

WPS 3071

POLICY RESEARCH WORKING PAPER

3071

# Survey Techniques to Measure and Explain Corruption

*Ritva Reinikka*

*Jakob Svensson*

The World Bank  
Development Research Group  
Public Services  
June 2003



## Abstract

Reinikka and Svensson demonstrate that, with appropriate survey methods and interview techniques, it is possible to collect quantitative micro-level data on corruption. Public expenditure tracking surveys, service provider surveys, and enterprise surveys are highlighted with several applications. While often broader in scope,

these surveys permit measurement of corruption at the level of individual agents, such as schools, health clinics, or firms. They also permit the study of mechanisms responsible for corruption, including leakage of funds and bribery, as data on corruption can be combined with other data collected in these surveys.

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This paper—a product of Public Services, Development Research Group—is part of a larger effort in the group to measure and explain corruption at micro level and to explore its effects on service delivery. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Hedy Sladovich, room MC3-607, telephone 202-473-7698, fax 202-522-1154, email address [hsladovich@worldbank.org](mailto:hsladovich@worldbank.org). Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at [rreinikka@worldbank.org](mailto:rreinikka@worldbank.org) or [jvensson@worldbank.org](mailto:jvensson@worldbank.org). June 2003. (16 pages)

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# **Survey Techniques to Measure and Explain Corruption**

## **Ritva Reinikka**

Research Manager, Development Research Group, World Bank  
1818 H Street, N.W., Washington, DC 20433  
E-mail: [rreinikka@worldbank.org](mailto:rreinikka@worldbank.org).  
Website: [www.publicspending.org](http://www.publicspending.org)

## **Jakob Svensson**

Senior Economist, Development Research Group, World Bank  
1818 H Street, N.W., Washington, DC 20433  
Institute for International Economic Studies, Stockholm University,  
10691 Stockholm, Sweden  
Email: [jakob.svensson@iies.su.se](mailto:jakob.svensson@iies.su.se)  
Website: [www.iies.su.se/~svenssoj/](http://www.iies.su.se/~svenssoj/)

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We thank conference participants at the University of East Anglia (UK) for useful comments and suggestions.



## 1. Introduction

The past decade has witnessed a boom in the empirical economic literature on corruption. With few exemptions, the existing literature has three common features.<sup>1</sup> First, it is based on cross-country analyses.<sup>2</sup> Second, the literature exploits data on corruption derived from perception indices. Finally, it explains corruption as a function of countries' policy and institutional environment. Although the literature has provided important insights on the aggregate determinants of corruption, it has drawbacks. In particular, perception indices raise concerns about biases. Also, the aggregate nature of the data tells us little about the relationship between corruption and individual agents, such as firms or service providers. Conceptually macro-level determinants cannot satisfactorily explain the within-country variation of corruption; firms and service providers facing similar institutions and policies may still end up paying or demanding different amounts in bribes.

The quantitative measurement of corruption is difficult, but not impossible. We show this using three different data collection approaches: public expenditure tracking surveys, service provider surveys, and firm surveys. Although each approach has a more general focus, corruption—broadly defined—is often identified as a key issue.

The rest of the paper is organized as follows. Section 2 discusses the key features and findings of the expenditure tracking surveys (PETS) in education and health care where the focus is on leakage of public funds. Section 3 looks at the experience with provider surveys to explore incentives and performance problems, such as absenteeism, on the frontline. Section 4 presents the firm-level approach and discusses key findings on the incidence, level, and effects of corruption on enterprise performance. Section 5 concludes with a discussion on policy implications.

## 2. Public Expenditure Tracking Surveys (PETS)

Government resources allocated for particular uses flow within a legally defined institutional framework. Funds often pass through several layers of government bureaucracy on the way to service facilities, which are charged with the responsibility of exercising the spending. Policymakers in developing countries seldom have information on *actual* public spending at the provider or facility level or by activity. A public expenditure tracking survey (PETS) tracks the flow of resources through these strata, on a sample survey basis, in order to determine how much of the originally allocated resources reach each level. It is therefore useful as a method for locating and quantifying political and bureaucratic capture, leakage of funds, and problems in the deployment of human and in-

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1. See Svensson (2003a).

2. Recent contributions on the determinants of corruption include Ades and di Tella (1997, 1999), Persson, Tabellini, and Trebbi (2003), Svensson (2000a), and Treisman (2000). On the effects of corruption, see Mauro (1995), Wei (1997), and Johnson and others (1997).

kind resources, such as staff, textbooks, and drugs. A typical PETS of frontline providers (schools and clinics and their staff) and local governments (politicians and public officials) is complemented by central government financial data.

The PETS explicitly recognizes that an agent may have a strong incentive to misreport. These incentives derive from the fact that information provided, for example, by a school or a health facility partly determines its entitlement to public support. In cases where resources, including staff time, are used for corruption or shirking, the agent involved in the activity will most likely not report it truthfully. Likewise official charges may only partly capture what the survey intends to measure (such as the user's cost of service). The PETS deals with these data issues by (i) using a multiangular data collection strategy (a combination of information from different sources); and (ii) carefully considering which sources and respondents have incentives to misreport, and identifying data sources that are the least contaminated by such incentives. This data collection strategy serves to cross-validate the information obtained separately from each source.

The PETS allows us to observe the outputs and actions of service providers, and thereby provide new information to policymakers and beneficiaries on the complex transformation of public budgets to services. When tailored to the specific circumstances, these tools can help identify incentives and shed light on the interactions which these incentives give rise to, such as collusion and bribery. They can also illuminate the political economy, such as the effect of interest groups on spending outcomes. The novelty of the PETS approach lies not so much in the development of new methods of analysis *per se*, but the application proven methods (micro surveys) to service providers and governments.

### *2.1 Using PETS to Measure Corruption*

Uganda was the first country to do a PETS in 1996. The study was motivated by the observation that despite a substantial increase in public spending on education, the official reports showed no increase in primary enrollment. The hypothesis was that actual service delivery, proxied by primary enrollment, was worse than budgetary allocations implied because public funds were subject to capture (by local politicians and public officials) and did not reach the intended facilities (schools). To test this hypothesis, a PETS was conducted to compare budget allocations to actual spending through various tiers of government, including frontline service delivery points, which in this involved primary schools (Ablo and Reinikka 1998; Reinikka 2001).

Adequate public accounts on actual spending were not available, so the survey collected five years of data on spending (including in-kind transfers), service outputs, and provider characteristics in 250 government primary schools. The initial objective of the PETS was purely diagnostic, that is, to measure leakage in school funding. As sections 2.2

and 2.3 show, a PETS can also provide quantitative data on and explain leakage of public funds, as well as serve as a tool for impact evaluation.

The first Ugandan school survey provides a stark picture of public funding on the frontlines. On average, only 13 percent of the annual capitation grant (per student) from the central government reached the school in 1991–95 (Table 1). Eighty-seven percent either disappeared for private gain or was captured by district officials for purposes unrelated to education, although there was no evidence of increased spending in other sectors (Jeppson 2001). Most schools received very little or nothing. Based on yearly data, 73 percent of the schools received less than 5 percent, while only 10 percent received more than 50 percent of the intended funds. The picture looks slightly better when constraining the sample to the last year of the survey period. Still, only 22 percent of the total capitation grant from the central government reached the schools in 1995 (Reinikka and Svensson 2002a).

**Table 1. Leakage of Nonwage Funds in Primary Education in Uganda, 1991–95 and 2001 (percent)**

<i>Year</i>	<i>Mean</i>	<i>Median</i>
1991	97	100
1992	96	100
1993	85	100
1994	84	100
1995	78	100
2001	18	18

*Source:* Reinikka (2001); Reinikka and Svensson (2003).

Subsequently, several other countries implemented public expenditure tracking surveys in education and health care. In primary education, these studies include Ghana, Peru, Tanzania, and Zambia. Leakage of nonwage funds—defined as the share of resources intended for but not received by the frontline service facility—is found to be a major issue in all cases (Table 2).

**Table 2. Leakage of Nonwage Funds in Primary Education: Evidence from Public Expenditure Tracking Surveys (percent)**

<i>Country</i>	<i>Mean</i>
Ghana 2000	50
Peru 2002*	30
Tanzania 1999	57
Zambia 2002	60

\* Utilities only.

*Source:* Ye and Canagarajah (2002) for Ghana; Instituto Apoyo and World Bank (2002) for Peru; Price Waterhouse Coopers (1999) for Tanzania; Das and others (2002) for Zambia.

According to the PETS in Zambia—unlike in Uganda in the mid-1990s—rule-based allocations seemed to reach the intended beneficiaries: more than 90 percent of all schools received their rule-based nonwage allocations, and 95 percent of teachers received their salaries (Das and others 2002). But rule-based funding accounts only for 30 percent of all funding. In discretionary allocations (70 percent of the total spending) the positive results no longer hold: less than 20 percent of schools receive *any* funding from discretionary sources. The rest is spent at the provincial and district level. Similarly, in the case of overtime allowances (which must be filed every term) or other discretionary allowances, 50 percent were overdue by six months or more.

A few studies also quantify the share of ghosts on the payroll, that is, teachers or health workers who continue to receive a salary but who no longer are in government service, or who have been included in the payroll without ever being in service. In Honduras, for example, 5 percent of teachers on the payroll were found to be ghosts, while in health care the percentage was 8.3 for general practitioners in 2000 (World Bank 2001). In Africa, the comparable figures are higher: 20 percent in Uganda in 1993 (Table 3).

**Table 3. Ghost Workers on Payroll**

(percent)

<i>Country</i>	<i>Ghosts workers</i>	
	<i>Education</i>	<i>Health</i>
Honduras 2000	5.0	8.3
Uganda 1993	20.0	—

— Not available.

Source: World Bank (2001) for Honduras; Reinikka (2001) for Uganda.

Taken together, the PETS carried out in Africa found leakage of nonwage funds on a very large scale. Salaries and allowances also suffer from leakage but to a much lesser extent. Given that availability of books and other instructional materials are key to improving the quality of schooling, the fact that between 87 percent (Uganda) and 50 percent (Ghana) of the funding for these inputs never reach the schools makes leakage a major policy concern in the education sector. Instead of instituting more general public sector reforms, the PETS in Uganda shows that it may be more efficient to target reforms and interventions at specific problem spots. For example, the PETS in 1996 pointed to the fact that nonwage expenditures are much more prone to leakage than salary expenditures. They also demonstrate that leakage occurs at specific tiers within the government (typically at the local governments in Tanzania, Uganda, and Zambia). This knowledge can be exploited to implement more focused and hence more efficient interventions.



## *2.2 Explaining Capture of Public Funds*

A striking feature of the Uganda (PETS) data is that although a majority of schools did not receive funding (in a given year), there was still large variation in leakage across schools. Reinikka and Svensson (2002a) develop a simple bargaining model to explain this variation. In the model, resource flows—and leakage—are endogenous to school characteristics, as schools use their bargaining power vis-à-vis other parts of the government to secure greater shares of the funding. Specifically, in the absence of central government oversight, local government officials and schools bargain over nonwage expenditures disbursed by the central government to local governments (districts). The district is supposed to pass the grant on to schools. Since district officials have discretion over these funds, only they know the amount of monthly transfers (which varies frequently given cash budgeting). In principle, a school could obtain information on disbursements of the capitation grant, but in practice contacting the central government is costly.

Even if the school decides to pay for obtaining the necessary information, exercising their voice (see Hirschman 1970) is also costly. It would require organizing the parents and teachers and lodging a complaint with higher authorities. The key implication of the model is that resources are not allocated according to the rules underlying the government's budget decisions, with obvious equity and efficiency implications.

As shown in Reinikka and Svensson (2002a), the model's predictions are confirmed in the data obtained from PETS. Specifically, larger schools appear to receive a larger share of the intended funds (per student). Schools with children of better-off parents also experience a lower degree of leakage, while schools with a higher share of unqualified teachers experience a higher leakage. After addressing potential selection, endogeneity, and measurement issues, these school characteristics have a quantitatively large impact on the degree of leakage. A 1-percent increase in school size (evaluated at the mean of all explanatory variables) reduces leakage by 2 percentage points. A 1-percent increase in household income (proxied by PTA fees) increases the amount of public funding that reaches the school by 0.25 percentage points, and a similar increase in the share of qualified teachers reduces leakage by 0.27 percentage points.

These findings provide new insights into an area almost exclusively studied using cross-country data. They show that a large part of the variation in corruption at the local level can be explained by studying the interaction between local officials and end-users (schools in this case) as a bargaining game. From an analytical point of view, this approach differs from much of the existing literature on corruption, since it focuses on the principal's (the school's) rather than the agent's (the district official's) incentives and constraints.

### *2.3. Evaluating Impact of a Public Information Campaign*

Following publication of the first PETS findings in 1996, the Ugandan central government made a swift attempt to remedy the situation. It began publishing the monthly intergovernmental transfers of public funds in the main newspapers, broadcasting information on them on radio, and requiring primary schools to post information on inflows of funds for all to see. This not only made information available to parent-teacher associations (PTA), but also signaled local governments that the center had resumed its oversight function. An evaluation of the information campaign—using a repeat PETS—reveals great improvement. While schools on average are still not receiving the entire grant (and there are delays) capture has been reduced from on average 78 percent in 1995 to 18 percent in 2001 (Table 1).

A before-after comparison for the same schools in 1995 and 2001—and controlling for a broad range of school-specific factors, such as household income, teacher education, school size, and degree of supervision—suggests that the information campaign can explain two-thirds of this massive improvement (Reinikka and Svensson 2003). This is likely to be an upper bound on the effect, since it cannot distinguish the effect of the information campaign from other policy actions or changes that simultaneously influenced all schools' ability to claim their entitlement.

A key component in the information campaign was making monthly transfers of public funds to the districts public in newspapers. Thus, schools with access to newspapers have been more extensively exposed to the information campaign. Interestingly, in 1995, schools with and without access to newspapers suffered just as much from local capture. From 1995 to 2001, both groups experienced a large drop in leakage, which is consistent with the before-after findings. However, the reduction in capture is significantly higher for the schools with newspapers; these schools on average increased their funding by 10 percentage points more than the schools that lacked newspapers. The results hold also when controlling for differences in income, school size, staff qualifications, and the incidence of supervision across the two groups.

With a relatively inexpensive policy action—provision of mass information—Uganda has dramatically reduced capture of a public program to increase primary education. Poor schools, being less able to claim their entitlement from the district officials before the campaign, benefited most from the information campaign.

### **3. Frontline Provider Surveys**

Service provider surveys are increasingly used to examine the efficiency of public spending, incentives and various dimensions of service delivery in provider organizations, especially on the frontline. The quantitative service delivery survey (QSDS) is a variant of these provider surveys, with a heavy emphasis on systematic quantitative data. It can be

applied to government, private for-profit, and not-for-profit providers. It collects data on inputs, outputs, quality, pricing, oversight, and so forth. The facility or frontline service provider is typically the main unit of observation in a QSDS in much the same way as the firm is in enterprise surveys and the household is in household surveys. A QSDS requires considerable effort, cost, and time compared to some of its alternatives, especially surveying perceptions.

A QSDS-type survey conducted in Bangladesh made unannounced visits to health clinics with the intention of discovering what fraction of medical professionals were present at their assigned post (Chaudhury and Hammer 2003). The survey quantified the extent of this problem on a nationally representative scale and collected other information as well. Absentee rates for medical providers in general are quite high (35 percent), and higher for doctors (40 percent; and 74 percent at lower-level health facilities).<sup>3</sup> Determinants of staff absenteeism include whether the medical provider lives near the health facility, has access to a road, or has an electricity connection.<sup>4</sup>

**Table 4. Absence Rates among Teachers and Health-Care Workers in the Public Sector**

(percent)

<i>Country</i>	<i>Primary schools</i>	<i>Primary health facilities</i>
Bangladesh 2002	—	35
Honduras 2000	14	27
India* 2002	23	43
Peru 2002	13	26
Uganda 2002	26	35
Zambia 2002	17	—

— Not available.

\* Average for 14 States.

*Source:* Chaudhury and Hammer (2003) for Bangladesh; Chaudhury and others (2003) for India, Peru, and Uganda; World Bank (2001) for Honduras; Habyarimana and others (2003) for Zambia.

Honduras used a combination of PETS and QSDS to diagnose moral hazard with respect to frontline health and education staff (World Bank 2001). The study demonstrated that even when salaries and nonwage funds reach frontline providers certain staff behaviors and incentives in public service have an adverse effect on service delivery, particularly absenteeism and job capture by employees. Migration of posts (due to capture by employees) was considered a major problem. The Honduran system of staffing assigns posts to the central ministry, not individual facilities. Because the central ministry has discretion over the geographic distribution of posts, frontline staff have an incentive to lobby for having their posts transferred to more attractive locations, most often to urban

3. These rates do not separate excused and unexcused absences, but compare the staff roster to those who were physically present at the time of the survey.

4. The average absence rate is the same in Ugandan health facilities, but even higher (43 percent) in India (Table 4). In schools absence rates are generally lower (35 percent).

areas. The implication is that posts migrate from the rural and primary level to cities and higher levels of health care/schooling. This is neither efficient nor equitable.

The PETS/QSDS set out to quantify the incongruity between budgetary and real staff assignments and determine the degree of attendance at work. It used central government information sources and a nationally representative sample of frontline facilities in health and education. Central government payroll data indicated each employee's place of work. The unit of observation was both the facility and the staff member, both operational and administrative, and included all levels of the two sectors from the ministry down to the service facility level.

In health, the study found absenteeism to be generic, with an average attendance rate of 73 percent across all staff categories (Table 4). Thirty-nine percent of absences were without justifiable reason (such as sick leave, vacations, and compensation for extra hours worked). This amounts to 10 percent of total staff work time. Multiple jobs were prevalent, especially for general practitioners and specialists. Fifty-four percent of specialist physicians had two or more jobs, and 60 percent of these were in a related field. Five percent of sampled staff members had migrated to posts other than the one assigned to them in the central database, while 40 percent had moved since their first assignment. The highest proportions of migrators were found among general practitioners. Migration was always from lower- to higher-level institutions, although there was also some lateral migration. Job migration was found to reflect a combination of employee capture and budget inflexibility.

In education, staff migration was highest among nonteaching staff and secondary teachers. Multiple jobs in education were twice as prevalent as in health, with 23 percent of all teachers doing two or more jobs. Finally, 40 percent of workers in the education sector worked in administrative jobs suggesting, perhaps, a preference for nonfrontline service employment, or perhaps deliberate employment creation on the part of the government.

The QSDS is still a new tool but the results of the first surveys are encouraging. There are ongoing attempts—for which published results are not yet available—to use the QSDS to measure other aspects of corruption and inefficiencies across service providers, including drug leakage, wastage, and informal user fees.

#### **4. Measuring and Understanding Corruption at the Firm Level**

Can reliable micro data on corruption really be collected from firms? Given the secretive nature of corrupt activities, the common view has been that it is virtually impossible to collect reliable quantitative information on corruption. Kaufmann (1997) argues that this presumption is incorrect. With appropriate survey methods and interview techniques, managers are willing to discuss corruption with remarkable candor. At the same time, in order to collect reliable information on graft at the firm level, it is crucial to

design an empirical strategy that gives the manager an incentive to cooperate and truthfully report their experiences with corruption.

One such attempt was carried out in the late 1990s in Uganda. A “standard” firm-level survey tool was used to collect quantitative information on bribe payments across firms (Reinikka and Svensson 2001). The idea was to combine detailed financial and structural information from the firms with the quantitative graft data, yielding a unique data set to study the determinants and consequences of corruption at the firm level.<sup>5</sup>

The empirical strategy to collect information on bribe payments across firms in Uganda had the following four key components. First, a local industry association, Uganda Manufactures’ Association Consultancy and Information Service, implemented the survey. In Uganda, as in many other countries, there is a deep-rooted distrust of the public sector. To avoid suspicion of the overall objective of the data collection effort, it was therefore decided that a body in which most firms had confidence should implement the survey. Second, the questions on corruption were phrased in an indirect manner to avoid implicating the respondent of wrongdoing. Third, the corruption-related questions were asked at the end of the interview, when the enumerator had had enough time to establish the necessary credibility and trust. Finally, to enhance the reliability of the corruption data, multiple questions were asked on corruption in different sections of the questionnaire. Consistent findings across measures significantly increase the reliability of the data.<sup>6</sup> The data collection effort was also aided by the fact that corruption had, to a large extent, been desensitized in Uganda. Prior to the survey, several awareness-raising campaigns had been implemented on the consequences of corruption.<sup>7</sup>

A striking finding of the survey was the large variation in reported graft across firms (Svensson 2003a). Since the Uganda firm-level survey was designed to be representative of the population of firms, why would some firms need to pay bribes while others do not? Clearly, there might be several reasons. For instance, firms deal with public officials who differ on the personal (moral) cost of demanding bribes. Public officials’ perception of the likelihood of getting caught if being corrupt and the perceived punishment if found guilty may also differ. However, the most likely explanation is that

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5. Kaufmann and Wei (1999) use firm-level data (based on the Global Competitiveness Report index) to assess the validation of the “grease argument,” but the data is perception-based and derived from questions referring to country characteristics. Ades and di Tella (1999) utilize the same source but use country averages. Hellman and others (2000a,b) also use micro (firm-level) data. The data from 20 countries is numerical but ordinal (based on multicategory responses to questions on corruption). In line with (and complementary to) the cross-country literature, they explain corruption as a function of the political-institutional environment (property rights protection and civil liberties).

6. The firm survey had a more general focus. The survey data have been used to evaluate the effects of trade liberalization on firm productivity (Gauthier 2001), assess the bad news principle (Svensson 2000b), and study the effects of, and coping with, poor public service provision (Reinikka and Svensson 2002b). Reinikka and Collier (2001) summarize several of the findings from the firm survey.

7. See Ruzindana and others (1998) and World Bank (1998).

officials' opportunity to extract bribes, that is, their opportunity to influence the firms' business decisions and cash flows, differ across sectors and locations. With private firms, these control rights stem from the existing regulatory system and the discretion public officials have over implementing, executing, and enforcing rules and benefits that affect firms, such as business regulations, licensing requirements, permissions, taxes, exemptions, and public-goods provision.

How much must graft-paying firms then pay? As discussed in Svensson (2003a), if the firms face the same set of rules and regulations and there are no differences in the number (or the extent) of interactions with the public sector, the answer must be firm specific. Consider a firm forced to pay bribes to continue its operations and that is bargaining with a rent-maximizing public official. The official will try to extort as high a bribe as possible, subject to the constraints that she might get caught and punished and that the firm might exit. Two firm-specific features would influence the magnitude of the graft demand according to this bargaining hypothesis: the firm's ability to pay the bribe and the firm's refusal power, that is, the cost of not paying.

In line with the control right hypothesis, the survey data reveal that there are statistical differences between the group of firms that pay graft and the group of firms that don't. Firms that don't pay graft tend to have characteristics suggesting that they operate in sectors with little or no contact with the public sector, that is, in the informal sector. They receive significantly less public services, are less involved in foreign trade, and pay fewer types of taxes, particularly when controlling for tax exemptions. This interpretation is further supported by the finding that firms reporting positive bribe payments spend significantly more time dealing with government regulations and more money on accountants and specialized service providers to deal with regulations and taxes. In other respects, the two groups of firms are similar.

Consistent with the bargaining hypothesis, Svensson (2003a) finds that firms' "ability to pay," proxied by firms' current and expected future profitability, and firms' "ability to refuse to pay," proxied by the expected cost of reallocation, can explain a large part of the variation in bribes across graft-reporting firms. The results are statistically robust and remained intact when instrumenting for profits. These results suggest that public officials act as price (bribe) discriminators, demanding higher bribes (for a given public service) from firms that can afford to pay, and demanding lower bribes from those that can credibly threaten to exit the market or use other means of acquiring the service.

Do bribe payments constitute a heavy burden on firms? The evidence suggests that they do. For the firms reporting positive bribes, the average amount of corrupt payments was equivalent to US\$ 8,280, with a median payment of US\$ 1,820. These are large amounts, on average corresponding to US\$ 88 per worker, or roughly 8 percent of the total costs (1 percent in the mean). Including firms reporting zero bribe payments, the average payment is US\$ 6,730, with a median payment of US\$ 450.

Approximately 50 percent of the firms reporting positive bribe payments paid more in grafts (annually) than for security (including guards and investment in security-related equipment). Almost 50 percent of the firms reported larger bribe payments than total investment.<sup>8</sup>

When assessing these data, it should be stressed that despite the data collection strategy, there are likely to be cases of misreporting in the sample. The average graft numbers may be sensitive to such misreporting. The strategy used to collect information on graft, however, has minimized any obvious systematic biases in the correlation between reported graft and the set of explanatory variables discussed above.

Fisman and Svensson (2000) use the same firm-level data set to study the effects of corruption on firm performance. Evaluating the effects of corruption (for instance on firm growth) using firm-level data is difficult. The problem is identification, since both growth and corruption are likely to be jointly determined. A simple example illustrates the point. Consider two firms in a given sector of similar size and age. One of the firms is producing a good/brand perceived to have a very favorable demand forecast, while the other firm is producing a good with much less favorable demand growth. Assume furthermore that the firms need to clear a certain number of business regulations and licensing requirements, or require some public infrastructure services. Moreover, assume that public servants have discretion in implementing and enforcing these regulations and services. A rational rent-extracting public official would try to extract as high a bribe as possible. In this setup, one would expect a public official to demand higher bribes from the firm producing the good with a favorable demand forecast, simply because this firm's expected profits are higher and, thus, its ability to pay is larger. If the forecasts also influence the firms' willingness to invest and expand, we would expect (comparing these two firms) a positive (observed) relationship between corruption and growth.

Fisman and Svensson (2001) try to overcome this simultaneity problem by using industry-location averages as instruments. They argue that if the simultaneity problem is specific for firms, but not industries or locations, then netting out this firm-specific component yields a bribe measure that only depends on the underlying characteristics inherent to particular industries and/or locations.

Fisman and Svensson (2001) find the rate of bribery to be negatively correlated with firm growth. For the full data set, a 1 percentage point increase in the bribery rate is associated with a reduction in firm growth of 3 percentage points, an effect about three times greater than that of taxation on firm growth. Moreover, after outliers have been excluded, they find a much greater negative impact of bribery on growth, while the effect of taxation is considerably reduced.

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8. Part of the explanation to this striking finding is that a considerable number of firms invested very little or nothing in any given year.

Despite these strong results, it should once more be stressed that in reality, some firms may still benefit (and possibly a great deal) from corruption. What this type of econometric work identifies is what is true on average, or in general. The data suggest that there is a strong negative relationship between bribery payments and firm growth on average.

In the firm survey work discussed above, the graft data measure the aggregate (for an individual firm) graft paid by firms. A complementary approach is to indirectly estimate subcomponents of this firm-specific aggregate, using cost information on provision of homogeneous public services (goods). In the Uganda firm-survey, information on two variables related to the delivery of public services was collected (Svensson 2001, Reinikka and Svensson 2001). The respondents were asked about the total costs (including informal payments to speed up the process) of getting connected to the public grid and the total cost (including informal payments to speed up the process) of acquiring a telephone line. The fee for a telephone connection (around US\$ 100) was supposed to be fixed. Thus, deviations from the set price typically reflect graft. Connection costs to the public electricity grid is more problematic. In fact, the cost of connection to the public grid is a complex function of load requirements, necessary upgrades, and distance to existing voltage connection. The complexity in determining the price of connection implies that the public electricity company in reality had large discretion over the cost. To the extent that the other determinants of connection costs to the public grid can be controlled for, deviations typically reflect graft.

Most firms acquiring a telephone line had to pay more than the official (set) price (Svensson 2003b). On average, the additional cost was around US\$ 130 which, given that the official price was around US\$ 100, implies that the average firm had to pay more than twice the stated cost to acquire a telephone line. The results are similar when analyzing the cost of connecting to the public grid. Interestingly, there is no clear relationship between the excess price and the time it takes for firms to get access to the services they paid for (Svensson 2003b).

A similar approach to collect quantitative data on corruption is used in di Tella and Schargrodsky (2003). They collect procurement data (prices paid) on basic, homogeneous inputs for public hospitals in Buenos Aires, Argentina. During a crackdown on corruption in public hospitals, they find that these prices fell by 15 percent.

## **5. Conclusion**

The paper has argued that with appropriate survey methods and interview techniques, it is possible to collect quantitative data on corruption at the micro level. In particular, the public expenditure tracking survey (PETS) and related quantitative service delivery surveys (QSDS) are promising new microeconomic tools for diagnosing corruption and other problems in basic service provision in developing countries (see



Dehn, Reinikka, and Svensson 2003 for a discussion). Until recently, the analysis of service delivery has focused almost entirely on financing services, while provision, particularly issues related to institutions, incentives, and provider behavior, has received much less attention. The PETS and QSDS address this omission.

From a policy perspective it should be noted that the extent (or variation across firms and service providers) of corruption and capture seem to have less to do with conventional audit and supervision mechanisms, and more to do with the schools' or clinics' opportunity to voice their claims for the funds, and firms' bargaining positions. Traditionally, it has been left to the government and a country's legal institutions to devise and enforce public accountability. The findings reviewed in this paper question this one-sided approach. As the government's role and services have expanded considerably during the past decades, it has become apparent that conventional mechanisms, such as audit and legislative reviews, may not be enough. Collusion, organizational deficiencies, abuse, and lack of responsiveness to citizens' needs cannot easily be detected and rectified even with the best of supervision. When the institutions are weak, as is common in many developing countries, the government's potential role as auditor and supervisor is even more constrained.

The positive impact of the information campaign to reduce capture in Uganda further suggests that corruption can be effectively tackled only when the reform of the political process and the restructuring of the regulatory systems are complemented by a systematic effort to increase the citizens' ability to monitor and challenge abuses of the system, and inform the citizens about their rights and entitlements.<sup>9</sup> Breaking the culture of secrecy that pervades the functioning of the government and empowering people to demand public accountability are two important components in such an effort.

Recent reviews of growth performance in Sub-Saharan Africa have identified a number of recurring features of African politics likely to undermine the results of traditional institutional reforms. These features include restricted civil society involvement, the state perceived as a vehicle of wealth accumulation, the prevalence of patronage politics, and a small elite with close political connections. Although each feature may not be applicable to every country, a successful national anticorruption program must also tackle these fundamental determinants of corruption.

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9. Paul (1997) makes the same argument.

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