8/31/98, December 8, 1998

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 bribe helpful to reduce the beaucratic red tape it faces. The "efficient grease" hypothesis goes one more step, asserting that corruption can therefore improve economic efficiency and fighting corruption would be counter-productive. This need not be the case. In a general equilibrium in which regulatory burden and delay are endogenously chosen by the bureaucrats in order to extract rents, bribery and beaucratic harassment may be positively, rather than negatively, correlated, and government or international actions to reduce corruption can in fact help to reduce the beaucratic harassment firms may face.

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 face more bribe demand are also likely to spend more, not less, management time with bureaucrats negotiating regulations, and face higher, not lower, cost of capital.

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We thank Rafael Di Tella, Jim Hines, Dani Rodrik, Susan Rose-Ackerman, and Ray Vernon for helpful discussions, and Pablo Zoido-Lobaton and Greg Dorchak for efficient research and editorial assistance. S-J Wei thanks the NBER International Taxation Program for providing partial research support for the project; Kaufmann thanks the Harvard Institute for International Development for initial research and data support while he was a visiting scholar at Harvard. The views in the paper are those of the authors and may not represent those of any of the institutions they are or have been associated with.

1. Introduction

United States' Foreign Corrupt Practice Act 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].

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)

That view has not been an exception, and political scientists have not been alone over 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 in many 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 respected Journal of Political Economy not long ago demonstrated the efficiency-enhancing role of corruption: by using a queuing model, Francis T. Lui (1985) showed that the size of bribes by different economic agents could reflect their different opportunity cost. Hence, like an auction, a license or contract awarded on the basis of bribe size may achieve Pareto-optimal allocation.

This paper examines one such theory, which we label as the "efficient grease payment" theory, that bribe payment can "grease the wheels of commerce," or campaigns by governments or international organizations to combat corruption can be counter-productive. For example, the U.S. FCPA or the OECD convention, if binding on the firms' behavior, could do harm to economic

[1] The OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions.
It still needs to be ratified by the individual parliments of the singatory countries.

efficiency. We argue that this "efficient grease" theory rests on a crucial assumption that should not be taken for granted. The assumption is that the 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 partial equilibrium in nature, and may not hold in a general equilibrium.

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 bureacratic regulations and bribery. More recently Banerjee (1997) has formalized certain aspects of that relationship, while Bardhan (1997) in his excellent survey paper on corruption (1997), 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, Susan Rose-Ackerman (1974 and 1978), Shleifer and Vishny (1993 and 1994), and Bliss and Di Tella (1997), among others, have modelled problems of corruption. In particular, Shleifer and Vishny also make the point that a country's regulatory burdern may be endogenously exploited by corruption-prone officials for the purpose of extracting bribes. We extend their argument half-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.

On empirical ground, Mauro (1995), Hines (1995), Kaufmann(1997a), Tanzi (1997) and Wei (1997a) have shown the negative effects of corruption on economic growth, business development, on the driving firms to the unofficial economy, on public expenditures, and on domestic and foreign investment.

There is also a substantial non-technical and illuminating work on the consequences of corruption, such as in Klitgaard (1990). Andvig (1991) and, more recently, Bardhan (1997), Rose-

Ackerman (1997) and Ades and Di Tella (1997) also 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 statistic evidence. The empirical papers to date have generally employed some country-level corruption perception index and investigated its consequence on various measures of economic performances for the whole country. In comparison, this paper will use data from three worldwide firm-level surveys, focusing on the interaction at the micro-level between the firms and the public officials.

The organization of the paper is as follows. Section 2 presents a model demonstrating how the "efficient grease" theory may lose validity. Section 3 describes the data set used in our empirical work. Section 4 discusses various empirical results. Section 5 concludes the paper.

2. A Simple Model

In terms of the effect of corruption on firms' incentive to invest, one can easily imagine the channel through which corruption (or bribe-taking by officials) can hurt business. If bribes can be viewed as a sort of distortionary tax, then an environment with more severe corruption would have less investment for the same reason that distortionary tax discourages investment.

When does a bribe grease the wheels of commerce?

Those who think that corruption may play a positive role do not think that bribes should be simply regarded as a distortionary tax. Rather, they argue that bribes should be regarded as an auction price through the firm with the highest willingness to pay would pay the highest bribe and get the project. The resource allocation in the end is still efficient. They also argue that bribes allow firms to evade bad or excessive regulation and can be viewed a channel of effective deregulation.

To illustrate the point, consider the problem of a firm in a rigid and excessively regulated country. For simplicity, let us assume that the firm uses one input, capital, denoted by x, and produces one output with a conventional (twice differentiable, increasing and concave) production function, f(x). The firm's objective is to maximize after-regulation and after-bribery profit,

$$\Pi_k = g(h, b_k)\, f(x_k) - c\, x_k - b_k$$

where h and b are parameters representing the degree of bureaucratic harassment faced by the business sector (e.g, a distortionary tax), and the rate of bribe payment, respectively. The unit cost of input, c, is a constant.

g(h, b) is a function that represents how much firms profit suffer as a result of excessive regulation or bureaucratic harrasment, and how might bribery helps to mitigate this. The function, g(h,b), should have a number of intuitive properties. First, g(h, b) is decreasing in h, implying that, as the bureaucratic harrassment increases, the firm gets to keep a declincing share of its output. Second, g(0, 0)=1, meaning that without harrassment including tax (and bribery), the firm gets to keep all of its output. Third, g(∞, 0)=0, meaning that the firm would lose all of its output if the harrassment is infinite. Fourth, g(h, b) is an increasing function in b, meaning that more bribery can help the firm to keep a larger share of its output. And finally, g(h, b) is concave in b, which is a technical assumption to ensure that a profit-maximizing b exists.

As an example,

$$g\ (h\ ,\ h) = e^{-[\ h\ -\ \gamma\ \ln\ (b+1)\ ]}$$

This function satisfies all of the properties stated above.

Notice that the government harassment function, g(h, b), is pre-multiplied on revenue, g(x), rather than on the profit. This is intended as a simple way to capture the idea that the bureaucratic harassment (e.g., tax, regulation, etc.) is generally distortionary to firm's production decision.

Of course, the profit-maximizing firm would optimally choose the input level, x, and bribe rate, b, to satisfy the following first order conditions:

$$g(h, b)\, f'(x) = c$$

and

$$f(x)\ \frac{\partial g(h, b)}{\partial b} = 1$$

In general, the optimal bribe rate, b, is not zero. That is, holding the harassment rate constant, the

firm is better off with some bribe than with no bribe. This, of course, is a version of the "grease payment" theory that bribes help speed up the wheels of commerce.

When does corruption inhibit commerce?

An important assumption in the above theory is that the level and scope of government tax and regulation (i.e., official hassle) can be taken as given, exogenous, unresponsive to the firm behavior. We would argue that once one allows for regulation or tax-setting behavior to be endogenous, the "efficient grease payment" theory can break down. In other words, we intend to show that the theory is valid in a partial equilibrium context like the last subsection, but not in a general equilibrium framework.

More specifically, we show that firmst that are expected to pay more bribes are also those that will face more red tapes in equilibrium. We develop a simple model that delivers this result. In our model, a crucial assumption is that firms may have different levels of commitment ability with regard to the maximum bribe they would pay. That is, they can commit to pay b* dollars or less, but no more. This commitment ability may result from the firm's characteristics (e.g., company history and reputation), industry characteristics, alternative opportunities, or even the source of capital. For example, in a corrupt host country, American firms may be better able to commit not to give bribes than Japanese firms because they can cite the U.S. Foreign Corrupt Practices Act which would penalize American firms or even jail corporate officers if the firms pay bribes to foreign officials.

In our model, corrupt officials design regulation and bureaucratic delay to extract bribe payments. They will impose sufficient delay and regulation to extract all the rents that firms are willing to pay that without violating the firm's commitment ability. In the equilibrium, the bribe payment is positively correlated with the bureaucratic delay and regulation (rather than negatively related as the grease payment argument would predict).

We now turn to the model. Consider a Stackleberg game. The corruption-prone bureaucrats move first to choose bureaucratic delay to maximize bribe intake, and firms who are price takers move next to choose the bribe payment in order to maximize the after-bribe profit.

Let h_k be a harassment rate that the bureaucrat can impose on a firm k. It is considered here firm-specific, although we omit firm subscript to simplify the notation. Let b_k be the amount of bribe the firm pays to the corrupt bureaucrat.

We solve for the equilibrium by backward induction. Consider first the the problem faced by the firm.

Firm:

For simplicity, we specialize the harassment function, g(h, b), to be exp{-[h - γ ln(b+1)] }, where $0 < \gamma < 1$, and the production function, f(x), to be x^{α} where $0 < \alpha < 1$. For future convenience, assume that $\alpha+\gamma > 1$. The firm k's post-harassment, post-bribe profit is given by

$$\max \Pi_{k,a} = e^{-h_k + \gamma \ln (b_k + 1)} x_k^{\alpha} - c\, x_k - b_k$$

The first order conditions yield the optimal amount of bribe firm k would choose to pay (if without any constraint on the maximum bribe) and optimal capital stock, which would satisfy the following equations:

$$\ln (b_k + 1) = \frac{h_k + \theta_k}{\alpha + \gamma - 1}$$

or

$$b_k = e^{\frac{h_k + \theta_k}{\alpha + \gamma - 1}} - 1 \equiv b_k^{\#} (h_k)$$

where

$$\theta_k = \ln (\gamma^{\alpha - 1} c_k^{\alpha} \alpha^{-\alpha})$$

and

$$x_k = \frac{\alpha (b_k^{\#} + 1)}{\gamma c_k}$$

Suppose b_k^* denote the maximum bribe that firm k would pay. That is, it can commit not to pay

anything above b_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:

$$b_k = \min \{ b_k^*, b_k\#(h_k) \}$$

Bureaucrat:

For now, let us assume that bureaucrats set harassment rate, h_k, (e.g., tax, license, regulation and delay) solely for the purpose of extracting bribe payment. There has to be a small price that the bureaucrat has to pay to increase the hassle rate, h_k. Otherwise, nothing prevents her from always imposing infinite amount bureaucratic delays. This price could be the result of penalty if she is found to impose excessively unreasonable burden on the firm, or that of her superior's concern about the firm's profit.

Let the bureaucrat maximize the following objective function

$$\max \quad U(b_k - p h_k)$$

Where p is the (linear) marginal penalty on the bureaucrat for raising the harassment rate, and U(.) is increasing, concave and twice differentiable.

Let us assume that the bureaucrat understands the firm's commitment ability. This game has a simple solution. As long as the penalty is not too large[2], specifically,

$$p \leq \frac{b_k^*}{(\alpha + \gamma - 1) \ln (b_k^* + 1) - \theta_k}$$

then, the bureaucrat would choose to impose just enough harassment to induce the firm to pay the maximum amount of bribe it is prepared to pay, namely, b_k^*. This implies that, in equilibrium, $h_k = (\alpha + \gamma - 1) \ln (b_k^* + 1) - \theta_k$ and $b_k = b_k^*$. In other words, across the firms, equilibrium

[2]That is, p is such that it is still worthwhile to impose harassment and take the bribe, i.e., $b^* - ph \geq 0$.

harrassment, h, and bribery, b, would be positively correlated.

The important feature of this story is that, if one allows regulation, tax, and bureaucratic delays to be endogenously determined to maximize rent-seeking, then the equilibrium harassment and the equilibrium bribe are positively related across firms, rather than negatively related as the "efficient grease payment" theory would have predicted.

Recap

For an individual firm, tax, regulation and bureaucratic delay are taken as given. In that environment, bribes may help the firm to reduce the distortionary regulation it faces. So bribe payment and severity of effective regulation is negatively related.

In our general equilibrium story, tax, regulation and bereaucratic delay are endogenously determined by the bureaucrats explicitly to extract rents. In this case, bureaucrats will raise regulatory burden and lengthen the bureaucratic delay on those firms from which they can extract more rents. In equilibrium, more bribe payment does not bring forth less delay or lower regulatory burden.

Our general equilibrium story has an important assumption which is that regulation and delays are erected by the bureaucrats to extract rents. In reality, many of the regulation are erected for this purpose. Others are originally put in place for a different, possibly good, reason, but kept in place because bureaucrats find them useful to extract rents. Of course, in principle, there can be other regulation or bureaucratic burden, which may be deemed excessive from an efficiency point of view, are nonetheless left in place for reasons unrelated to rent-seeking.

To sum up, if non-rent-seeking type of regulatory burden dominates, then the "efficient grease" theory can be valid, and bribes and regulatory delay may be negatively correlated. On the other hand, if bureaucratic regulation and delay are predominantly motivated by rent seeking, more bribes will not be associated with less regulatory burden in equilibrium.

3. Data

In the empirical part of the paper, we examine the relationship between bribe payment and some measures of bureaucratic harassment. There are many types of harassment one can think of. We will focus on one that we can collect data (or proxy) on: the time senior managers of firms have to spend

negotiating with bureaucrats. In addition, we will look at a proxy for the cost of capital reported by the firms under the assumption that the higher the harassment, the higher the cost of capital.

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

The two GCR survey 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 2827 firms in 58 countries, of which 2381 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 1537 firms (1503 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 3866 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 GCR96, and contains 26 countries not in the WDR97 survey, whereas the WDR97 survey contains 41 countries that are not covered by GCR97. For a complete list of country coverages in the three surveys, please see Appendix 1 (**to be added**). 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 on the variable ratings by the respondent in a scale of 1 to 7. 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, policy 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 firms that give a worse rating on their reported perceived incidence of bribery in the survey do indeed find themselves in a position to have to pay 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 3700 firms, Question 14 asks: "Is it common form 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 1-6 scale with 1 meaning "always" and 6 "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% of its time dealing with government bureaucracy." An answer of "4" (in the scale of 1 to 7) is calibrated to mean the management has spent roughly 30% of time. We use 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%, (2) 5-15%, (3) 15-25%, (4) 25-50%, (5) 50-75%, and (6) more than 75%." In our regressions, we re-code the answer (1) to 2%. From (2) to (5), we use the midpoint. For (6), we use 80%.

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

Cost of capital . Only in GCR 1996 there was a question (4.09) which asked firms to rate in a scale of 1 to 6 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 a scale ranging between 1 to 7.

Regulation. We extract two aspects of government regulations from the GCR97 survey. The first one, which we label as "regulatory intervention," is derived from Question 2.02, which asks the respondents to rate on a one-to-seven basis 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."

GDP per capita in 1994 comes from the World Bank official data base.

Rule of Law variable for 1995 comes from ICRG Political Risk Services Index, of which rule of law index rating for each country, by their experts, is one of their variables. We also use this variable for controlling for country conditions.

Other Country-specific survey data. In addition, we also report on some more in depth country specific surveys, where direct quantification of time costs incurred by firm and/or bribing costs has been

estimated, such as in the case of surveys in Ukraine (Kaufmann 1997a) or some African countries (HIID ACS 1998, forthcoming).

4. Empirical Findings

We turn to the empirical examination on the relationship between corruption payment and a proxy for one type of bureaucratic harassment on the firms. In particular, we look at the time cost that the management of the firms have to incur with government official negotiating interpretations of regulations and so on. The "efficient grease payment" hypothesis would suggest a negative correlation between bribes and the wasted time: firms that pay more bribes would waste less time in securing licenses. That is why many of the "grease payments" are also called "speed money."

4.1 Results from the Global Competitiveness Report Surveys

Corruption and Managers' Time Wasted

First we review what cross-country comparisons tell us, on the basis of the GCR 1997 data on means for 58 countries. A simple scatterplot for country means reveal a positive and significant correlation between bribery and management time wasted with public officials (Figure 1). On the basis of simple OLS regressions, Table 1 summarizes the associations between the country average of wasted time and country average of perceived level of corruption. In Column 1, aside from an intercept (not shown), we also included in the regression the country's per capita GDP in logarithm as a control variable. The coefficient on the corruption variable is positive (0.29) and statistically significant at the five percent level. Firms in countries where bribery prevails do not end up saving time in dealing with bureaucrats, even controlling for level of development. This is consistent with our endogenous corruption story, and inconsistent with the partial equilibrium "grease payment" hypothesis.

INSERT TABLE 1 ABOUT HERE---------

Yet an important concern with the regression in the first column of table 1 is the possible omission of relevant variables. In particular, bad and excessive government regulation may indeed be the root

cause both for high bribe payment and for management time wasted in complying (or attempting to evade) the regulation. To control for this, we include a measure of regulatory burden in Column 2 of Table 1. Indeed, the coefficient on the "regulatory burden" measure is positive and significant, suggesting that average wasted time across countries is certainly positively correlated with the degree of government intrusion in the economy. Furthermore, the coefficient on the corruption variable is reduced, suggesting part of the original positive association is indeed due to a common factor, namely, degree of regulation. However, the coefficient on the corruption variable remains positive and statistically significant. Even after controlling for the level of regulations at the country level, bribes do not speed up government service. A similar pattern remains when we add per capita GDP (and regulations) as a control variable in the country means sample, although the positive relationship between bribery and time spent with bureacrats loses its significance. Yet even in that specification there is no evidence of a negative relationship between bribery and time costs.

Cross country regressions utilizing average indices can have serious drawbacks, both masking the richness of individual observations (and impairing the use of further country and industry controls), and also potentially biasing the results. For instance, there may be other country characteristics (in addition to regulation) that may be correlated both with corruption and wasted time. Maybe in certain settings bribing is a more commonly accepted practice at the same time that wasted time with officials is tolerated more. Or it could be that the particular differences in characteristics of firms in different countries (industry they operate on, domestic producer or foreign investor, etc.) could be driving much of the results.

Thus, we turn next to examine if, within a country, there is any association at the firm level between time-wasted and bribe burden (as measured by firm-specific corruption level). Table 2 reports on a basic set of regressions of the determinants of time spent by the firm's management with public officials. Column 1 in that table is the most basic univariate regression, based on all 2761 firms in the GCR 1997 survey. The coefficient is positive and statistically significant. In Columns 2-6, we control for country fixed effects and a variety of other factors for the overall sample, such as the degree of regulatory interventions, regulatory discretion and enforcement, as well as basic firm specific characteristics such as whether it engages in FDI and how big it is. Overall we see that controlling for the fixed effects, i.e. special country characteristics, does reduce the magnitude of the coefficient on bribery, but only marginally, and the significance of the coefficient remains very high. Similarly, adding additional controls, also reduce the magnitude of the coefficient somewhat, yet it remains significantly positive.

TABLE 2 ABOUT HERE----------

We note that aside from some common country-wide regulations (e.g, federal corporate income tax – although bureacratic discretion may imply differential application of the same de jure code to different firms even in these "country-wide" variables), firms also face explicit firm-specific harassment (i.e., fire inspection fee, fire inspection frequency, etc.) from the regulators. The positive correlation indicates that at the firm level, those firms that (perceive to) have paid more bribes also waste more management time with the regulators.

Yet again, accounting for the possibility that the positive association between bribes and wasted time is caused by their joint association with the level of government regulation, regulatory measures were added in columns 3-6 in table 2. In all cases, not surprisingly, we do find that managers from more regulated firms also waste more time with officials. More interesting is to observe the robustness of the relationship between bribery and time costs across specifications. In fact, in column 10 we selected a subsample of only those firms operating under a highly regulated environment, to see whether the "grease" argument may have some residual support at least within particularly burdensome red tape settings, consistent with the notion that the "grease" argument may particularly applicable to certain developing countries with substantial red tape. Again, the converse is the case: in fact the positive and highly significant empirical relationship between bribery and time costs is the same for firms in highly regulated settings as it is for those firms in less regulated environments. In other words, bribe payment does not reduce time wasted on bureaucrats irrespective of whether the setting is a poor, over-regulated developing country, or a wealthier country with relatively less red tape.

Some of the results reported above may be driven by firm-level characteristics. Thus, we also performed empirical analysis controlling for possible interactive effects as well as controlling for sectors the firm operates in. For instance, omitted variable bias may have affected our previous results if the positive relationship we observe was due to different propensity to bribe in different industries (construction versus education, for instance). Columns 5-6 of Table 2 present the results with all these additional controls and interactive effects. Neither controlling for industries of origin ("sectors") nor interacting such sectors and other characteristics such as size and FDI with the bribery variable affects the positive coefficient and significance of the bribery variable itself. As we see in Columns 7-10, this

result holds across a variety of subsamples.

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 suggest 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. Similarly, one sometimes also hears an Latin America exceptionalism hypothesis.

In Table 3, we examine these exceptionalism hypotheses. The evidence rejects them strongly.

TABLE 3 ABOUT HERE----------

Corruption and Cost-of-Capital

As a check for the robustness of the relationship between bribery and costs to firms, we also draw from the data on cost of capital as rated by the firms in the 1996 GCR survey. That survey did not ask the question on time costs, yet in contrast with the GCR 1997 it did ask about cost of capital. It also asked a question about incidence of bribery and corruption. Table 4 presents the OLS regressions on the determinants of the reported rating of the cost of capital by the firm. Column 1 presents a simple regression where corruption is the only regressor (other than the intercept). The coefficient on corruption is positive and significant: firms that (perceive to) have paid more bribes also (perceive to) have higher, not lower, cost of capital. This is inconsistent with the grease payment hypothesis. In fact, consistent with the previous results on time costs, the bribery variable is consistently positive and significant in explaining cost of capital. This holds across different specifications with different country controls, interaction effects, regressing only the subsample for highly bureacratic environments, etc. Note that in these specifications we have not added sectoral controls or other such firm level characteristics, which we have not obtained for GCR 1996.

TABLE 4 ABOUT HERE----------

Results from the World Development Report Survey

Table 5 re-examines the relationship between corruption frequencies and time wasted by senior managers with government officials. The first three columns report regressions on the whole sample. 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 to have paid more bribes also have more management time spent negotiating with the bureaucracies, which is inconsistent with the beneficial grease hypothesis. This is true after we control the 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 countries with relatively high predictability of corruption. Again the same pattern appears in the subsample of countries in which birbe payments are high, or in the the sample of Latin American and Carribeans, and Asian countries.

In Table 5, we also look at more ways to break the data into subsamples and control variables. In Columns 1-2, we see that, bribery is again a clear, statistically significant, positive predictor on the amount of the time managers spend with officials. This finding agrees with our previous discussion with the GCR sample.

One may worry about the possibility that both time spent with the officials and the need to pay bribes are related to the burden of regulations. Furthermore, a disorganized corruption market may also induce people to both pay more in bribes and spend more time negotiating with the officials. In Column 3, we include the unpredictability of bribery and burden of regulations as control variables. Both of them are significant at the five percent level, and sensibly positively correlated with the amount of time the managers waste with bureaucrats. Importantly for us, the positive association between bribery and time wasted does go down a bit. However, they remain positive and statistically significant.

In Column 4, we include a large firm dummy and foreign participation dummy as additional control variables. The firm size dummy is insignificant, but the foreign participation dummy is negative and significant. In other words, foreign firms which are better situated to threaten to leave if mistreated need to waste less time with the officials. This is consistent with the commitment story in our previous section.

Columns 5-10 split the data into various sub-samples of interest. The overwhelming observation one can make is that the positive association between corruption and time wasted are clearly positively

related.

Column 6 in Table 5 restricts the sample to those countries with a highly predictable policy environment. The regression includes country fixed effects, sector dummies, and interaction between bribery and the sector dummies. We see that a positive correlation between bribery and time wasted by the management prevails in this subsample, refuting the beneficial grease hypothesis even in an environment with relatively predictable government policies. Column 9 restricts the sample to those high corruption observations. Again, it has sector dummies, country fixed effects, and interaction between bribery variable and the dummies. Firms that report to have paid more bribes also have more management time wasted negotiating with the bureaucracy in this subsample.

Possible Perception Bias.

A potential problem with the above regression analysis stems from possible survey respondent perception bias. There are two levels at which such perception bias can operate. One is country-wide perception bias; in some countries their citizens or firms may tend to "complain" more than in others even in the face of the same objective circumstances. This problem of index rating "benchmarking" may then result in a spurious association between bribery and perceived costs, simply driven by the tendency to complain more across the board in some settings than in others. Further, there could be such similar bias at the individual firm level: those firms that tend to rate everything negatively, as opposed to other firms, in similar objective circumstances, giving across the board higher ratings to the various variables we are utilizing in our analysis. In these cases, it is possible then that (at least partly) spurious positive association between corruption rating, management time wasted, and cost of capital may be generated. [3]

One approach to test whether this potential perception differences is biasing our results is to either control for, or select, the sample of firms for which a more internationally calibrated benchmark can be expected, such as those engaged in foreign investment, or those who export the bulk of their production, or for those firms headquartered abroad. In fact, neither of those controls or subsamples affect the results in a meaningful way, as seen for instance in table 1 above, columns 8 and 9 (other similar results, such as for exporters, not shown here but available upon request).

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[3] For instance, even if wasted management time and corruption payment are identical across firms, those who hate corruption the most may perceive corruption to be worse that it is actually is. At the same time, they perceive to have wasted more time than they actually have. This could produce a spurious positive correlation between the two.

Further, looking at the raw data responses of the individual survey questionnaire is also telling: at both the firm level, and thus for country averages as well, there are major differences as to how negatively or positively different variables are rated throughout the comprehensive questionnaire; the within-questionnaire variance in ratings can be rather large. Another suggestive indicator is to look at the results of the "high bribing" subsample only (or at the highly regulated/bureacratic intervention sample) presuming that by so doing we are controlling for the "highly negative overall perception factor", and see whether even within such controlled "complaining" subset the relationship between bribery and firms costs is sustained. As seen in previous tables, the coefficients are not altered in magnitude or significance. Neither they were, in fact, when simply controlling for regulations on the right hand side, which is an indirect (yet admittedly partial) way of controlling for the overall "complaining" factor. Finally, it is worth noting that controlling for country fixed effects, which cleans at least part of the different perception biases across countries, did not alter our results significantly.

So far, we have look at perception bias at the country level -- the tendency for respondents in one country to exaggerate bad things relative to those in another country. We now turn to perception bias at the individual firm level. Suppose that firms A and B have to pay exactly the same amount of bribe, and that their managers have to spend the exactly the same amount of time with government officials. If the manager in firm A who answers the survey questions happen to have a bad feeling towards the governemnt, he may give a worse ratings on both corruption and management time quesitons. If this happens, we may mistakenly think that the answers from these firms indicate a positive relationship between bribery and time the managers spend with officials even though none exists by our initial assumption.

To address this concern, we construct a measure of perception bias at the level of individual respondents, labeled as "Kvetch[4]," based on how the individual respondents may rate differently the quality of a common public good. In fact, we construct three "Kvetch" measures from the GCR survey.

"Kvetch1" is the deviation of individual respondent's anwer 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 neglets infrastructure

[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."

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 imply a greater tendency to gripe.

We include these measures, one by one, in our regressions in order to control for the possibilities 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 early would go away with this control.

Note that 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 6 reports the regression results. All three kvetch measures have positive coefficients, and two of them are statistically significant. 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 time wasted does not go away.

Similarly, for the WDR sample, we also construct three measures of perception bias which use increasely more questions from the surveys. "Kvetch1" is an equally weighted avearge of the respondent's ratings (on a 1-6 scale with 1 being the best and 6 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].

"Kvetch2" is an equally weighted avearge of the respondent's ratings (all on a 1-6 scale with 1 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 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

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They are Quetion 22 b-d, respectively, in the WDR97 survey.

telephone line connected" (Questions 23 and 24, respectively, in the WDR survey).

Table 7 reports, for the WDR sample, the regresion results with the Kvetch measures as the additional regressors. As we can see, Kvetch1 has a negative coefficient and is statistically insignificantly different zero. Kvetch2 and Kvetch3 have positive coefficient, meaning that those respondents that give bad scores on the quality of public goods provision generally also report more management time with government officials. However, both coefficients are not different from zero at the ten percent level. Moreover, the coefficients on the bribery variable remain positive and statistically significant, suggesting the perception bias due to differential grumpiness is not the reason our early finding.

The above checks notwithstanding, the fact remains that the data is based on subjective ratings within an ordinal index. Thus, it is also important to complement such data and further check for possible perception bias by reviewing other sources of existing data. Such other sources, even if they lack the same broad cross-country coverage, have the advantage of gathering harder quantitative information on bribery and/or time costs than the GCR or similar perception-based surveys. One such data set comes from Ukraine (Kaufmann 1997a), another from a very recent survey in Africa (HIID-ACS 1998). In the 1996 in-depth enterprise survey of 150 firms in Ukraine, which inter alia elicited information on what bribe amount were required for different licenses, permits, tax assessments and other public services, it was found that the owner or general manager of high bribing firms (in terms of total annual monetary amounts) ended up spending about one-third more time with public officials in negotiations and other time costs than the low-bribing firms. Further, those high bribing firms also need to spend 75 staff weeks per year on other administrative staff time in dealing with bureacrats, as compared with only 22 staff weeks for low-bribing firms. The preliminary (and admittedly small sample, of about 20 observations per country) data being analyzed from some African countries is also suggestive in this context, as seen in table 3 below, and suggests that with

Table 8: Select Africa country responses on % time of owner spent with bureacrats

	% Time Wasted with Public Officials			
	Egypt	**Malawi**	**Tanzania**	**Zambia**
In High bribing firm	13%	13%	19%	25%

In Low bribing firm	5%	7%	5%	6%

These results from harder information from a selected group of countries broadly support the results based on the GCR surveys: more bribe payments are certainly not associated with a reduction in managers' time spent with regulators or other government officials. To the contrary. We need to underscore, however, that this data, while reflecting harder numerical information for some variables, show the results of simple correlations and thus it would be premature to infer clear causality.

5. Conclusions and Implications

In a partial equilibrium context in which bureaucratic burden and delay are exogenous, bribe payment may help firms to reduce the effective burden and delay they face. In a general equilibrium in which regulatory burden and delay are endogenously chosen by the bureaucrats in order to extract rents, more bribe payment will not be associated with less delay and lower burden. We develop a simple theoretical framework to suggest the contrast between the exogenous partial equilibrium ("grease") model as well as the endogenous general equilibrium ("sand") model.

In the second part of the paper, we examine some evidence from three large firm-level surveys, focusing on the relationship between bribe payment and management time wasted with bureaucrats, and bewteen bribery and cost of capital.

While the surveys at hand have some clear advantages for our purposes, such as questions asking thousands of firms throughout the world on the very variables we are honing in, its potential problems ought to be explicitly taken into account as well. Chief among them is the possible perception bias, given that the survey does not elicit hard numbers from the respondents but ratings in an index. We have conducted some controls and robustness tests with these variables to account for possible perception bias and found that the results are still robust vis a vis these tests. We have also looked at alternative data sets with harder numbers, even if the country coverage and firm sample is much smaller. The results are consistent. Nonetheless, we emphasize that this investigation is only a first step in an area where data and empirical analysis has been lacking, and therefore our conclusions from the empirical analysis provided above ought to be qualified accordingly. We believe that we can state with varying degrees of confidence conclusions at different levels.

First, and rather conclusively, we find that there is no evidence to indicate support in the data for the

"grease" argument. In other words, we do not find evidence that the business sector paying bribes helps them overall to reduce time waste or capital costs. Second, and somewhat more tentatively, we find evidence suggesting that the contrary may be the case, however: where the business sector pays more bribes they end up with higher, not lower, time wasted and cost of capital. Our results have important implications. The main one is on the "logic of collective action" for the business community to have external levers allowing them to credibly pre-commit to no-bribery. For instance, laws that help to increase firms' ability to commit against bribery, such as the international adoption of criminalization of foreign bribery (akin to the recent OECD resolutions, OAS anti-bribery pledges, the U.S. Foreign Corrupt Practices Act, etc.), not only can help to reduce corruption incidence, but also help to reduce the bureaucratic delays firms may face.

References

Ades, Alberto, and Rafael Di Tella, 1997, "National Champions and Corruption: Some Unpleasant Interventionist Arithmetic," forthcoming, The Economic Journal.

Andvig, Jens Christopher, 1991, "The Economics of Corruption: A Survey," Studi, Economici, 43: 57-94.

Bliss, Christopher, and Rafael Di Tella, 1997, "Does Competition Kill Corruption?" Journal of Political Economy, December, 5(105): 1001-1023.

Bardhan, Pranab, 1997, "Corruption and Development: A Review of Issues," Journal of Economic Literature, Vol. XXXV (September): 1320-1346.

Eliott, Kimberly Ann, 1997, Corruption and the Global Economy, Institute for International Economics, Washington DC.

Hines, James Jr., 1995, "Forbidden Payment: Foreign Bribery and American Business After 1977," NBER Working Paper 5266, September.

Huntington, Samuel P., 1968, Political Order in Changing Societies. New Haven: Yale University Press.

Johnson, Simon, Daniel Kaufmann, and Andrei Shleifer, "The Unofficial Economy in Transition", Brookings Panel of Economic Activity, Brookings Institution, Wash. D.C., forthcoming January 1998

Kaufmann, Daniel, 1997a, "The Missing Pillar of a Growth Strategy for Ukraine: Institutional and Policy Reform for Private Sector Development," in Peter K. Cornelius and Patrick Lenain, eds., Ukraine: Accelerating the Transition to Market, Washington: International Monetary Fund, pp 234-275.

Kaufmann, Daniel, 1997b, "Corruption: Some Myths and Facts." An early version was published in Foreign Policy, Summer 1997, pp114-131.

Klitgaard, Robert, 1990, Tropical Gangsters, BasicBooks.

Krueger, Anne O., 1974, "The Political Economy of Rent-seeking Society," American Economic Review, June, 64(3): 291-303.

Leff, Nathaniel H., 1964, "Economic Development Through Bureaucratic Corruption," The American Behavior Scientist, November, 8(2): 8-14.

Lui, Francis, 1985, "An Equilibrium Queuing Model of Bribery," Journal of Political Economy, August, 93(4): 760-781.

Mauro, Paolo, 1995, "Corruption and Growth," Quarterly Journal of Economics, 110: 681-712.

Myrdal, Gunnar, 1968, Asian Drama: An Inquiry into the Poverty of Nations, New York: Pantheon Books.

Rose-Ackerman, Susan, 1975, "The Economics of Corruption," Journal of Public Economics, 5617, June.

Rose-Ackerman, Susan, 1978, Corruption: A Study in Political Economy, New York: Academic Press.

Rose-Ackerman, Susan, 1998a, “Bribes and Gifts,” in Avner Ben-Ner and Louis Putterman, eds., Economics, Values, and Organization, Cambridge University Press.

Rose-Ackerman, Susan, 1998b. “Corruption and Development,” in Boris Pleskovi and Joseph Stiglitz, eds., Annual World Bank Conference on Development Economics-1997, Wahsington DC: The World Bank.

Shleifer, Andrei and Robert W. Vishny, 1993, "Corruption," Quarterly Journal of Economics, 108: 599-617.

Shleifer, Andrei and Robert W. Vishny, 1994, "Politicians and Firms," Quarterly Journal of Economics, November.

Wei, Shang-Jin, 1997a, "How Taxing is Corruption on International Investors?" The National Bureau of Economic Research Working Paper 6030, May.

Wei, Shang-Jin, 1997b, "Why is Corruption So Much More Taxing Than Tax? Arbitrariness Kills." The National Bureau of Economic Research Working Paper, November.

Not used
in Section 1

Yet so far the empirical work has generally focused on whether overall societal welfare is impaired by corruption or not. Even the growing strand of the literature challenging the notion that bribery can improve overall welfare has not challenged the implicit assumption that some significant groups in society stand to gain significantly from corruption – at the expense of others, who lose more, that is. This implicit assumption is of course uncontroversial in its logical extreme: at least some politicians or bureacrats who benefit directly from such practices and are not penalized will end up being materially better off. And without such clear beneficiaries of corruption it would not take place in the first place. However, within the broad spectrum of possible gainers and losers located between the extremes of selected politicians, on the one hand, and society as a whole, on the other, there is a variety of important groups of agents for which *a priori* it is not evident whether bribery ultimately benefits them or not. And this matters for policy and law. For instance, if the common implicit assumption that the business community as a whole must benefit from bribing (otherwise they would refrain from doing so) were to hold empirical scrutiny, the (adversarial) legal and enforcement implications that would follow would differ than if it were to be empirically found that the business community is a net "loser" instead from a strategy of bribing officials. In the latter, a case of cooperative collective action spearheaded by the business community may be warranted instead.

Hence, in this paper we undertake to explore in particular the question of the implications of bribing for the business sector, i.e. we look at the "grease" argument particularly focussing on the interactions between firms and public officials. As far as we know, previous work has not systematically looked at the "efficient grease payment" theory directly in the data: do bribes indeed help reduce the bureacratic burden and cost of capital facing the firms?

Table 1: Time Wasted and Bribery, Country Averages in GCR97 Survey

Dependent Variable: Queuing Time Index (1-7)	GCS97 Country Averages		
	1	2	3
Prevalence of bribes	.29*	.16*	.06
	(.09)	(.09)	(.11)
Regulations		.56*	.51*
		(.16)	(.16)
GDP per capita (log)	-.12		-.14#
	(.09)		(.09)
Adj R^2	.46	.54	.64
No. of Observations	53	58	53

Notes:

1) GDP variable in logs, other variables in step ratings between 1 and 7. Time costs (dependent variable), Bribes and regulation variables are from GCS97.

2) Standard deviation in parenthesis.

3) * denotes statistically significant at 5%, and # denotes statistically significant at 10%.