

# **FIGHTING CORRUPTION TO IMPROVE SCHOOLING: EVIDENCE FROM A NEWSPAPER CAMPAIGN IN UGANDA**

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What are the most effective ways to increase primary school enrollment and student learning? We argue that innovations in governance of social services may yield the highest return since social service delivery in developing countries is often plagued by inefficiencies and corruption. We illustrate this by using data from an unusual policy experiment. A newspaper campaign in Uganda aimed at reducing capture of public funds by providing schools (parents) with information to monitor local officials' handling of a large education grant program. The campaign was highly successful and the reduction in capture had a positive effect on enrollment and student learning. (JEL: D73, I22, O12)

## **1. Introduction**

The Millennium Development Goals call for universal primary school en-

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rollment by 2015. Yet, until recently, little is actually known about what governments in developing countries should prioritize to raise educational attainment. This lack of knowledge does not reflect a lack of interest in the economic profession. There is an extensive literature on school characteristics and educational outcomes, but as argued by Glewwe (2002) and others most of the contributions suffer from methodological shortcomings.

Recently, progress has been made in one important dimension: assessing the effects and costs of specific school inputs and programs.<sup>1</sup> Unlike the earlier literature, these studies are based on quasi- or randomized experiments. However, while knowledge of these reduced form estimates of specific school programs and inputs are important in order to design effective ways to increase enrollment and student performance, they are not enough to guide government policy in developing countries. When scaling-up a specific program found to work in a controlled experiment run by a specific organization (often an NGO with substantial assistance from the research team), it is crucial also to have an understanding of the whole delivery chain; from the institutional constraints that affect central government policy decisions, through the incentive constraints that influence different layers of government agencies and officials implementing a given policy, to the actions and incentives of the end-producers (schools) and beneficiaries (students and

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<sup>1</sup>An (incomplete) list of recent contributions include Miguel and Kremer (2004), Banerjee et al. (2003), Glewwe et al (2002, 2004), and Shultz (2004).

parents).<sup>2</sup> Lack of attention to the service delivery system, and adjustment of policy accordingly, may imply effects very different from what a simple extrapolation of the estimates of the controlled experiment produces. As the total impact (when scaling up a program to the national level) depends on all the elements in the service delivery chain, interventions that focus on improving governance in general and governance of social services in particular may be the most cost-effective way to increase school enrollment and student learning. Moreover, since traditional approaches to improve governance have produced weak results in most developing countries, experimentation and evaluation of new tools to enhance accountability should be at the forefront of research into improving outcomes of social services.

We illustrate these points using data from an unusual policy experiment: a newspaper campaign in Uganda aimed at reducing capture of public funds by providing schools (parents) with information to monitor local officials' handling of a large education grant program. The program in question - a capitation grant to cover primary schools' nonwage expenditures - is a fairly standard one in developing countries. Like many other spending

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<sup>2</sup>Thus, the issue we raise is about external validity. However, the problem is different from what is typically discussed in the literature on randomized evaluations. In fact, the external validity concern raised in the literature stems from the fact that the context of a specific intervention and time duration often matter to its outcomes, thus confounding interferences for scaling up from randomized trials. General equilibrium effects further complicates extrapolation.

programs, this was a program that appeared to work well, based on central government budget data. Funds were disbursed by the Ministry in charge on a regular basis, and a benefit incidence analysis carried out by the World Bank suggested that benefit incidence of public spending was neutral (World Bank, 1996). However, like in many other spending programs in low-income countries, the situation on the ground was completely different from the official statistics.

A public expenditure tracking survey (PETS) to gauge the extent to which public resources actually filtered down to the schools showed that in the mid-1990s, the average school received only around 20 percent of central government spending on the program (Reinikka and Svensson, 2004a).<sup>3</sup> Most schools received nothing and the bulk of the grants was captured by local government officials (and politicians) in charge of disbursing the grant to the schools. The data also revealed large variations in grants received across schools. Contrary to the findings of the benefit incidence analysis, data on actual public spending reaching the schools showed schools in poorer communities to suffer significantly more from capture.<sup>4</sup>

The government initiated a newspaper campaign in response to the prob-

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<sup>3</sup>For a conceptual discussion on public expenditure tracking and other similar surveys, see Dehn, Reinikka and Svensson (2003).

<sup>4</sup>While Uganda in the mid-1990s may have been somewhat of an extreme case with respect to local capture and corruption, available data indicate that the situation is similar in other Sub-Saharan African countries (see Reinikka and Svensson, 2004a).

lems identified in the first PETS. As an anticorruption program it differs from the standard package. Traditionally, anticorruption programs target corruption in service delivery primarily through capacity building of the legal and financial institutions - judiciary, police, and financial auditors - in charge of enforcing accountability in the public sector. This is a top-down approach where some government agencies are assigned to monitor and control others. The problem is that in many poor countries the legal and financial institutions are weak and among the most corrupt. More resources to these agencies may therefore not be the best solution. For these reasons, the government decided to take the bottom-up route of citizen enforcement and began to publish data on monthly transfers of capitation grants to districts in the national newspapers (and their local language editions).

In Reinikka and Svensson (2004b) we show that public access to information can indeed be a powerful deterrent to capture of funds at the local level. Specifically, we show that head teachers in schools closer to a newspaper outlet are more knowledgeable of the rules governing the grant program and the timing of releases of funds by the central government. These schools also managed to claim a significantly larger part of their entitlement after the newspaper campaign had been initiated.

In this paper, we take these results as a starting point to explore the effects of improved “client power” on school enrollment and performance. Our preliminary results show that after the newspaper campaign started,

enrollment increased more rapidly in schools closer to a newspaper outlet. The effects are large. We also present complementary evidence based on district averages (Björkman, 2004). While preliminary, Björkman's results suggest that both enrollment and test scores increased significantly more in schools in areas with higher newspaper penetration, and thus in schools with more funds.

## **2. The newspaper campaign and its effects on local capture**

To assess the effects of improved access to public information on capture of funds a repeat PETS was carried out in 2002. The original 1996 sample consisted of 250 schools, randomly drawn from 18 districts. The 2002 survey revisited these original schools plus an additional 170 schools from 9 of the original 18 districts surveyed (for details on survey design, sampling strategy and data, see Reinikka and Svensson, 2004b).

The school-specific measure of capture  $s_{jt}$  is grants received (by school  $j$  in year  $t$ ) as a share of the grants disbursed by the central government to that school.<sup>5</sup> A low value indicates that the school suffers more from local capture. To measure  $s$  we collected data on grant receipts from the schools

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<sup>5</sup>A school's entitlement is a function of the number of P1 to P3 and P4 to P7 grade students. In 1995, the grant formula prescribed that each student in grade P1 to P3 was entitled to 2,500 USh per year, while each student in P4 to P7 was entitled to 4,000 USh. In 2001, the capitation grant was set at 5,000 USh per year for P1 to P3 students, and 8,100 USh per year for P4 to P7 students. The grant has maintained its real value in U.S. dollar terms.

and disbursement data from the Ministry of Finance.

Summary statistics are reported in table 1. The situation has improved since the mid-1990s. While only 24 percent of the total yearly grant from the central government reached schools on average in 1995, the average school received more than 80 percent of its entitlement in 2001. Even more strikingly, while the median school received nothing in the mid-1990s, it received 82 percent of its entitlement in 2001. Thus, the extent of capture has fallen dramatically. However, for many schools, capture is still a problem. For example, about 30 percent of the schools receive less than two-thirds of their entitlements.

In Reinikka and Svensson (2004b) we use two complementary approaches to estimate the effects of improved access to information on local capture of school grants. The first approach exploits the differences in access to newspapers across schools. The second approach measures exposure to the information campaign directly by testing head teachers' knowledge of the grant program and then instruments for it by using distance to the nearest newspaper outlet as instrument.

Table 2 reproduces the key findings of the second approach. Specification 1 depicts the first stage of a two-stage least squares estimation of the impact of improved access to public information as a tool to reduce capture. The dependent variable, *info*, is the aggregate test score on questions posed to head teachers about the formula used for deriving the capitation grant and

knowledge about the timing of releases of funds by the central government. The instrument is distance to the nearest newspaper outlet (*distance*). Distance to the nearest newspaper outlet has a strong negative effect on head teachers' knowledge about the grant program.

For distance to the nearest newspaper outlet to serve as a legitimate instrument it must affect the school's exposure to information about the grant program, but have no direct effect on its ability to claim funds from the district. In Reinikka and Svensson (2004b), we provide a battery of tests that support the use of distance as an instrument.

Specification 2 in Table 2 reports the results from estimating the structural regression

$$s_{jt} = \beta_0 x_{jt} + \beta_1 \widehat{info}_j + \beta_2 \sigma_{2001} + \beta_3 \sigma_{2001} \widehat{info}_j + \mu_j + \eta_{jt} , \quad (1)$$

where  $x_{jt}$  is income,  $\mu_j$  is a school-specific fixed effect, and  $\sigma_{2001}$  is a dummy for the treatment period 2001, i.e., after the newspaper campaign started.<sup>6</sup> We can difference away the school-specific effects.<sup>7</sup>

Schools that are more extensively exposed to the newspaper campaign, i.e., more informed schools, experience a significantly larger reduction in local capture of funds since the campaign started. We report both OLS stan-

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<sup>6</sup>We follow Reinikka and Svensson (2004a) and use the mean consumption level across district-urban-rural locations as a measure of income. The mean consumption level across district-urban-rural is derived from the national household survey data.

<sup>7</sup>We use all sample information (388 observations) to derive the generated regressor  $\widehat{info}_j$ .

dard errors (in parenthesis) and bootstrapped standard errors (in brackets). The quantitative effect of improved access to public information is large. The IV estimate implies that a one standard deviation increase in *info* results in a 1.1 standard deviation increase in spending reaching the schools (i.e., 44.2 percentage points increase in funding reaching the school between 1995 and 2001).

### **3. Effects of the newspaper campaign on enrollment and student learning**

Table 3 presents some preliminary evidence on the impact of the newspaper campaign on school enrollment. We follow the identification strategy laid out above. That is, we use distance to the nearest newspaper outlet (*distance*) as instrument. Instead of estimating the whole chain of events from distance through improved information to more funds, we first link distance to funding.<sup>8</sup> This regression then forms the first stage of a two-stage least squares procedure of the impact of reduced capture on school enrollment.

A potential problem with evaluating the impact of reduced corruption on school enrollment using survey data is sorting.<sup>9</sup> That is, it may be the

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<sup>8</sup>This is the reduced form of the structural model (1) .

<sup>9</sup>An additional problem is that due to idiosyncratic events in the period in-between the two surveys (1995 and 2001), such as a reduction in the number of classrooms or grades (due to adverse shocks or lack of maintenance), some schools have experienced structural shifts in their ability to accept new students. While there is no reason to believe that these idiosyncratic events are correlated with distance, due to a relatively

case that school enrollment in aggregate does not increase but that students sort into schools with more resources. While problematic, in reality there are reasons to believe that this problem is not so severe. Our sample consists almost exclusively of rural schools and the pool of potential students served by these schools does not typically have much choice with respect to primary school. Still, there is likely to be some sorting in the sample and this should be kept in mind when assessing the results. As we show below, when using district averages as in Björkman (2004) (in which case sorting is much less of a concern), we still observe similar effects.

In specification 1, table 3, we report the simple regression of changes in the number of students on a constant. From 1995 to 2001, average school size has almost doubled. We argue below that this change is driven in part by the reduction in capture caused by the newspaper campaign. However, it is also affected by another significant reform during the sample period. In 1997, primary schools were no longer allowed to charge school fees. As recent research has shown (see footnote 1), reducing the cost of schooling can have large effects on participation.

Specification 2, table 3 reports the first-stage relationship between dis-  

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small sample size, this may still be problematic. However, we can partly deal with this problem by removing the schools that experienced measurable adverse shocks during the period. Specifically, a handful of schools (10) experienced a dramatic fall in attendance during the period 1995 to 2001 due to different (exogenous) circumstances. These schools were consequently dropped from the sample.

tance to the nearest newspaper outlet and reduction in capture. Specification 3 depicts the second stage. That is,

$$\Delta students_j = \gamma_0 \Delta x_j + \gamma_1 \sigma_{2001} + \gamma_2 \Delta \hat{s}_j + \varepsilon_j , \quad (2)$$

where  $\Delta students_j$  is the change in number of enrolled students in grade 1 to 7 between 1995 and 2001. The predicted school-specific change in the share of spending reaching the school  $\Delta \hat{s}_j$ , is attributed to  $distance_j$ , and hence reflects factors outside the school's (community's) control.  $\hat{s}_j$  enters significantly and the effect is large. A one standard deviation increase in  $\Delta s_j$  results in a 0.66 standard deviation increase in school enrollment (i.e., 297 more students per school).

Specifications 4 and 5 depict the reduced-form coefficients of distance to the nearest newspaper outlet on the change in school enrollment. Specification 4 shows the estimate of  $distance$  during the information campaign (1995-2001). There is a strong relationship between distance to the nearest newspaper outlet and increase in school enrollment since the newspaper campaign started. The control experiment reported in specification 5 shows the estimate of  $distance$  during the five-year period prior to the campaign (1991-1995). This result contrasts with the changes in enrollment in the period after the campaign. That is, being located near a newspaper outlet had no impact on school enrollment prior to the campaign, but a large effect once the campaign had started.

Table 4 presents complementary evidence from Björkman (2004). Björk-

man's study is based on data on all Grade 7 students in Uganda, combined with district specific data on newspaper circulation. By looking at district averages, she can to a large extent get around problems of sorting and selection. Similar to the identification strategy used in Reinikka and Svensson (2004b), Björkman exploits the fact that exposure to information about the per-student capitation grant, and thus funding according to the results reported above, varied by district. Specifically, she uses the variation in newspaper circulation per district as an instrument of exposure. Her difference-in-differences estimates on enrollment are reproduced in Table 4.

Controlling for income, in the pre-newspaper campaign year 1995, there is no significant relationship between the number of grade 7 students and newspaper penetration, here defined as newspaper circulation per school (specification 1). However, in the post newspaper campaign year 2001, districts with higher newspaper circulation also have significantly more grade 7 students in primary school (specification 2).<sup>10</sup> The difference-in-differences estimate suggests that one more newspaper per school results in 20 more grade 7 students (specification 3).<sup>11</sup> Hence, enrollment increased significantly faster in districts with higher newspaper penetration and thus in districts more extensively exposed to public information about the grant program and thereby less subject to capture.

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<sup>10</sup>As in Reinikka and Svensson (2004a), the income data are derived from national household survey data.

<sup>11</sup>The average district has 7 newspapers per school.

Using a similar approach, Björkman also shows that the newspaper campaign had a large effect on student performance. On average, pupils in districts which were highly exposed to the per-capitation grant program scored 0.42 standard deviations (1.46 points) better in the Primary Leaving Exam than pupils in districts that were less exposed to the program (Björkman, 2004). This corresponds to an improvement of roughly 6 percent in test score of the average pupil in Uganda.

#### **4. Concluding remarks**

What is the most effective way to increase primary school enrollment? In this paper we have argued that innovations in governance of social services may yield the highest return since social service delivery in developing countries is often plagued by inefficiencies and corruption. We illustrate this by using data from an unusual policy experiment. A newspaper campaign in Uganda aimed at reducing capture of public funds by providing schools (parents) with information to monitor local officials' handling of a large education grant program. While preliminary, the evidence reported above suggests that both enrollment and test scores increased significantly more in schools in areas with higher newspaper penetration, and thus in schools with more funds. Since schools were free to spend their grants on whatever nonwage items they needed, be it textbooks, school meals, school uniforms, or flipcharts (or even to boost wages since funds generated by the schools themselves are fungible), these findings suggest that experimentation and

evaluation of the processes and institutions that improve voice and accountability, and thus indirectly enhance the learning environment in schools by ensuring that entitlements actually reach their beneficiaries as intended, should be high on the policy and research agenda.

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TABLE 1. Summary information on capture: Grants received as share of entitled grants (in percent)

	Mean	Median	St. dev.	Obs
<i>All schools</i>				
1995	23.9	0	35.1	229
2001	81.8	82.3	24.6	217

TABLE 2. Linking distance, information, and capture

<i>Specification</i>	(1)	(2)
Regression	1 <sup>st</sup> stage	2 <sup>nd</sup> stage
Dep. variable	info	$\Delta s$
Distance to nearest newspaper outlet	-0.103 <sup>***</sup> (.029)	
2001		2.30 (21.1)
Info		65.9 <sup>***</sup> (23.5) [23.6]
Schools	388	199

Notes: Income is included as control.

OLS standard errors in parenthesis and bootstrapped standard errors in square brackets.

\*\*\* [\*\*] (\*) denote statistically significant at 1 [5] (10) percent levels, respectively.

Source: Reinikka and Svensson (2004b).

TABLE 3. Impact of the newspaper campaign on school enrollment

<i>Specification</i>	(1)	(2)	(3)	(4)	(5)
Dep. variable	$\Delta$ students	$\Delta$ s	$\Delta$ students	$\Delta$ students	$\Delta$ students
Period	95-01	95-01	95-01	95-01	91-95
Constant	450*** (20.3)	74.1*** (6.77)	29.7 (286)	574*** (49.3)	68.4** (33.6)
Distance to nearest newspaper outlet		-5.74** (2.45)		-37.7** (17.9)	-4.7 (12.1)
Share of funding reaching school			7.55* (4.62)		
Schools	202	188	188	202	153

Notes: Income is included as control.

OLS standard errors in parenthesis.

\*\*\* [\*\*] (\*) denote statistically significant at 1 [5] (10) percent levels, respectively.

TABLE 4. Difference-in-differences estimates of the effects of newspaper circulation on enrollment of grade 7 students

<i>Specification</i>	(1)	(2)	(3)
Dep. variable	students	students	students
Period	1995	2001	95, 01
1995			3,242 (328)
2001			6,988 (685)
Newspapers per school	14.5 (11.5)	34.0* (18.3)	14.0 (12.0)
Newspapers per school*2001			20.2*** (3.18)
Schools	53	53	106

Notes: Income is included as control.

Robust standard errors in parenthesis.

\*\*\* [\*\*] (\*) denote statistically significant at 1 [5] (10) percent levels, respectively.

Source: Björkman (2004).