Kvetch (Table 1). This is consistent with the hypothesis that perception bias may be present. However, even after controlling for the perception bias, the positive correlation between bribery and effective red tape does not go away.

We apply a similar idea to the WDR sample. First, we also construct three measures of perception bias which incrementally includes more questions from the

[4] According to Merriam Webster's Collegiate Dictionary, Kvetch (a Yiddish word) as a noun means a habitual complainer. It can also be used as a verb to mean "to complain habitually: GRIPE."

surveys. “Kvetch1” is an equally weighted average of the respondent’s ratings (on a one-to-six scale with one being the best and six the poorest) of the following three public goods: the general condition of roads, the efficiency of mail delivery, and the quality of public care provision.[5]

Table 5. Controlling for Propensity to Gripe, GRC97

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Dependent variable	*Regulatory burden*			*Regulatory discretion*			*Time wasted with bureaucrats*		
Bribery	.19*	.18*	.16*	.22*	.20*	.17*	.17*	.16*	.15*
	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)
Regulatory burden							.23*	.23*	.22*
							(.02)	(.02)	(.02)
Regulatory discretion							.21*	.20*	.19*
							(.02)	(.03)	(.03)
Large firm	.01	.02	.01	–.03	–.00	–.02	–.14#	.13##	–.14##
	(0.08)	(0.08)	(.08)	(.06)	(.06)	(.06)	(.08)	(.08)	(.08)
Foreign firm	–.03	–.04	.03	–.04	–.05	–.03	–.15*	–.14*	–.14*
	(.060	(.06)	(.06)	(.05)	(.05)	(.05)	(.07)	(.07)	(.07)
Kvetch 1	.12*			.20*			.018		
	(.02)			(.02)			(.026)		
Kvetch 2		.21*			.33*			.084*	
		(.03)			(.02)			(.033)	
Kvetch 3			.29*			.44*			.140*
			(.03)			(.03)			(.04)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs/R^2	2742/.07	2751/.07	2751/.08	2744.30	2754/.29	2754/.27	2726/.21	2735/.21	2735/.21

*, #, and ## denote significance at the 5, 10, and 15 percent levels, respectively.

“Kvetch2” is an equally weighted average of the respondent’s ratings (all on a one-to-six scale with one being the best) of the following four public goods: general rating of the efficiency of government in delivering services right now (question 25, part 1, in the WDR survey), plus the three questions covered in “Kvetch1.”

“Kvetch3” is an equally weighted average of the ratings of six questions: in addition to the four public goods covered in “Kvetch2,” we add “frequency of power outages” and “time it takes to get a public telephone line connected” (questions 23 and 24, respectively, in the WDR survey).

Next, we repeat the key regressions in Table 4 with the three Kvetch measures added one by one. The regression results are reported in Table 6. As we can see, the Kvetch variables are positively correlated with the measures of red tape (regulatory

[5] Question 22 b-d, respectively, in the WDR97 survey.

burden and the time firm managers spend with government officials), and their inclusion generally reduces the coefficient on the bribery variable. This suggests that part of the correlation between reported effective red tape and reported bribery frequency may indeed relate to the Kvetch effect. However, in all cases, the coefficients on the bribery variable remain positive and statistically significant, suggesting that the perception bias due to differential grumpiness is not the driving reason for our earlier findings.

Table 6. Controlling for Propensity to Gripe, WDR Survey

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Dependent variable			*Regulatory burden*					*Time spent with bureaucrats*	
Bribery	.10*	.10*	.10*	.07*	.06*	.06*	.023*	.023*	.023*
	(.01)	(.01)	(.01)	(.02)	(.02)	(.02)	(.003)	(.003)	(.003)
Unpredictability of bribes				.06*	.03	.03	.019*	.017*	.016*
				(.03)	(.03)	(.03)	(.005)	(.005)	(.005)
Regulatory burden							.015*	.015*	.015*
							(.003)	(.003)	(.003)
Large firm	.05	.04	.04	.05	.05	.05	.003	.002	.003
	(.05)	(.04)	(.04)	(.05)	(.04)	(.05)	(.008)	(.007)	(.007)
Foreign participation	.04	.06	.06	.05	.06	.07#	–.0070	–.010##	–.010##
	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.0066)	(.006)	(.006)
Kvetch1	.14*			.14*			.0010		
	(.02)			(.02)			(.0035)		
Kvetch2		.18*			.18*			.0034	
		(.02)			(.02)			(.0038)	
Kvetch3			.20*			.20*			.0074#
			(.03)			(.03)			(.0043)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. obs.	3260	3484	3487	3283	3475	3478	3121	3298	3298
Adj. R^2	.05	.06	.06	.05	.07	.07	0.103	0.111	0.106

See notes to Table 1.

7. Conclusions and Implications

If bureaucratic burden and delay are exogenous, bribe payments may help firms reduce the effective burden and delay they face. In a more general equilibrium in which regulatory burden and delay are endogenously chosen by the bureaucrats in order to extract rents, more bribe payments will not be associated with less delay and lower burden. In a simple model, we show that the contrary can be true: the bribes firms have to pay and the effective harassment they face in equilibrium can be positively correlated.

In the second part of the paper, we examine some evidence from three large firm-level surveys, focusing on the relationship between bribe payments and a variety of measures of official harassment (management time wasted with bureaucracy, regulatory burden, and cost of capital). The evidence suggests that there is no support for the "efficient grease" hypothesis. In fact, a consistent pattern is that bribery and measures of official harassment are positively correlated across firms.

While the surveys at hand have some clear advantages for our purposes, by asking thousands of firms throughout the world about the very variables we are interested in, the potential problems with such surveys ought to be explicitly taken into account. Chief among them is the possible perception bias, given that the survey does not elicit hard numbers from the respondents but only ratings on an index. We have proposed and implemented an approach to deal with perception bias and found that the results are still robust. Future work with more precise measures of bribery (and other variables) could help us obtain more accurate answers.

The results in the paper have important policy implications. Just to clarify, this paper does not say that a bribe-paying firm in a corrupt environment is individually irrational. Rather, it says that the business community as a whole can benefit from international laws that strengthen their ability to credibly commit to no-bribery even if an individual firm may find it otherwise optimal to bribe in a corrupt environment. Such laws may not only reduce bribe payment, but may also reduce the actual harassment firms face in equilibrium.

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