Evidence from the Firm:
A New Approach to Understanding Corruption

(Very preliminary draft for comments)

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Introduction

Due to its clandestine nature, most of what we understand about corruption comes from survey evidence and self-reported perceptions of corruption: this limits both the range of questions that can be asked, and the precision of answers that can be provided. This chapter proposes a new lens to understand corruption, using internal records collected from firms that pay bribes. We examine widespread corruption in three industries in an Asian developing country: procurement, pharmaceutical sales and construction. Using data of real bribes, we provide new estimates of corruption and study its relationship with organizational ownership.

Most current evidence of corruption comes from survey data, in which individuals and firms are asked about extra-legal payments made in the course of business and life.¹ Survey data has a range of advantages: the harmonization of phrasing of questions across surveys facilitates temporal and international comparisons; and surveyors have wide latitude in the type and nature of questions they ask (Kaufmann and Kraay, 2002). Surveys can also target representative samples: Svensson (2003), for example, found that a large fraction of Ugandan firms pay bribes, but that there was substantial variation in the size of bribe paid, even within industries.

However, there are also well-known limitations to survey data, as recall is not perfect (Rose-Ackerman, 2006). Moreover, there is convincing evidence that individuals under-report the frequency and magnitude of their misdeeds (e.g., Harrison and Hughes, 1997). Producers of survey-based data have taken these criticisms seriously: Kaufmann, Kraay, and Mastruzzi (2006), for example, point out that “objective” measures are noisy as well. Finally, we note surveys are well-suited for impressionistic data and simple characterizations,² but poorly suited for obtaining detailed, transaction-level data necessary to answer specific questions about the magnitude and functioning of corruption.

Over the past several years, we have carried out a research program that collects information from those who are among the most knowledgeable about corruption: the firms that pay bribes.

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¹ Two well-known corruption measures based on surveys are Transparency International’s Corruption Perception Index (See Lambsdorff [2006]) and World Bank’s Governance Indicators (See Kaufmann, Kraay and Mastruzzi [2006]).
² Questionnaires of corruption surveys typically include questions such as “How frequently do you think corruption is part of the business culture in your country of operation?” (Soreide, 2004)
have conducted interviews with business executives and in some cases obtained their internal records on bribery transactions, under the condition that their identity is protected. The first output of this research program is presented in Tran (2010), which demonstrates the impact of different procurement auction rules on the extent and depth of bribery.

In this paper, we exploit the internal records of three bribing firms to investigate the difference between corruption in public and in private organizations. In our samples, we find public organizations are pervasively plagued by corruption. Private organizations are also highly susceptible to corruption. This is especially true for organizations whose ownership and control is separated or diluted. We also show how bribing firms exaggerate their cost claims to cover up bribery expenses in their official accounting books.

To provide a context for and enrich the quantitative analysis, we provide qualitative descriptions of the exact nature of the mechanisms and practices of corruption, which in setting is an integral part of normal business process. This information was gained via interviews with the CEO or other responsible parties within bribe-paying firms, and represents a somewhat more systematic description than that is typically obtained in journalistic or other narratives.

Firms carefully track bribe payments for the same reasons they track other business expenses. They represent a significant cost of doing business. Since they are typically paid in cash, without a receipt, they may represent a temptation target for employee theft. Tran (2010) shows that bribes are often paid in stages as contract conditions are fulfilled, requiring a firm to keep track of what has been paid, and what must be paid. Finally, because firms cannot deduct the cost of bribes from their official income statements, tracking the cost of corruption provide firms guidance on how much to inflate other expenses, to avoid paying income taxes on the amount paid as bribes (bribes cannot be deducted for income tax purposes).

The data we present here come from “internal” accounting books provided by firms. In addition to recording bribes, the internal books are used to reconcile actual revenue and expenses with the set of books that is shared with the tax inspector. These hand-collected data were provided to the authors on the condition that the authors not reveal any information that could identify either the payer or the payee of any extra-legal payments. This data collection represents what we hope will become a new approach to understanding the economics of corruption.

**PUBLIC AND PRIVATE PROCUREMENT: WHICH ONE IS MORE CORRUPT?**

Procurement is an area known to be susceptible to corruption. Corruption in procurement is frequently discovered and surfaces on the news. A notable and recent case is that of Siemens admitting the payment of billions of dollars in bribery in many countries to obtain procurement contracts. Although much has been said about corruption in public procurement, we know little about the prevalence of corruption in private procurement.
This section exploits the records of kickbacks paid by an industrial supplier, across 1,737 procurement contracts from January 2003 to July 2007. This supplier imports several types of industrial parts from Europe and sells them to firms in the northern region of an Asian country. It has been in this business for more than 10 years and is currently one of the leading national suppliers in this competitive market.

There are 372 buyers with a range of ownership structures: the military, state-owned enterprises, and private and foreign firms. Because the equipment is used across a wide variety of industries, it provides a nice laboratory in which to compare the prevalence and level of corruption across different types of organization.

**PROCESS**

The marketing and sales process of this supplier consists of five main steps: identifying potential clients; approaching them; negotiating for a contract; entering into a contract; receiving payment and paying kickbacks. In the first step, to identify potential clients, the supplier looks for information in business directories, particularly in areas related to its products (heavy industries). It also has stalls at industrial exhibitions. The supplier tries to determine which firms are likely to buy its products.

In the second step, the supplier’s sales force approaches potential clients. For a new client, this is a lengthy process. Initially the salespeople contact the potential client to request a meeting. If the client agrees to meet, the salespeople make a presentation about the products to the CEO or head engineer. After this meeting, the salespeople follow up with several phone calls and possibly further meetings. Many of these efforts do not succeed because these firms already buy from other suppliers. After several contacts, some firms may agree to consider an offer from the supplier.

It might take a few rounds of offers before the client agrees to enter the third step – negotiating a procurement contract. They negotiate the price, quality, post-sales services, as well as a kickback if the client shows interest. The selling firm does not offer kickbacks on its own—rather, clients request a kickback; this request typically includes an indication of the size of the kickback sought. The supplier gives its salespeople a minimum price list and allows them to pay kickbacks up to 5% of the value of the contract. For any price lower than the listed prices, or for a kickback greater than 5% of the contract values, the salespeople are required to ask the CEO of the supplier for authorization. Competition in the market makes the suppliers’ offers very similar in quality, price and kickback levels.

If an agreement is reached, the parties typically enter into a contract through the following process. After signing the contract, the client makes a deposit of roughly 30% of the contract value and the supplier orders the product from overseas (a deposit is usually necessary because these products are customized and would be difficult to sell to other clients). It takes about 1-2 weeks for the supplier to deliver the product, and the client usually pays the rest of the contract’s value at delivery. In some cases, the supplier allows the client to hold back roughly 20% of the contract value until one month after delivery, until the client is satisfied that the product meets the specified quality.
The kickback is paid only after all contract payments have been made. This is quite different from the kickback-payment method used by other firms that deal with larger contract values (Tran, 2010). When contract values are large, selling firms usually pay kickbacks as a percentage of the actual payment; that is, they do not wait until all payments have been made. Even this supplier mentioned that in a few cases where contract values were high, it had to pay part of the kickback before all payments had been made.

The supplier allowed the use of this dataset, which includes detailed information about: contract values, costs and profits, dates of deposit, invoices, payments and kickbacks, and product name. It also includes client information: name, ownership, industry, address, tax code, size category, position of contact person.

The 1737 contracts yielded total sales revenue of US$ 3,648,000. Contract values were small: The median contract value was $351; the average contract value was $2,114. Kickbacks were demanded by 1/4\(^{th}\) (121 of 372) client companies. The median kickback among contracts with corrupt clients was 7.0%.

Bribing is efficient in the sense that almost all kickbacks are paid in cash. Even though these deals take place in an Asian country with a very strong tradition of exchanging gifts at important holidays (e.g., on New Year’s Eve), this supplier has only a modest budget for gifts and fancy dinners. Rather, the supplier provides kickbacks following sales with cash stuffed in envelopes, with the amount clearly written on the outside of the envelope. Surprisingly, the supplier sometime wires the kickback money through the post office to recipients in remote areas.

**ANALYSIS**

Table 1 reports which buyers take kickbacks and how much. The first column shows the type of ownership. The second column shows the fraction of the contracts in which a kickback is demanded. The third column shows the kickback as percentage of contract values, only for contracts with kickback. The fourth column shows the kickback as percentage of contract values for all contracts.

Forty-six percent of the contracts involve a kickback. Corruption is widespread among government and military contracts (72 and 70 percent, respectively). When the buying firm is jointly owned by government-private investors, the percentage of contracts with kickback falls to 56 percent. The least corruptible group is firms owned by a single private investor – only 24% of contracts with these firms involve a kickback. This percentage increases to 37% when firms are owned by multiple private owners. Multiple-investor ownership seems to provide the incentive for the management to be corrupt. The most surprising fact is that foreign-invested firms are highly corrupt. 77% of contracts procured by foreign firms (based in the country) involve a kickback, and this percentage increases to 90% when the foreign buying firms are jointly owned by domestic investors. This makes foreign-invested firms the most corruptible group.

In terms of the level of kickback, the military buyers demand the highest bribes (27.2% of contract value). In this country, the police and civil inspectors are not allowed to investigate the military, thus giving the military a large freedom to take bribes. Foreign-invested firms demand kickbacks
more frequently but take lower kickbacks, compared to state-owned enterprises (12.2% vs. 14.8%). Firms owned by a single and private investor are least likely to take kickback, and when they do, they take the lowest kickback (9.2%). When we put both corrupt and non-corrupt contracts together (column 4), the military is still the worst group, with the average kickback accounting for 19.0% of contract value. The foreign-invested firms are doing slightly better than SOEs (9.4% vs. 10.6%). Singly and privately owned firms are the best group, with only 2.2% of contract value leaked due to corruption.

Table 1. Procurement Kickback Taken by Different Buyer Ownership type

<table>
<thead>
<tr>
<th>Ownership type</th>
<th>Kickback is demanded</th>
<th>Kickback as % of contract value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Contracts with kickback</td>
</tr>
<tr>
<td>Government (SOEs)</td>
<td>72%</td>
<td>14.8%</td>
</tr>
<tr>
<td>Military</td>
<td>70%</td>
<td>27.2%</td>
</tr>
<tr>
<td>Government private joint</td>
<td>56%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Single private owner</td>
<td>24%</td>
<td>9.2%</td>
</tr>
<tr>
<td>Multi private owner</td>
<td>37%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Foreign</td>
<td>77%</td>
<td>12.2%</td>
</tr>
<tr>
<td>Foreign domestic joint</td>
<td>90%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Overall</td>
<td>46%</td>
<td>11.8%</td>
</tr>
</tbody>
</table>

One interesting question is whether the amount paid as a kickback increases the price paid, or crowds out the selling firm’s profits. If the firm and procuring officers are simply colluding to defraud the company, we might expect the price to increase dollar-for-dollar (or even more quickly) as the bribe increases. In contrast, if the market is fairly “competitive,” with the correct price approximately known, we might expect kickback payments to come from the firm’s profit. Unfortunately, we do not have a source of exogenous variation in the size of the bribe. We can, however, look at the simple correlation. Figure X plots the profit margin (as a percentage of the sales revenue) on the Y axis, and the size of the bribe (again measured as a percentage of the sales revenue) on the X axis. We observe a clear and positive relationship between profit margin and kickback. The correlation coefficient is 0.29. If we regress profit margin on just kickback, the coefficient on kickback would be 0.979. That is, a one-percent increase in kickback is associated on average with a one-percent increase in profit margin. Since these two variables have the same denominator, this implies a dollar-for-two-dollar relationship between bribe and price paid. This provides evidence for the collusion hypothesis and against the competitive-market hypothesis mentioned above.
In sum, the analyses above show that kickback is widespread in this procurement market. Although government and military firms are significantly more corrupt, private firms are often corrupt too, especially when owned by multiple owners. Most intriguingly, privately-owned foreign-invested firms are among the most corruptible.

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**PUBLIC AND PRIVATE HEALTHCARE: WHOM DO PHARMACEUTICALS PAY HIGHER KICKBACK?**

Pharmaceutical firms are known for persuading doctors to prescribe their drugs through different incentives including research funding and conference sponsorship. In many developing countries, firms simply pay doctors (illegal) cash kickbacks, potentially leading to both increased public expenditure, and serious health problems for patients. In China, the problem was so serious that the Chief of China’s Food and Drug Watchdog was executed for taking bribes from a pharmaceutical firm to approve an antibiotic that killed at least 10 people (Olesen 2007). Corruption in healthcare and pharmaceutical was perceived as such a problem that Transparency International devoted its 2006 Global Corruption Report to discuss the situation and solutions for it.

In this section, we present a brief analysis using internal data from a firm that imports drugs from the U.S. and sells them in the developing country we study. This firm specializes in drugs that treat...
joint ailments. This work builds on a chapter from the previous volume of this series. Meaghen (2006) presents an institutional analysis of the pharmaceutical market in Bulgaria and shows that this system prescribes for corruption. In particular, the chain of drug selection and gate-keeping approvals provides a fertile ground for abuses. He takes a qualitative approach partly because “no statistically valid survey was feasible.” Cohen, Mrazek and Hawkins (2007) develop a more general framework that helps to identify vulnerabilities in the pharmaceutical value chain. They also use qualitative stories of abuses and reforms in Mekong region, India, Azerbaijan, Brazil, Balkans, Uganda and Costa Rica to highlight this framework. Our work in this section complements these researches with a quantitative analysis.

**PROCESS**

The firm sells both generic and branded drugs, which are distributed through hospitals. To do so, the firm needs to get through two main gatekeepers (or agents): the Hospital and the Doctor. Each of these two gatekeepers demands a bribe as percentage of the drug sales. Besides them, there are several other parties that also participate and take their shares in the sales of medicines.

*The hospital (1st gatekeeper):* Each hospital maintains a list of allowable drugs. Pharmaceutical firms must apply for approval from the Hospital’s Drug Department in order to include their drugs on the list. To obtain approval, pharmaceutical firms face a two-tiered tariff: a fixed initial bribe to be included in the list, and an ongoing fraction of sales revenue. Currently, the initial bribe is typically around US$100 and the sales-based bribe is 10 percent (this percentage is a general rule for many hospitals in the country.) The Head of the Drug Department usually takes bribes directly. The only exception comes when he or she is still young and would like further promotion in the hospital hierarchy. In such cases, she or he delegates staff to take bribes on his or her behalf.

*The Doctor (2nd gatekeeper):* In order to incentivize doctors to prescribe their drugs, pharmaceutical firms often kickback 25-35 percent of their revenue to doctors. When asked how the percentage kickback is determined, the firm owner said that she would pay up to the level that is profitable for her, which depends on the demand, supply and competition. A doctor may earn up to US$10 thousand per month from pharmaceutical firms, which is about 30 times of their official salary.

*The Department of Examination or Treatment:* Each specialty department within a hospital may also maintain its own list of allowable drugs, which is approved by the department’s head. Pharmaceutical firms may have to pay a bribe of 5-10 percent of sales revenue to the head of the department in order to be on this list.

*The Drug Store:* When patients receive a prescription, they go to the hospital’s drug store to buy drugs. Pharmaceutical firms usually pay 10 percent of revenue as commission for drug stores. Pharmaceutical firms pay the drug store $5-10 each month for recording the drug volume prescribed by each doctor. There are even reports of pharmaceutical firms refusing to pay kickbacks to doctors, and instead offering large kickback (25-35 percent) to hospital drug stores to lie to patients, telling them a prescribed drug from a competitor is unavailable and switching the patient to the firm’s drug.
The Sales Force: Each pharmaceutical firm maintains a sales force to approach the abovementioned gatekeepers, record the sales made through them and pay bribes accordingly. Sales people visit the doctors frequently, and may sit right outside doctors’ offices every day to encourage doctors to prescribe, and to record the volume prescribe. The average commission of the sales force is around 10 percent of revenue.

The total bribes and commissions for the above group mount up to around 60 percent of the revenue. The remaining 40 percent includes the pharmaceutical firms’ imported cost and profit. Without corruption, the intermediary cost would probably be only around 10 percent (5 percent for drug stores and 5 percent for the sales force).

Firms with patented drugs have negotiation power with doctors and face less competition. Therefore, they are not compelled and generally do not pay cash bribes to doctors or hospitals. They may pay in-kind incentives such as sponsoring conferences or overseas study trips for doctors. Also, they tend to be large multinationals, while firms selling generic drugs tend to be domestic.

Analysis
The pharmaceutical firm that provided us with the data is a small firm that imports medicines from the U.S. and sells them though doctors in hospitals. Such drug-importing firms are growing rapidly in number and size in the country. We have access to this firm’s monthly sales to ten hospitals for one drug from January 2008 to June 2010. The reason the firm keeps monthly data is that they pay kickbacks to doctors and hospital monthly. There are 300 transactions in the dataset.

Among the ten hospitals, six are public, three are private, and one is public-private partnership. Private hospitals are generally owned by doctors. Regardless of ownership, all hospitals and doctors take kickback from pharmaceutical sales. Somewhat surprisingly, private hospitals take higher kickback than public ones (11% vs. 8% of sales revenue, on average).

However, doctors’ kickback shows the opposite picture. On average, doctors from private hospitals take 24% of pharmaceutical sales as kickback. Doctors from public hospitals take on average 30%. It appears that private hospitals take higher kickback but let their doctors take lower kickback, compared to public hospitals. Note that the retail price of this drug is the same, whether it is sold through private or public hospitals. That suggests that hospitals and doctor’s corruption are more a substitute than a complement.

Regarding doctors’ income, by selling this drug alone, each doctor receives on average US$3,036 in kickback per year, which is higher than their formal salary in public hospitals. The total kickback income for each doctor should be many times higher since they prescribe dozens of other drugs for their patients.

Among the three datasets of actual corrupt transactions discussed in this paper, this dataset allows us to observe a repeated relationship between bribe-payer and bribe-takers. The other two datasets tend to have one-shot or short-term relationship. In repeated games, monopolistic bribe-taking gatekeepers tend to have more negotiation power and might be able to extract higher
kickback than in one-shot games. Indeed, the relative level of kickback in this doctor-pharmaceutical firm is much higher than in procurement or construction relationships. Of course, this difference may be due to a range of other factors as well.

One pattern that is appears consistently in the history of kickback payments in long-term relationships is that the kickback amount is fixed in terms of percentage of sales. During the course of 30 months, among 10 hospitals, only one demanded an increase in kickback from 5% to 10% of sales; this was due to personnel change. The percentages of kickback to all 10 doctors remained constant throughout this period.

Table 2 puts the above discussion into a multivariate test. This table shows the regression of kickback to hospitals and doctors on hospital ownership and various control variables. All regressions include year fixed effects, and standard errors are clustered at the doctor-year level. Models (1) and (2) show that kickback to public hospitals is lower than kickback to private ones by 4.25 percentage points. Drug stores take less than hospitals by around 2.7 percentage points, probably because they have less control over patients’ prescriptions. The volume of sales has no effect on the percentage of kickback taken by hospitals.

Table 2. Kickback to hospitals and doctors (as ratio of sales)

<table>
<thead>
<tr>
<th></th>
<th>Kickback to hospital</th>
<th>Kickback to doctor</th>
<th>Kickback to doctor and hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Public hospital</td>
<td>-0.0425***</td>
<td>-0.0425***</td>
<td>0.0703***</td>
</tr>
<tr>
<td></td>
<td>(0.0123)</td>
<td>(0.0123)</td>
<td>(0.0121)</td>
</tr>
<tr>
<td>Drug store</td>
<td>-0.0250**</td>
<td>-0.0273**</td>
<td>-0.0461***</td>
</tr>
<tr>
<td></td>
<td>(0.0107)</td>
<td>(0.0109)</td>
<td>(0.0150)</td>
</tr>
<tr>
<td>Log monthly sales</td>
<td>-0.000296</td>
<td>-0.000806**</td>
<td>-0.000976**</td>
</tr>
<tr>
<td></td>
<td>(0.000341)</td>
<td>(0.000294)</td>
<td>(0.000425)</td>
</tr>
<tr>
<td>Male doctors</td>
<td>-0.0232**</td>
<td></td>
<td>0.00607</td>
</tr>
<tr>
<td></td>
<td>(0.00859)</td>
<td></td>
<td>(0.0107)</td>
</tr>
<tr>
<td>Doctor Age</td>
<td></td>
<td>0.00215*</td>
<td>0.00202***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.00118)</td>
<td>(0.000689)</td>
</tr>
<tr>
<td>Year</td>
<td>0.00114</td>
<td>0.000882</td>
<td>-0.000696</td>
</tr>
<tr>
<td></td>
<td>(0.00570)</td>
<td>(0.00578)</td>
<td>(0.00432)</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.160</td>
<td>-1.644</td>
<td>1.560</td>
</tr>
<tr>
<td></td>
<td>(11.46)</td>
<td>(11.62)</td>
<td>(8.690)</td>
</tr>
<tr>
<td>Observations</td>
<td>300</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.304</td>
<td>0.310</td>
<td>0.789</td>
</tr>
<tr>
<td>Average kickback</td>
<td>0.09</td>
<td>0.09</td>
<td>0.28</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
Models (3) shows that kickback to doctors in public hospitals is higher than kickback to doctors in private hospitals by 7.03 percentage points. Doctors who sell higher monthly volume seem to take lower kickbacks – this is different from the pattern observed in the procurement data above. Interestingly, consistent with what we heard from the interviews, male doctors take lower kickback than female ones by 2.3 percentage points. Older doctors seem to take significantly higher kickback.

As we have seen, public hospitals take lower kickback for themselves but their doctors take higher kickback, compared to private hospitals. Adding the kickback to both hospitals and doctors together, Model (4) shows that the total kickback for public hospitals is 3.66% higher than for private ones.

While we know that public organizations are susceptible to corruption, the analysis in this section shows that private healthcare providers can be highly corrupt too. Most interestingly, private hospitals demand higher kickback and let their doctors take lower kickback, compared to public hospitals. Note an important difference between public and private hospital: kickback to private hospitals goes to their owners while kickback to public hospitals goes to their managers. Putting the kickback to hospitals and doctors together, the pharmaceutical firm has to pay significantly higher to sell through public hospitals than through private ones. However, it is important to note that both groups are highly corrupt and their kickback roughly doubles the retail price of the drug.

**CONSTRUCTION: HOW KICKBACKS ARE COVERED UP?**

This section documents corruption in a construction company. Construction is an important industry globally, typically comprising between 5 and 7 percent of GDP (Kenny 2007). Construction is also commonly described as one of the industries most vulnerable to corruption. Rose-Ackerman (1997) describes a number of cases of high corruption in this area in Pakistan, Thailand and Brazil. In China, about one-fourth of all prosecutions for corruption involve construction.

Nor is corruption in construction limited to developing countries. Surveys show that people working in construction in the UK believe that corruption is a serious problem in this sector (ICOB 2006). Recently, Halliburton agreed to pay $559 million to the U.S. to settle charges that it bribed Nigerian officials in a construction project.

Why is construction so prone to corruption? Transparency International (2006) points out several reasons. First, construction projects are typically very expensive and quite complicated, making it relatively easy to inflate claims to allow for payment of bribes. Construction designs often vary, making it difficult to compare and benchmark costs. Second, a significant fraction of construction projects are paid for from public funds: with dispersed residual claimants, incentives to monitor may be weaker. Third, construction projects require a range of permits, allowing officials at various levels to exact bribes. Finally, a large portion of the project output is concealed, making it difficult to verify the quantity and quality of construction input.
We interviewed a former accountant of a medium-sized construction firm. This accountant described the construction process and how corruption affects it, based on his experience with hundreds of construction projects. He also provided two datasets. The first covers the revenue and kickbacks in 83 construction projects that the company implemented in the northern part of the country. The second dataset details how the firm inflates input claims to cover up kickbacks and evade tax in 13 projects.

**PROCESS**

Each construction project is comprised of six main stages, each involving a number of organizations and people. In the country we study, construction firms may pay kickbacks and “grease money” to nearly everyone involved in this process. While many of these informal payments are small, together they represent a significantly fraction of the cost of the project.

*Stage 1 – Project formulation:* In this stage, the investing organization\(^3\) prepares a project proposal (including budget) and seeks approval from the supervisory administrative agency.\(^4\) Construction firms must start lobbying for business in this stage, as many organizations select the contracting firm internally well before the formal request for proposals is announced. Construction firms often identify opportunities through relationships with members of the investing organization, or through a consulting firm. Selection is usually based on relationships or introduction (by supervisory agencies). Interestingly, at this stage potential suppliers do not compete on the level of kickback.\(^5\) Kickback sizes are determined by the project size and range from 5-10 percent, depending on the project’s value.\(^6\) In some cases, when the investing organization does not have funding for a particular project, construction firms may help secure funding from the government. In such cases, they may divide the standard kickback between the investing organization and politicians and government employees who are responsible for making the project happen. The selected construction firm usually specifies the kickback amount in advance but typically does not start paying until the first deposit is made.\(^7\)

*Stage 2 – Selection of a consulting firm:* The investing organization selects a consulting firm to help it design a master plan and estimate the cost. The selection of the consulting firm for large projects is usually made through auctions, which are usually rigged. Consulting firms pay quite high levels of kickbacks (25-35% of consulting fees); this is because the quality and expenses are difficult to judge, leaving substantial scope for overcharging. The materials and unit costs prepared by the

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\(^3\) The investing organization is the firm or public entity that commissions the project. For example, a school would be the investing organization if it plans to have a new building.

\(^4\) The supervisory administrative agency is usually the local government which supervises the investing organization. Depending on the size of the project, this could be the commune, district, provincial or national governments.

\(^5\) Tran (2010) shows that some corrupt officials avoid looking for firms with higher kickbacks because it increases competition and reduces room for corruption.

\(^6\) Note that the percentage of kickback in construction and industrial is much lower than in pharmaceutical markets. Construction and industrial products studied in this paper are much more homogeneous than drugs. Consumers in construction and industrial supplies market know much better about the quality and price of the products than patients know about the effectiveness and price of drugs. This explains, at least partly, the percentage of kickback difference across markets.

\(^7\) Some particularly impatient organizations do require payment of kickbacks in advance.
consulting firm are based on government construction and cost guidance, which greatly exceed actual construction costs, creating room for theft and corruption. This detailed cost estimate is again approved by the supervisory administrative agency.

Stage 3 – Auctions: the investing organization puts together an auction team, which includes its staff and experts from the consulting firm. The auction team prepares the bidding documents, which specify technical requirements and budget limit. This is typically an open auction, which in theory allows any eligible construction firms to submit a bid. However, in practice the winning firm has typically been informally selected from the previous stage. The auction evaluation committee is led by the head of the investing organization and consists of representatives from departments of planning, finance, technical and project management unit. The informal pre-selection notwithstanding, the firm that was informally pre-selected typically pays “speed money” to members of the auction evaluation committee to speed the process. The investing organization makes a final decision, following the recommendation of the auction evaluation committee.

Stage 4 – Construction: The construction firm usually receives a deposit of 30% of the budget before it starts building. It will give the investing organization the kickback equal to the promised percentage times the advanced money. The construction is monitored by the investing organization and the supervising firm hired by the investing organization. "Grease money" to monitoring parties during the construction may account for up to 1% of the project’s total budget.

Stage 5 – Evaluation and reimbursement: After the construction project is complete, the monitoring parties evaluate whether construction has met the specified technical requirements. The investing organization then reviews and approves the actual reimbursement request. This request is passed to the financial department of the supervisory administrative agency for review. Once the request has passed this series of approvals, it is passed to the treasury of the supervisory administrative agency for payment. Government funding usually arrives during the second half of the fiscal year. Construction firms thus engage in competition to get paid as quickly as possible. To speed settlement of bills, they pay speed money.

Stage 6 – Audit and inspection: Large projects are usually audited. When there are “signs” of misconduct, projects will be inspected by Sectorial Inspectors, State Inspectors or Citizen Inspectors. Sub-projects within a large project are more likely to be audited and inspected than small projects. When an auditor or inspector discovers a “fault” in the project (such as a quantity or quality lower than specified, or fake claims), the construction firm is typically obliged to pay a bribe equal to one-third of the misused amount, which roughly equals the income tax they have evaded.8

Because this contracting and auditing process is complicated, costly and uncertain, construction firms usually maintain a specialized unit (called planning and business department) with expertise to handle it. Construction firms cover up the bribe by inflating input prices and volumes in the design stage and reducing the actual material inputs, particularly for underground sections of the project, which are more difficult to inspect.

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8 See Kenny and Musatova’s chapter in this volume about the ineffectiveness of the “red flag” audit method applied to a sample of World Bank’s projects.
ANALYSIS

This firm specializes in constructing a few specific components of larger construction projects. Our dataset includes 86 projects conducted by this firm during two years in early 2000s. About half of the projects are related to road construction; the rest are related to other types of construction. The investing organizations are either the government (central or local) or state-owned enterprises. Twenty-nine percent of the projects are conducted in the capital city; most of the rest are in northern provinces of the country. The average value of the projects is $101,683. The average kickback is 7.7% of the projects' value.

The Figure below plots the relationship between project value and kickback amount (as measured by percentage of the contract value). All 86 projects involve some kickback. Although many people believe percentage kickback decreases as project’s value increases, such a relationship is not evidenced in this sample. Kickbacks vary between 2 and 12 percent of the project’s value, with the greatest density in the 7-8% band.

It is commonly believed that many firms inflate their input costs in order to cover up kickbacks, which cannot be reported on official books or deducted for corporate income tax purposes. These
firms often maintain two sets of accounting books: the official book is to report to the tax authority and the internal book is to keep track of their real transaction and performance. However, to date we are aware of no evidence on how firms do this.

Table 3 reports the official and the internal books of 13 construction projects conducted by this firm in the early 2000s. The total pre-income-tax value of these projects is $US 1,476,888. According to the official book, construction materials are the largest cost item, comprising 78% of the total revenue. Labor and machinery expenses account for a further 8.3% and 2.9%, respectively, while average overhead and profits are 5.3% and 5.0%.

The internal book reveals that 7.4% of the projects’ revenue has been paid as kickbacks; moreover, the real profit is approximately 9.7%, rather than the reported 5.0%. To cover up these items, the firm inflated materials claims by 15.7%, and machinery cost by 10.0%. It is interesting to note that the labor, transport and overhead claims were virtually unchanged. This suggests that cost claims vary in their scope for manipulation: for example, it might be difficult or risky to ask many employees to receive an amount lower than their contractual salary. This result has some implications for anti-corruption policy: auditors would be best served by focusing on categories which can be easily manipulated.

The fact that profits are much higher in the internal books means that the firms are engaged in systematic tax evasion, above and beyond their efforts to hide the cost of the kickbacks. The marginal tax rate for firms in this industry is approximately 35%. Of course, this begs the question of why the firms show any profit at all—while we do not have hard data to answer this question, our understanding based on conversations with other firms is that, at the end of the tax year, the firm’s management meets with the tax collector to negotiate over the amount of income tax to pay, and the amount of bribe to be paid to the tax collector.

Table 3. Double-book Accounting for Corrupt Activities

<table>
<thead>
<tr>
<th>Cost item</th>
<th>Official book</th>
<th>Internal book</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount</td>
<td>% of Total</td>
<td>Amount</td>
</tr>
<tr>
<td>Materials</td>
<td>$1,104,288</td>
<td>74.8%</td>
<td>$931,050</td>
</tr>
<tr>
<td>Transport</td>
<td>$508</td>
<td>0.0%</td>
<td>$508</td>
</tr>
<tr>
<td>Labor</td>
<td>$122,238</td>
<td>8.3%</td>
<td>$121,737</td>
</tr>
<tr>
<td>Machinery</td>
<td>$42,906</td>
<td>2.9%</td>
<td>$38,595</td>
</tr>
<tr>
<td>Overhead</td>
<td>$78,881</td>
<td>5.3%</td>
<td>$78,357</td>
</tr>
<tr>
<td>Profit</td>
<td>$74,312</td>
<td>5.0%</td>
<td>$143,431</td>
</tr>
<tr>
<td>VAT</td>
<td>$53,754</td>
<td>3.6%</td>
<td>$53,754</td>
</tr>
<tr>
<td>Kickback</td>
<td>$109,457</td>
<td>7.4%</td>
<td>$(109,457)</td>
</tr>
<tr>
<td>Total</td>
<td>$1,476,888</td>
<td>100%</td>
<td>$1,476,888</td>
</tr>
</tbody>
</table>

The analysis above uses actual kickback data to show that corruption in construction is widespread and systemic. We describe in details the complicated process of a construction project that allows many players to exact bribes from construction firms. We show that kickback in road constructions
is lower than in other types of construction. We also show that construction firms inflate certain cost items (materials and machinery) to cover up the kickback and evade income tax.

CONCLUSION AND DISCUSSION

This chapter presents a new method of analysis for studying a problem that has been challenging empiricists since the early studies of corruption (e.g., Ackerman, 1975). In their recent handbook chapter on corruption, Banerjee et al (2010) identify several important challenges of obtaining good measurements of corruption: individuals are reluctant to report truthfully for shame (or fear of legal action); it is particularly difficult, even with thoroughly cooperative survey respondents, to quantify who bribed who; and even methods such as direct audits or government wiretaps or sting operations are subject to a “Heisenburg indeterminancy” critique: a well-run audit program may change bureaucrats’ behavior, precluding the measurement of “normal” levels of corruption.

The approach we use has several advantages. The setting is important, as many firms report paying bribes: 81% of Ugandan firms in Svensson (2003); in Soreide (2006) two thirds of Norwegian firms report they have lost a contract because of corruption. The data quality is likely very good (the firms we study have strong incentives to track these cash outlays), and it is possible to identify who, what, where, and when bribe payments were made, for hundreds of transactions. The firms we study interact with a broad range of buyers and sellers—while we cannot know whether our data are statistically representative, we do know that the firms providing data are not atypical, and that they interact with a very broad range of customers and government employees. The setting, of commercial transactions, is one which facilitates the comparison between different organizational forms.

Our paper uses actual records of bribes paid by firms to show several patterns about corruption. One of the most surprising results is that corruption is not only pervasive among public organizations but is also widespread among private entities. We do not see a bright line between standard principal-agent problems and “corruption.” Banerjee at al. (2010) identify corruption as distinct from standard principal agent problems found in a firm by arguing that, in the latter, all agents would want to maximize the firm’s income, and inefficiencies arise because the principal and agent disagree over how that surplus should be split. Giving the agent sufficient residual cash flow rights, they argue, would alleviate the problem of corruption. However, we note that the problem of extra-legal payments to private doctors working in private clinics, to persuade them to prescribe the wrong pharmaceuticals to private patients who pay from their own pockets, would not be solved even by giving entire ownership of the firm to the doctors. Patients would still be harmed.

We do confirm that, in terms of magnitude, public organizations tend to be more corrupt than private ones. While this does not come as a surprise, our approach is a uniquely apples-to-apples comparison. For example, we consider public and private entities interacting with exactly the same
firm (or even sales agent) and purchasing exactly the same type of equipment, and we observe large differences in amounts of kickback paid.

Third, a challenge for bribing firms is to explain this illegal expense in their accounting system. We document how a government contracts are inflated both to hide bribes and to evade corporate income tax. These results may be of separate interest for the literature on tax evasion.

Of course, our approach has several important limitations, which we acknowledge. First, the data may be difficult to obtain, requiring trust between the firm and the researchers. The data in this paper were obtained after one of the authors had spent considerable time interacting with each of the firms and establishing a relationship—though we note that since nearly every firm in these industries pays bribes, the perception of risk from the data-providing firms may in fact have been quite low. In fact, the typical “punishment” for being caught paying a bribe is to pay an even larger bribe to the bureaucrat that caught you.

A second potential limitation is that firms that are willing to provide data may not be representative, though this limitation is somewhat mitigated by the fact that we observe hundreds of market transactions, in which the data-providing firms compete with the rest of the market. Finally, as in any observational study, the ability to infer causal relationships is severely limited, as it is difficult to rule out the possibility that omitted variables may be driving observed correlations.

We end with suggestions for further applications of this approach. First, on the organizational economics side, obtaining data about how bribes are distributed within an organization could shed light on the degree to which relational contracts exacerbate or ameliorate private and public incentive problems. Second, a more detailed analysis of the role of delegation, ownership, and information asymmetries in affecting the size of kickbacks demanded in the procurement process may improve our understanding of the degree to which the public nature of employees’ work is to blame for apparently corrupt behavior, as against standard incentive problems. Third, and most promisingly, micro-level variation in agents and institutions may help identify a range of causal relationships that have heretofore eluded us. For example, in the health care sectors, the ability to determine which drugs a hospital will use is periodically rotated among bureaucrats of equal seniority. Such exogenous variation, combined with accurate informal payment information, may help clarify the quantitative importance of variations in (dis)taste for corruption in observed levels of corruption and allocative efficiency.

REFERENCES

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9 Svensson (2006), intended to be a representative survey, was able to collect corruption data from 176 of 243 surveyed corruption firms.


