

# **Methodological Approaches to the Study of Institutions and Service Delivery: A Review of PETS, QSDS and CRCS**

Bernard Gauthier  
HEC Montréal

Ritva Reinikka  
The World Bank

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## **Abstract**

Achieving Millennium Development Goals in Africa requires a quantum leap in access to and quality of services. To this end, better diagnosis and understanding of both failures and successes in service delivery is crucial. In this paper, we review micro-level approaches to the study of service delivery. We focus on two types of service provider surveys--Public Expenditure Tracking Survey (PETS) and Quantitative Service Delivery Survey (QSDS)-- which have been developed for empirical analysis of incentives, service provider behavior and the resulting efficiency and equity of public expenditures, key to producing good outcomes, such as improved welfare, health and education. We also examine Citizens Report Card Surveys (CRCS), in which users specify their experiences of service quality, and which are used as feedback mechanisms from users to service providers and policymakers.

**Keywords:** Service delivery, Facility surveys, Public expenditure

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# 1. INTRODUCTION

How can the Millennium Development Goals in Africa best be achieved? To be sure, strong economic growth is necessary to reduce poverty and improve health and education, but it is not sufficient in itself, especially for reaching the health and education goals. Africa will reach the income-poverty goal if current growth rates more than double- a tough task in itself- but it will still fall short of the primary education and child mortality goals. Accelerating progress requires increased resources and, more importantly, more effective use of external finance and domestic public resources. For poverty and human development goals, more effective use of resources requires substantial improvements in service delivery, such as water, sanitation, municipal services, energy, transport, health care, and education that contribute to improved welfare and better health and education outcomes.

Domestic and external resources in Africa are limited. Even if resources are available, often public services are failing, for several reasons. First, governments spend little of their budgets on the public services poor people need to improve their livelihoods, health and education. For example, in the 1990s, Guinea allocated 48% of its limited public health spending to the richest fifth of the population (World Bank 2003). Second, even when public spending is allocated toward the poor—say, by shifting resources to primary schools and clinics—the money does not always reach frontline service providers. In the early 1990s in Uganda, only 13% of non-salary spending on primary education actually reached the primary schools. This was the average: poorer communities received even less, often nothing. Third, increasing the share of spending that goes to poor communities—as Uganda has subsequently done—is not enough. For education outcomes to improve, teachers must show up at work and perform effectively, as doctors and nurses must do for health outcomes to improve. Yet, these service providers are often mired in a system where the incentives for effective service delivery are weak, corruption is rife, and political patronage is common. A survey of primary health care facilities in India and Indonesia, for example, found the absenteeism rate for medical staff to be 40%. Finally, apart from service provider behavior, the demand side is also important. If households do not make use of services- use a clean water source, send their children to school or take them to a health clinic when they are ill- outcomes will not improve even if good quality services are available.

Until recently, the analysis of service delivery has mainly focused on the demand side using household survey data and on financing of services, while issues related to institutions, incentives and provider behavior have received much less attention. In the last decade, however, a new set of studies have emerged using micro approaches to analyze service delivery. They focus on the interaction between demand and supply, along with the behavior of frontline providers and the constraints associated with the supply side and shortcomings in the principal-agent relationships.

In this paper, we review these new micro-level approaches to the study of service delivery. We focus on two types of service provider surveys—Public Expenditure Tracking Survey (PETS) and Quantitative Service Delivery Survey (QSDS)—which have been developed to address incentives and behavior of frontline providers as determinants of efficiency and equity of public spending and service delivery. In addition, we review Citizens Report Card Surveys that collect information from users about service quality and that are used as feedback to service providers and policymakers.

The paper proceeds as follows. Section II presents a brief review of theoretical and empirical approaches that have been used to study service delivery. Section III then discusses the uses of PETS in studying service delivery, in particular relating to measuring leakage of funds, explaining capture and evaluating policy reforms concerning transparency and information. It also examines various methodological considerations related to the implementation of expenditure tracking surveys. Section IV examines some of the main ways QSDS are used to assess provider behavior, including staff motivation, performance and absenteeism. Section discusses the use of CRCS. Finally, Section VI explores new avenues for future research and recommends areas where these tools can shed light on ways to improve service delivery.

## **2. Various Approaches to the Study of Service Delivery**

Various methods and approaches have been used to study service delivery in recent years. This section reviews key theoretical and empirical approaches.

### **2.1 Theoretical approaches**

One of the main models used to analyze service delivery in the public economics literature is the principal-agent model. This perspective emphasizes the principal-agent relationships between citizens, politicians and service providers. Citizens (clients) delegate responsibilities to elected officials (state) to provide public services and pay taxes to fund them. Politicians in turn delegate service delivery to provider organizations by creating incentives and appropriating budgets. Clients have different ways of influencing providers, such as school boards or health clinic management committees. This network of principal-agent relationships presents numerous incentive problems. The model stipulates two layers of agency problems: between the citizens and elected officials and between elected officials and service providers (see Figure 1). The role of intermediary agent played by the state in the principal-agent relationship creates a situation where it is difficult for the principal (citizens) to evaluate and control the actions of the decentralized agent (service provider) (World Bank, 2003).

In order to increase organizational efficiency and reduce the influence of private interests over the organizational (principal's) goals, organizational activities tend to be coordinated through a set of institutional arrangements: rules, norms, standard operating procedures and hierarchical structures. This framework, enlarged by the compensation schemes offered to the agents, is designed to provide incentives and impose constraints on individual decision makers, and thus attenuate uncertainty in the behavior and organizational outcomes.

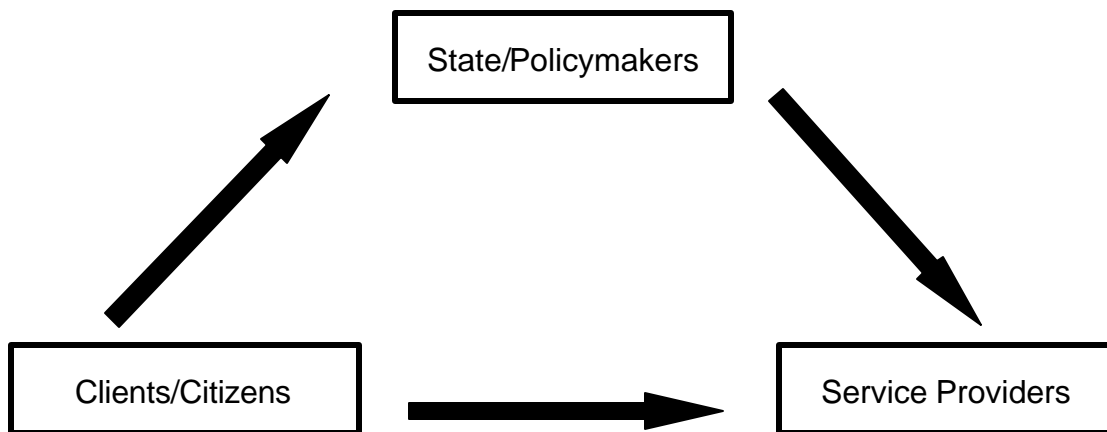
The general issue in designing incentives for the agent to exert the appropriate level of effort in the standard moral-hazard (hidden action) models is by linking the agent's compensation to his performance.<sup>1</sup> In a first-best world, with perfect information shared among parties, citizens would be able to evaluate actions taken on their behalf by governments and service providers, and to exercise control over agents' behavior. However, in practice, citizens have a weak capacity to

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<sup>1</sup> The assumption that the principal engages in a compensation relation based on the observation of the payoff is common to works in information economics and organization theory. See Holmström (1979).

exercise control through this process as information is imperfect and asymmetric, agents' objectives do not coincide with those of the principal (citizens), and enforcement is inadequate. This leads to situations where agents will put forth less effort than citizens would wish (shirking) or will be able to divert some resources to their own ends (rent extraction). In the context of agents' risk aversion and difficulty of measurement, there is a classic trade-off between risk and incentives (Holmström, 1979).

**FIGURE 1: CLIENTS-GOVERNMENT-SERVICE PROVIDERS RELATIONSHIP**



Source: World Bank (2003).

The difficulty of control present in any principal-agent relationship is reinforced in public service delivery due to the characteristics of the institutional and organizational arrangements. The public economics literature has focused mainly on three aspects in which public services differ from private provision (Besley and Ghatak, 2003; Burgess and Rotto, 2003): multi-tasking considerations, the difficulty of measuring performance and the presence of multiple principals (Dixit, 2002).

Service providers perform a multiplicity of tasks which renders evaluation of results even more difficult. For instance, health workers perform vaccination or other preventive activities as well as curative activities, which generally compete with each other in terms of limited time and other resources. As Holmström and Milgrom (1991) emphasize, if an employee has several tasks to carry out and some have good performance measures and others do not, then making employees' pay sensitive to good performance measures will cause a substitution of efforts away from the other tasks and could result in loss of efficiency. This makes provision of incentives hard when workers have to perform multiple tasks. If, for instance, health workers are rewarded on the basis of the performance of vaccinations exclusively, this might lead to an excessive focus on these activities at the expense of other components of good health.

Measurability problems are associated with the complexity of service provision. Agents' activities (marginal productivities) in public organizations are generally unobservable by the principal

(citizens). Typically, citizens only get to observe the aggregate output of the production process. Citizens cannot easily determine who is responsible for the situation they observe: the frontline service providers, politicians or bureaucrats. They cannot observe the specific contribution that a politician makes to a program and it is also difficult to link this potential contribution to the program outcome and their own welfare. Further, the objectives of service providers are often imprecise. For instance, the overall objective of a school is to provide good education, which is very difficult to define. In such contexts, it is hard to identify good performance measures. When performance measures are noisy, incentive structures sensitive to these measures are inefficient and subject workers to unnecessary risks (Dixit, 2002; Besley and Ghatak, 2003). In most public organizational settings, because of the prohibitive cost (or non-feasibility) of gathering information about each agent action and input in the production process, the principal will tend to use aggregate measures to evaluate agents' success and contribution. This is especially true in public services, as these outputs often do not have a market equivalent and are consequently hard to appraise.

Service delivery is also characterized by the presence of multiple principals. There are several actors who are directly affected by the actions of an agent in the provision of public services. For instance, in the education sector, the parents, employers, school boards, ministry of education officials and politicians could be seen as the principals, while the agents are the teachers. These different principals might have different preferences concerning the outcome of the various tasks carried out by the agents (Besley and Ghatak, 2003). Since each principal would like to induce the agent to put more effort into activities that he cares more about, if the incentive schemes are not chosen to maximize the joint payoffs of the principals, there will be inefficiencies (Dixit, 2002).

In addition to these three factors, the difficulty of controlling public service delivery is also compounded by the presence of multiple agents engaged in a joint production process. In the public administration, responsibilities are shared between several decision-making levels, often following a central-provincial-local authority pattern.<sup>2</sup> These multi-level structures are characterized by situations of functional interdependence between levels: rather than being independent, one unit's (or level's) action has repercussions upon the effectiveness of a second unit's action.<sup>3</sup> Functional interdependence between agents potentially gives rise to specific problems, in particular related to the difficulty of dissociating the individual contribution of the different levels of agents (see, for instance, Radner and Marschak, 1972; Holmström, 1982). Often, only aggregate or joint outcomes could be measured. Moral hazard, which arises in situations where individuals are shielded from bearing all the costs of their actions because of the difficulty of observing their private actions, is then reinforced in teams. As shown in Holmström's (1982) seminal contribution, when there are complementarities in production, if all

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<sup>2</sup> A country's constitution customarily accounts for this separation of jurisdiction between levels of government. In public and private organizations, however, separation of powers is generally motivated by efficiency purposes, for instance, to benefit from comparative advantages or technological innovations. Beyond doubt, efficiency considerations are also integrated in the drafting of a state's constitutions, but other criteria such as human rights and freedom may be given much greater precedence.

<sup>3</sup> In multi-level organizations, the task of the executive or managerial level normally centers on long-term planning or appraisal of activities. The operational level is usually in charge of implementing activities chosen by the higher level (for instance, service delivery programs).

the output of the team is shared among team members, team members will tend to free-ride on other agents' productive activity. This free rider problem is exacerbated in large organizations.

Furthermore, hierarchical structures are frequently used to allocate the responsibilities among the agents in service delivery systems. One of the main challenges in hierarchical settings is of motivating the superior agent (politician or policy maker) to act himself as a principal toward his subordinate (local government or service provider).

The performance and rent sharing arrangements within hierarchies have been analyzed in various settings and contexts (Tirole, 1986; Melumad et al., 1992; Radner, 1992; Laffont and Martimort, 1998; Mookherjee and Tsumagari, 2004). For instance, the optimal contracting relationship between a principal and two functionally interdependent and productive agents has been characterized under both centralized and decentralized compensation structures by Laffont and Martimort (1998).<sup>4</sup> Mookherjee (2006) reviews the literature on hierarchies and delegations. He specifically examines the costs and benefits of decentralized decision-making with respect to problems of incentives and coordination. In the presence of communication costs, there is a tradeoff between control loss and flexibility. In such a context, delegating decision-making through hierarchical arrangements plays an important role in organizations, especially in public service delivery.

The sequential nature of the sub-delegation process within hierarchies dictates that agents have access to different information sets. The local (service delivery) agent, in its position of last mover, has a richer information set than the intermediate agent (regional or central government bureaucracy), which in turn has a richer set than the principal (citizens). Sub-delegation leads to a situation where the intermediate agent chooses an action before knowing what level of action will be taken by the implementing agent (service provider).<sup>5</sup> The principal strategy in such a situation is to devise compensation schedules that motivate the intermediate and implementing agents to reduce their discretionary behavior (Gauthier, 2002).

Restricted communication channels within hierarchies (which is assumed in several hierarchical principal-agent models), encourages residual rent capture by the agents, which provides a rationale for institutional arrangement reforms, in particular through monitoring. Most

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<sup>4</sup> In a centralized compensation structure the reward structure that is offered to induce the agents to engage in an adequate amount of productive activity is the prerogative of the principal. Centralized structures are encountered in governments when, for instance, appropriation decisions for regional or local governments (or lower layers in the public administration) are determined politically by the legislative or executive branch. The role of the central bureaucrat is then confined to the limits of the allocations determined centrally. Conversely, in a decentralized compensation structure the principal simply determines the manager's compensation, while the authority for compensating the decentralized agent is delegated to the manager. Decentralized compensation structures are also frequently encountered in both public and private organizations. Examples can be found in situations where a legislature leaves the discretion over the local bureaucracy compensation (in the form of budgetary allocation, federal grants, etc.) to a central bureaucracy. For a discussion of the distinctions between centralized and decentralized compensation structures, see Tirole (1986), Baliga and Sjöström (1998) or Laffont and Martimort (1998).

<sup>5</sup> Several models assume that the implementing agent observes the intermediate agent's action before determining its own action since it implements the policy or project determined by the intermediate agent (see for instance Laffont and Martimort (1998)). The intermediate agent level decision in such models takes into account the implementing agent's information advantage and considers its optimal reaction to its own choice of action.

organization processes indeed rely on monitoring to reduce the extent of an agent's discretionary power. Contracts are generally made contingent not simply on aggregate outputs, but also on these additional signals. Alternatively, an independent third agent, as a monitor, could be integrated in the organization. In a weak governance environment where monitoring agents are corrupt, however, one cannot expect that simply by introducing monitoring mechanisms, such as supervision, audits or even anti-corruption units, would bring about significant results, as these agents are part of the (corrupt) system and tend therefore to be inefficient. This is where the citizen's role becomes important (Reinikka and Svensson, 2006a).

Besley and Ghatak (2003) develop a theoretical framework to study public service provision focusing on issues of incentives and competition. While they discuss their model in the context of public sector reform in the UK, their analysis is widely applicable. The authors examine three components in the design of an organization providing a public service: the mission of the organization, the motivation of workers and matching between workers and the organization's mission. They emphasize that public service provision often takes place in mission-oriented firms, that is, "in a culture that is widely shared and warmly endorsed by operators and managers alike" (Wilson 1989). Rewards for effort in such contexts are not purely pecuniary; agents might be motivated to provide high quality services because they care about the service being produced.

Besley and Ghatak underline that inefficiency in public production arise because service providers face limited incentives to improve quality since service users (citizens) are not viewed as customers as in the private sector, where customer satisfaction is key to the provider's survival. Also, public service providers have no incentives to reduce costs because of the use of soft budget constraints in the public sector. The authors argue that decentralized organizational arrangement is in many contexts an efficient system of public service delivery that enhances consumer empowerment. Empowering consumers means that the nature of the principal agent relationship changes and that customer satisfaction becomes a priority of frontline providers (Figure 1).

As mentioned above, the World Development Report 2004 "Making Services Work for Poor People" develops a conceptual framework that focuses on the accountability relationships between principals and agents in the service delivery system. A relation of accountability is defined as a principal-agent relationship comprising the following characteristics: delegation of responsibility, financing and enforcement on the part of the principal, and effort and information on the part of the agent. As the World Bank (2003) maintains, there are two main layers of accountability relationships in this multi-level principal-agent relationship of service delivery. First, citizens have to hold politicians (policymakers) accountable for allocating resources for service delivery and for providing appropriate incentives for performance. Second, policymakers have to hold provider organizations accountable for delivering the proper services. This sequential process of accountability has been referred to as the "long route" of accountability, as opposed to the "short route," which involves direct accountability of providers to clients, a situation typically encountered in the private competitive sector. Inadequate service delivery could hence be associated with failures in one or both of the links along the "long route" of accountability, as well as with failures in the "short route" of accountability



### 2.1.1 The “Long Route” of Accountability

The accountability relationship between citizens and policymakers could be broken for several reasons. As Ahmad et al. (2005) affirm, citizens, especially the poor, might be unable to hold politicians accountable for resource allocation decisions, leading to biases toward the rich in public spending. In some countries, this could be due to the absence of electoral democracy. In other cases, there may be a functioning electoral system, but because of important information asymmetries or social polarization, the outcome may still be biased against the poor (Keefer and Khemani, 2005).<sup>6</sup> Furthermore, even if poor citizens could hold politicians accountable, politicians in turn may not be able to hold the providers accountable for bad performance.

Keefer and Khemani (2005) emphasize that the optimal level of public service provision predicted by the median voter model is not observed in developing countries, particularly owing to institutional failures associated with political market arrangements. The political market is structured in such a way that political incentives are based on seeking rents instead of providing public goods and services. As previously mentioned, information asymmetry makes it difficult for citizens to attribute blame or credit to politicians for their actions, and to evaluate the impact of these actions on their welfare. This increases politicians’ incentives for shirking, specifically by seeking rents instead of making efforts to produce public goods. Politicians then prefer to allocate resources toward infrastructure construction, i.e. building and staffing schools and clinics, instead of improving the quality of services, which is harder to observe and measure.<sup>7</sup> The difficulty for citizens to reward (or penalize) policymakers for their actions is further reinforced by time horizon factors, because benefits of education or health reforms generally take years to be observable.

Another political market imperfection discussed by Keefer and Khemani (2005) is that citizens in developing countries tend to be heterogeneous with respect to income, language, ideology, religious belief and the value they place on various public goods. They might also tend to favor politicians from a particular ethnic group, who are not necessarily questioned even if they perform inadequately.<sup>8</sup>

Another accountability problem in the service delivery system relates to the relationship between policymakers and frontline providers. As previously emphasized, resources and information flows in public administrations are complex. Organizational arrangements include a large number of agents and administrative layers.

In most African countries, there is a crucial lack of information at various levels in the public organizational structure, particularly at the central level, regarding resource use and transfers

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<sup>6</sup> There is considerable evidence in developed and developing countries that public service provision tends to be inequitably allocated, as services tend to be diverted toward those best able to manipulate the system, typically the educated and better informed middle-class (Le Grand, 1991; Besley and Ghatak, 2003).

<sup>7</sup> Other factors explaining lower health and education expenditures include the fungibility of these funds. Feyzioglu et al. (1998) observed that governments that receive foreign aid specifically targeted to these sectors (e.g. education) are likely to reduce their own contribution to these sectors. However, aid directed at sectors such as transport and communication do not suffer from fungibility to the same degree.

<sup>8</sup> The authors underline the lack of credibility of politicians as a factor that affects the citizens’ potential to exercise control. In situations where political competitors cannot make credible promises, the incumbent politician is not held accountable for his own commitments.

through the service delivery supply chain. Furthermore, information problems are also acute at lower levels of the hierarchy, as decentralized administrative units are often unaware of the budgetary resources to which they are entitled. Typically, the central administrative level organizes procedures governing resource flow in the supply chain, but there is little or no consultation with lower levels and scarce transmission of information. Those who receive the inputs (textbooks, medical supplies, etc) at lower levels typically do not have information on what they were entitled to receive, in terms of the type, quantity and value of supplies, or when and from whom they should receive the resources. The information gap and retention of information at various levels within public organizations reinforces moral hazard problems and underlies the problem of inefficiencies and rent seeking.

### 2.1.2 *The “Short Route” of Accountability*

Given these shortcomings in the accountability relationships between citizens and policymakers and between policymakers and providers, public service provision is adversely affected unless there is a mechanism that enables clients to monitor and directly discipline service providers--that is, through the “short route” of accountability (World Bank, 2003).

An important way to strengthen the accountability relationships in service delivery is by reducing information asymmetry among parties in the service provision system. Collecting information on activities of agents increases the principal’s (citizens) bargaining power and control through improved monitoring and disciplining of policy-makers and providers.

In a democratic political setting, evidence suggests that accountability could be improved when voters share information about political responsibility for certain key outcomes (Ferejohn and Kuklinsky, 1990). Khemani (2004) finds evidence of the impact of information on service provision in India through election cycles. She observes that when elections are approaching, state governments in India tend to increase expenditures on public investments that are easily observable by voters and reduce them on more broad-based public services.

Finally, increasing client power over service providers can increase efficiency and control in the system. Barr et al., (2006) describe an experiment in Ethiopia that studied the impact of various institutional arrangements on rent capture in service delivery. They find that closer service recipient control increases efficiency. They describe the relationship between principal and agent in the service delivery system as a game between a principal who contracts an agent to perform a task, but the principal is not the one who receives the services. The principal could also hire a monitor to supervise the agent.<sup>9</sup> The authors explain poor health service performance through staff motivation and incentive problems. They devise an experiment involving medical and nursing students in which they examine the impact of providers’ norms of behavior as well as three alternative institutional designs. They focus on three factors which have been identified in the literature as potentially important in determining staff behavior: the nature of the relationship between recipients of services and monitors, the capacity to monitor providers and provider pay.

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<sup>9</sup> It should be noted that in the governance and corruption literature, principal agent models have typically emphasized the delegation problem between policy maker and decentralized agents. In these models, the principal is generally seen as the central government (policymakers or tax authority), which seeks to reduce rent capture by the decentralized agents (tax agent or citizen) (see for instance Besley and McLaren, 1993 or Mookheree and Png, 1995).

They find that service providers perform better when supervised by monitors elected by service recipients.

## 2.2 Empirical Approaches

Different empirical approaches have been used to study service delivery in developing countries. On the demand side, household surveys have enhanced our understanding of the relationship between service delivery and population outcomes in the last few decades. For instance, household survey data have been used to examine the impact of service usage as well as household education and health expenditures on education and health outcomes.<sup>10</sup>

On the supply side of service delivery one of the standard instruments used to evaluate public services is the expenditure/benefit incidence analysis which combines supply and demand side information. Benefit incidence studies make use of national budgetary data and household survey data on usage of services to evaluate the equity of government spending among various socioeconomic groups. For instance, Castro-Leal et al. (2000) examine health care spending in six Sub-Saharan African countries.<sup>11</sup> The benefit incidence approach they use combines an evaluation of the cost of providing the services with information on health services use from household survey in order to estimate the distribution of government subsidies in the sector.<sup>12</sup> The authors find that public expenditures tend to favor people that are better off. They observe that governments allocate a significant portion of their health budgets to hospital-based services, which the poor generally do not use.<sup>13</sup>

The benefit incidence methodology presents several limitations. First, in most studies, results among countries are not strictly comparable because household survey instruments are typically not standardized. Second, unit cost estimates are limited in several ways. In Castro-Leal et al. (2000), for instance, the data refer to the actual recurrent spending on health facilities in only two countries.<sup>14</sup> In the other countries, the data are based on budgeted expenditures, which may differ

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<sup>10</sup> In the health literature for instance, an important line of inquiry has examined the determinants of health and nutrition and their impacts on the development process. Behrman and Deolalikar (1988) review the literature on health and nutrition, focusing mainly on the demand side, and examine the production process that determines health status. The relationship between health service usage and health outcomes has also been examined using household level data. Thomas, Lavy and Strauss (1996) examine linkages between distance, quality of services and health outcomes. Also using household survey data, Dercon and Krishnan (2000) analyze the relationship between nutrition, illness and health care services in Ethiopia. Another line of study has examined household behavior and linkages with service delivery. For instance in the health sector, Collier et al (2002) have examined the quantity-quality tradeoff of health care provision in Ethiopia. Using household data, budget data and facility data, they focus on the low usage of health facilities in the country.

<sup>11</sup> See also Government of Uganda (2004) "Access to Education and Health Care in Uganda," which uses the government's official fiscal accounts and data from the Uganda National Integrated Household survey to determine the distribution of public spending in health and education that benefits different income groups.

<sup>12</sup> Unit subsidies, which represent the net current cost to the government of an individual visit to a health facility for public health care is calculated in Castro-Leal et al (2000) as total recurrent spending on facilities less any revenues from user fees returned to the Treasury, normalized by the number of visits. The number of visits is itself obtained from government accounts or is alternatively estimated using household survey data.

<sup>13</sup> In Ghana, for instance, 2/3 of the health budget was spent on hospital services, and a major portion went to a large teaching hospital. In South Africa, the health budget allocated to hospitals is 89%. Typically less than 25% of recurrent health expenditures in Africa are allocated to the primary level.

<sup>14</sup> Ghana and South Africa.

significantly from actual expenditures. Also, there is little disaggregation by type of facility or type of consultation.<sup>15</sup> Furthermore, the lack of regional health expenditures data means that unit costs are calculated at the national level. However, in most countries variations in unit costs among regions are substantial.<sup>16</sup> As Reinikka and Svensson (2004a) demonstrate, results are thus likely to underestimate the true inequality in public spending and service delivery.

An adequate understanding of the relationship between public expenditure, service provision and outcomes requires better micro-level information of the supply side. In the last few decades, such micro-level data on service provision have been collected in many developing countries.

### *Micro-level surveys of service delivery*

Micro-level data on service delivery in developing countries have been collected in the last 30 years for different purposes. Typically, the focus of studies using these data has been on cost of production and financing of services.<sup>17</sup> More recently, the focus has shifted toward provider behavior and motivations, and linkages with incentives provided by institutional arrangements. Here, the attention is placed on collecting data on performance as well as various institutional and organizational characteristics that affect performance

The *World Fertility Surveys (WFS)* is one of the first surveys to collect information on health services in developing countries in the 1970s. Information at the community level was collected through “community informants” as a complement to individual and household data, in order to understand the effect of health services on fertility and mortality (Turner et al., 2001).

Since 1984, *Demographic and Health Surveys (DHS)*, sponsored by USAID, have collected information about the characteristics of health facilities available to the population through a Service Availability Module (SAM). The objective was to analyze the relationship between the supply of family planning, prenatal and maternity services on fertility. Data were collected on types of services available (hospitals, health clinics, pharmacies and private doctors), their proximity to the population, user costs, opening hours, etc. SAM sample selection strategy consisted of selecting the nearest facility of each type located within 30 kilometers of the DHS cluster. At the end of 1999, SAM had been implemented in 45 countries (Turner et al., 2001).

Since the 1970s, the RAND Corporation *Family Life Surveys (FLS)* have collected data at individual and household level. Community level data are collected and provider level surveys of schools and health care have been implemented in the sampled communities in some countries. In the health facility survey, data are collected from facility representative on services, usage, staffing, etc. Surveys cover public, private and non-profit health centers, doctors, nurses, midwives and paramedics.<sup>18</sup> As in WFS and DHS, health providers are chosen based on household responses on where they normally seek care. In each community, up to 3 public

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<sup>15</sup> Castro-Leal et al (2000) report that costs were generally averaged between visits to hospitals and clinics. Furthermore, the distinction between in- and out-patients was feasible in only two countries.

<sup>16</sup> Indeed, where regional data were available (such as for Madagascar and Ghana), differences among regions were very important. Spending per visit in Accra was 6 times that of other areas of Ghana. The use of aggregate data masked these variations.

<sup>17</sup> In the health literature, for instance, hospital costs and production process were generally analyzed.

<sup>18</sup> Instruments are tailored to the differences in providers’ organizational structure and services offered.

centers, 6 private clinics, doctors, etc. and 2 community clinics are surveyed. In certain countries, clinical vignettes have been administered to assess service quality and providers' knowledge (Lindelöw and Wagstaff, 2003).<sup>19</sup>

The World Bank's *Living Standard Measurement Studies (LSMS)*, a large-scale multi-purpose survey, includes health and education household modules which provide information on the use and access to services, household expenditures and behavior. In some countries, complementary health and education data are collected at the community level using "community informants."<sup>20</sup> In addition, some LSMS surveys encompass school and health facility surveys.<sup>21</sup> Health facility surveys, in particular, are designed to collect information on facility characteristics, user fees, medicine cost as well as health service quality (including diagnosis, treatment and staff attitude) (Lindelöw and Wagstaff, 2003).

In the early 1990s, the Population Council introduced the *Situation Analysis (SA)* surveys, a more comprehensive type of facility survey, with the objective of describing the delivery of family planning and reproductive health services. Contrary to WFS, DHS and Rand surveys, whose choice of facility sampled was based on the proximity to sample communities or household clusters, facilities in SA surveys are chosen based on the facility population.<sup>22</sup> In addition to providing information on the characteristics of facilities providing family services and health services (including infrastructure, personnel, equipment and supplies), SA assessed the quality of service delivery through the observation of interactions between patients and providers, as well as through exit interviews (Turner et al. 2001).<sup>23</sup>

Since 1997, the USAID-supported *EVALUATION* and *MEASURE Evaluation* programs have carried out health facility surveys. Their objectives are to monitor trends in service delivery and to measure the impact of health services on reproductive behavior.<sup>24</sup> In particular, *EVALUATION* surveys seek to assess the relationship between service availability and health behavior and outcomes through linkages with DHS household survey data. Surveys carried out under the *MEASURE Evaluation* project have included observation of quality of services through the interaction between providers and clients and exit interviews with non-family-planning clients. Repeat surveys in some countries have allowed the compilation of panel data that have been used

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<sup>19</sup> In Indonesia in 1998, vignettes covered themes such as provision of contraceptives, IUDs, prenatal care, respiratory illness, vomiting and diarrhea.

<sup>20</sup> These questionnaires comprise information on public services including schools and health facilities. Data include information on the types of health providers available in the community, travel times, user costs and health services available. In some countries (e.g. Ghana, Tanzania) community level data have been used to analyze the relationship between health care infrastructures and health seeking behavior and outcomes (Lindelöw and Wagstaff 2003, p. 32).

<sup>21</sup> School surveys were implemented in Jamaica and Vietnam. Health facility surveys were implemented in Cote d'Ivoire, Jamaica and Vietnam. In Jamaica, the facility survey included all public facilities and a sample of private providers. Data on staff wages, revenues and expenditures were included.

<sup>22</sup> It should be noted that the SA sampling approach does not describe the services received by the average citizen or assess the impact of the family planning supply environment on service use. This would require linking SA to DHS.

<sup>23</sup> Surveys also include interviews of clients of non-family planning services as to their perceptions and reasons for not using family planning.

<sup>24</sup> Since 1997, DHS+ has been part of the *MEASURE* program based at the University of North Carolina at Chapel Hill.

for monitoring purposes.<sup>25</sup> The sampling approach includes visits to all facilities located within DHS sample clusters and surrounding clusters. Sampling strategies for linking facility and facility surveys were also devised.<sup>26</sup>

*Vignettes* have been used to study quality of service delivery. These tools, through unblind standardized case studies involving an actor, test the level of knowledge and competence of service providers and have clear potential for service delivery improvements. Leonard and Masatu (2005) have examined quality in outpatient services in Tanzania using direct clinician observation as well as vignettes, and recommend a combined approach to evaluate health service quality.

Two new survey instruments, the *Public Expenditure Tracking Survey and Quantitative Service Delivery Survey (PETS and QSDS)*, which are the focus of this paper, were developed in the context of the World Bank supported programs in the last ten years to collect micro-level information on service delivery systems and service provider performance. These surveys are implemented in response to perceived problems in public expenditure management and service delivery. They stand out because they collect mainly quantitative data to overcome the information problem in the principal-agent relationship and because of their focus on organizational and institutional characteristics at all levels, together with incentives. PETS examine flows of funds and materials from the central government to local service providers, via regional and local governments, in order to identify resource use and leakages. They mainly evaluate the proportion of public resources (financial, human and in-kind) that reaches each level, in particular at the level of frontline service providers. QSDS are multi-purpose provider surveys that examine the efficiency of frontline service delivery and the use of resources by collecting information on service providers and other agents and principals in the system. These two instruments could be applied jointly to obtain a more complete picture of the efficiency and equity of public service delivery.

While problems highlighted by PETS and QSDS are not new, these tools innovate because they provide quantitative evidence of the nature of problems in budget execution and service delivery performance which can be used to study these problems in detail. Most of these surveys have been implemented in the health and education sectors. In a few countries, however, services such as water, sanitation and roads were also included (e.g., Tanzania, Rwanda). There have been large variations in terms of the scope and focus of these surveys. The various surveys carried out have focused on leakage, job capture and other means of extracting private benefits from public positions, the implicit allocation of resources at different levels of the administration, and the costs and efficiency of education and health care delivery. In some cases, efforts have been made to link the surveys with household data.

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<sup>25</sup> In several countries, impact assessments of family planning programs have been carried out using linked facility and household survey data (e.g. Brazil, Peru, Tanzania) See Turner et al (2001) for details.

<sup>26</sup> The *World Health Organization (WHO)* has also carried out health facility surveys for a relatively long period. They focus on issues relating to child mortality and morbidity, and covered specific program evaluation or specific diseases. Facility surveys are generally accompanied by exit interviews and/or household surveys (Lindelöw and Wagstaff, 2003).

*Citizen Report Cards Surveys (CRCS)* are survey tools that collect (periodic) information from users about their experiences of service quality. Both qualitative and quantitative data are typically included. They could be directly used as feedback to affect service quality. Indeed, these surveys are typically used to generate score cards which can then be disseminated among the population, including to service providers, to improve the services. An interesting experiment with this new tool has been implemented in Uganda, including a randomized evaluation of its impact on health outcomes and use and quality of services (Björkman, Reinikka and Svensson, 2006; Björkman and Svensson 2007). Report cards have been used in various settings, including experiments in the health sector in the US. Dranove et al. (2003) present results of health care report cards, which consisted in the public reporting of patient health outcome at the physician or hospital level. They argue that this approach may reduce important information asymmetries in markets for health care. It may, however, have the perverse effect of providing incentives for hospitals and doctors to decline the treatment of more difficult cases.

To summarize, empirical studies have relied on micro-level survey data to analyze service delivery. In recent decades, there has been an evolution in terms of coverage and instruments used in facility surveys. More recent instruments such as PETS, QSDS and CRCS have placed more emphasis on incentives, institutional arrangements and performance of providers and other agents and principals in the service delivery chain. In the next sections, we specifically examine the PETS, QSDS and CRCS, together with some of the main research questions they have been used to investigate and their main findings.

### **3. Going beyond Budget: Public Expenditure Tracking Surveys**

In this section, we discuss the uses of public expenditure tracking surveys (PETS) and examine methodological considerations related to the implementation of these surveys. We also examine some of the evidence from the relationship of accountability between (i) the policymaker and the service provider and (ii) the service provider and the client that these surveys have identified. We analyze in particular information problems in service delivery and leakage of public resources.

#### **3.1 Role and Purpose of PETS**

Policymakers in developing countries possess limited information on actual public spending at the service facility level or by program. The public expenditure tracking survey (PETS) is therefore designed to track the flow of resources through the administrative system, on a sample survey basis, in order to determine how much of the originally allocated resources reach each level. It is a useful tool for locating and quantifying political and bureaucratic capture, leakage of funds, and problems in the deployment of human and in-kind resources such as staff, textbooks, and drugs.

A typical PETS consists of a survey of frontline providers (for example, schools and clinics and their staff) and local governments (public officials), complemented by central government financial and other data.<sup>27</sup> The PETS explicitly recognizes that an agent may have an incentive to

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<sup>27</sup> For a review, see also Dehn, Reinikka, and Svensson (2003) and Reinikka and Svensson (2006).

misreport. These incentives derive from the fact that information provided, for example, by a school or a health facility to local governments determines (at least partly) its entitlement to public support. In cases where resources are used for corruption, the agent involved in the activity will most likely not report it truthfully. 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 affected by such incentives. This data collection strategy serves to cross-validate the information obtained separately from each source. Overall, the novelty of the PETS approach lies not so much in the development of new methods per se, but rather in the application of proven methods (micro-surveys) to service providers and governments, where administrative data and official records are typically used.

Tracking surveys serve several purposes. First, they can be used as a diagnostic. For instance, by studying the flow of public funds through various levels of government, PETS allows policymakers to diagnose how incentives and accountability systems work in practice. PETS is useful for locating and identifying political and bureaucratic capture of resources, corruption and problems of resource deployment. They can also be useful tools for benchmarking for monitoring purposes. Second, as an analytical tool, PETS can be designed to pinpoint the causes of problems. Finally, public expenditure tracking surveys can also provide micro-data for impact evaluations. Accordingly, they can be designed to examine the impact of a specific government program or reform on service delivery and final outcomes.

After examining methodological issues associated with public expenditure tracking surveys, we describe their uses in detail in the following sub-sections.

### **3.2 Methodological Considerations**

Methodological approaches used in designing and implementing public expenditure tracking surveys have important consequences on the capacity of these surveys to achieve their objectives in terms of diagnostic/monitoring, analysis or impact evaluation. Below we examine methodological options related to the choice of tracking flows, institutional assessment, sampling strategies and survey instruments.<sup>28</sup>

#### *Tracking Resource Flows*

An important element in PETS is the decision to track resource flows. Given that leakage of funds has been one of the main hypotheses put forward to explain the weak link between public expenditures and service delivery outcomes, the choice of tracking relevant resource flows is crucial.

The determination of the specific flows on which financial and quantitative information are collected and of the administrative levels has to be made in any such survey. Clearly, in each of the various branches, there are possibilities of leakage: funding, supplies, drugs, equipment or materials could leak at various levels in the service supply chain. Similarly, salary expenditures could leak through the creation of fictitious (ghost) workers, for instance. However, not all flows

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<sup>28</sup> For a review of methodological considerations related to PETS and QSDS in Sub-Saharan Africa, see Gauthier (2006).



are amenable to tracking. Nonexistent records or accounts, data inconsistencies and other types of problems will make certain flows untraceable, or make the data too noisy to be informative.

Several factors are at play in determining the choice of flows to track in the supply chain. The choice is specified directly in the research question or survey objectives.<sup>29</sup> Several PETS, however, did not have a predetermined set of flows to track from the outset, and favored instead an open mode of trying to track most, if not all, categories of funds. In such cases, more pragmatic reasons for restricting flow tracking, such as data availability or quality, and resources or time constraints, then became important considerations.

A common trap of past PETS has been too wide coverage, as there is a clear trade-off between wide coverage and survey feasibility. Indeed, surveys that attempt to track entire sector flows run the risk of not being able to collect consistent, high quality data. To gather information on line ministries' entire recurrent expenditures can be very difficult. Given data limitations in most countries, it is better to focus on specific funding or flows for which records or accounts of good enough quality exist on at least two levels of government.

In the first-ever PETS in Uganda, for instance, the initial intentions were to track all public spending in education through the entire delivery system (Ablo and Reinikka, 1998, Reinikka 2001). However, a pilot survey revealed that at the central government level, expenditure data were not available on salaries paid to primary school teachers, either by district or by school. The only data available were aggregate salary payments, which lumped together payments to teachers in primary, secondary and tertiary levels as well as to non-teaching staff.<sup>30</sup> The only systematic information on primary education that was found to be available and of good quality at the central government level was capitation grants<sup>31</sup> for non-wage spending. Fortunately, at the school level, financial records were also relatively comprehensive. The tracking exercise then ultimately focused on a single flow, capitation grant, which was the largest non-wage program. The survey objective thus became to determine how much of the capitation grant allocated by the ministry of education actually reached primary schools. Data on the receipt of resources (financial and in-kind) under this program were collected at the district and school level. To estimate leakage (between the entitled budgetary allocations and actual receipt at the school level), the only other information required was enrolment data at the school level, which were also available.<sup>32</sup>

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<sup>29</sup> For instance, if the objective of the survey is to identify the prevalence of ghost workers, then the domain of financial flows to track could be restricted to salary flows. Similarly, if the purpose of the survey is to evaluate the impact of a specific program in the education or health sector (e.g. HIV/AIDS), then the focus of the tracking exercise could naturally be limited to this specific program.

<sup>30</sup> Another factor complicating efforts to track salary spending was that there were more teachers at the school level than on central government payrolls, as additional teachers were hired directly by schools and funded by parents' associations (Ablo and Reinikka, 1998).

<sup>31</sup> Capitation grant was a payment to school per student enrolled and was viewed as a matching (50%) government contribution against the mandated tuition fee, which is paid by parents. The ministry of education official policy was to disburse this per student grant in full to the school (either in cash or in kind), through the district education officer. The grant is intended to be used to partly pay for textbooks and other learning materials, as well as schools' general operating costs. The capitation grant was set in 1991 at the nominal rate of USh 2500 per child enrolled at levels P1-P4, and USh 4000 per child enrolled at levels P5-P7. These nominal rates remained the same until 1997 (Ablo and Reinikka, 1998, pp. 9-10).

<sup>32</sup> It should be noted that the fixed allocation rule in which each school was entitled to a specific amount of cash (or in-kind) transfers based on the number of students enrolled made it possible to measure leakage in a straightforward

In Zambia, Das et al. (2004) chose to track non-wage cash flows from the ministry of education and donors at the provincial, district and facility levels. In-kind transfers, as well as salary transfers, were excluded from the tracking exercise. The specific objective of the tracking exercise then became to determine whether: a) schools received the fixed-rule component of the MOE budget (lump-sum payment per school); b) provinces and districts supported schools further through discretionary expenditures; and c) decentralization had an effect on fund allocation behavior (Das et al., 2004a, p.29).

The rationale for excluding staff financial data (salary, allowances, etc.) from the tracking exercise was that staff remuneration is disbursed directly from the central government payroll to individual teachers and hence does not pass through the hierarchical administrative system. Although it did not track salary flows, the survey nonetheless analyzed staff compensation in terms of delays and overdue for various types of teacher compensation. Furthermore, financial data on staff compensation were collected at the facility level from among a sample of teachers (from grades 5 and 6) in order to measure the value of staff input in each school, which was then used in an equity analysis.<sup>33</sup>

Restricting the tracking exercise to cash flows has facilitated data collection in Zambia, as good quality financial records were available.<sup>34</sup> In addition, the Zambian survey examined the discretionary components of funds transferred to schools using an equity analysis.

### *Institutional Assessment*

Another important methodological choice which has consequences on the survey is the capacity to achieve its research objectives related to the institutional assessment phase. This step serves to identify and understand the institutional arrangements through which public resources are allocated to service providers. This institutional analysis and data assessment also verifies the availability, quality and consistency of data reported across various administrative levels. It could help detect data quality problems and avoid a costly and time consuming exercise of gathering inconsistent data.

The challenge of adequately understanding the institutional arrangements is emphasized by Ye and Canagarajah (2002, p. 3) relative to the Ghana education and health PETS:

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fashion, as the ratio of what a school received to what it was entitled to. This fixed allocation rule greatly simplified the leakage measure exercise. Analysts should thus look for such fixed allocation rule programs that could simplify the tracking exercise. Another potential lesson from the first PETS is the realization that the selected flow to track need not predominate in the service provider budget to convey important results. Indeed, the flow tracked in Uganda, capitation grants, represented on average 20% of primary education spending in 1991-95.

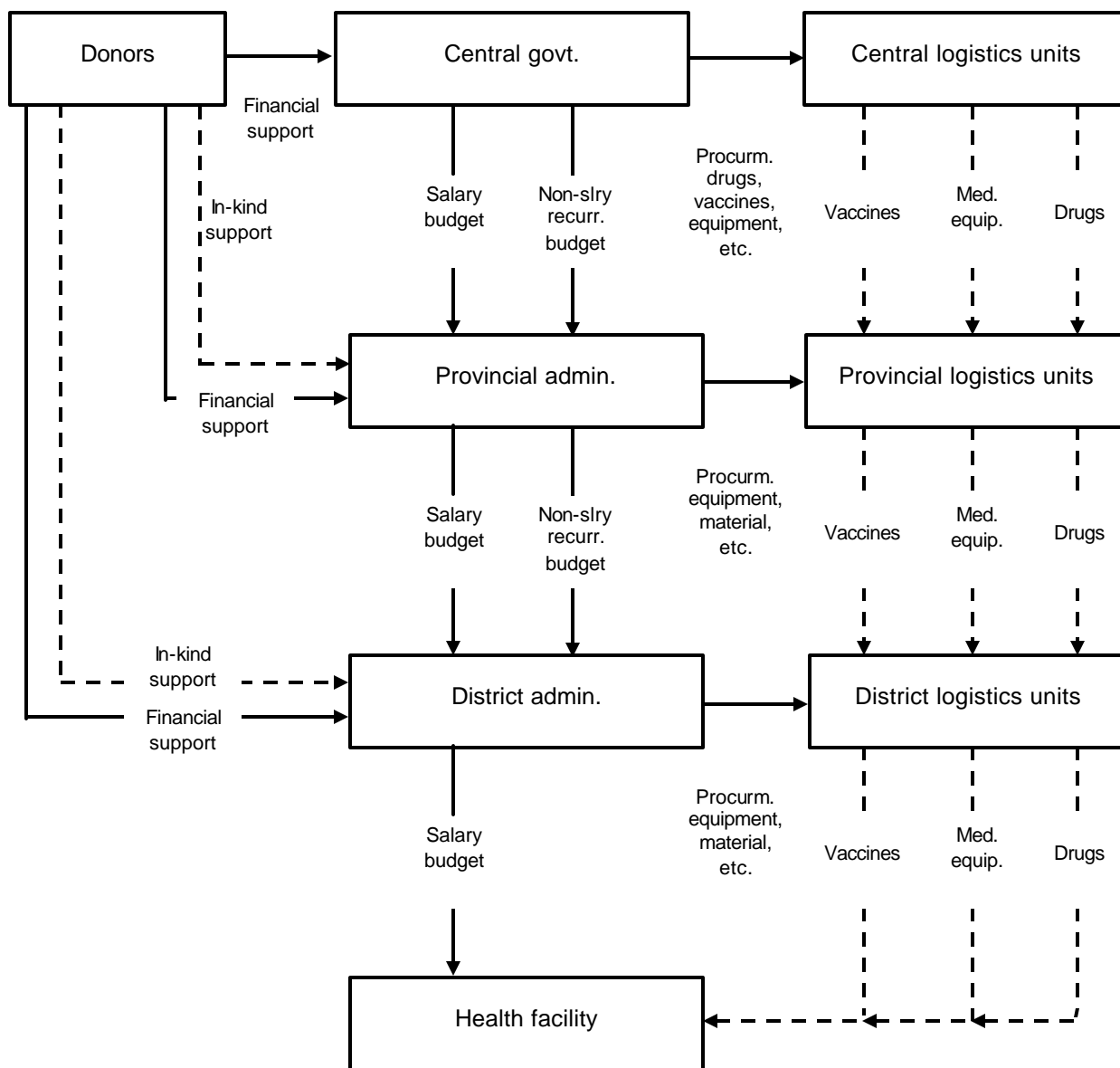
<sup>33</sup> The exclusion of in-kind materials and equipment from the tracking exercise was justified by the fact that the procurement of the school materials was not completed at the time of the survey, which was fielded in July in the middle of the school term (which started in January) (Das et al, 2004a, p.23). This could have introduced some biases in the data collected if provinces or district systematically provided more in-kind resources than cash transfers to certain types of schools or districts. However, as Das et al (2004a, p.50) argue, data on receipt of such materials at the school level tended to be scarce at the time of the survey, which reduced the potential risk of such biases .

<sup>34</sup> The distinction introduced between rule-based and discretionary funding allowed the use of a measure of leakage comparable to the one developed by Ablo and Reinikka (1998) in the first Uganda PETS. Indeed, in the original (or “strict”) definition (see section 3.2.1), leakage was defined with respect to a fixed rule .

The biggest challenge that we encountered in conducting this tracking survey was to understand the systems of public resource distribution in Ghana. On paper, all resources at the level of the central government are allocated by the Ministry of Finance to the line ministries with clearly marked heads and subhead, indicating where the funds should go. In reality, however, the distribution systems of public spending are rather complicated.

To illustrate the complexity of funding flows and the need to properly understand the institutional structures in order to develop an adequate methodological approach to implement tracking surveys, Figure 2 illustrates the resource flow process in the health sector in Mozambique.

**FIGURE 2: FLOW OF RESOURCES IN THE HEALTH SECTOR IN MOZAMBIQUE**



Source: Lindelöw (2006)

As reported by Lindelöw et al. (2004), the health sector in Mozambique is composed of a three-tier administrative hierarchy responsible for the management of health services. Health providers (hospitals, health centers and health posts) are under the administrative responsibility of District Directorates of Health (DDH). Their responsibilities include planning human resources and budget management, provision of medical supplies and supervision of service providers at the district level. DDH are under the responsibility of Provincial Directorates of Health (PDH), which coordinate the administration of health activities in the province. They enjoy considerable autonomy with respect to allocation of staff, medical and non-medical resources and supervision. Provincial directorates report to the Ministry of Health (MOH), which allocates their resources.

Primary health care facilities in Mozambique are not allocated funding from higher administrative levels, but only receive in-kind transfers, which complicates tracking. Furthermore, although all transfers are made at district level, procurement of goods could take place at either the central, provincial or district level depending on the specific input, further complicating the tracking exercise.<sup>35</sup>

As Lindelöw (2006) emphasizes, the survey team faced two options. It could either focus on a specific resource flow or program (in line with the capitation grant tracked in the education sector in Uganda), in order to collect very detailed data that would permit reliable assessments of leakage. However, this approach risked having a relatively limited impact because of its narrower focus. Alternatively, the team could choose to take a broader focus and attempt to measure most health expenditures, but run the risk that the data would not allow firm conclusions on leakage. The second option was chosen; the survey attempted to track all non-wage recurrent expenditures, drugs and other supplies, and human resources, at three levels: provinces, districts and facilities. Various data were also collected at the facility level, including information on staffing, user fees, service outputs and infrastructure.

Ultimately, data quality turned out to be a serious concern at both the provincial and district levels in Mozambique. Large gaps in information were observed in about 75% of the districts between District Health Offices' financial information records and those provided by the Provincial Health Offices. Furthermore, complete district level financial data could be collected for only about 40% of districts. Similar discrepancies between provincial and district records were also found in the transfers of medical supplies and drugs and health worker data.<sup>36</sup>

An alternative approach to tracking in such challenging situations could have been to collect information only at the facility level (in order to measure resources available for services) and at

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<sup>35</sup> With the exception of hospitals, public health care providers in Mozambique do not receive any financial resources from the public administrative system. The only sources of financial resources at the provider level are user fees charged for consultation services and drugs. In-kind resources (medical and non-medical materials, drugs and vaccines) are allotted to service providers through a complex administrative and logistical system. The DDH has a central role: distributing in-kind resources to health centers and paying salaries to health workers. Some of these resources are procured directly at the district level through a district logistic unit, but other non-wage recurrent resources (e.g. drugs, vaccines, medical equipment) are procured directly by the provincial or central levels. Further, the investment budget is the responsibility of higher levels (Lindelöw et al, 2004).

<sup>36</sup> Information discrepancies rendered estimation of leakage very difficult in Mozambique. As the report states: "documented discrepancies in information were a clear sign of weaknesses in management and control systems" (Lindelöw et al, 2004, p. 6). Even though they could not find firm evidence of leakage, the report still observes that the lack of control "provides few incentives against fraud or malfeasance."

the central level (in order to know how much was officially sent), and to bypass all collection of hard financial data at the intermediary level (province and districts) (Gauthier, 2006).

### *Sampling Strategy*

The sampling strategy is another crucial methodological component of tracking surveys. In previous PETS, samples have been formed using various approaches, often involving stratification by levels or categories. Some surveys have used a random (or systematic) approach to select the sample. However, some facility samples have been chosen informally on the basis of their convenience of access or ease of interviewing, instead of through the use of random selection techniques. Evidently, the key problem with such informal methods is that valid inferences about the whole population of facilities (as well as clients or staff) cannot be made from the survey results.<sup>37</sup> Indeed, for a sampling strategy to be valid, the sample has to be representative of the universe it aims to describe. This is rendered more complex in the case of PETS because there are several units to be analyzed (central government, provincial and district administrations, local service providers, staff, service users, households, etc).

Once the sample frame is determined,<sup>38</sup> a sample stratification is often introduced given that the sample frame is generally large (sometimes several hundred schools or health facilities), and that different types of facilities may be targeted (public-private, rural-urban, etc.) as well as different administrative levels.<sup>39</sup>

Furthermore, the sampling design can be further complicated when PETS and QSDS are conducted jointly. Indeed, to adequately measure leakage in a PETS, it is better to sample a relatively large number of local governments (districts), which implies, with a budget constraint, reducing the number of service providers sampled in each district. However, in a QSDS it could be preferable to interview a greater number of facilities in a smaller number of districts in order to assess differences in behavior and performance among types of facilities within districts (Reinikka and Smith, 2004).

These trade-offs have been resolved in various ways in previous tracking surveys. Table A1 in the Appendix summarizes the sampling procedures used in tracking surveys in Africa.

A notable alternative to a “pure” stratified sample approach (where samples are drawn at each strata level) is the mixed sample-census approach. In such a strategy, areas (for instance, districts)

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<sup>37</sup> For instance, “convenience samples” were used in Tanzania and Namibia. The cluster approach (e.g. enumeration areas, wards) tends to reduce costs, but is generally not an efficient sampling method because the resulting sample is less well distributed than that generated by a random sampling strategy.

<sup>38</sup> With respect to service providers, the development of a representative sample requires information on the population under study. Most Sub-Saharan African countries do not have a reliable census of service providers. Such information regarding the presence and characteristics of local service providers, though imperfect, is generally available through the country’s education or health Management Information Systems (MIS) (i.e. list of schools or health centers). In certain cases the coverage of these MIS includes private non-profit and for-profit facilities, generally not all types of facilities participate in the reporting procedure. Indeed, lists of schools or health centers are often incomplete or outdated. Nonetheless most tracking surveys have used this information to constitute an initial sample frame of the facility population which was then verified and updated.

<sup>39</sup> Stratification divides the survey population into sub-categories, which are then sampled independently as if they were independent populations. This reduces sample variance and ensures a sufficient number of observations for separate analysis of different sub-categories.

could be selected in the first stage of sample selection. In the second stage, a census approach could be used in which all facilities in the district are inventoried and then surveyed on a census basis. In some cases, this strategy could be better suited to measure leakage than the pure sample approach (in which a small number of facilities are visited in each district)(Gauthier, 2006).<sup>40</sup>

The alternative strategy of combining a stratified sample in the first stage (to choose districts, for instance) and a census in the second stage (within districts), allows evaluation of the use of all resources within districts, and hence measurement of leakage in the case of fixed allocation rules.<sup>41</sup> The two-stage sample-census strategy was used in Chad (Gauthier and Wane, 2005).<sup>42</sup>

### *Household survey linkages*

Sampling methods in PETS differ in terms of linkages with household surveys. Indeed, facility survey samples can be chosen independently of any household survey, or linked to population survey sample areas. In the latter, the design of the sample requires adoption of the same sample areas as used to generate the household survey.

While the link with household survey constrains the facility sample in several ways and could affect its representativeness, such linkages bring important value added. Indeed, in a linked survey, the facility survey provides information on the service supply environment to which the population included in the household survey is exposed (Turner et al., 2001). It allows investigation of how population behavior and outcomes are affected by the presence of service providers.<sup>43</sup> For the purpose of using PETS/QSDS for specific program impact assessment, the linkage of facility and household surveys is fundamental.

Few tracking surveys in Africa have chosen the route of linkages. The Ghana 2000 PETS is an exception. Sample selection was structured to allow linkages with the Ghana Living Standard Survey (GLSS 4) conducted in 1998, and consequently the matching between households and facilities data sets (Ye and Canagarajah, 2002). The PETS sample covered 143 of the 300 GLSS 4 enumeration areas. Schools and health facilities located in the enumeration areas of the

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<sup>40</sup> In particular, such a strategy could be more appropriate in the case where no fixed-allocation rules are in practice and only “narrow” leakage could be measured. The problem with the first (sample strategy) approach is that one cannot estimate reliable leakage figures in such a case as complete data on the flows tracked is required. Indeed, when measuring “narrow” leakage (e.g. the difference between what was reportedly sent and what arrived), all resources in an area have to be assessed. With only a few facilities visited per district in the sampling strategy, it is not possible to make assertions about resource use in that specific district, in terms of reception of materials, financing, drugs, user fees, etc relative to other districts (or aggregated at the provincial level)

<sup>41</sup> It should be noted that this strategy presents the further advantage of producing representative results without the need for weights (Turner et al, 2001, p. 49). Indeed, the appropriate sample size must be determined, or various stratification between types (private, public, sizes, etc) when the survey is not a census. (Turner et al, 2001).

<sup>42</sup> If private for-profit and non-profit providers are sufficiently active in the country under study and if the survey focuses on the sector as a whole (or on differences across facility types), then all types of facilities should be included in the sample strategy. In the health sector, hospitals should be surveyed if the analysis focuses on tracking the whole health budget, for instance, but hospitals should not be included if the focus is on the efficiency of local health centers. If more than one sector is covered by the tracking exercise, separate samples have to be drawn for each sector in order for the samples to be representative of the facility population of each sector.

<sup>43</sup> Non-linked surveys could be used to conduct multivariate analysis, but in this case, the household data need to be aggregated at a given administrative or geographical level to match the outcome of interest with program data. Consequently, the unit of analysis will no longer be the individual. (Turner et al, 2001, p25)

household survey were automatically part of the sample, together with facilities used by GLSS 4 households.

There is a trade-off in the linked survey approach as a choice has to be made regarding whether the sample is to be representative of the population of individuals or of the facility population. In Ghana, the final facility sample is representative of the household population rather than the facility population. In such situations, care should be taken to assign the proper weights to the facility sample to avoid biases.<sup>44</sup>

In Chad, efforts were made to ensure linkages between the tracking survey and a household survey (ECOSIT) that was about to be launched in 2004, when the PETS-QSDS was being designed. A health module was devised by the tracking survey team and included in the household survey. Furthermore, facility survey codes were used in the household survey in order to be able to identify the facilities used by households (Gauthier and Wane 2005).<sup>45</sup>

The Zambian PETS/QSDS took a different path to link supply and demand. Das et al. (2004) innovated by devising a household survey which was linked with their sample schools' students in order to assess academic achievement. The household survey was conducted in parallel with the school survey in a sub-sample of schools in two consecutive years in four provinces.<sup>46</sup> The sub-sample of schools was chosen from among schools sufficiently far apart (as measured using a Geographical Information System that mapped the location of every school). This technique allowed matching household and school data. However, their results are limited to the sub-sample of schools matched with rural households (sample size not provided), given that the method chosen disqualifies schools in urban areas which are not sufficiently separated. Furthermore, it should be noted that the household stratification method chosen was not based on a preexisting survey. In that respect, the household sample is not representative of the country's population. However, the objective in Zambia was to develop direct linkages between schools and households. Indeed, by collecting these household panel data, Das et al. (2004a) were able to incorporate household assets and spending in a detailed equity analysis, which revealed important elements of public and private spending and learning achievements.

Ultimately, the choice of linking facility and household surveys depends on the objective pursued, for instance, which population the survey sample should represent (service providers, households, etc.). Nonetheless, considerable value added can be gained by linking supply and demand results in order to be able to examine the impact of service provision in terms of population outcomes.<sup>47</sup>

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<sup>44</sup> In the Ghana case, although Ye and Canagarajah (2002) do not provide details on the question, it could be inferred that the weights used were most probably based on individual population instead of facilities, which would then introduce a bias.

<sup>45</sup> However, the linkage is not perfect; given that the household survey is much broader in scope, it includes enumeration areas (EA) that were not included in the facility survey. In general, in such household surveys, it is not possible to identify the health centers that households utilize in their neighborhoods (Gauthier and Wane, 2005).

<sup>46</sup> By comparing test scores from these two years, Das et al (2004) were able to derive learning achievement results. These were then tested against two types of funding to assess the impact of education expenditures.

<sup>47</sup> See Turner et al (2001) for a detailed description of stand-alone and linked survey sampling strategies.

## *Survey Instruments*

Another important methodological consideration for tracking surveys relates to survey instruments. The design of survey instruments depends on survey objectives and the initial choice of tracking flows. In past tracking surveys, there has been much variance in terms of instruments used to collect quantitative and qualitative data. The first surveys have served as “an open source technology” which subsequent users have improved upon. While there is clearly a trade-off between standardization of survey instruments (a common general structure to allow maximum comparability) and flexibility in instrument design (to account for the various specificities of each country), a minimal level of methodological coherence (common minimum structure of questionnaires, including sampling methodology) is required to allow cross-country comparability.<sup>48</sup>

The limited harmonization among tracking survey instruments has hindered cross-country comparisons or regression analysis. Thus, the tradeoff is between country specificity and cross-country comparisons.<sup>49</sup> An effort is under way under the auspices of the African Economic Research Consortium to develop a standardized set of core questions for PETS and QSDS.

Survey instruments generally include modules for each level of the public administration, frontline providers, staff, client exit polls and often households. In addition, it is important to collect administrative data at the central government level. These annual data, both for the entire sector under study and specific programs tracked, should be disaggregated at the provincial, district, and service provider level, if available. Such data would allow measurement of resources officially allocated to decentralized levels. It may also make it possible to triangulate information provided at lower levels.

Examples of instruments are available on the World Bank website.<sup>50</sup> A good example of questionnaires in the education sector is the Zambia 2002 PETS-QSDS (Das, Dercon, Habyarimana and Krishnan, 2004a). Their specific instruments include modules for central government units, provincial administrations, districts, schools, staff, students and households.

### **3.3 Research Questions and Findings**

In this section, we examine the main uses of PETS and the research questions it can answer. We analyze in particular the ways PETS have been used to measure leakage, to explain capture of funds and to evaluate impact of providing information on outcomes.

#### *3.3.1 Using PETS to Measure Leakage of Funds*

The first PETS was implemented in Uganda in 1996. The country was facing stagnant school enrollment despite substantial increases in public expenditures: although public expenditures had

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<sup>48</sup> Other surveys such as DHS are very rigid in terms of facility module components across countries.

<sup>49</sup> However, the potential uses of tracking surveys for cross-country comparisons could be somewhat limited. Lindelöw (2006) argues that given the complex institutional factors at play and the slight variation in their measures, tracking surveys may not be well suited to make inferences about the determinants of the outcomes of interest. Accordingly, they may be more useful as diagnostic tools than as analytical tools. Tracking surveys could also be well suited to evaluate the impact of institutional reforms through repeated surveys (Reinikka and Svensson, 2004a).

<sup>50</sup> <http://www.worldbank.org/research/projects/publicspending/tools/newtools.htm>



tripled, official primary school enrolment figures did not increase (Ablo and Reinikka, 1998). The central government had little information about resource use and reasons for poor outcomes, but it was suspected that local governments might be misappropriating resources intended for schools

The objective of the first PETS was therefore to track expenditure flows, using a survey, in the hierarchical structure in order to measure leakage in school funding. As mentioned earlier, the study hypothesized that public resources did not reach the schools and therefore enrollment did not increase. Survey instruments were developed to compare official budget allocations with actual spending at various tiers of government, including primary schools. Data were collected at the central level, the district level (local government) and the public primary school level.

The expenditure tracking focused on a specific non-wage program or per-capita capitation grant to schools--which was officially based on enrolment figures at the school level. The survey collected five years of data on spending (including in-kind transfers), service outputs and provider characteristics in 250 government primary schools, 18 local governments (districts) and three central government ministries. The initial objective of the PETS was purely diagnostic, that is, to measure leakage in school funding.

The tracking survey identified several problems in service delivery, most importantly large-scale resource leakage. On average, only 13% of the annual capitation grant from the central government reached the schools in 1991–95. Eighty-seven percent was captured by local officials for purposes unrelated to education, yet there was no evidence of increased spending in other sectors (Jeppson, 2001). Most schools received no grants at all. Based on yearly data, 73% of the schools received less than 5%, while only 10% received more than 50% of the intended funds. The picture looks slightly better when the sample is limited to the last year of the survey period. Nonetheless, only 22% of the total capitation grant from the central government reached the schools in 1995 (Reinikka & Svensson, 2004a). A major improvement was then observed, following a public information campaign (see section 3.3.3). As a result, in 2001, the average leakage was only 18%. Even more importantly, the median leakage was reduced from 100% in 1995 to 18% in 2001.

Although there is indirect evidence that part of the observed leakage is due to theft, as indicated by numerous newspaper articles about indictments of district education officers after the survey findings were made public, anecdotal evidence suggests that funds were also used for patronage politics and political activities. For example, information collected during the survey indicates that on the day funds actually arrived in the district, well-connected citizens and local politicians got together with the district officials to decide how the funds should be used. While the PETS data can usefully quantify capture of funds in a public program and shed light on where in the hierarchy such capture takes place, the data can not, without additional effort, serve to determine what exactly happened to the funds after they had been captured.

As discussed by Reinikka and Svensson (2004a), the anecdotes collected during the survey are consistent with case study evidence of local political financing and corruption in Uganda. Thomas (1998, 1999) argues that the power in local governments is concentrated in a small pool of elites interconnected by common schooling, marriage, friendships, shared ethnicities, or religion. Sustaining this power balance is costly and public funds fuel a system of patronage politics, where patrons give clients material rewards for their political loyalty and services. The

patronage system takes different forms, including government actors' diverting public resources for their own campaigns and those of friends and family, and financing of local and private causes, including distribution of private goods to neutralize voter dissatisfaction.

Following the first Uganda survey, PETS have been implemented in about two dozen developing countries, the majority in Africa, to assess performance and measure rent capture in basic service delivery. Most of these surveys were conducted in the health and education sectors, but a few also comprised other sectors such as water supply, agriculture and rural roads. Most PETS have been motivated by common objectives of increasing information on social sector spending to understand the weak links between public expenditures and human development outcomes, and have been implemented in institutional settings characterized by deficient accounting, monitoring and reporting.

Several of these surveys document evidence of substantial public resource leakage (see Table 1). Table A2 in the Appendix lists all surveys in SSA countries and presents the average leakage level observed in the various countries and the flows of resources on which these observations were based.

It should be noted that leakage, generally understood as the share of resources intended but not received by frontline providers, has been defined in two ways in the tracking surveys. The original or "strict" definition of leakage was introduced by Ablo and Reinikka (1998) for rule-based expenditures as the share not received with respect to the expected (fixed-rule) entitlement:

$$\text{"Strict" leakage} = 1 - \frac{\text{resources received by facility}}{\text{resources intended for the facility}}$$

For non-fixed allocation rule flows (discretionary funding), Lindelöw (2006) proposed a "narrow" (or soft) leakage measure which simply consists in the share of resources sent at a certain level and not received at the other, in particular the facility level:

$$\text{"Narrow" leakage} = 1 - \frac{? \text{ resources received by facility}}{\text{Resources disbursed by higher level}}$$

As figures in Table 1 show, several PETS have identified leakage on a large scale. For instance, in the 1990s in Tanzania and Ghana, leakage on non-wage education expenditures was respectively 57% and 49%, in the health sector in Ghana leakage reached 80%, while only 1% of non-wage health expenditures to regional health administrations were estimated to arrive at the health facility level in Chad.

Such high rates of leakage of non-wage expenditures could have dire consequences for the quality of public service delivery (Reinikka and Svensson, 2006a). When 50% (Ghana), 87% (Uganda) or 99% (Chad) of funds for supplies (medical and non-medical supplies, books and other schooling materials, i.e. non-wage inputs) do not reach health centers or schools, leakage prevention must become a major policy issue in these sectors.

**Table 1: Leakage by Sector and Country (%)**

<b>Country</b>	<b>Education</b>	<b>Health</b>
Chad, 2004	-	99
Ghana, 1998	49	80
Kenya, 2004	-	38
Tanzania, 1998	57	41
Uganda, 1991-95	87	-
Zambia , 2001	10 (rule-based) 76 (discretionary)	-

Source: Reinikka and Svensson (2006a); Gauthier and Wane (2005, 2008b)

Certain patterns in resource leakage tend to emerge from the survey findings, in particular in terms of: i) rule-based versus discretionary expenditures; ii) wage versus non-wage expenditures; iii) levels of government; and iv) in-kind versus cash transfers (Gauthier, 2006).

*i) Rule-based versus discretionary expenditures*

As emphasized by Reinikka and Svensson (2001), Das et al. (2004a) and Lindelöw (2006), the level of discretion exercised in resource allocation influences leakage levels. Greater discretionary power granted to particular administrative units, combined with weak supervision and poor incentives, could lead to large fund capture. Indeed, differences in leakage levels have been observed between funds allocated through fixed-rule and those that are at the discretion of public officials or politicians. In Zambia for instance, rule-based funding (per-school grants) presented a level of leakage of only 10%, versus more than 76% for discretionary funding.<sup>51</sup> As Das et al. (2004a) demonstrate, since rule-based funding is clearly defined by a simple allocation rule, capture of funds is more difficult compared with discretionary funds, which are not bound by any specific allocation rule. Similarly, in the health sector in Chad, where no fixed allocation rules apply for most resource allocation, it was estimated that only 1% of non-wage resources allocated to regional health administration in 2003 arrived at the facility level (Gauthier and Wane 2008b).

As the case of Uganda, characterized by a fixed allocation rule but high leakage, demonstrates, beneficiaries need to be aware of the allocation rule, or it amounts to no rule at all. Cash budgeting (where available resources determined releases of funds) made it difficult in the 1990s for Ugandan schools to know whether monthly transfers were actually made by the Treasury.

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<sup>51</sup> It should be noted that Das et al (2004a, p. 25) are “agnostic” about the fact that such non-arrival rates at the school level constitute good or bad service delivery, and whether leakage is indeed taking place given that for discretionary funding, no fixed-rule governed the share of resources earmarked for service providers. Indeed, normal administrative use at the provincial and district levels should be accounted for in this figure, as well as delays in arrival, etc.

This allowed local governments to capture funds instead of sending them to schools. Generally, we observe that the greater the agent's discretionary power, the higher the leakage.

#### *ii) Wage versus non-wage expenditure*

There are also differences in leakage levels between salary and non-salary funds. As shown in Table 1, tracking surveys, particularly in Ghana, Tanzania, Uganda and Zambia, reveal that non-wage expenditures (channeled through intergovernmental transfers) suffer from more extensive leakage than do salary expenditures.

In the case of non-wage expenditures, local officials and politicians can use their information advantage to reduce disbursement or provide fewer non-wage supplies to health centers or schools, knowing it would attract little attention (Reinikka and Svensson, 2004a, p.38). In contrast, failure to pay health workers or teachers would attract attention as workers know how much they are owed. Indeed, salaries and allowances are more easily observed and individual recipients have a greater incentive to ensure that the funds actually arrive.

Salaries are also often paid directly by the central government to individual workers at the service provider level, without going through the administrative apparatus (for instance, in Rwanda, salaries are paid directly into workers' bank accounts). Alternatively, when salaries are transferred through the administrative structure, they are generally paid by local authorities directly to workers, thus with the same incentives at the recipient level for ensuring full transfer.

Furthermore, salaries and other forms of staff compensation are generally governed by clearer, fixed rules than non-wage expenditures, which could also contribute to reducing funds dissipation.<sup>52</sup> Hence salaries and allowances seem to suffer from leakage to a much lesser extent than other categories of public expenditures.

#### *iii) Levels of government*

Tracking surveys have also shown, depending on the country's specific institutional arrangements, that resource loss could be more extensive at certain levels of government. Indeed, several PETS have observed that leakage is more pronounced at specific tiers of government (Reinikka and Svensson, 2003). For instance, in Mozambique, Rwanda, Senegal, Uganda and Tanzania, the most serious resource leakage was observed at the local government (district) level. In contrast, in Chad and Ghana, leakage occurred at the central government level. In Ghana, it was noted that a large proportion of resource diversion occurred during the procurement of in-kind items between line ministries and district administrations.

These varying leakage results are associated with different institutional structures characterized by various information asymmetry problems among parties, coupled with varying discretionary power and weak enforcement capacity.

#### *iv) In-kind versus cash transfers*

Furthermore, leakage has also been shown to be more pronounced in the case of in-kind transfers compared with financial transfers. This situation, observed for instance in Ghana, Mozambique

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<sup>52</sup> In Zambia, important divergence was observed in terms of rules governing workers' allowances, with direct impact on delays and potential leakage.

and Tanzania, could be explained by the fact that the value of in-kind items is typically not known by the recipient (at the local government or facility levels). This situation tends to exacerbate the information asymmetry problem, diminishes accountability in the delivery system and reduces potential feedback from service providers. Furthermore, it is generally more complex to monitor numerous small items than less frequent cash transfers (Ye and Canagarajah, 2002; Lindelöw, 2006).

Such a situation was observed in Tanzania, where district officials had complete discretion over school fund allocation. Although school officials and parents knew they were entitled to some funding from the district level, because resources reaching the schools were predominantly in-kind without any indication of monetary value, school communities seldom knew the value of the in-kind support they received, which greatly reduced accountability.

Similarly, in Ghana, education resources are essentially channeled to schools as in-kind resources via district offices. Here again, as schools had little knowledge of the monetary value of what they actually received, information asymmetry was more pronounced, which reduced accountability in the delivery system and increased the possibility of leakage.

### *Delays*

PETS have also shed light on the problem of delays and bottlenecks in the allocation of resources through public administrations (e.g. salaries, allowances, financing, material, equipment, drugs and vaccines). These issues could have important effects on the quality of services, staff morale and the capacity of providers to deliver services. Table A3 in the Appendix presents estimates on delays in various SSA countries, for certain types of items and inputs.

At times, the measurement of delays proved easier to estimate than quantitative or financial data on the same flows, which would have allowed measurement of leakage levels (Gauthier, 2006). In Zambia, for instance (as in most countries), staff compensation flows were not tracked. Instead, information was collected on delays (and arrival time) in the reception of salaries and four types of allowances (compensation and time overdue) at the service provider level.<sup>53</sup> For the salary component, the payment system is efficient; over 95% of staff was paid on time and less than 3% reported more than 6 months' overdue pay. However, allowance disbursements have worse records, depending on the type of allowance. Well-defined allowances (hardship and responsibilities) are paid on time, while delays are observed in disbursement of the other types of allowances. In particular, more than 75% of recipients of "double-class allowances" (additional amount paid for overtime, etc) experience at least 6 month's overdue pay. According to the report, this appears to be partly due to lags in payroll updating.

In Rwanda, delays were observed in the payment of capitation grant funds to schools. About 13% of teachers did not receive their salaries regularly. More importantly, 82% of teachers report salary arrears in 2003.

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<sup>53</sup> The four types of allowances studied were i) Double-class allowance, paid to teachers who teach more than their contract stipulates, ii) Hardship allowances, paid as an incentive to teach in rural areas iii) Student-trainee allowance, paid to teachers in their second year of training that are assigned to rural areas iv) other allowances, which include compensation for additional responsibilities at the school (Das et al, 2004a).

In Tanzania, REPOA/ESRF (2001) described the disbursement procedure between the central level and facilities via district authorities. It measured the disbursement time between these levels and delays for salaries and “other charges,” as well as for certain materials (books and drug kits). Salaries appeared to be less prone to diversion than non-wage expenditures, but delays in pay for frontline staff were also observed. The most important delays are reported for non-wage resources in rural areas.<sup>54</sup> Significant delays in the allocation of non-wage funds at the central level were documented. In fact, delays were observed in all districts studied. In some districts, no transfers at all were reported in some sectors for the period under study.

In Nigeria, Das Gupta et al. (2003) and Khemani (2006) found evidence of long delays in the payment of salaries to health providers. In particular, extensive non-payment of salaries of public health personnel was observed in one of the two states surveyed (Kogi) where 42% of staff respondents reported not receiving a salary for 6 months or more in the past year at the time of the survey.

### *Ghost Workers*

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 the government service, or who have been included in the payroll without ever being in the service.<sup>55</sup> In a PETS survey in Honduras, for example, 5% of teachers on the payroll were found to be ghosts, while in health care, the rate was 8.3% for general practitioners in 2000 (World Bank, 2001). In Papua New Guinea, a 2003 PETS showed that 15% of teachers on the payroll were ghosts (World Bank, 2004a). In Africa, the comparable figures are even higher: 20% in Uganda in 1993 (Table 2)<sup>56</sup>.

**Table 2 Ghost Workers on Payroll by Sector and Country (%)**

Country	Ghosts workers	
	Education	Health
Honduras, 2000	5.0	8.3
Papua New Guinea, 2002	15.0	-
Uganda, 1993	20.0	-

Source: World Bank (2001) for Honduras; World Bank (2004) for Papua New Guinea; and Reinikka (2001) for Uganda.— Not available.

In Mozambique, Lindełow et al.. (2004) noted important discrepancies between provincial, district and facility level staff records but could not confirm the presence of ghost workers. Data problems were noted, but a further problem arose from some health personnel being hired locally through community funds or user fees, which complicated the comparison between the central

<sup>54</sup> The cause was linked to a cash budgeting system, which lead to volatile transfers of resources due to fluctuations in revenue.

<sup>55</sup> Most public administrations in Sub-Saharan Africa use a centralized staff payroll system. Generally, teachers and health workers are paid directly by the central ministry.

<sup>56</sup> Note that this evidence was not obtained from PETS, but rather from a payroll clean-up exercise.

payroll list and facility personnel. A similar situation was observed also in Uganda (Reinikka and Svensson, 2004a).

### *3.3.2 Explaining Capture of Public Funds*

#### *Lack of Information*

Apart from diagnosis, PETS data allow analysis of leakage and other shortcomings in service delivery. For instance, Reinikka and Svensson (2004a) observe that while the average leakage was 87 percent in 1990-95, there was a large variation in leakage across schools. They show that much of this variation can be explained by analyzing the interaction between local officials and schools as a bargaining game. The district was supposed to pass the grant on to schools. In the absence of central government oversight, however, district officials had a considerable degree of discretion over these funds, as only they knew the amount of monthly transfers (which varied from month to month, given cash-based budget management). In principle, a school could obtain information on disbursements of the capitation grant, but in practice contacting the central government for information is costly.

Even if the school decided to obtain the information, exercising their voice (see [Hirschman, 1970](#)) is also costly. They would have to mobilize parents and teachers and file a complaint to higher authorities. An important consequence is that resources are not allocated according to the rules underlying the central government's budget decisions, with obvious equity and efficiency implications.

Reinikka and Svensson (2004a) show that resource flows are endogenous to a school's socioeconomic endowment. Rather than being passive recipients of flows from the government, schools use their bargaining power vis-à-vis other parts of the government to secure larger shares of funding. Combining the PETS data with household survey data, they demonstrate that poor students suffer disproportionately due to local capture because their schools received even less than others. Many schools in poor communities received nothing. A 1% increase in income increases the amount of public funding reaching the average school by 0.3 percentage points. This result is in contrast with benefit incidence studies that use budget data, which found that public spending in primary education was distributionally neutral ([World Bank, 1996](#)). The PETS data clearly reveal that non-wage public spending, at least, was highly regressive due to capture.

Similarly, in Zambia differences in schools' bargaining power seem to explain the fact that only about 20% of schools receive any resources from discretionary funding. Das et al. (2004a, p.41) argue that the few schools that received large amounts of discretionary funds have greater bargaining power with higher administrative levels.

Hence, shortcomings in information flows were an important factor in Uganda and in Zambia. In several other African countries, tracking surveys have been able to identify information problems associated with budgeting, accounting, reporting systems, supervision and monitoring.

In Tanzania, as in several other African countries, information asymmetry was associated with the use of a cash budgeting system at the central government level. The requirement for the

government to avoid running deficits, coupled with the prioritization of salary payments over other social sector expenditures, led to volatile transfers to the ministries and decentralized administration, due to fluctuations in revenue. This in turn gave rise to information asymmetry, because it was difficult for local service providers to know the amount of their monthly resource entitlement (REPOA/ESRF, 2001).

A further information problem was observed in Tanzania with respect to rural road expenditures. Instead of being deposited in a specific road fund account at the district (or urban) council level, funds disbursed for road maintenance by the ministry of regional administration and local government are deposited in a miscellaneous account. This means that it is almost impossible to trace the funds, because the system of accountability and reporting used is different from that of other funds. Furthermore, the funds are not included in the annual budget estimates and are not disbursed using the same procedure and timing as other grants. As observed by REPOA/ESRF (2001), this system of aggregating expenditure items reduces transparency and increases capture at the local government council.

In Chad, the total lack of transparency of budgetary information at the regional and district levels greatly facilitates the capture of the ministry of health budget at the central level. The regional delegates and heads of the health district lack information on the resources the ministry of health earmarked for them. The availability of information on the regional allocation of the “centralized purchases” would allow the regional delegates to ensure that the resources they receive indeed correspond to their initial allocation. In the same vein, it was suggested that making the budgetary information available to the district and health facility heads would help ensure that adequate resources reach the beneficiaries (Gauthier and Wane, 2008b).

In Nigeria, Khemani (2006) documents significant differences in terms of delays and non-payment of salaries between states (Kogi and Lagos), which could not be explained by lack of resources available to local governments. Rather, evidence suggests that non-payment of salaries is related to problems of accountability at the local government level. Furthermore, she observed that this non-payment had an impact on provision of services. The greater the extent of non-payment of salaries, the greater the likelihood that facility staff acted as private providers, e.g. providing more services outside the facility, misappropriating drugs from facility stocks, etc.

### *Impact of Public Resources*

In Chad, PETS data were used to examine the determinants of public resource allocation to regional delegations and local health centers and the factors favoring leakage. Gauthier and Wane (2008b) examine the determinants of public resource receipt by health centers. They show (using a probit model) that the discretion of district and regional administrators has a significant impact on the probability of receiving public resources, in that the probability of receiving material resources increases significantly for health centers that have been visited by the regional delegate. They also observe a negative and significant impact of support by foreign donors on the receipt of public resources. This tends to indicate that foreign donor support has a strong substitution effect on public resources; the presence of donor support reduces the probability of receiving public medical materials by 13.6% and any type of public resources by 19.6%.



Gauthier and Wane (2008b) also examine the link between government spending and services actually provided. Several studies have questioned the relationship between public expenditures and outputs and outcomes in the health sector. (Filmer et al., 2000). Figure 3 shows the relationship between expenditures per capita in a regional delegation and the number of patients visiting local health centers per 1,000 inhabitants in a region in Chad. Figure 3(A) presents the effects of official health expenditures and Figure 3(B) illustrates the effective health expenditures.<sup>57</sup>

As shown in Figure 3(A), public resources allocated to regional delegations in the central budget appear to have a negative impact on health center output in Chad. Regions that were officially allocated the highest per-capita health expenditures present the lowest ratio of patients that received health services in the region. This result supports the empirical observations of the weak correlation between official health expenditures and health indicators in several countries (Filmer et al., 2000). However, this negative conclusion does not hold once leakage of health expenditure is taken into account, and the reverse is actually true. As illustrated in Figure 3(B), which presents effective public expenditures (that is, those that reach the regions), public expenditures indeed have a strong positive impact on health output. Public expenditures could therefore contribute to the improvement of the population's health, provided they reach the population.

These results concerning the relationship between official and effective health resources and health services are supported by regression analysis. Using the total number of consultations in the health centers of a region as the dependent variable, Gauthier and Wane (2008b) show that official health expenditures do not explain health output at the regional level. However, effective health expenditures have a positive and significant impact on health output at the regional level.

Indeed, they estimated that for one million CFAF (US\$2,062) of effective public expenditures received in a region in Chad, 693 more patients would receive medical consultations in primary health centers in the region annually. Furthermore, given the estimates of leakage and the elasticity of consultation service to health expenditure allocation, they estimated that if all public resources officially budgeted for regional delegations had reached the frontline providers in 2003, the number of patients seeking primary health care in Chad would have more than doubled during the year.<sup>58</sup>

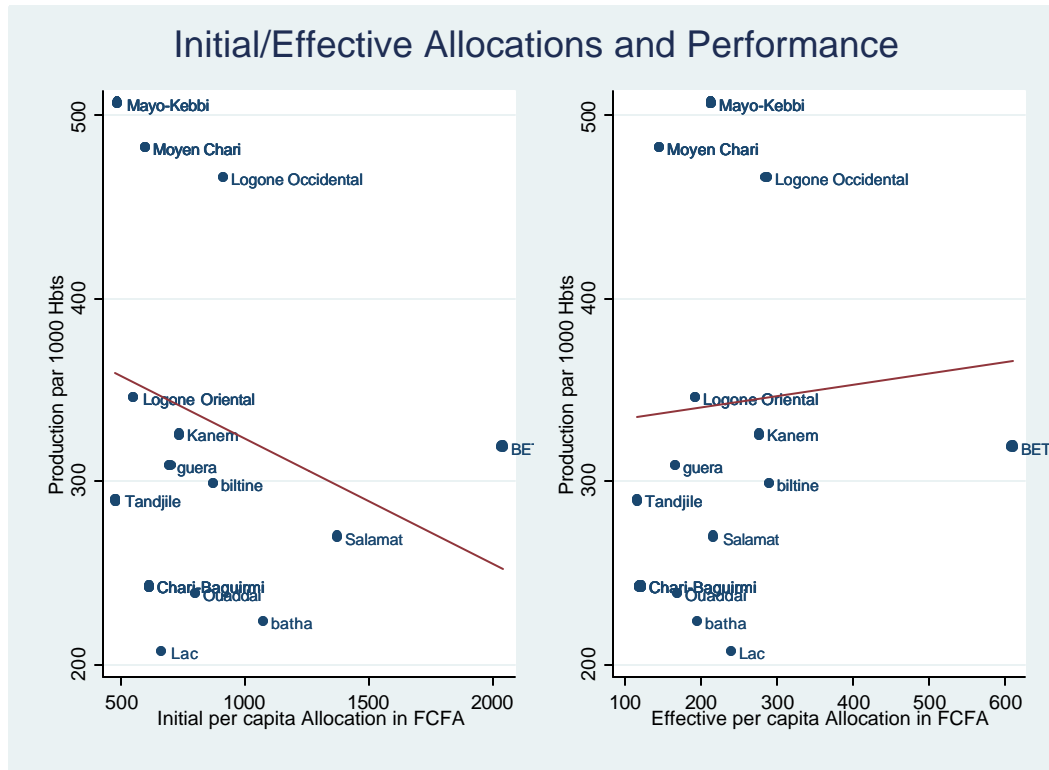
Overall, the findings from the PETS provide new insights into various shortcomings in the accountability relationships between policymakers and frontline providers. They show that a large part of the variation in capture of public funds at the local level can be explained by studying the interaction between local officials and end users (e.g. schools and health facilities).

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<sup>57</sup> Regional production is the number of consultations reported by health centers.

<sup>58</sup> The authors estimated that approximately 4 billion CFAF officially budgeted for regional delegations do not reach the regional level. Using the estimated coefficient of effective health expenditures, they estimate that close to 3 million patients do not visit health centers because public resources do not reach service providers. Given that primary health centers in Chad have treated about 2.5 million patients in 2003, this figure illustrates the impact of public resource leakage on health services in Chad.

**FIGURE 3: RELATIONSHIP BETWEEN OFFICIAL AND EFFECTIVE ALLOCATION OF PUBLIC RESOURCES TO HEALTH SERVICES IN CHAD**



Source: Gauthier and Wane (2008b)

### 3.3.3 Evaluating Impact of Information on Leakage of Funds and Outcomes

PETS data can also be used to evaluate the impact of policy reforms, such as in Uganda. Following publication of the findings from the first PETS in 1996, the Ugandan central government made a swift attempt to reduce the high leakage level observed in the education sector. It began publishing the monthly intergovernmental transfers of capitation grants in the main newspapers 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, but also signalled to local governments that the center had resumed its oversight function. As discussed above, an evaluation of the information campaign—using a repeat PETS—revealed a great improvement. While schools on average are still not receiving the entire grant (and there are delays), capture has been reduced from 78% on average in 1995 to 18% in 2001.

A key component of the information campaign was the publication of monthly transfers of public funds to the districts 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. However, the reduction in capture is significantly higher for schools with newspapers; these schools on average increased their funding by 14%

points more than the schools that lacked newspapers (Reinikka & Svensson, 2004b). The results also hold when differences in income are controlled.

Using distance to the nearest newspaper outlet as an instrument, Reinikka and Svensson (2004b) show that a strong relationship exists between proximity to a newspaper outlet and reduction in capture of funds since the newspaper campaign started. In sum, with a relatively inexpensive policy action—provision of mass information through the press—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 information campaign, benefited most from this initiative. This improvement coincided with a massive increase in primary enrollment (and hence a large increase in total capitation spending) thanks to a universal primary education initiative in 1997 (Stasavage, 2003).

## **4. Performance and Provider Behavior: Quantitative Service Delivery Surveys**

In this section, we examine some of the main uses of quantitative service delivery surveys (QSDS), especially in relation to staff motivation, performance and absenteeism. We also examine how these studies have been used to analyze other issues such as decentralization, user fees and equity.

QSDS seek to collect information on service providers in order to examine the efficiency of public spending and service delivery on the frontline. These surveys can be used to examine activities and services at the provider level, the incentives and behavior of various agents, input use, pricing and quality. The focus is on staff incentives and behaviors, relationships with the demand side, etc. Various types of providers can be examined: public, private for-profit and private non-profit. QSDS can be conducted jointly with a PETS in order to obtain a more complete picture of the efficiency of a public resource allocation system, activities at the provider level, as well as various agents involved in the service delivery process.<sup>59</sup> Furthermore, data from service users (e.g. students or patients) can be combined to provide qualitative measures of service quality and performance.

### **4.1 Motivation and Performance**

Reinikka and Svensson (2006b) examine how different motivations of health care providers affect their pricing and quality in Uganda. They compare outcomes of religious providers with those of private for-profit providers and public health centers to test an altruistic motivation hypothesis. They make use of an exogenous change in the financial incentives given to not-for-profits (an untied government grant) as a natural experiment to identify the objectives of not-for-profit providers. They show that the latter pay qualified staff below market wage, that they provide more pro-poor services and services with a public good element and charge lower user fees. At the same time, they are able to provide comparable quality to private for-profit health providers.

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<sup>59</sup> Combined PETS-QSDS are sometimes called Expenditure Tracking and Service Delivery Surveys (ETSDS) or Expenditure and Service Delivery Surveys (ESDS).

Alternative approaches relating in particular to qualitative data collection have also been used to study staff motivation and other aspects of service delivery performance. Lindelöw and Serneels (2006), for instance, have made use of focus groups to examine health workers' performance and human resource problems in the health sector in Ethiopia. Focus group discussions are a qualitative tool to study service delivery that could be used to elicit views from users and frontline workers that are potentially harder to collect through individual interviews. The authors' objective was to generate hypotheses that could be tested with subsequent quantitative research. They identify a series of problems related to the transition to a more competitive health sector, the HIV/AIDS crisis and an inadequate policy and regulatory environment. Combined with weak enforcement mechanisms, these problems have created new incentives and reduced trust and professionalism among health workers.

Similarly, Serneels et al. (2005) report on focus group discussions in Ethiopia and Rwanda. Their objective is to understand and explore institutions and policies and examine how they are perceived by health workers and users and how they affect absenteeism. They observe that health workers in religious health centers seem to have lower absenteeism levels than other workers. In their attempt to build an enriched model of absenteeism, Serneels et al. also identify intrinsic motivation, job mobility and health risk as being correlated with absenteeism, variables not typically included in standard models.

## **4.2 Absenteeism**

Apart from focus groups, QSDS have been extensively used to study absenteeism among frontline workers.

Table 3 presents the findings on absence rates from a large multi-country study (Chaudhury et al. 2006; Rogers et al. 2004; and Chaudhury and Hammer 2004). The study reports results from QSDS-type surveys in which enumerators made unannounced visits to primary schools and health clinics in Bangladesh, Ecuador, India, Indonesia, Peru and Uganda and recorded whether they found teachers and health workers in the facilities. Averaging across the countries, about 19 percent of teachers and 35 percent of health workers were absent. The survey focused on whether providers were present in their facilities, but since many providers who were at their facilities were not working, even these figures may present too favorable a picture. For example, in India, one-quarter of government primary school teachers were absent from school, but only about one-half of the teachers were actually teaching when enumerators arrived at the schools. The study analyzes the high absence rates across sectors and countries; investigate the correlates, efficiency, and political economy of teacher and health worker absence; and consider implications for policy.

Das et al. (2005) explored the relationship between teacher absenteeism and students' learning. Absenteeism in Zambia was shown to be associated with shocks, caused often by illness or death rather than overall lack of motivation. The authors showed that teachers work harder to compensate for such absences but that children with a frequently absent teacher may fail to improve in their test scores. The findings suggest that programs to allocate substitute teachers could significantly improve education outcomes in such an uncertain environment.

**Table 3: Absence Rates by Country and Sector (%)**

<b>Country</b>	<b>Primary schools</b>	<b>Health centers</b>
Bangladesh	16	35
Ecuador	14	-
India	25	40
Indonesia	19	40
Papua New Guinea	15	19
Peru	11	25
Uganda	27	37
Zambia	17	-

*Source: Chaudhury et al. (2006); Das et al. (2005); World Bank (2004a) -- Not Available*

In Honduras, for example, a combination of PETS and QSDS was used to diagnose the 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 in the education and health sectors assigns posts to the central ministry, rather than 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 areas. The implication is that posts migrate over time from the rural and primary level to cities and higher levels of health care/schooling. This is neither efficient nor equitable.

The PETS/QSDS in Honduras 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 the study included all levels of the two sectors from the ministry down to the service facility level.

In health, the study found absenteeism to be common in Honduras, with an average attendance rate of 73% across all staff categories (Table 3). Thirty-nine percent of absences were justified (e.g. sick leave, vacations and compensation for extra hours worked). This amounts to 10% 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% 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% 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 non-teaching staff and secondary teachers. Multiple jobs in education were twice as prevalent as in health, with 23% of all teachers holding two or more jobs. Furthermore, 40% of the educational staff worked in administrative jobs, suggesting a preference for non-frontline service employment.

### **4.3 Broader issues**

A series of other hypotheses have been analyzed using QSDS data, in particular relating to decentralization, user fees and equity.

#### *4.3.1 Decentralization*

Decentralization of responsibilities from central government to regional or local authorities has been one of the most common approaches of institutional reforms in the past decades. In the last quarter century, over 75 countries have transferred central government responsibilities, which may include fiscal and/or administrative responsibilities, to lower tiers (Ahmad et al., 2005, p1). Decentralization could be motivated by economic or political reform objectives, a quest to reinforce democracy or ethnic reasons, but in several cases (e.g. Chile, Cote d'Ivoire, Uganda) the main objective was to improve the delivery of services (Shah and Thompson, 2004). Two sets of reasons are generally invoked in such contexts: (i) basic services, in particular health, education, water and sanitation, which are the responsibility of the government, are deficient and fail the poor in particular; (ii) these services are locally consumed and are thus better allocated locally (World Bank, 2003).

Furthermore, donors have largely supported decentralization, which was perceived as encouraging more bottom-up expression of preferences and potential improvement in procurement decisions.

However, the results of decentralization attempts have been quite mixed (World Bank 2003, Burki, Perry and Dillinger 1999). Ahmad et al. (2005) presents a framework explaining why decentralization can generate improvements in service delivery, but also why it often does not meet expectations. The framework is based on the premise that delivery of services requires a strong relationship of accountability between the various groups in the service delivery supply chain. Decentralization can also be associated with political capture of local governments. Accountability to villages and local communities can be weak. These factors can undermine service delivery and are sometimes associated with a deterioration of service quality.

A few public expenditure tracking surveys have also examined the impact of decentralization on social sectors' resource allocation. In the 1996 Uganda education PETS, this consideration was incorporated in the sample selection process and was studied through the flow of capitation (per student) grants to schools. Findings indicated that decentralization had not at least in the early years produced positive results in terms of better resource allocation to service providers. Following decentralization, which was implemented gradually starting in 1993, district authorities and district and urban councils gradually gained control of the funds allocated by the central government to primary education. Using the capitation grant as a proxy to explore the impact of decentralization on the flow of public funds to schools, Reinikka (2001) finds that decentralization was associated with a slight deterioration in the flow of funds to schools.

Das et al. (2004a) also incorporated the question of decentralization in the sample design in the 2002 Zambia PETS/QSDS which surveyed two centralized and two decentralized provinces.<sup>60</sup> They present similar results to Uganda with respect to the negative effect on funding flow to service providers. While the survey indicates that decentralization improved the flow of funds by decreasing spending at the provincial level, it somewhat reduced the allocation of funds to schools. Indeed, decentralized provinces presented greater levels of fund capture than centralized provinces. Overall, while only between 15% and 33% of total funding in the system (rule-based and discretionary funding) reaches schools, the record is slightly worse in decentralized provinces. Schools in centralized provinces receive around 30% of total funds in the system compared with about 25% for schools in decentralized provinces.<sup>61</sup>

Khemani (2006) examined decentralized delivery of primary health care in Nigeria. Her empirical study is based on the PETS/QSDS carried out in 2002 in two states (Lagos and Kogi) covering 30 local governments, 252 primary health care facilities and over 700 health care providers. The two states differ on a number of aspects that influence accountability relationships, in particular level of urbanization, availability of alternatives (such as private providers) and effectiveness in monitoring frontline providers. The study found a high degree of leakage in the more rural Kogi state. Furthermore, the author found evidence of a general problem of accountability at the local level in the use of public resources. Although the study cannot address the question of whether decentralization has a beneficial effect on allocation and use of public resources — because the two states examined did not differ significantly in the extent of decentralization of responsibility — the overall policy lesson is that strengthening local government accountability is fundamental to reducing public resources capture.

#### *4.3.2 User fees*

Another research question that service delivery surveys have explored concerns user fees. There has been much debate about the equity and efficiency effects of user fees on the demand and supply sides. For frontline providers, user fees are sometimes the only source of revenues; in several countries, as previously mentioned, providers receive only in-kind items from upper administrative levels. On the demand side, user charges create clear problems of accessibility and equity for the poor. QSDS have shown that user fees often constitute an important part of service costs for users and can have considerable negative effects on access.

In the Chadian health sector, for instance, contrary to the conclusions of previous studies (Ministère de la Santé publique, 2001; World Bank, 2004), the tracking survey discovered that the most important source of health center financing is user fees. As most public health expenditures in Chad are consumed by the central and regional administrations that do not provide direct services to the population, very little is left for frontline service delivery. Once

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<sup>60</sup> Decentralized provinces were defined as those where a district education board exists and is responsible for school funding.

<sup>61</sup> Note that the tracking exercise in Zambia assessed the amount of resources available in the education system within the 4 provinces surveyed, distinguishing between rule-based and discretionary funds, and the originating level of the resources, as well as funds available at the district level. Financial resources available at the school level were tracked per pupil. The researchers analyze enrolment figures collected at the district level. Two districts were dropped from the calculation because of incomplete financial data. (Das et al, 2004a, p.36).

labor resources are allocated, health centers are left to their own devices to finance their activities through user fees. Indeed, government transfers account for only 2% of health center revenues (excluding salaries) and for one quarter of their revenues, including salaries. The impact in terms of access is significant, since the health centers tend to charge higher user fees to make up for their lack of resources (Gauthier and Wane, 2008b).

The Chad PETS data were also used to examine ways in which actual receipt of public resources could allow better access to health services, including the reduction of drug prices. Several empirical studies have shown that drug prices, which typically represent the dominant component of user fees in public health clinics in Sub-Saharan Africa, constitute an important barrier to health service access. People often do not go to a health center because of the total cost of consultation fees and prescribed drugs. Gauthier and Wane (2008b) show that in Chad drugs account for 75% of total medical costs for patients, and as much as 85% in rural areas. They also estimate the effect of public resource leakage on the mark-up charged by primary health centers.

Given that private health centers are more likely to be located in urban areas and rural centers, Gauthier and Wane (2008b) estimate simultaneous equations of the mark-up and competition. They show that there is a negative and significant relationship between average drug mark-up and effective transfers of public resources to health centers. Local health facilities that receive government transfers are able to charge lower mark-ups on drugs than centers that do not receive transfers. Leakage of government resources thus appears to have a significant and negative effect on user fees and thus constitutes a barrier to access to health care.<sup>62</sup>

In the education sector in Uganda, the tracking survey found that private contributions represented more than 60% of education finance at the school level in the early-1990s. Subsequently fees were abolished (although the repeat PETS showed that some fees continued to be collected).

Similarly, in Zambia despite an official policy of abolishing Parent Teacher Association (PTA) fees in order to increase enrolment,<sup>63</sup> the survey estimated that private education expenditures were prominent in education costs. Das et al. (2004a) estimated that education fees and other private non-fee expenditures (textbook, uniforms, etc) represent on average between 54% and 67% of total education costs for rich and poor households, respectively.

In Rwanda the ministry of education introduced a policy of “education for all” to improve access to basic education. Under this program, the ministry pays education fees for all students. Basic education has thus become free and compulsory. However, the survey report notes that the disbursement of public funds to schools is irregular and insufficient to cover school expenditures. Schools then ask parents to make additional payments, which far exceed public funding.<sup>64</sup> School authorities reportedly send home children who were unable to pay school fees (Government of Rwanda, 2004).

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<sup>62</sup> They also observe that health centers located in rural areas tend to charge significantly lower mark-up than centers located in urban areas and that greater competition among health centers tends to significantly reduce average mark-up on drugs and thus be favorable to users.

<sup>63</sup> PTA fees were abolished for primary and basic schools in April 2002, 3 months before the fielding of the survey (Das et al, 2004a, p. 51).

<sup>64</sup> In the capital, these school fees ranged from 400-2000 Rwf per student per term, while in the province, they ranged between 5 and 500 Rwf (Government of Rwanda, 2004)



QSDS data have also been used to demonstrate a substitution effect between private and public education expenditures, for example, in Zambia, Rwanda and Uganda. Das et al. (2004b) examined the question of the effect of household response to schooling inputs on educational outcomes. They devised a dynamic model of household cognitive achievement in which households respond optimally to the provision of inputs at the school level. The impact of school inputs in this framework depends on the level of household anticipation about the input and the degree of substitutability between school and household inputs. They make use of input data provided by the 2002 PETS/QSDS in Zambia, which included test scores on a sample of students one year apart. In addition, they matched the household data to a sub-sample of schools which allowed them to directly relate household and school inputs. They show that household educational expenditures and public cash grants to schools are substitutes and that the elasticity of substitution between the two is high and significant. They find that unanticipated grants have a significant and substantial impact on learning achievement, while anticipated grants have a small, insignificant effect.

The 2004 Rwanda PETS discovered that parents reduced private education spending following an increase in public education expenditures. Specifically, following the introduction of the “education for all” policy, many parents disengaged themselves from funding their children’s education, with the result that many students no longer wore uniforms to school (Government of Rwanda, 2004, p. 44). But the policy had also a strong positive effect on attendance, as there was a massive influx of children into primary schools.

Interestingly, public and private expenditures in Uganda were complementary: parents’ private education expenditures increased concomitantly with public expenditures during the period studied by Ablo and Reinikka (1998). Further analysis of the factors explaining differences in private responses to public spending is required to fully understand this dynamic.

#### *4.3.3 Efficiency*

There is no consensus about which indicators should be used to measure performance of schools or health centers. Indeed, various problems with measures and comparability exist. In the health sector in particular, there is considerable heterogeneity in terms of service output due, for instance, to variations in case mix across facilities (types of patients, complexity of cases, etc.) and range of services offered. Nonetheless the most frequently used indicators that measure performance of health centers include the number of consultations by specialized staff and the total number of consultations per employee. These indicators do not control for the quality of services offered, an important factor in explaining efficiency, but one which is even harder to measure.

Lindelöw et al. (2004) examined the question of productivity of health centers using PETS/QSDS data in Mozambique. They analyze seven categories of service output and devise a composite index of output to deal with the problem of multi-output production. They observe significant urban-rural and regional differences in service output per capita. The authors note important variations in output per health worker across districts (8 to 1 ratio). They find that the low productivity observed in certain districts may be due to low density, and consequently, that low productivity may be a cost of extending service to sparsely populated areas in the interest of equity.

Lindelöw et al. (2003) examined the question of efficiency in Ugandan health clinics using QSDS data. They make use of an output weighted index similar to the one used in Mozambique to measure health workers' output for different categories of facilities. They note very important differences in outpatient-equivalent service units per workers across facilities in the country (in a 50 to 1 ratio). Important differences in output per worker are also observed across ownership categories, with lower levels observed among non-profit facilities.

Gauthier and Wane (2005) also examined differences in productivity among health facility ownership categories in Chad using PETS/QSDS data. They observe that religious not-for-profit facilities are the most efficient providers for a variety of performance indicators (including the average number of outpatients and the number of patients per staff member). A typical religious not-for-profit facility in Chad treats 2,300 more patients annually than the average government provider of primary health care. Employees in religious not-for-profit facilities are also the most productive, offering health care to over 270 patients more per year than the average health worker. This difference was 970 patients annually when the sample is restricted to qualified workers.

Finally, Over et al. (2006) examine efficiency of health service delivery in six countries, focusing especially on HIV prevention. They apply a technical efficiency approach based on stochastic production frontier to estimate the determinants of relative productivity. They evaluate cost-effectiveness of service delivery, controlling for quality of health care.

#### *4.3.4 Equity*

Yet another research question examined using service delivery surveys is equity in the allocation of resources and services by location and between income groups. In several countries, variability of health and school spending across geographical areas, regions and districts, as well as within districts, was observed. The considerable difference in resource allocation noted in several countries raises serious issues of equity among socio-economic and demographic groups.

In Mozambique, for instance, a nine-fold variation in per capita health spending was observed at the district level ranging from 5,000 to 47,000 Meticals annually. These variations seemed to be mainly driven by staffing and infrastructure patterns across districts. In Chad, non-wage per capita public health spending showed important variations across districts (16 to 1 ratio): at the health center level, the most funded district received 38 CFAF per capita on average versus 2.3 CFAF for the least funded district (Gauthier and Wane, 2008b). In the schooling system in Zambia, the most funded district received 8 times more average per-student public resources than the least funded district. This variance was due predominantly (90%) to differences within provinces, as opposed to difference across provinces (10%). At the school level, differences in Zambia were even much more pronounced; the most funded school received 3,000 times more funding than the least funded one.

Das et al. (2004a) used a household survey to develop an index of wealth, which measured the progressive nature of two types of school funding (rule-based and discretionary). In addition,

their equity analysis accounted for the value of staff inputs at the school level and private contributions to education expenditures. The study found that rule-based (per-school) funding had progressive characteristics that led to greater per pupil funding for poorer and rural schools.<sup>65</sup> However, staff expenditures per pupil were found to be regressive; they were higher in urban and richer schools.<sup>66</sup> Discretionary funding was found to be regressive in rural areas (whereas it was wealth neutral in urban areas). Overall, (accounting for all these sources of public funds) public school funding in Zambia was shown to be regressive, with richer schools receiving almost 30% more public resources per pupil. Furthermore, Das et al. (2004a) also showed that household spending further contributes to inequalities in education.

Das (2004) examines the question of the effect of government education expenditure on equity. His model specifically accounts for the difference in the substitution effect between public and private education expenditures between the rich and the poor. He shows that the success of government education expenditures at reducing educational inequalities depends on the types of expenditures and institutional arrangements used. While cash grants were successful at targeting the poor, they were less successful at modifying overall educational expenditures given the greater crowding out effect on poorer households. Consequently, public transfers did not reduce inequality in overall educational expenditures.

Gauthier and Wane (2005, 2008a) investigated equity in Chad. They focus on access to public health resources at the regional level and user costs among quintiles of income. They find stark inequities in the Chadian health system. The most affluent individuals have better access, both geographical and financial, to health care and receive a higher quality of care. About 44% of individuals in the richest quintile have another health care provider close to their home, compared with 13% for the poorest quintile. For the most affluent patients, out-of-pocket medical expenses account for 2.1% of their monthly household incomes versus 21% for the poorest, which thus bear a burden that is ten times heavier.

## **5. Client Power: Citizen Report Card Surveys**

A Citizen report card is a tool to collect feedback from the users (and potential users) of public services and disseminate this information back to the citizens/users so they have reliable information about how their community at large experiences the quality and efficacy of service delivery. It also provides the community with an opportunity to compare service delivery in their community vis-à-vis other communities, or across districts and municipalities in the country overall. The citizen report card methodology also emphasizes active dissemination of information in order to create awareness and encourage participation by the community. Stratified random sample surveys provide the information on which report cards are prepared, and typically cover citizens who have used the specific services.

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<sup>65</sup> This was mainly due to the fact that rule-based funding was a fixed amount per school, irrespective of enrolment, and enrolment was lower in poorer rural schools.

<sup>66</sup> This was associated with the fact that poor and rural schools tend to have a larger share of lower paid teacher trainees on the payroll.

## **5.1 Urban Context in India: Bangalore**

The oldest and perhaps best known example of citizen report cards is that developed by the Public Affairs Centre in Bangalore, India (Paul, 2002). The first CRCS on Bangalore's public agencies in 1994 covered municipal services, water supply, electricity, telecom and transport. Citizens were asked to rate service access and quality and to report on concerns about public services, general grievances, and corruption. The information was summarized in report cards that were reported in the press and in civic forums.

The findings of the first CRCS on Bangalore showed that almost all the public service providers received low rating from users. The media publicity that the findings received and the public discussions that followed brought public services to the forefront. Civil society groups began to organize amongst themselves to voice their demands for better performance. Some of the public agencies responded to these demands and took steps to improve the services (Paul, 2002). The second report card in Bangalore in 1999 showed improvements in performance as agencies' ratings improved, although corruption levels remained high. The third CRCS in 2003 shows major improvement in the ratings of almost all agencies. Public satisfaction improved for most services and corruption seems to have declined in the transactions between users and public officials.

Citizen report cards have spread beyond Bangalore to cities in Kenya, Mozambique, the Philippines, South Africa, Ukraine, and Vietnam. They have been scaled up in India to cover urban and rural services in 24 states. Overall, citizen report cards have attracted considerable media and political attention, and there is general acknowledgment in policy circles of their positive contribution to service improvements (World Bank, 2003).

## **5.2 Rural Uganda**

In order to rigorously evaluate the impact of CRCS interventions, a randomized evaluation of a citizen report card at the community level was carried out in primary health care in Uganda (see Reinikka and Svensson 2004c; Björkman, Reinikka and Svensson 2006; and Björkman and Svensson 2007). The citizen report card project collected quantitative information on the quality and quantity of health service provision from citizens and public health care providers. This information was then assembled in "easy access" report cards that were disseminated, together with practical information on the best ways to use this information, in community, staff, and interface meetings by local community organizations in order to enhance citizens' ability to monitor health care providers.

By randomly assigning communities into a treatment group (i.e., communities in which the citizen report card project was implemented) and a control group (i.e., communities in which the citizen report card project was not implemented), the authors tried to reduce the possibility of confounding factors. Another factor that increases the confidence in the external validity of the results is that the intervention was implemented on a large scale—over 5,000 households from 50 "communities" from nine districts in Uganda were surveyed in two rounds.<sup>67</sup>

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<sup>67</sup>A "community" is defined as the households (and villages) residing in a five-kilometer radius around the facility.

Björkman and Svensson (2007) found that community-based monitoring intervention (citizen report card project) increased the quality and quantity of primary health care provision and resulted in improved health outcomes. One year into the program, utilization (for general outpatient services) was 16 percent higher in the treatment facilities. They also found significant differences in deliveries at the treatment facilities, and in the use of antenatal care and family planning. Treatment practices, as expressed both in perception responses by households and in more quantitative indicators (immunization of children, waiting time, examination procedures) improved significantly in the treatment communities. The authors report a small but significant difference in the weight of infants and a markedly lower number of deaths among children-under-five in the treatment communities. No effect is found on investments or financial or in-kind support (from the government), suggesting that the changes in the quality and quantity of health care provision are due to behavioral changes of the staff. They also find evidence that the treatment clinics started sharing information about treatment practices, availability of drugs, and service delivery in general in response to the intervention and that the treatment communities began to monitor the health unit more extensively. The authors contend that the findings on the quality and quantity of health care provision resulted from increased efforts by the health unit staff to serve the community, following better community monitoring.

## **6. Recommendation for future research**

The importance of education and health outcomes in development provides a strong case for allocating public expenditures to these sectors. However a growing body of research on service delivery demonstrates that allocating more budgetary resources may not necessarily deliver better outcomes: budgetary resources benefit the rich; they may not reach the intended beneficiaries; and even if they do, these resources may not result in better outcomes because of poor performance by providers.<sup>68</sup>

To be sure, understanding factors underlying weak performance of service delivery is crucial for improving human development outcomes in Africa and elsewhere. The last decade has seen an emergence of a new set of studies--notably based PETS, QSDS and CRCS data-- that use micro approaches to analyze service delivery. These studies highlight the behavior of frontline providers as well as the constraints associated with the supply side of service delivery. These new tools have demonstrated their usefulness in evaluations of public service delivery and the use of public resources and, along with dissemination of information, have lead to reforms of institutional arrangements in ways that create incentives for better results on the ground.

### *Future Research*

The main avenues of future research are baseline surveys, follow-up surveys, impact evaluations of various interventions, such as citizen report cards, and vignettes. These research endeavors could include sectors that few past tracking surveys have analyzed, such as water supply,

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<sup>68</sup> Even if services are available households may not make use of them due to poverty or other factors. While important for making services work, this paper does not focus on that aspect.

sanitation and agricultural services. We recommend that the AERC project explore the following research problems in particular:

- i) Benchmarking leakage of resources and better explaining capture of funds (including delays etc.).

Robust baseline surveys of the sector studied should be devised to diagnose and analyze the process by which public resources are translated into services and identify shortcomings in the supply chain and among frontline providers, in particular leakage of resources. Factors explaining leakage that could be examined notably concern users' bargaining power, service provider remoteness, size of facilities, access to infrastructure, incentives, etc. Developing a core set of questions for PETS to be applied across countries should be a priority.

- ii) Benchmarking absence rates and better explaining provider behavior.

Service provider absenteeism has been found to be a widespread problem in a number of countries. It is also an effective way to get policymakers' attention to performance in service delivery. It would be worthwhile to document the extent of the problem in SSA countries and identify factors that are associated with worker absence. Baseline surveys could seek to measure absenteeism in various facility types, ownership categories, locations, etc.; to measure time on task for different types of workers and to try to better explain reasons for absence rates.. For instance, in Zambia Das et al. (2004) found that teacher absenteeism had more to do with health problems than with shirking. Again, developing a set of core questions to be applied across countries is a priority.

- iii) Evaluating interventions to combat leakage, absenteeism and other service delivery failures with a focus on human development and other sectors.

Impact evaluation of pilots or reform programs such as information campaigns, citizen report cards, monitoring mechanisms and incentive schemes for service providers need to be carried out.

There is a growing belief that local participation by citizens in service delivery and better information can help achieve better outcomes (World Bank, 2003; Banerjee et al., 2006). For example, information campaigns seeking to give clients a stronger bargaining power has led to a significant reduction in leakage in Uganda and elsewhere. Similar information problems exist in many other countries, making the information campaign approach adopted in Uganda potentially widely applicable.<sup>69</sup> Accordingly, rigorous evaluations of such information campaigns intended to reduce leakage could be devised.

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<sup>69</sup> Such an information campaign approach to reducing corruption has also been used in Tanzania, where, following a PETS, the central government started publishing information in newspapers on allocations for ministries, regions and local authorities (councils) of budget allocations for the selected pro-poor spending programs. While reports indicate that the information campaign has reduced leakage (World Bank, 2003, p.14), a formal impact evaluation has not been conducted.

Various other experiments involving the participation of citizens should also be considered. Randomized impact evaluations of such interventions could help find answers to questions, such as: How can awareness about service provision and resource allocations be raised? Are decision-making mechanisms such as school boards or health committees having an impact on service providers and outcomes? Similar to the field experiment in rural India conducted by Banerjee et al. (2006), the role and impact of the village education committee on school functioning and student learning could be examined. While these authors found that members of these education committees had often little knowledge of their role and had little impact on children's learning outcomes, experiments could be devised to make these committees more effective, apart from identifying their impacts on schools and learning in sub-Saharan Africa.

Experiments to promote local participation and collective action through advocacy could be designed and evaluations could be carried out to assess their impact on local participation, provider behavior and final outcomes.<sup>70</sup> Such an experiment could involve, for instance, the establishment of new teaching supervision programs that could be put forward in treatment schools, while in the others the program, if successful, would be phased in later. Student learning results could then be compared in the two groups of schools.

Experiments involving monitoring mechanisms and incentives could be implemented to reduce worker absenteeism and improve outcomes. For instance, Duflo et al. (2006) tested whether incentives linked to teacher presence in class could reduce absenteeism, and whether they promote teaching and student learning. Monitoring was introduced through the use of a camera operated by a student, who photographs the teachers as well as other students at the beginning and end of school day. Financial incentives were given to teachers in 60 randomly selected schools out of the 120 schools surveyed.<sup>71</sup> Such actions or other mechanisms designed to monitor and provide high-powered incentives to workers could be examined with a view to improving citizens' control over service providers. These programs could involve improving the flow of information between citizens and service providers or between citizens and public officials. Alternately, they could involve the community in hiring and firing service providers.

Such prospective impact evaluation help identify which community or citizen-based intervention lead to increased provider time on task, service quality and outcomes. For instance, Chaudhury et al. (2005) found that community-hired teachers and contract teachers have significantly higher absence rates than those of regular government teachers. Similarly, Banerjee et al. (2004) and Banerjee and Duflo (2005) found that community-based monitoring did not reduce health worker absenteeism in rural India.

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<sup>70</sup> Randomized evaluation involves comparing the situation in a treatment group to a control group following the experiment. This approach attenuates selection problems. Indeed, following the Heckman principle, "difference of difference" should be taken to avoid biases. Without such difference between groups from the baseline, other things could be captured only if a randomized group is compared with a control group (given that other non-observable factors influence the before-after difference).

<sup>71</sup> They find that the program positively affected the absence rate from 43% in the control group to 24% in the treatment schools. Furthermore, student test scores were .17 standard deviations higher in the treatment schools

In contrast, Chaudhury et al. (2005) found that teachers had a lower absence rate in more frequently inspected schools. Various experiments to test worker incentives empirically, community or external monitoring or other actions could be carried out to determine which program leads to lower absenteeism, more time on task and improved outcomes.

- iv) Explore not-for-profit providers' motivation and behavior using these types of tools. In particular, analyze intrinsic motivation of public, NGO and religious providers as a major factor in social service provision.

For instance, Serneels et al. (2005) found that health workers in religious health centers seem to have lower absence rates than other workers. Similarly, Reinikka and Svensson (2006b) found that religious providers pay qualified staff below market wage, that they provide more pro-poor services and services with a public good element and charge lower user-fees. Future research could examine how intrinsic motivations affect absenteeism, job mobility and overall performance of social service providers.

- v) Link demand and supply sides of service delivery to develop a better understanding of development outcomes.

Future research should target linkages between facility survey data and household data in order to allow measurement of final outcomes at the household level and to link service and human development and other outcomes. PETS/QSDS, for instance, can comprise a household survey module. Alternatively, linkages with another self-standing household survey can be established.<sup>72</sup>

### *Other Topics*

Various other interventions related to weaknesses in the delivery chain could also be studied, including impact evaluation. In particular, areas identified for reforms in past service delivery survey work in Africa include:

- Improving internal controls, in particular incentives for better accounting and reporting systems, in order to enhance transparency and accountability (basic accounting systems are often not in place but rules not followed);
- Accelerating budget execution at various levels of the delivery chain;
- Increasing inspection and monitoring, both top-down and bottom-up, at all level of the service delivery system;
- Improving communication and information pass-through (dissemination of information is a general problem between the administrative levels, including beneficiaries);

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<sup>72</sup>Although a choice must be made between the facility sample's being representative of the population of individuals or of facilities, the sample strategy should be as representative as possible of the facility population.



- Providing training for local governments and service delivery units and assessing its impact;
- Establishing mechanisms and incentives to make the service delivery system more client focused at all levels.

Decentralization is another important policy to evaluate. In several countries, decentralization has been implemented and needs to be evaluated. In some countries (e.g. Cameroon, Chad), service delivery in social sectors encounters problems associated with what could be called a situation of “false decentralization.” Accordingly, budgets for the decentralized administrations are still managed at the central level (e.g. “centralized credits” in Chad). In such contexts, public funding can be diverted and captured more easily. An interesting experiment could involve devising a decentralization reform in some regions and conducting an impact evaluation on this reform.

Future research could also focus on leakage of drugs. In a number of African countries, the poor availability of drugs has been directly attributed to problems of corruption in the distribution of medicines (see for instance, Van der Geest, 1987, on Cameroon). Nevertheless, there is almost no systematic evidence on the extent of leakage or the implications that such leakage has for health outcomes in the African context. The importance is magnified in the context of the AIDS crisis. Given the high value of AIDS medicines, existing problems of distribution will be exacerbated, underscoring the need to understand the link between leakage and welfare (Das, Gauthier and Philipson, 2005). Future research could focus on developing a theoretical and empirical framework for examining the economic and health impact of such leakage of resources on outcomes.

Future theoretical and empirical research could also examine various organizational and institutional arrangements in order to develop a more realistic explanation of relative organizational efficiency. A better understanding of the effects of specific institutional arrangements on service provider behavior and outcomes could help determine who stands to gain or lose from specific institutional arrangements, who exerts influence, how this influence is exercised, and how efficiency and equity are affected.

Future empirical research could also include qualitative tools such as vignettes. Das and Hammer (2004) observed a disconnect between practitioner knowledge and services rendered by the doctor or clinician. The practitioner’s incentives may come from elsewhere (market, case load, specific patient facing the doctor, etc). These questions could be further explored in stand-alone vignettes or combined with QSDS, to analyze service quality.

As for CRCS, many interesting experiments with this new tool could be conducted. As emphasized by Hellwig (2002) and Morris and Shin (2002), individuals tend to form beliefs and rank services and providers. Public information will affect individual beliefs, but in a complex manner (e.g., through Bayesian updating) that would be worth investigating.

Finally, other avenues of research include efficiency and productivity analysis; user fees, tuition and non-tuition fees; drug use and over-prescription; linkages with traditional/informal sector and substitution effects between private and public expenditures.

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## APPENDIX: TABLE A1

### PETS AND QSDS: SAMPLE AND RESOURCES MONITORED

Country	Year	Survey Type	Sectors	Sample strategy	Sample	Resources monitored and years	Levels/Units tracked
<i>Uganda</i>	1996	PETS	Education and Health	<p><u>Education:</u> -Two criteria for sample selection: a) broad regional coverage b) Representative of the school population in the district. -Stratified random sample: For each of the 5 regions of the country, 2 or 3 districts were drawn with probability proportional to the number of primary schools in the district. The selection of schools in the district was based on school performance in the primary leaving examination results</p> <p><u>Health:</u> In each district selected, 5 primarily government facilities were visited.</p>	<p><u>Education:</u> -18 districts (out of 39) -250 public primary schools</p> <p><u>Health:</u> -19 districts -100 health facilities</p>	<p><u>Education:</u> -Annual capitation (per student) grant from the central government (financial and in-kind transfers) -Panel data 5 years: 1991-1995</p> <p><u>Health:</u> non-wage expenditure</p>	<p><u>2 levels:</u> - Central government (enrolment) - Facilities</p>
	1999* and 2000*	PETS	Education	N.A.	<p>-16 districts -218 public primary schools</p>	-Data for 1999 and 2001	<p><u>2 levels:</u> - Central government (enrolment) - Facilities</p>
	2000	QSDS	Health	<p>-Two-stage stratified sample Three principles: a) focus on dispensaries; b) all regions included; c) all categories (public, private for-profit and non-profit) should be surveyed. -First stage: 10 districts were randomly selected. -From the selected districts, a sample of public and non-profit facilities was randomly</p>	<p>-10 District administrations (out of 45) -155 (public, private for-profit and non-profit) health facilities -1617 patients</p>	<p>Data for 1999-2000: -Medical consumable -Contraceptives -non-medical consumable -capital inputs</p> <p>-Vaccines: 6 months data: -Drugs (6) : 1 month data</p>	<p><u>3 units:</u> -Districts -Health facilities -Patients</p>

Country	Year	Survey Type	Sectors	Sample strategy	Sample	Resources monitored and years	Levels/Units tracked
				drawn. Private for profit facilities were identified based on information given by public facilities.			
Tanzania	1999*	PETS	Education and Health	N.A.	-3 districts (out of 115) -45 primary schools -36 health facilities	-Non-wage education and health expenditures -Data for 1998	<u>2 levels:</u> - District -Facilities
	2001	PETS	Education and Health	-Choice of districts based on geographical balance (rural-urban) and whether or not a financial management system (FMS) was in place. -At the council level, 2 schools and health facilities chosen from the ward that houses the council headquarter and 2 others from a ward considered remote by the council	-5 districts -16 primary schools -15 health clinics	- Non-wage expenditures - Data for FY 1999-2000 and first half 2000	<u>3 levels:</u> -Central government - Districts - Health facilities and schools
Ghana	2000	PETS	Education and Health	-Designed with the aim of matching data with the Ghana Living Standard Survey Round 4 (GLSS4) of 1998. -Two-stage stratified sample: First stage: From each of the 10 regions, 4 districts were chosen: 2 depressed, 1 average and 1 better off (based on criteria of natural resources endowment, infrastructure and level of developments). Second stage: In each selected district, 3 primary and 2 junior secondary schools were selected, as well as 3 health posts, 1 clinic and 1 health center. Service facilities located in the EA of the GLSS4 were automatically part of the sample as well as facilities reported used by GLSS4 household.	-10 regions -40 districts -119 primary schools -79 junior secondary schools -172 primary health clinics	-Total recurrent expenditure (wage and non-wage) -Data for FY 1997-1998 and 1998-1999	<u>3 units:</u> - District offices (health and education) - Health facilities and schools -User perception survey was carried out

Country	Year	Survey Type	Sectors	Sample strategy	Sample	Resources monitored and years	Levels/Units tracked
Rwanda	2000	PETS	Education and Health	<p><u>Education:</u> All administrative units (provincial and district level offices) were visited. 400 primary schools were selected using a twostage stratified random sampling method. 43 and 357 schools were sampled in urban and rural areas respectively, with probability proportional to the number of schools in the area. For the urban area, 9 of 43 schools were sampled from Kigali.</p> <p><u>Health:</u> Nation-wide survey of facilities and administrative units</p>	<p><u>Education:</u> -12 Provincial Education Offices (out of 12) -151 District Education Offices (DEOs) (out of 154) -390 primary schools (out of 2100)</p> <p><u>Health:</u> -11 Regional Health Offices (out of 11) -37 District Health Offices (out of 40) -250 health centers (out of 351).</p>	<p>- Recurrent expenditures (cash, in-kind contribution and equipments)</p> <p>-Data for 1998 and 1999</p>	<p><u>5 units:</u> -Central government -Provincial -Districts -Facilities -Users</p>
	2004	PETS	Education and Health*	<p><u>Education:</u> Twostage: In the first stage, in each province (total of 12), 3 districts were selected. Second stage: primary schools were chosen in selected districts as well as 1 secondary school per district. In addition, 1 secondary school per province that was determined to be the main beneficiary of the FARG program was selected</p>	<p>-36 districts (out of 106) -107 primary schools (out of 2203) -48 secondary schools (out of 339) -36 banks -48 students</p>	<p>- Teachers' salary</p> <p>- Three funding programs: i) Funds for Genocide Survivors (FARG) ii) Education support Funds for Vulnerable and Poor Children iii) Capitation funds.</p> <p>-Data for FY 2003</p>	<p><u>4 units:</u> -Central government -schools -beneficiary students -banks</p>
Zambia	2001	PETS QSDS	Education	<p>-Stratified random sample from urban/rural location. -Schools were chosen from 4 provinces (2 richest and 2 poor with enrolment rates just marginally better than the worst performer)</p>	<p>-33 districts -182 primary schools (grades 1-9)</p>	<p>- Non-wage funding for basic education (fixed-school grant, discretionary non-wage grant program)</p> <p>-Data for June 2001-June 2002</p>	<p><u>6 units:</u> -Central level -Provinces -Districts -Schools -Households -Student achievement</p>
Mozambique	2002	PETS QSDS	Health	<p>-Sample was selected in 2 stages: random selection of districts followed by random selection of facilities within</p>	<p>-11 provinces (out of 11) -35 districts -90 public primary health</p>	<p>- Allocation: recurrent budget panel data 2000 to 2002</p> <p>- Execution of district recurrent budget 2000 and 2001</p>	<p><u>5 units:</u> -Provincial directorate of health - District directorate of health</p>

Country	Year	Survey Type	Sectors	Sample strategy	Sample	Resources monitored and years	Levels/Units tracked
				districts -Sampling weights were used to provide for nationally representatives estimates - Users and staff were also selected randomly	centers -167 workers -679 patients	- Drugs and other supplies - District and facility data on user fees: - Service output:	- Health facilities - Staff - Patient exit polls
<i>Nigeria</i>	2002	PETS QSDS	Health		-30 local government -252 health facilities -700 employees		<u>3 units:</u> - Local government - Facilities - Staff
<i>Senegal</i>	2002	PETS	Health	-Stratified sampling methodology ensured representativeness of urban/rural level. -5 regions were first randomly selected. -Then 2 departments from each region, and 10 health posts and 1 district within each department were selected.	-10 districts -37 local governments -100 facilities	- Panel data 6 years: 1997-2002 - Decentralization Fund (recurrent non-wage expenditures) - Equipment Fund - Investment program	
<i>Cameroon</i>	2003	PETS	Health	-Covers all 10 provincial health delegations and the two main urban areas, Douala and Yaoundé. -Stratified multistage. -In the first stage, 3 departments (UP) in each province are selected. 12 health facilities are selected in each department including the district hospital and 1 private clinic. -User survey: 6 users are selected per "zone de dénombrement" in each district for the main urban areas and 3 in others.	-36 districts (out of 36) -143 health facilities (including 36 hospitals and 34 private facilities) -2952 patients (in-patients and out-patients)	-Non-wage recurrent expenditures - Data for 2001-2002 and 2002-2003 (9 months)	- Provinces - Districts - Health facilities - Patients
<i>Madagascar</i>	2003	PETS	Education	<u>First survey</u> : stratified random sample covering	<u>First survey</u> : 36 districts and 326 primary schools	-Two main funding programs to schools : CRESED and IPPTE	<u>2 levels:</u>

Country	Year	Survey Type	Sectors	Sample strategy	Sample	Resources monitored and years	Levels/Units tracked
				144 communes in 36 districts (out of 111) <u>Second survey</u> : Track budget at the school level. The purpose was to provide nationally representative figures on budget and leakages from Cisco to the school level. <u>Third survey</u> : budget allocation at the district level	<u>Second survey</u> : 185 primary schools were surveyed, about half of the schools included in the first survey. <u>Third survey</u> : 24 district administrations (out of 111)	-District allocation data collected for two years, 2001-02 and 2002-03	-District school authorities (Cisco) -Schools
Namibia	2003	PETS	Education and Health	- Convenience sample of regions (7 out of 13) - Random sample of schools and health facilities within regions	<u>Education</u> 113 public and private primary and secondary schools <u>Health</u> 9 district hospitals 10 health centers 22 clinics 192 patients	<u>Education</u> Non-wage recurrent expenditures School Development Fund 2002-03 <u>Health</u> Non-wage recurrent expenditures 2002-03	<u>Education</u> <u>5 units</u> : -Central government -Regions -Schools -School board -Students <u>Health</u> <u>5 units</u> : -Central government -Regions -Districts -Facilities -Patients
Chad	2004	PETS/Q SDS	Primary health care	-Mixed stratified sample-census strategy In the first step, either 1 or 2 districts depending on the number of districts in the region were randomly selected in each of the 14 delegations. In the second step, all health centers were identified and visited on a census basis.	-14 Regional health delegations -13 Regional pharmacies -21 District health delegations -281 Health facilities (public, private for-profit and private non-profit) -1274 workers -1801 patients	-Non-wage recurrent expenditures -Data for 2003 -8 medical materials were traced -10 drugs were traced	<u>7 units</u> : -Central government -Regional health delegation -Regional pharmacies -District health delegations -Health Facilities -Staff -Patients
Kenya	2004	PETS	Education and Health	<u>Facilities</u> Stratified sample: In each of	<u>Education</u> : -26 districts and 3	<u>Education</u> Bursary funds	<u>4 units</u> : -Central government

Country	Year	Survey Type	Sectors	Sample strategy	Sample	Resources monitored and years	Levels/Units tracked
				the 8 provinces, 2 poor and 1 rich districts were selected using poverty index. Facilities were selected in each district using systematic random sampling <u>Users:</u> random exit interviews of non-serious cases in health centers. Random selection of 2 students who had received a bursary in each class. 2 parents in each sampled school were interviewed.	divisions in Nairobi province -330 public secondary schools - students -598 parents <u>Health:</u> -27 districts and 3 divisions in Nairobi province -214 public health facilities -772 patients	2001-02, 2002-03, 2003-04 <u>Health</u> Non-wage expenditures (funds and in-kind) 2003-04	-Districts -Facilities -Users

Sources: Gauthier (2006) from Survey reports; Uganda, Tanzania: Reinikka and Svensson (2004a); Lindelöw et al. (2006). Note: (\*) Reports not available



**TABLE A2**  
**PETS AND QSDS: LEAKAGE OF PUBLIC FUNDS**

Country	Survey Year	Type	Sector	Resources tracked	Leakage	Observation	Other comments	Cause
<i>Uganda</i> <i>(Ablo and Reinikka, 1998)</i>	1996	PETS	Education and Health	<u>Education:</u> Capitation grants  <u>Health:</u> Non-wage expenditures	<u>Education:</u> -87% (on average) during 1991-1995 -Leakage of salaries much smaller  <u>Health:</u> Not defined.	<u>Education:</u> -Leakage appears principally at the district level -Resources either disappeared for private gains or were used by district officials for purposes unrelated to education  <u>Health:</u> Most transfers from government are in-kind. A quantitative assessment of the flow of resources to health centers or service delivered was not feasible.	<u>Education:</u> -Large variations in leakage across schools: - Larger schools appear to receive larger share of the intended funds (per student). - Schools with children of better off parents experience lower degree of leakage - Schools with higher share of unqualified teachers experience more leakage	<u>Education:</u> -Asymmetric information has adverse effects on the flow of funds to frontline providers and service delivery  -Schools with greater capacity to influence local officials are granted higher shares
<i>Reinikka and Svensson (2004)</i>	1999* and 2000*	PETS	Education	-Capitation grants	-Reduction of leakage from 87% in 1991-95 to about 18% in 1999 and 2000	-Information campaign is estimated to account for about ¾ of the improvement in leakage	-Shows the value of transparency and efficiency of mobilizing civil society against corruption	-Improvements are associated with better information about school entitlements through radio and newspaper campaign
<i>Lindelöw, Reinikka and Svensson (2003)</i>	2000	QSDS	Health	- Financing - Drugs, vaccines and supplies	-Some evidence of drug leakage, but average figures not provided.			-Excessive drug use in public and private health facilities. This could be associated with over-prescription or leakage.
<i>Tanzania REPOA/ESFR (2001)</i>	1999*	PETS	Education and Health	- Non-wage expenditures	-Leakage was estimated at 57% in education and 41% in health care	- Leakage appears at the district level - Salaries appear less prone to diversion		
	2001	PETS	Education and Health	- Non-wage expenditures	-Average figures for leakage not provided	-Decentralized funds (OC) sent to districts are essentially all consumed	-At the district level, treasury and sector heads tend to	- Lack of predictability of the disbursement promotes leakage

Country	Survey Year	Type	Sector	Resources tracked	Leakage	Observation	Other comments	Cause
					-Difference between disbursement and receipts between Treasury and councils is estimated at 18% on average for non-wage funds for July 1999-June 2000 and July-December 2000.	at the district level. -Only material sent by the center to districts is partially redistributed to facilities. -No cash funding below the sector/district level, only in-kind material	reallocate non-wage expenditures in favor of activities that benefit the council staff at the expense of facilities (e.g. traveling, vehicles, fuel versus school materials and medications)	especially at the sub-national level. -Highly aggregated government records are reported to undermine transparency
<i>Ghana</i>	2000	PETS	Education and Health	- Non-wage expenditures - Salaries	- Leakage estimated at about 50% of non-wage education expenditures and 80% of the non-wage health expenditures - Leakage of salaries is estimated at about 20%	-Large proportion of leakage seemed to occur between central government and district offices (instead of between district and facilities), during the procurement process when public expenditures are translated into in-kind transfers.	-Possibilities of leakage were found to be much greater when the value of material distributed was unknown to recipients	-In-kind nature of transfers increases information asymmetry and lack of accountability in the delivery system and reduces feedback from frontline facilities
<i>Rwanda Rwanda (2004)</i>	2000	PETS	Education and Health	- Recurrent expenditures	- Some evidence of leakage between regions and districts, but no firm estimates	-Except for staff salaries, recurrent expenditures in health and education do not reach schools and health facilities.	-Lack of accountability in the use of public funds and other resources contributed by users, parents, NGOs, donors and other development agencies.	-District offices' accounts are credited at the discretion of the regional offices. -The lack of budgets and guidelines for the use of funds was cited by health officials as the source of major inefficiencies and causes of delays and potential leakages.
	2004	PETS	Education	-Teachers' salary - Three funding programs: i) Funds for Genocide Survivors (FARG) ii) Education Support Funds for Vulnerable	- Some evidence of leakage of capitation grant at the school level in particular, but no firm estimates. - Potential leakage of the Education Support Fund program at the central level, but no estimates are provided.	-There are no controls for the utilization of capitation grants by schools, as neither the MOE, province or district have control mechanisms in place. -District reports are said to be unreliable and audits of MOE does not cover all schools.	-Anomalies are noted in the list of beneficiaries of the Education Support Fund program at the central level (the first names of beneficiaries are not listed, nor are their exact birth dates or parents' names), which introduces	

Country	Survey Year	Type	Sector	Resources tracked	Leakage	Observation	Other comments	Cause
				and Poor Children, iii) Capitation funds.			potential misreporting.	
Zambia <i>Das et al. (2004)</i>	2001	PETS QDSD	Education	- Non-wage funding for basic education (fixed-school grant, discretionary non-wage grant program)	-Leakage of 10% for fixed-rule grants -76% for discretionary non-wage expenditures	-Rule-based funding reaches almost every school, while discretionary funds are mainly used at the district and province levels. About 20% of schools receive some funding from discretionary funds	-Rule based funds are progressive as greater per-pupil funding is observed in poorer schools - Discretionary disbursement higher for richer schools in rural areas and wealth neutral in urban areas -Overall, public funding is regressive: almost 30% higher allocation to richer schools.	-For rule-based funds, delays in disbursement may be a factor. -For discretionary funds, the few schools that received large amounts have greater bargaining power with higher administrative levels.
Mozambique <i>Lindel öw</i>	2002	PETS QSDS	Health		- No firm estimates of leakage - Some evidence of leakage of drugs in the transfer from provinces to districts	- Unreliable data on district budget at the district and provincial levels make it difficult to assess whether resources reach their intended beneficiaries		
Nigeria	2002	PETS QSDS	Health		- No firm estimates of leakage - But report of high degree of leakage in the more rural state (Kogi)	- Evidence of capture of rent by local government officials and important problems of non-payment of health workers' salaries		-Lack of accountability of local government leads to capture of public resources by local officials.
Senegal	2002	PETS	Health	Decentralization fund	- No firm estimates of leakage - Some evidence of leakage at regional and communal levels in non-wage expenditures from central level to providers	-Decentralized local governments have different priorities than health and could use resources earmarked for health for other purposes.	- Inconsistent data on resources sent and received between levels	
Cameroon	2003	PETS	Health	- Non-wage recurrent expenditures	- No firm estimates of leakage			

Country	Survey Year	Type	Sector	Resources tracked	Leakage	Observation	Other comments	Cause
Madagascar	2003	PETS QSDS	Education	IPPTE CRESED	<ul style="list-style-type: none"> <li>- Leakage of cash funds at the lower echelons of the education sector is perceived to be low (10% and 8% for the two main sources of cash contributions to schools).</li> <li>- Leakage of material is more common as 28% of schools report receiving less materials than stated by the district.</li> </ul>	<ul style="list-style-type: none"> <li>- Leakage is associated with remoteness as 56% of schools in the Communes far from the capital of the province show leakages in comparison with only 21% of the schools in the Communes close to the capital.</li> </ul>	<ul style="list-style-type: none"> <li>- Schools are uninformed about decisions taken higher up in the education sector system concerning their potential resources and possibilities.</li> <li>-Only 35% of schools reported knowing at the beginning of the year what they were supposed to receive from the district level (Cisco).</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of information, dysfunctional accounting system and absence of allocation rules at the district and school level increase the incentives for leakage.</li> </ul>
Namibia	2003	PETS QSDS	Education and Health		<ul style="list-style-type: none"> <li>- No firm estimates of leakage</li> </ul>	<ul style="list-style-type: none"> <li>- Incomplete records make it difficult to assess whether resources reach their intended beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li>- Potential leakage of medication and other materials</li> </ul>	<ul style="list-style-type: none"> <li>- Poor record keeping and few records of the delivery of material to district and school level are available and could increase the incentives for leakage.</li> </ul>
Chad	2004	PETS QSDS	Health	-Non-wage recurrent expenditures	<ul style="list-style-type: none"> <li>- Only about 27% of non-wage expenditures officially allocated to regions by the MOH reaches regional health delegations</li> <li>-Less than 1% of non-wage expenditures officially allocated to regions reach local health centers</li> </ul>	<ul style="list-style-type: none"> <li>-Public resources arrival rates vary considerably between regions.</li> <li>-The highest rate of leakage is observed in the BET region, the most remote area of the country</li> <li>- A large proportion of leakage seemed to occur between central government and regional delegation during the procurement process via so called "centralized credits"</li> </ul>	<ul style="list-style-type: none"> <li>-It was estimated that if all public resources officially budgeted for regional delegations had reached the frontline providers in 2003, the number of patients seeking primary health care in Chad would have more than doubled during the year</li> </ul>	<ul style="list-style-type: none"> <li>-Main factors explaining low level of resources received at the local level are:1) the very high rate of resource centralization at the MOH level, 2) the lack of supervision and control of resources, and 3) lack of planning in the allocation of resources as allocations are arbitrary at every level.</li> </ul>
Kenya	2004	PETS	Education and Health		<p><u>Health:</u></p> <ul style="list-style-type: none"> <li>-Leakage of total funds received at the health center</li> </ul>	<p><u>Health:</u></p> <ul style="list-style-type: none"> <li>Leakage is more pronounced in health</li> </ul>	<ul style="list-style-type: none"> <li>- An audit trail of the bursary funds released was not possible because of</li> </ul>	<p><u>Health:</u></p> <ul style="list-style-type: none"> <li>-Provinces and districts are unaware</li> </ul>

Country	Survey Year	Type	Sector	Resources tracked	Leakage	Observation	Other comments	Cause
					level is estimated at 38% - Leakage of user fees at the facility level estimated at 25% - Leakage of Community development funds at facility level is estimated at 37% <u>Education:</u> -More than 80% of schools did not receive their entitled amount of bursary funds -Evidence that some schools are receiving more allocation than required and that funds are diverted for personal gains -Total leakage of bursary funds estimated at 35.8%	centers than dispensaries. <u>Education:</u> -The bursary program is not thoroughly audited which increases possibilities of leakage -Criteria of selection of vulnerable and needy students not followed by many schools	the lack of proper accounting system	of budgets and programs. -Supervisory capacity of provincial and district authorities are insufficient. -Financial and accounting systems are inadequate <u>Education:</u> -Financial management of the school is in the hands of the head teacher with minimal influence of the PTA and BOG. -Lack of information at the school level leads to non-accountability of public resources -Poor records maintained by schools and lack of proper audits

Sources: Gauthier (2006) from Survey reports; Uganda, Tanzania: Reinikka and Svensson (2004a); Lindelöw et al. (2006), PETS 1996-2004 tables Note: (\*) Reports not available

**TABLE A3**  
**PETS AND QSDS: DELAYS**

Country	Survey Year	Type	Sector	Delays	Observation	Cause
<i>Uganda</i>	1996	PETS	Education Health	-Anecdotal evidence that teachers' salaries suffer from delays.  -However, survey indicates that salary payments reach schools relatively well.		
	2000	QSDS	Health	-72% of staff faces salary delays in public facilities (compared to 28% in for-profit facilities).  -40% of government facilities report stock outs of supplies during the FY	-In 20% of government facilities, salary delays of more than 16 weeks are reported.	
<i>Tanzania</i>	1999*	PETS	Education and Health	- Frontline workers suffer delays in pay		
	2001	PETS	Education and Health	-Delays in disbursement and significant delays in the processing of non-wage funds, ranging from 6 to 42 days at the treasury, while wage disbursements are rarely delayed.  -Delays are also observed in all districts surveyed.	-Delays are reportedly worse for non-wage expenditures versus salaries and in rural areas  -In some districts, transfers were not made by councils to some sectors for the 1999-2000 period	-Linked to cash budgeting system and the fact that salaries are prioritized in the budget.  -This increases volatility in transfers and i asymmetry of information
<i>Rwanda</i>	2000	PETS	Education and Health	-Evidence of delays in budget execution at the central level  -Considerable delays in transfers between regions and districts	<u>Health:</u> -Very low execution rate as 80% of non-wage expenditures are released at the end of the year	-Delays were largely attributed to the application of the cash budgeting system in the MOF and cash constraints of the government
	2004	PETS	Education	-In particular, delays were observed in the payment of capitation grant to schools  -13% of teachers do not receive their salaries regularly.  -82% of teachers have salary arrears (2003)  -Irregularities in the payment of the Education Support Fund program reported by 43% of students surveyed	- Only 47% of teachers knew the amount of salary arrears.	-Salaries are directly transferred to teachers' bank accounts. They don't receive detailed pay slips. They lack information about their exact salary and deductions at source.

Country	Survey Year	Type	Sector	Delays	Observation	Cause
Zambia	2001	PETS QSDS	Education	<ul style="list-style-type: none"> <li>- Salaries: About 5% of teachers report delays</li> <li>-Hardship allowance: for almost all the provinces, about 20% of teachers incur delays</li> <li>-Double-class allowances (additional amount paid for overtime, etc): More than 75% of recipients experience at least 6 month overdue</li> </ul>	<ul style="list-style-type: none"> <li>- Well defined allowances (hardship and responsibilities) tend to be paid on time</li> <li>-However, less well defined allowances suffer important delays.</li> </ul>	<ul style="list-style-type: none"> <li>- Delays in the case of double-class allowances and student trainees appear to be due in part to lag in payroll updating</li> </ul>
Mozambique	2002	PETS QSDS	Health	<ul style="list-style-type: none"> <li>- Delays and bottlenecks in budget execution and supply management</li> </ul>		
Nigeria	2002	PETS QSDS	Health	<ul style="list-style-type: none"> <li>- Extensive non-payment of salaries observed in one of the two states surveyed, Kogi</li> <li>- Overall, 42% of staff experience salary delays, reported not receiving salary for 6 months or more in the past year at the time of the survey.</li> </ul>	<ul style="list-style-type: none"> <li>- Regression results show significant differences between Kogi and Lagos in extent of non-payment of salaries.</li> <li>-Non-payment of salaries had impact on provision of services : the greater the extent of non-payment of salaries, the higher the likelihood that facility staff behaved as private providers</li> </ul>	<ul style="list-style-type: none"> <li>- Non-payment of salary was related to problems of accountability at the local government level</li> </ul>
Senegal	2002	PETS	Health	<ul style="list-style-type: none"> <li>- Evidence of delays in the decentralization fund (non-wage)</li> </ul>		<ul style="list-style-type: none"> <li>- Asymmetry of information between the local government and service providers on funds allocated</li> </ul>
Cameroon	2003	PETS	Health	<ul style="list-style-type: none"> <li>-Delays in the notification of budgetary envelopes to decentralized units</li> </ul>	<ul style="list-style-type: none"> <li>-Fund managers have about 9 months to execute their budget</li> </ul>	
Madagascar	2003	PETS QSDS	Education	<ul style="list-style-type: none"> <li>-Significant delays to get IPSTE and CRESED at the school level</li> </ul>		<ul style="list-style-type: none"> <li>- District is slow in budget execution</li> </ul>
Namibia	2003		Education and Health	<p><u>Education</u></p> <ul style="list-style-type: none"> <li>- Delays in the supply of books at the school level</li> </ul> <p><u>Health</u></p> <ul style="list-style-type: none"> <li>- Delays in the release of funds at the central level</li> </ul>		<p><u>Education</u></p> <ul style="list-style-type: none"> <li>-Mismatch between MOE textbooks catalogue and available books</li> </ul>
Chad	2004	PETS QSDS		<ul style="list-style-type: none"> <li>- 14% of health workers report delays in receiving salaries.</li> <li>- In public clinics, salary delays affect 20% of the personnel</li> <li>7% of health personnel do not receive their full salaries.</li> </ul>	<ul style="list-style-type: none"> <li>- Delays in salary payment are slightly higher 16% vs. 10% in urban areas</li> </ul>	<ul style="list-style-type: none"> <li>- Poor infrastructure and absence of decentralized financial institutions. Workers often have to travel long distances to collect salaries</li> </ul>

<b>Country</b>	<b>Survey Year</b>	<b>Type</b>	<b>Sector</b>	<b>Delays</b>	<b>Observation</b>	<b>Cause</b>
<i>Kenya</i>	2004	PETS	Health and education	-Delays in delivery of medical supplies -61% of health centers report cases of stock-out of drugs during FY 2003-04		- Delays in medical supplies may be explained by top-down approach in the procurement process.

Sources: Gauthier (2006) from Survey reports; Uganda, Tanzania: Reinikka and Svensson (2004a); Lindelöw et al. (2006); PETS 1996-2004 tables. Note: (\*) Reports not available; N.A.: Not available