A Trio of Perspectives on Corruption

Bias, Speed Money and “Grand Theft Infrastructure”

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Abstract

A number of recent survey articles express hope that new data from enterprise surveys would shed new light on corruption complementing the corruption perception index by Transparency International. The paper explores this using the World Bank's Enterprise Survey data globally and not just the data on Eastern Europe and Central Asia that have been used before. The authors find that in general the Enterprise Survey data provide aggregate views on corruption that are similar to the corruption perception index. However, massive differences exist for key countries, such as China and India. This suggests that idiosyncratic, country-specific biases are at work in one or both data sources. The authors use the Enterprise Survey data and relate them to measures of bureaucratic complexity from the World Bank's Doing Business data, finding that more red tape is associated with higher corruption. The data are also consistent with the view that bribe payments reduce the burden of red tape. Finally, the paper looks at corruption

in infrastructure. It has been suggested that the natural monopoly characteristics of infrastructure provide the lever to extract bribes. However, based on data on price-cost gaps, the authors find that infrastructure ventures in power and water typically charge prices below cost in developing economies, not anywhere near monopoly prices. Furthermore, the Enterprise Surveys do not suggest that infrastructure-related bribe payments are more significant than those, for example, related to tax payments or various forms of licensing. Existing sources on bribery surrounding specific projects suggest that the value of bribe payments may not be the biggest problem but the choice of uneconomic and inefficient projects. If infrastructure ventures were entirely dependent on revenue from user fees, they could not afford to pursue inefficient projects, thus reducing the cost of corrupt activity to society. Monopoly pricing would be better than the typical current pricing policy.

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A trio of perspectives on corruption: Bias, speed money and "grand theft infrastructure"

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Introduction

By its nature corruption is hard to measure. Yet, over the last two decades a series of data sets and indices have emerged that attempt to capture the phenomenon of corruption. Work with indicators on corruption typically confronts two basic issues. First, it is not always clear what types of corruption are measured. Second, it is not clear whether and to what degree perception measures of corruption reflect biases of respondents who either try to hide the truth or make biased guesses. The practical result is that perception measures of corruption can raise awareness but are not actually helping design policy. As argued by Kenny (2006) it could be that new more fine-grained firm-level indicators of corruption might generate more useful findings.

In this paper we explore whether the juxtaposition of several data sets can help disentangle some of the issues. We start by considering potential bias in aggregate perception indicators of corruption by confronting them with indicators generated from firm surveys. We then confront the firm surveys of corruption with data on regulatory obstacles and find plausible stories both about the link between regulation and corruption and about the effectiveness of removing obstacles through corruption, including obstacles to obtaining infrastructure service.

Turning to infrastructure, we find just a few data and case studies. The firm-level indicators suggest that infrastructure sectors are plagued by corruption, but not more than other sectors of the economy. If there is a sector that is particularly plagued by corruption it is construction, including for infrastructure projects. But there are important stylized facts about price levels and access to infrastructure services that shed light on mechanisms of corruption and are relevant for policy-making. We argue that the first line of defense for policymakers against the major ill-effects of corruption in infrastructure is the restriction of government transfers to firms and reliance on consumer prices that effectively cover full cost. Corrupt elites may have an interest in going along with such policy change, because it might make them better off too.

We conclude with some basic thoughts about a sensible attitude towards measurement of corruption and policymaking.

Noise and Bias in Aggregate Indicators?

Aggregate indicators of corruption tend to be based on perceptions of “experts” in firms, government and other institutions who provide views about the degree of corruption in different countries. The best known such indicators are Transparency International’s (TI) Corruption Perception Index (CPI) and the World Governance Indicators (WGI) of the World Bank.

There are two potential issues with such indicators: noise (that the indicators only weakly reflect underlying levels of corruption) and bias (that the reflection is distorted by the influence of factors other than corruption). Given the illicit nature of the activity, it is unsurprising that even

experts would have a limited knowledge of the range of corrupt dealings ongoing in a country at a given time. So, when ranking countries they might draw on observable information that in their view is indicative of corruption rather than direct experience or knowledge.

With regard to noise, a case from Peru gives reason for doubting the power of general indices to reflect the underlying extent of corruption. In 2000 the government released tape transcripts on the Montesino corruption scandal, which involved the bribery of over 1,600 senior government figures. Following the release of the tapes, the Corruption Perception Index of TI moved fairly dramatically from 4.4 to 3.5 (on a scale of 10 - 1). This seems to suggest that the experts did not really understand corruption in Peru prior to the release of the tapes –before the scandal broke, when the corruption was ongoing, Peru was judged as clean as the Czech Republic.

Comparing firm-level surveys and perceptions of aggregate corruption Knack (2006) shows for Eastern Europe and Central Asia that firm-level data on petty corruption are only weakly correlated with perceptions on aggregate corruption. Both sets of data are not well correlated with firm data on procurement related corruption. Olken (2008) and Donchev and Ujheliyi (2008) also find weak correlation between micro-data on corruption and aggregate perceptions.

Kaufmann, Kraay and Mastruzzi (2006) (hereafter KKM) explore whether biases are reflected in perceptions indicators. First, they find that expert surveys do not seem to exhibit systematic biases compared to surveys based on the observations of samples of individual firms or households. Essentially, they showed that ratings among commercial risk-rating surveys were not more correlated with each other than with firm surveys of corruption. They cast doubt on a study by Razafindrakoto and Roubaud, which shows that for eight African countries, experts significantly misjudged what households would report about corruption. For example, households were asked whether they had been “victims of corruption”. KKM argued that some may have paid bribes, but may not have felt victimized, maybe because bribes helped them get what they wanted. Second, they explored whether social groups with different world views about what constitutes good governance such as business or NGOs might come systematically to different conclusions about the existence of corruption. They find that rankings of corruption produced by such different groups are highly correlated. They consider a few other potential sources of bias such as cultural bias, or bias originating in sampling technique. All in all, they conclude that there might well be biases, but it is not clear whether and in what way they might be systematic.

At the same time, Olken (2008) examined the relationship between people’s perceptions of corruption in road building in villages in Indonesia and audited actual levels of materials theft from that project. He found that perceived levels of corruption were driven far more by general cynicism about the honesty of politicians, the education level of respondents and the ethnic diversity of the village they lived in than they were by actual levels of corruption. And while perceptions of corruption were considerably higher in diverse villages, objective evidence of

corruption was considerably *lower*. If these results are replicated at the international level, it suggests the potential for considerable bias in measures such as the CPI.

We further probe whether expert opinion about overall corruption accurately reflects observations reported by firms. Firms probably know better, whether and to what degree they themselves are exposed to corruption. At the same time, firms might underreport based on fear of discovery (Thompson and Shah, 2005). Bias may also lead to over-reporting in answer to questions such as ‘firms like yours.’ As Svensson (2005) argues, this might not matter much for cross-country comparisons, if such misreporting is not systematically related to country characteristics. We use the enterprise surveys (ES) of the World Bank to test this hypothesis.

For our exercise we compare rankings. Even if firms were systematically to underreport corruption in highly corrupt countries, this need not change that country’s ranking if under-reporting is similar across countries. Of course, it could be that in some corrupt countries firms try to understate the extent of corruption, whereas in others they do not care to do so. We cannot control for such an effect, but highlight some intriguing cases.

Enterprise surveys, which by now cover 125 countries ask firms whether “an informal gift of payment [was] expected or requested” for eight transactions, to obtain licenses for operation, construction and imports, when paying taxes or applying for a government contract as well as connections to electricity, water and telephony. The correlation between these different indicators of bribery ranges from 0.41 to 0.82 (Table 1 reports selected correlations). Not being very strongly correlated, it thus seems that they may capture a range of information about bribery.

Table 1: Correlation of selected rankings for bribe payments

<i>Transaction</i>	Construction permit	Operations license	Government Contract
Water connection	0.65	0.65	0.41
Construction permit		0.82	0.62
Operations license			0.68

We then simply aggregated the eight indicators into a composite one using equal weights and compared it to the CPI. The correlation between the two indicators is about 0.7. Hence it seems that the CPI may capture important information about overall corruption, but possibly with a large error margin.

We then explored whether the differences between firm level responses and those of experts generating the CPI might have a systematic reason. We speculated that the experts who cannot be fully familiar with corruption in a country might draw conclusions about corruption by

considering, for example, economic performance of a country. We controlled for two simple measures of economic performance, income level and income growth in the five preceding years. The results suggest that these two factors explain some of the difference between aggregate perception-based indicators and indicators generated from firm-level surveys. (Of course, those who see corruption as a major source of poor performance would expect corrupt countries to be poor and grow more slowly, so this might be considered over-controlling.) Adding further controls about development of a country such as urbanization did not change our finding. Figure 1 below presents the results graphically. The left panel shows the scatter diagram of correlations between CPI and ES rankings. The right panel adjusts the CPI rankings through regressions on income levels and growth (2005-2009). In the graphic the fitted CPI rankings are “compressed” as, for example, the top ranked countries are dragged down by the control for income levels. The results are inconclusive.

What we are left with is a significant variation of the apparent incidence of corruption among sectors, types of permits and other “targets” of corruption. Data on the size and frequency of bribe payments for a contract in the construction industry alone suggests considerable within-country variation on the reported frequency and scale of bribe payments even within this limited sphere (Kenny, 2006). Indeed, the significant in-country variation between measures of different types of corruption casts some doubt on the utility of one overall measure such as the CPI as a guide to the extent and nature of the corruption problem within an economy.

Comparing individual country rankings, we observe some intriguing differences between the ranking in the CPI and our aggregate firm-based indicator. We consider the respective rankings of 107 developing countries. While most countries are ranked broadly similarly, China and India are clearly not. They rank at 35 and 40 respectively on the CPI. On the aggregate ranking derived from enterprise surveys they rank 69 and 100 – just two countries, but over 35 percent of humanity. Two other intriguing cases are Belarus and Venezuela. The CPI ranks them at 70 and 99 respectively; the enterprise ranking yields place 34 and 13. For countries like Venezuela and Belarus it might be that firms are afraid that their responses might not remain confidential or outside perception is affected by other views about the economy. For China and India we can only speculate about rosy perceptions of foreign respondents captured in the CPI.

Figure 1: Correlations among country rankings by CPI vs. aggregate indicator from Enterprise Surveys

CPI vs. ES

CPI adjusted with “fitted variables” vs. ES

Perhaps the CPI measures something akin to an overall “culture of corruption”, whereas the ES captures particular patterns of bribes for certain transactions. In any case, the data about aggregate corruption remain noisy. They may capture different facets of corruption and they may contain other types of information that are not really observations of corruption. This may help to explain why there is such a weak relationship between the CPI and outcomes in infrastructure once we control for income (Kenny, 2008).

While our “results” support a certain amount of skepticism as to the information content of aggregate corruption perception measures, this does not imply that one should discard or disregard indicators like the CPI. They do seem to capture important information at the least about perceptions that may alter investment behavior and they are a way of giving prominence to an important topic. What may, however, be questioned are statistical methods that attempt to place confidence intervals around current corruption indicators. The statistical methods to derive such confidence intervals need to assume some random process that relates actual corruption to the observation expressed by the respondents. If there are other unidentified observations in the data that are not about corruption, it is not clear how one would adjust for this. It might thus be better to drop the pretense of creating “scientific” confidence intervals.

Speed Money

In the last decade a new data set has been created that annually measures a set of regulatory arrangements relevant for business, currently across 183 countries – the Doing Business (DB) report. By now there are eleven sub-indicator sets that measure inter alia official procedural requirements for registering a business, obtaining a construction license, an import license and getting an electricity connection. Starting with the pioneering first data set on regulation of entry (Djankov, 2002), the data have been used to assess whether more complex procedural

requirements are associated with greater corruption. Typically, the analyses suggest this to be the case. We explore this further by confronting the DB data with data from the ES.

It is clear that what is “on the books” need not be the way the world actually works. In fact, the claim of the DB project is not to characterize the way the world works, but to characterize what governments make – regulations in this case. Where, for example, complex regulations lead to lengthy procedures firms may have an incentive to pay “speed money” to cut through the process. The 150 days it took in Sao Paulo, Brazil, until 2009 to register a business the official way, was not a good predictor of the actual time taken, for example. “Facilitators” would help firms get registered much faster. Still the market for facilitation was created or sustained by regulation. The impact of official regulation cannot be determined by measuring whether people behave in accordance with the law, but by whether and how they respond to the law.

Doing Business complements the above mentioned enterprise surveys (ES) that capture the world as experienced by firms. The ES were expanded to cover not only Africa, Eastern Europe and Central Asia and a few extra countries, where they originated, but also other regions. Contrary to DB the ES are not available every year for all the countries covered. Nevertheless it is now possible to start confronting the data about official regulation with actual practice using panel data sets.

Hallward-Driemeyer and Pritchett (2010) have recently explored in detail the difference between data on official requirements for business registration, construction licenses and import licenses with the actual time to obtain these licenses. They found complex relations between the two data sets.² What seems to be the case is that as official requirements become more burdensome, some firms are able to cope much better than others. For example, an increase in official time from 77 to 601 days for construction licenses is associated for some firms with an actual increase of just 3 days whereas for others it meant 130 extra days. The authors also find that for relatively simple regulations there is an association between official and actual time taken. It seems, when the law is simple, people follow it. When it gets complicated, firms find ways around it.

We assess whether corruption as reported by the ES can help explain the difference between official and actual time taken. The ES ask firms for each the three permits and the electricity connection that we look at “whether an informal gift or payment was expected or requested”. For each country we constructed a percentage of firms that answered with “yes”. We then correlated this percentage with the official and actual time required to get the permit or connection. We controlled for country characteristics (GDP level and GDP growth, the level of crime and the ranking on the DB enforcement of contract indicator) and for firm characteristics (ownership - privately or state-owned and proxies for the quality of the firm (share of export in sales and experience of top managers).

² Part of this may be due to the fact that firms asked how much time it takes to obtain an operating license may not have recent actual experience with this.

As shown in figures 2 to 5, plotting the results, reveals an intriguing pattern that is similar for all indicators. First, longer official time requirements correlate with higher percentages of bribe payments. Second, higher percentages of bribe payments are associated with lower actual time.

Figure 2: Electricity connections: Fitted values of corrupt payments vs. official and actual time

Figure 3: Operating licenses: Fitted values of corrupt payments vs. official and actual time

Figure 4: Construction licenses: Fitted values of corrupt payments vs. official and actual time

Figure 5: Import licenses: Fitted values of corrupt payments vs. official and actual time

We further subjected the data to tests documented in annex I. We used quadratic functions, added variables controlling for observable country characteristics including population, literacy, characteristics of average firm types and finally added regional dummies. While using further variables leads to different country coverage dependent on availability of controlling variables, typically, we find significant relationships between official procedures and corruption, particularly for construction permits and import licenses. The relationship between bribes and actual time seems more tenuous. Several stories can be told consistent with the data. In the first story regulatory complexity leads to bribes, and bribes are actually effective in removing the obstacle. This could be read to be support for an “effective grease” story. Complex rules are effectively circumvented by bribes. We do not test whether the rules are useful in assuring a relevant dimension of quality, and hence cannot claim direct support for an “efficient grease” hypothesis. Other evidence shows that corruption may create hazards. A case in point is driver licenses in Delhi. Corruption lets people who cannot drive well obtain a license (Bertrand et. al. 2007).

A second story is that both complex rules and bribes are effective tools and outcomes in pursuit of the real goal, namely running a system of corruption. The rules constitute blackmail – and it works: people pay up. To the extent that current policymakers are the ones that support the system, there would be limited interest in either simplifying regulation or reducing bribery. The system is a way of raising “informal taxes”. It may be effective, but people suffer, like Mohamed Bouazizi, who famously immolated himself in Tunisia in protest against continued harassment.

Third, there may be a common reason, both for bribery and for complex rules. In societies with low levels of trust, corruption may reign. At the same time there might be citizen demand for rules to counteract corruption by firms even when officials are also corrupt (Aghion et al. 2008). Complex rules might be conceived as a tool to make it hard for firms to skimp on quality. To the extent that bribes are effective in circumventing rules, our results suggest that the rules are only partial substitutes for trust. If quality is also not produced systematically, we simply have a “low-trust equilibrium” where inefficiency begets inefficiency.

Finally, the tenuous relationship between bribes and actual time may reflect a number of phenomena. One could be that obtaining a permit at all is worth bribing even if time is not reduced. This can theoretically be an issue, even if rules have been simplified. Some firms may be “important”, “well-connected” or the like. They may not be hit up for petty bribes. It could also be that some firms use facilitators (“tax lawyers”) and do not see facilitation payments as bribes, because they themselves were not asked and did not pay. Here the line between legal and illegal, between corruption and honest behavior can become blurred. At the official end of the spectrum we have Greece. Unusually, compared to most countries in the world the government had trouble simplifying registration rules for small- and medium-sized businesses. The reason? Several official procedural steps required fees that fund the pensions of lawyers in the country.

What might it all mean for policy? The two basic possible thrusts are a) better enforcement using a combination of disclosure rules and better prosecution of corrupt activity and b) better rules. Based on available evidence better rules seem strongly related to lower corruption. People seem to follow the rules more easily when they are appropriate. Generally, the countries with simple rules are advanced economies with *prima facie* relatively low quality issues (see various Doing Business reports).

What remains is somewhat unsurprising. Good rules are needed to achieve useful goals for society. Sensible rules can actually be better enforced than complex ones. Such enforcement seems to achieve the ostensible goals of regulation in many countries. Tougher enforcement of lousy rules could be worse. Bribery would then be the lesser evil and potentially “efficient”. In fact, some policy-makers are pondering whether it might even be worth considering making bribes legal in some countries with pervasive corruption issues. This was recently proposed by the Chief Economic Advisor to the Ministry of Finance in India (Basu, 2011). He argues for legalizing bribes when they are paid to obtain something that should legally be available rather

than to obtain something that breaks the law. This may make bribe-takers more afraid to ask for bribes as bribe-givers would no longer incriminate themselves by acceding to the request. They might thus be more willing to complain³.

In practice most governments, with the notable exception of Venezuela and Zimbabwe, reform rules when unwarranted complexity is exposed, for example, through global rankings. Most popular with policymakers are reforms of rules on registration and import licenses, a little less so on construction (World Bank, 2011). The main driver seems to be the search for “competitiveness”. This is clearly consistent with the first (“effective grease”) story, but it can also be consistent with the second (“systemic corruption”) story. Corrupt regimes may feel they can eventually steal more, at least in absolute amounts, when there is stronger economic growth. However, in this case reforms may upset the system and lead current winners to lose.

The rapidity with which some countries have embraced reforms of simple licenses might suggest they often are not an essential part of a corrupt system –but it may reflect the adaptability of corrupt players in cases where the second model applies. It is a frequent complaint of small businesses in the Middle East and North Africa, for example, that while de jure regulations are simplified (and Doing Business rankings are dramatically improving), de facto implementation remains heavily skewed towards the interests of a favored group of connected firms (World Bank, 2009).

Regardless, remaining regulation and enforcement should be designed so that even if (when) corrupted, it still provides the appropriate incentives. For example, corruption that reprioritizes useful investments (speed payments for licenses that should be issued) is considerably less harmful than corruption that facilitates or encourages poor investments (kickbacks for ignoring very poor quality construction). In terms of the bribe payer, incentives might be aligned by legalizing speed payments (as suggested above) while holding bribe payers responsible for deaths or damage related to improperly licensed construction.

Corruption and Infrastructure

We now turn to infrastructure to see what existing data suggest about the nature of corruption in that sector and possible implications for policy. Aggregate indicators of corruption like the CPI say nothing about the intensity of corruption across sectors. ES at least allow us to assess how petty corruption in infrastructure sectors compares to petty corruption in other areas. It appears that bribery associated with obtaining a utility connection is not much different from bribery in other areas. What does appear more pervasive is bribery associated with construction activities, encompassing infrastructure projects. Construction firms represented in the Business Environment and Enterprise Performance Survey of Eastern Europe and Central Asia have significantly larger ‘bribe budgets’ than the average firm, and they bribe more often.

³ The exemption of facilitation payments in the United States’ Foreign Corrupt Practices Act could be justified on similar grounds.

Of their total bribe budget, a larger percentage goes to gain government contracts –an average of 23 percent for construction compared to 15 percent for all firms in the sample (Kenny, 2009).

For policy-making we need to rely on observations other than those purporting to measure corruption. We start by looking at the role of prices in infrastructure. It is often pointed out that infrastructure firms tend to exhibit natural monopoly characteristics. This might, in principle, allow easier rent extraction than in competitive sectors where consumer might be able to escape high prices by buying from lower cost providers. However, for the most part rent extraction does not seem to be accomplished via high effective prices charged by infrastructure providers. In most infrastructure sectors in countries with high perceived levels of corruption prices are actually low, typically below cost-covering levels (World Bank, 1994)⁴. The one exception is telecommunications⁵. Newer data from 2004 suggest that the basic pattern of price-cost gaps has not changed in a major way. Water prices are still about 30 percent of cost on average and electricity price appear to have increased from about 60 percent to almost 80 percent of costs (Komives et al., 2005). While many so called privatizations have taken place over the last two

⁴ A global exercise assessing the level of prices in relation to cost was done for the World Development Report on infrastructure in 1994 and not repeated since. Available case by case evidence suggests that the broad pricing patterns still hold.

⁵ Corruption in telecommunications has been prominently on display recently in India, where private providers allegedly obtained spectrum licenses cheaply through bribery, instead of paying the full price that the state would have obtained in an efficient auction. In this case, corrupt officials obtain rents from private firms, who make a lower net payment for a critical input than in the case of the efficient auction. In mobile telephony, competition is at work and consumers might pay lower prices than under an efficient government auction. Firms corruptly obtaining the license may end up with higher market share than otherwise, but not with higher rates of profit as long as competition is effective. The net losers are the fiscal authorities.

decades, they typically have not affected the consumer end of the business. Instead in water private participation was mostly introduced in water treatment plants and in electricity in generation according to the private participation in infrastructure database of the World Bank (<http://ppi.worldbank.org/>).

Figure 6: Cost Recovery by Public Utilities in Developing Countries

Source: World Bank (1994)

In other infrastructure sectors prices are low relative to costs and access for citizens is limited. Where access exists quality is often low, particularly under public ownership⁶. Citizens, who do not have access, typically lower income groups, pay higher unit prices for non-networked substitutes than the rich pay for their networked services. It is unsurprising that studies on the incidence of subsidies in infrastructure suggest redistribution tends to favor the better off (Brook and Irwin, 2003). Among non-payers of utility bills, government authorities stick out. The few studies that link infrastructure service provision to corruption perceptions are consistent with this. Corruption is associated with low quality and low maintenance expenditures (Tanzi and Davoodi, 1998) and inefficient operations (Bo and Rossi, 2007 for 13 Latin American electricity distribution companies).

When a system does not supply users with demonstrated high willingness to pay (including the poor) and when important customers do not pay, corruption does not principally operate by exploiting the pricing power of infrastructure services. Instead of taking rents out of profit rents are taken out of cost. Low prices mean that investment decisions are heavily dependent on fiscal

⁶ Gassner et. al. (2007) report that private sector participation is associated with an increase in length of uninterrupted daily supply, an improvement in collection rates, a decline in operational losses, improved labor productivity and an expanded capital base. Results on formal service price and rollout were inconclusive perhaps reflecting that privatization alone does not solve the issue of underpriced services.

decisions. Consumer demand is not the main driver. Instead the system distributes rents extracted through taxation or donor funding through fiscal expenditure. The often noted phenomenon of low maintenance expenditure is a sign of the diversion of funds.

One of the few studies that demonstrates how fiscal resources “leak” finds that only 13 percent of resources supporting schools in Uganda actually arrived at their destination (Reinikka and Svensson 2006). Other evidence also suggests that corruption can enable cartel pricing for infrastructure in public procurement, which can raise construction costs considerably above the size of the bribe payment. For example, costs for road rehabilitation are higher in countries where the average bribe paid for government contracts is larger. The average cost paid per square meter for rehabilitation of a two lane highway in countries where the average bribe for a government contract was reported to be below two percent of the contract value was \$30. For countries where bribes for government contracts were reported to be larger than two percent of their value, average costs were \$46 (Kenny, 2010).

Overall, the scale of bribes revealed in large infrastructure construction scandals tends to amount to a few percentage points of the value of investment projects (box 1). It is hard to see that these transfer payments per se would entail a major drag on economic performance (Kenny, 2006), for example, if they were collected by an infrastructure monopoly that can raise prices with minimal change in consumption.

But at the same time it is reasonably clear that in some countries corruption affects economic performance in significant ways. Where that is the case, the true cost of corruption must arise from other factors than price – the choice of uneconomic technology, uneconomic location, sub-standard maintenance and the like. Whole investment programs may be unproductive as in the case of Nigeria (Klein, 2011), where just the opportunity cost of suboptimal major investment projects amounted to about \$ 80 billion over roughly twenty years leading up to 1991, while GDP in that year amounted to around \$ 30 billion.

Sub-optimal investment choices may be the result of corrupt decision makers disguising corrupt activity (Shleifer and Vishny, 1993). Siting projects in locations under the physical control of particular corrupt officials gives them powers to enforce corrupt payments to themselves. Complex technology that requires non-standard procurement may help avoid detection and discipline from bidding processes. Simply not maintaining good accounts for the firm may undermine the ability to manage but render it more difficult to trace financial flows - much better, to let problems show up in the form of low quality. Quality problems are harder to attribute than money flows⁷. Excuses abound - from “low capacity” to cheating equipment

⁷ This feature also arises in advanced economies. It is easier to find fault with price cap regulation than rate-of-return regulation, because high rates of profit are easier to observe than excessive costs.

suppliers. All the while low prices in a poor country for “much needed” infrastructure services provide a developmental narrative that helps disguise the real issues⁸.

If one believes this story, one should restrict fiscal expenditure for infrastructure, where possible. Instead, infrastructure firms should have to rely on consumers for cash flow and on arms-length financiers for debt and equity funding. In this case projects would only be able to attract funding, if they were likely to provide service to consumers who are willing to pay. That would be an advance on traditional inefficient corruption. It seems a lesser problem to worry about whether consumers pay more than strictly necessary in an ideal world. Corruption out of profit is at least likely to be associated with service provision.

The argument is, of course, not new. It is related to a very old one made by Adam Smith (1776). He said that tolls for roads should cover average cost and not just marginal cost so that it is established whether the road is actually needed. The argument is the same as those who favor privatization as a way to enforce a hard budget constraint (Galal et al., 1994). But perhaps it is useful occasionally to remind ourselves of this basic rationale for hard budget constraints rather than only focusing on improving the procurement process in a public system and enforcing anti-corruption measures –all without considering the underlying incentive framework.

At the same time, there exists a class of infrastructure firms that charge consumers cost-covering prices. These are the small scale infrastructure service providers in poor countries that reach communities where an official utility does not exist or does not reach and where the government either allows such provision or does not oppose it. For example, Cambodia features several hundred electricity and water companies that supply villages, towns or neighborhoods. They are not well-documented. The only attempt to take stock of this phenomenon identified such utilities in 49 countries supplying up to 50,000 people each in urban, peri-urban and rural areas. Some 7000 small electricity companies in 32 countries and 10,000 small water companies in 49 countries were identified (Kariuki and Schwartz, 2005). Prices cover costs. Unit costs in water are actually not much above those in modern systems. In power unit costs are significantly higher than those in well-run modern power systems, but cheaper than standby-generation or even higher cost forms of energy such as batteries. These are local monopolies and they provide access to underserved populations. They do not represent the end-state of development, but they demonstrate that hard budget constraints can actually do better for people in the most destitute of countries than the standard fiscal approach to infrastructure.

⁸ See Klein (2011) for a discussion of the business model of the corrupt

Concluding Remarks

New datasets have been created in recent years that hold promise to understand better the phenomenon of corruption. Yet, the nature of the beast makes measurement hard. The obfuscating strategies of the corrupt create, rationally, identification problems. By juxtaposing different data sets, we may be able to generate intriguing and plausible results as we tried to show. However, for policymaking the existing measures of corruption illuminate weakly.

That does not mean we should stop measurement attempts and related analysis. But perhaps we should be clearer about “measurement philosophy” for indicators, for example, the CPI. Measurement is part of the scientific endeavor. It is also a communication tool. Corruption is clearly an important feature of life in many countries. Dealing with it is important. It is a secretive business. Its very success requires obfuscating reality. The analysts in of Transparency International, for example, who created the CPI were aware of all the potential pitfalls of an indicator. But they went ahead and found out that simple rankings communicate. They focus attention; they generate activity from research to policy.

Consumers of the information know that it is hard to observe corruption directly. They are also aware that rankings are imperfect. Keeping the story simple may allow readers to have better judgment than a complex story, for example, about the derivation of confidence intervals that adds a layer of confusion rather than precision.

Communicating is one thing. Making changes another. That requires a view on policy. Existing measures of corruption yield little for policy. In our exploration, the data we fall back on to arrive at a basic policy stance are data about prices, about access, about the rules on the books. Making regulations simpler and emphasizing commercial principles for infrastructure ventures are hardly new ideas. Yet, consideration of the mechanisms that drive corruption strengthens the arguments, if anything.

Moving policy in this direction brings new dilemmas. For example, if one brings more commercial discipline through privatization, it may lead to public dissatisfaction, because it allows both better service and more (absolute) corruption that can be seen more easily when measures such as prices and profits exist (Martimort and Straub, 2007). There may not actually be a corrupt payment out of profit, but people may, sometimes correctly, believe that powerful people obtained shares in a company without paying a fair price.

At the same time, getting systems to change usually needs some willingness of powerful people to change as well. To some degree (selfish) interest in better policy comes from the interest of the elites to benefit more. For that one needs better policy that raises productivity. If one believes corruption is a major issue, one needs to confront such dilemmas. They cannot be wished away.

Box 1: Evidence about grand corruption in infrastructure

- In 2002, a senior executive of Vivendi was convicted of planning to bribe members of Milan's City Council 4bn Lira to win a 200bn Lira contract for a wastewater plant –or 2% (Kenny and Soreide, 2008).
- An alleged \$2m bribe payment was made to win a BOT for the \$470m Caliraya-Botocan-Kalayaan hydroelectric power plant in the Philippines –or 0.4% (Kenny and Soreide, 2008).
- Bribes in the Lesotho Highlands Dam case amounted to about \$6 million, project costs were \$2.5 billion –or 0.25% (Kenny, 2007).
- Enron spent \$20 million on 'education and project development process' expenditures in the (allegedly) corrupt Dabhol power deal in India, on a project that cost \$1.3 billion –or 1.5% (Kenny, 2007).
- Siemens paid \$1.7 million in bribes related to 42 contracts under the Iraq oil for food program worth \$80 million, \$31 million in corrupt payments related to a \$1billion Argentina National Identity Card project and \$19 million on bribes related to the Venezuelan Maracaibo and Velencia metro projects which have cost a combined total of around \$340 million, and a total of \$5.3 million in corrupt payments related to a Bangladesh telecoms contract worth \$41 million.¹ These aren't 'average' deals –these are deals we know to be very corrupt. Yet the bribe payments as a percentage of contract values average 4.1 percent in these cases. And bribes as a percentage of total payments were larger on smaller contracts –so that only 1.6 percent of the total \$5.2bn value of these contracts was paid in bribes.

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Annex 1:

LEGEND FOR VARIABLES USED IN THE TABLES

Name of the Variable	Description
corr6	% of Firms Expected to Give Gifts to Get an Electrical Connection (ES data)
corr10	% of Firms Expected to Give Gifts to Get an Operating License (ES data)
corr8	% of Firms Expected to Give Gifts to Get a Construction Permit (ES data)
corr9	% of Firms Expected to Give Gifts to Get an Import License (ES data)
db_electricity_time	Official time it takes to get an electricity connection (DB data)
ln_db_electricity_time	Log form of 'db_electricity_time'
db_operatinglic_time	Official time it takes to get an operating license (DB data)
ln_db_operatinglic_time	Log form of 'db_operatinglic_time'
db_construction_permits_time	Official time it takes to get a construction permit (DB data)
ln_db_construction_permits_time	Log form of 'db_construction_permits_time'
db_time_to_import	Official time it takes to get an import license (DB data)
ln_db_time_to_import	Log form of 'db_time_to_import'
gdp_percapita	Level of GDP per capita in 2009 (WDI data)
ln_gdp_percapita	Log form of 'GDP per capita'
gdpgrowth	GDP growth, average for 2005-2009 (WDI data)
urban	Urban population (% of total) in 2009 (WDI data)
urban2	Squared term of 'urban'
literacy	Literacy rate, adult total (% of people ages 15 and above)
literacy2	Squared term of 'literacy'
total_population	Total population in 2009 (WDI data)
ln_total_population	Log of total population (2009)
exports_gdp	Exports/GDP in 2009 (WDI data)
exports_gdp2	Squared term of 'exports'
wk6	Average Number of Production Workers (ES data)
wk6_2	Squared term of 'wk 6'
wk13	% of unskilled workers (or ratio of skilled vs. unskilled) (ES data)
wk13_2	Squared term of 'wk13'
fin14	% of Firms With Bank Loans/line of Credit (ES data)
fin14_2	Squared term of 'fin14'
tr5	Sales Exported Directly (% Sales) (ES data)
tr5_2	Squared term of 'tr5'
tr6	Sales Exported Indirectly (% Sales) (ES data)
tr6_2	Squared term of 'tr6'
_lregion_2	region==AFR (WB classification)
_lregion_2	region==EAP (WB classification)
_lregion_3	region==ECA (WB classification)
_lregion_4	region==LCR (WB classification)
_lregion_5	region==MNA (WB classification)
_lregion_6	region==OECD (WB classification)
_lregion_7	region==SAR (WB classification)

ELECTRICITY (LOG FORM)– OFFICIAL TIME

corr6	(1)	(2)	(3)
ln_db_electricity_time	4.753** (2.381)	5.093* (2.561)	4.823* (2.567)
ln_gdp_percapita	-6.369** (2.660)	-6.487** (2.846)	-7.845*** (2.904)
gdpgrowth	0.472 (0.501)	0.573 (0.531)	0.652 (0.500)
Urban	0.0330 (0.118)	0.370 (0.418)	0.394 (0.416)
urban2		-0.00319 (0.00382)	-0.00305 (0.00384)
Literacy	-0.174* (0.103)	-0.0172 (0.477)	-0.0714 (0.526)
literacy2			-0.00105 (0.00437)
exports_gdp	0.0896 (0.0975)	0.198 (0.402)	0.471 (0.393)
exports_gdp2		-0.00155 (0.00459)	-0.00395 (0.00444)
wk6	0.0301 (0.0314)	0.0381 (0.0832)	0.0623 (0.0908)
wk6_2		1.12e-05 (0.000297)	-0.000275 (0.000327)
wk13	-0.225* (0.121)	0.0676 (0.441)	0.136 (0.461)
wk13_2		-0.00353 (0.00536)	-0.00293 (0.00548)
_lregion_2			11.50 (8.172)
_lregion_3			6.398 (7.710)
_lregion_4			3.434 (5.721)
_lregion_5			8.158 (6.395)
_lregion_7			30.15*** (8.541)
Constant	59.72*** (19.53)	39.41 (30.05)	39.81 (30.08)
Additional Controls	YES	YES	YES
Squared Terms	NO	YES	YES
Regional Dummies	NO	YES	YES
Observations	78	78	78
R-squared	0.375	0.391	0.515

OPERATING LICENSE (LOG FORM) – OFFICIAL TIME

corr10	(1)	(2)	(3)
ln_db_operatinglic_time	2.426	3.084*	3.611*
	(1.701)	(1.769)	(1.903)
ln_gdp_percapita	-10.50***	-11.97***	-13.32***
	(2.711)	(2.737)	(2.983)
gdpgrowth	0.445	0.469	0.499
	(0.497)	(0.506)	(0.514)
Urban	0.145	0.532	0.565
	(0.117)	(0.402)	(0.454)
urban2		-0.00367	-0.00281
		(0.00368)	(0.00419)
Literacy	0.0823	-0.815*	-0.550
	(0.102)	(0.454)	(0.570)
literacy2		0.00675*	0.00435
		(0.00339)	(0.00481)
exports_gdp	0.0941	0.501	0.614
	(0.0976)	(0.385)	(0.413)
exports_gdp2		-0.00520	-0.00608
		(0.00439)	(0.00466)
wk6	0.0440	0.103	0.104
	(0.0324)	(0.0800)	(0.0932)
wk6_2		-0.000202	-0.000241
		(0.000286)	(0.000340)
wk13	-0.184	0.163	0.279
	(0.119)	(0.414)	(0.479)
wk13_2		-0.00272	-0.00302
		(0.00505)	(0.00578)
_lregion_2			0.0168
			(9.416)
_lregion_3			6.432
			(8.495)
_lregion_4			-2.581
			(5.842)
_lregion_5			-0.878
			(6.640)
_lregion_7			10.87
			(8.840)
Constant	80.96***	91.11***	83.93***
	(17.51)	(23.76)	(27.10)
Additional Controls	YES	YES	YES
Squared Terms	NO	YES	YES
Regional Dummies	NO	YES	YES
Observations	77	77	77
R-squared	0.308	0.381	0.421

CONSTRUCTION PERMITS (LOG FORM) – OFFICIAL TIME

corr8	(1)	(2)	(3)
ln_db_construction_permits_time	10.79*** (3.797)	11.87*** (3.886)	9.371** (4.315)
ln_gdp_percapita	-11.57*** (3.142)	-12.93*** (3.246)	-11.86*** (3.514)
gdpgrowth	1.153* (0.619)	1.227* (0.620)	1.199* (0.618)
urban	0.119 (0.141)	0.873 (0.532)	0.593 (0.564)
urban2		-0.00693 (0.00479)	-0.00414 (0.00524)
literacy	0.0593 (0.123)	-0.818 (0.539)	-0.534 (0.685)
literacy2		0.00649 (0.00402)	0.00339 (0.00577)
exports_gdp	0.164 (0.114)	0.357 (0.467)	0.579 (0.491)
exports_gdp2		-0.00283 (0.00533)	-0.00544 (0.00555)
wk6	0.0756* (0.0400)	0.118 (0.0945)	0.0594 (0.111)
wk6_2		-8.42e-05 (0.000342)	-7.69e-05 (0.000404)
wk13	-0.159 (0.166)	-0.753 (0.695)	-0.311 (0.729)
wk13_2		0.0119 (0.0102)	0.00679 (0.0106)
_lregion_2			22.47** (10.40)
_lregion_3			10.99 (10.22)
_lregion_4			2.653 (6.643)
_lregion_5			6.722 (7.705)
_lregion_7			16.68 (10.45)
Constant	44.30 (29.79)	58.30 (35.03)	52.24 (35.54)
Additional Controls	YES	YES	YES
Squared Terms	NO	YES	YES
Regional Dummies	NO	YES	YES
Observations	77	77	77
R-squared	0.416	0.467	0.529

IMPORT LICENSE (LOG FORM) – OFFICIAL TIME

corr9	(1)	(2)	(3)
ln_db_time_to_import	12.29***	11.01***	12.47***
	(3.207)	(3.325)	(3.297)
ln_gdp_percapita	-3.333	-4.712	-2.657
	(2.890)	(3.046)	(3.215)
gdpgrowth	0.355	0.476	0.235
	(0.531)	(0.549)	(0.537)
Urban	0.0393	0.452	0.0269
	(0.120)	(0.418)	(0.430)
urban2		-0.00402	-0.000516
		(0.00380)	(0.00397)
Literacy	-0.0482	-0.315	0.266
	(0.106)	(0.462)	(0.543)
literacy2		0.00205	-0.00397
		(0.00347)	(0.00452)
exports_gdp	0.211**	0.770*	0.731*
	(0.0990)	(0.409)	(0.413)
exports_gdp2		-0.00707	-0.00689
		(0.00469)	(0.00468)
wk6	0.0704**	0.0969	-0.0397
	(0.0320)	(0.0822)	(0.0935)
wk6_2		-5.84e-05	0.000377
		(0.000295)	(0.000339)
wk13	-0.228*	0.0975	0.410
	(0.121)	(0.435)	(0.475)
wk13_2		-0.00318	-0.00732
		(0.00529)	(0.00565)
_lregion_2			19.78**
			(8.503)
_lregion_3			19.60**
			(8.003)
_lregion_4			8.564
			(5.796)
_lregion_5			13.49**
			(6.545)
_lregion_7			-4.827
			(8.800)
Constant	-0.292	-4.109	-26.77
	(23.53)	(31.18)	(33.04)
Additional Controls	YES	YES	YES
Squared Terms	NO	YES	YES
Regional Dummies	NO	YES	YES
Observations	78	78	78
R-squared	0.383	0.432	0.512