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Survey Tools for Assessing Service Delivery

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1. Introduction

Central government budget allocations can be poor predictors of the actual quantity and quality of public services in poor countries with weak governance, a conclusion supported by the weak relationship between public spending and growth and social development indicators in cross-country analysis. There is also evidence that government funds are spent on the wrong goods (private rather than public) and the wrong people (better-off rather than the poor), fail to reach intended service providers, or are converted into actual services inefficiently. Additionally, households may choose not to take advantage of such services for various reasons.

The ability to diagnose and measure problems of service delivery within the public and private delivery systems is a pre-requisite to designing policy reforms and institutions to improve service delivery. This paper argues that micro-level tools are necessary to assess both the quality and quantity of services, and the complexities involved in transforming budgets into goods and services. Public Expenditure Tracking Surveys (PETS) and Quantitative Service Delivery Surveys (QSDS) have been developed in full recognition of the characteristics of public organizations, and with the specific objectives of identifying where service delivery problems arise, quantifying the relative importance, discovering how and why they arise, and devising means of resolving them. PETS and QSDS gather quantitative data on a sample survey basis, including inputs, outputs, and other characteristics, directly from the service-providing unit. PETS assess (often diagnostically) the issue of leakage of public funds or resources prior to reaching the intended beneficiary. QSDS take a service-facility-based approach to assessing incentives for facility level staff to produce high-quality services, and provide a measure for efficiency at the level of the frontline provider and information about determinants.

This paper is intended to guide those who wish to undertake the PETS/QSDS. The paper is organized as follows. Section 2 outlines the motivation for developing PETS and QSDS, namely the persistent failure to observe close relationships between public sector spending and outcomes. Section 3 discusses general features of public service agencies that provide public services and some reasons why information on performance is not easy to obtain. Section 4 summarizes key features and potential uses of PETS and QSDS, including a comparison with other tools for public expenditure and service delivery analysis. In section 5, we highlight key lessons learned through implementing these surveys and provide details on how to design and implement PETS and QSDS. We discuss sampling strategies and data issues in section 6. Sections 7 and 8 present findings from a number PETS studies and the first QSDS in health care in Uganda.

2. Public spending, service delivery, and outcomes

Conventionally central government budget allocations are used as indicators of the supply of public services. It has become increasingly clear, however, that budget allocations can be poor predictors of the actual quantity and quality of public services, especially in countries with poor governance and weak institutions. A substantial body of cross-country empirical studies shows that the associations between public spending on the one hand and growth and social development outcomes on the other are ambiguous at best. For example, Kormendi and Mequire (1985) and Ram (1986) find that higher government expenditures are associated with higher growth, while Landau (1986), Barro (1991), Dowrick (1992), and Alesina (1997) find higher government expenditures to be associated with lower growth. Easterly and Rebelo (1993) find that overall public investment has a very low impact on growth, and Devarajan, Swaroop, and Zou (1996) observe that the standard candidates for productive expenditures have either a negative or an insignificant relationship with growth.

Sector specific studies have likewise failed to reveal a strong link between spending and outcomes. With respect to public spending and educational outcomes, the relationship between the level of resources spent on schooling and educational outcomes remains weak (Hanushek 1995). One part of the problem seems to be that government funds do not reach schools intact, as studies in Uganda (Reinikka and Svensson 2001) and Indonesia (James, King, and Suryadi 1995) have shown

Cross-country studies of the health outcomes have come to a fair consensus on two points. First, socioeconomic characteristics explain nearly all of the variation in the mortality rates across countries. These include gross domestic product (GDP) per capita, distribution of income, and level of female education (Filmer and Pritchett 1999). Second, public expenditure on health care has had little impact on average health status. According to a review by Filmer, Hammer and Pritchett (2000), the share of public spending on health care is not a significant determinant of health outcomes, such as life expectancy and child mortality. In a recent paper also using cross-country data, Rajkumar and Swaroop (2002) show that the impact of public spending on human development outcomes depends on governance—measured by level of corruption and quality of bureaucracy. When governance is better so is the effect of spending on education and health outcomes.

3. Public sector agencies

Two key questions in public policy today are (1) why does the level of public expenditure on average have such a limited effect on human development outcomes? and (2) what can be done to improve performance?

The literature provides at least four interrelated explanations. First, governments may be spending on the wrong goods or the wrong people. A large portion of public spending on health and education is devoted to private goods—ones where government spending is likely to crowd out private spending (Hammer, Nabi, and Cercone 1995). Many benefit incidence studies of health and education spending also show that benefits accrue largely to the rich and middle-class, while the share going to the poorest 20 percent (where it can make a difference) is always less than 20 percent (Castro-Leal and others 1999).

Second, even when governments spend on the right goods or the right people, the money fails to reach the frontline service provider. A PETS study in Uganda in the early 1990s showed that only 13 percent of nonwage recurrent expenditures for primary education actually reached the primary school (Reinikka and Svensson 2001). Furthermore, much of the variation in funding received across schools could be explained more by political economy than by efficiency and equity considerations. Similar findings have been obtained in Ghana and Tanzania (for a review see Reinikka and Svensson 2002a).

Third, incentives to deliver a high quality product or service are often missing. Even when the money reaches the primary school or health clinic, the service providers may be poorly paid and ineffectively monitored. Clients meanwhile, have limited information to enable them to hold service providers accountable.

Fourth, even if the services are effectively provided, households may not take advantage of them. For economic and other reasons, parents pull their children out of school or fail to take them to the clinic. This “demand-side” failure often interacts with the supply-side failures to generate a low-level of public services and outcomes among the poor.

All four explanations, and in particular the second and third point, highlight a key motivation for undertaking a QSDS/PETS, namely that improving public services must involve an explicit treatment of incentives within the public sector.¹ The organizational structure of public sector agencies involves multiple tiers of management and frontline workers. Multiplicity is also a key aspect of public sector agencies in terms of the tasks they perform and stakeholder or constituencies they serve. Tasks and interests at each tier may conflict with each other from the viewpoint of limited resources and finite time, and various stakeholders may also have conflicting interests. The output of public service agencies is often difficult to measure and systematic information is rarely available about specific inputs and outputs of service delivery, particularly in developing countries.

¹ Dixit (2000) reviews the characteristics of public organizations in light of incentives and organization theory. For further details, see also Bernheim and Whinston (1986), Dixit (1996, 1997), Holmström and Milgrom (1988), Martimort (1992), and Stole (1991).

Public sector organizations share the following key features:

- A multi-tier organizational structure, with various tiers of government down to the frontline provider;
- Multiple stakeholders with different and often competing objectives and an underlying political economy through which the stakeholders exert pressure on public sector agencies to achieve their respective goals;
- Multiplicity of tasks with various degrees of substitutability; and
- Vague measurability of outputs and tasks.

Dixit (2000) gives an example of public education to illustrate some of these features. Multi-tasking includes providing literacy and numeracy and other direct skills, supporting the emotional and physical growth of the children, providing vocational skills and preparing pupils for working life, providing skills in health and financial management, instilling citizenship, overcoming the disadvantages of home life, and ensuring children can grow up in a drug and violence-free environment. While they are not mutually contradictory, these goals must compete for limited resources of schools and teachers and are frequently considered interchangeable in the schools' production process. Moreover, it is very difficult to measure the output of many of these tasks. The diverse body of stakeholders includes parents and children, teachers and their unions, taxpayers, potential employers of graduates, society as a whole, private schools, and various groups favoring or opposing specific components of the curriculum. These principals have diverse preferences and objectives. Parents want "good education" and day care for their children, teachers and unions want higher pay, taxpayers want low costs, employers want vocational skills, society wants good citizens, and private schools compete for pupils and some public funds. Again, many of these objectives are mutually conflicting, for instance taxpayers' objective of low costs vis-à-vis teachers and unions' goal who want higher pay. And yet teachers are often not interested in pay alone but in challenging work and career prospects.

These features not only complicate analysis of performance; they may also explain why so little detailed information exists on public sector performance. First, there is often inadequate information on outputs, possibly because management information systems tend to be unreliable in the absence of adequate incentives to maintain them on a regular basis. Lack of information weakens the agents' (that is, public service agencies and/or their employees) incentive to make the required effort—a straightforward result of moral hazard—which in turn adversely affects both the quality and quantity of services. Lack of information can be further entrenched if government allocates expenditures away from areas of poor measurability and verifiability precisely *because* of poor measurability and verifiability rather than on the technical and economic merits of such expenditures per se.

Second, there is often inadequate information on agent actions. Agents can often resist effective monitoring in the presence of multiple tasks and multiple principals with substitutable objectives. Moreover, as some actions are more verifiable than others, it is not always optimal to provide implicit incentives to carry out specific tasks, since the agent will then tend to divert all effort from unverifiable to verifiable tasks. In education, for example, exam results would be disproportionately emphasized. Incentive schemes are most suitable when outcomes are clearly defined and unambiguous, and become weak when neither outcomes nor actions are observable, such as in a typical government ministry.

4. Key Features of PETS and QSDS²

A. Key features

Apart from information on central government budget allocations, information on actual public spending is seldom available in many developing countries. The PETS was designed to provide such information, on a sample survey basis, from different tiers of government, including frontline service facilities with the objective of identifying the location and extent of impediments in financial flows. Government resources, which are typically earmarked for particular uses in the budget (votes, line items), flow upon release, within a pre-defined legal, regulatory, and institutional framework, passing through the layers of the government and via the banking system down to service facilities, which are charged with the responsibility of exercising the actual spending. A PETS tracks the flow of resources through these institutional strata in order to determine how much of original resources reach each level, and how long resources take to get there (if they get there at all). It is therefore useful as a device for locating and quantifying (political and bureaucratic) capture, leakage of funds, and problems in the deployment of human and financial resources. It can in principle also be used to evaluate impediments to the reverse flow of information to account for actual expenditures.

The QSDS goes beyond tracking funds to examine efficacy of spending, as well as incentives, oversight, and the relationship between agents and principals. In the QSDS, the facility or frontline service provider is typically the main unit of observation in much the same way that the firm is the unit of observation in enterprise surveys and the household is the unit in household surveys.

The QSDS can be applied to government, private for-profit and private not-for-profit service providers. In each case, data are collected both through interviews of managers and staff and from the service provider's records (say, both local government and

² Examples can be found at http://econ.worldbank.org/programs/public_services/topic/tools/.

facility). In some cases, beneficiaries are also surveyed. Triangulating the data collection this way means that information serves as a means of cross-validating information obtained separately from each source. Thus the compilation of information gathered through this method typically requires much more effort than, say, a perception survey of users, making it costlier and more time consuming to implement than its qualitative alternatives. But in many cases the benefits of quantitative analysis by far offset its cost.

As the PETS and QSDS complement each other, a PETS may be conducted in conjunction with a QSDS. Their combination allows a detailed evaluation of wider institutional and resource-flow problems on frontline service delivery. The facility-level analysis can also be linked “upstream” to the public administration and political processes (through public official surveys) and “downstream” to households through (household surveys) to combine the supply of and demand for service.

B. Other survey-based tools

A number of tools exist to analyze provider behavior, including facility modules in household surveys, benefit incidence analysis, and empirical studies to estimate facility (in particular hospital) cost functions. PETS and QSDS are distinct from these other tools in the following key respects.

First, PETS/QSDS differ from other survey-based research tools by defining the service provider (and the incentives facing the provider) as the key unit of analysis (as opposed to, say, the firm or the household). It is not unusual from household surveys to include facility modules. Previously the Living Standard Measurement Study (LSMS) household surveys included health facility modules on an *ad hoc* basis (Alderman and Lavy 1996). A number of the Demographic and Health Surveys (DHS) carried out in over 50 developing countries have also included a service provider component. The Family Life Surveys implemented by RAND combined health provider surveys with those of households (for a review of health facility surveys see Lindelöw and Wagstaff 2001). The rationale for including a facility module in a household survey is to characterize the link between access to and quality of public services and key household welfare indicators. These modules collect quantitative data on medical procedures, equipment and staff availability, and supervision, as well as carry out various quality checks on staff (Frankenberg and Beegle 1998; Thomas, Lavy, and Strauss 1996; Alderman and Lavy 1996).

The perspective in these surveys, however, is that of the household rather than the service provider *per se*. As a consequence they pay little attention to the question of why quality and access are the way they are. This is reflected in the type of data collected, which is mainly on access indicators and the range of services offered. In other words, these surveys largely ignore provider behavior and the processes and complexities, as discussed above, through which public spending is transformed into services.

In addition, in most cases, facility information is collected as a part of community questionnaires, which rely on the knowledge of one or more informed individuals (Frankenberg 2000). Information supplied by informants is therefore not only heavily dependent on the perception of a few individuals but also not detailed enough to form a basis for analysis of service delivery, such as operational efficiency, utilization, and other performance indicators. To the extent that the information is based on perceptions, there may be additional problems due to the subjective nature of the data and its sensitivity to respondents' expectations. Perceptions are often useful as a means of formulating testable hypotheses rather than as a means of testing them.

Second, PETS/QSDS do not use budgeted costs as a basis for analysis. In benefit incidence analysis household data on consumption of public goods are combined with information on budget allocations for public expenditures to determine a unit subsidy per person. Household usage of the service is then aggregated across key social groups to impute the pattern and distribution of service provision. By contrast, PETS/QSDS collect data on actual spending and services provided at the facility level.

Third, PETS/QSDS explicitly recognize the “umbilical” link between public service providers and the rest of the public sector. Providers of public services typically rely on the wider government structure for resources, guidance about what services to provide, and how to provide them. This dependence makes them sensitive to systemwide problems in transfer of resources and the institutional framework. Therefore, it is not possible completely to isolate a public facility from the rest of the system. This sets PETS/QSDS apart from the hospital cost function literature, which despite having a clear facility focus, is more or less analogous to the firm-survey based literature. In other words, the hospital cost function literature does not try to relate the problems of service delivery to upstream issues. In part, this reflects the fact that the literature has mainly looked at cost efficiency in hospitals in the United Kingdom and the United States, where “leakage” is perhaps less of an issue than efficiency.³ Perhaps more relevant, though, is the budding literature on cost efficiency and other performance indicators in clinics and primary health facilities in developing countries (Somanathan and others 2000, McPake and others 1999). This literature can and should have an important influence on the development of the best practice QSDS.

Finally, PETS/QSDS explicitly recognize that agents in the service delivery system may have strong incentives to misreport (or not report) key data. These incentives derive from the fact that information provided by, for example a school or a health facility, partly determine its entitlement of public support/funding. Also, in case resources (including staff time) are used for other purposes (for instance in case of shirking and corruption), the agent involved in the activity will most likely not report it truthfully.

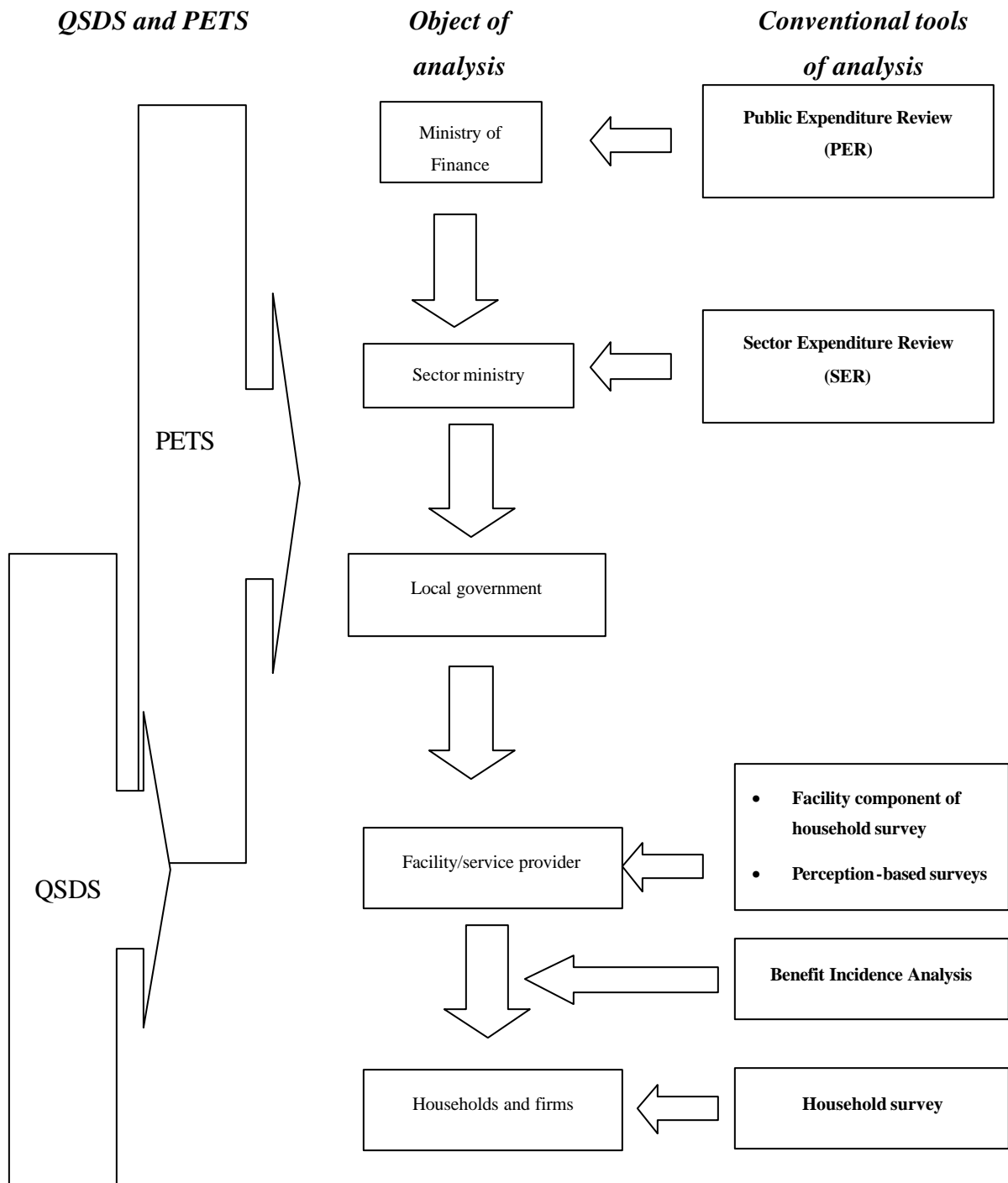
3. For a review of this literature, see Wagstaff (1989); Wagstaff and Barnum (1992); Barnum and Kutzin (1993).

Moreover, certain types of information, such as official charges, may only partly capture what is intended to be measured (e.g., the users' costs of the service). PETS/QSDS deal with these data issues in two ways: (i) by using a multi-angular data collection strategy; that is, a combination of information from different sources; and (ii) by careful consideration of which sources and respondents have incentives to misreport, and identification of data/sources that to a lesser extent are influenced by these incentives.

C. Uses and applications of PETS/QSDS

Issues of particular interest to development practitioners include efficiency, quality of service, leakage of resources, political or administrative capture, moral hazard, such as shirking and ghost workers, asymmetric information, management, supervision, and distributional issues. Many countries formulate policies within a paradigm of large and ambitious public spending programs intended to address efficiency and equity concerns. Yet, the implementation capacity of governments has seldom been systematically incorporated into the analysis of public expenditure priorities. PETS and QSDS are eminently suited for such tasks.

Figure 1. Tools of analysis of public expenditure



Apart from diagnosis, the PETS and particularly the QSDS can be used for generating data for research. While the large literature on incentives in the context of contract and information theory focuses mostly on firms, it offers a number of applications to the public sector as well (Dixit 2000). PETS and QSDS can provide new data to test hypotheses on provider behavior underlying service delivery outcomes. Research into the economic behavior of households and firms has already yielded important insights, often with substantial policy implications. This suggests that research into public institutions, which in some countries deliver as much of half of GDP and which are directly responsible for the implementation of government policy, promises an equally rich research agenda. Important empirical research questions that the PETS and the QSDS can help to answer:

- How to design “right” incentives within the public sector (characterized by multiple principals and multiple agents) and the private sector, compatible with increased quantity and improved quality of basic services, particularly for poor people?
- How to measure and overcome problems of moral hazard, such as shirking and ghost workers?
- How to strengthen voice mechanisms for service users and counter problems created by asymmetric information?
- What type of accountability and oversight arrangements between various tiers of government and between government and beneficiaries can help improve basic service delivery?

Finally, information collected through PETS and QSDS allows empirical testing of various theoretical propositions pertaining to principal-agent relations within the public sector, bargaining and other resource allocation mechanisms, as well as asymmetric information and incentive problems and how they affect the quality and quantity of services delivered. Empirical research using PETS and QSDS data can be used not only to test various predictions from standard contract and incentive theories, but also to contribute to the development of new theories in this area for public sector agencies.

Looking beyond country-specific studies, the compilation of systematic multi-country service delivery databases will also facilitate cross-country comparisons. The World Bank’s Development Research Group is presently of setting up such a database of QSDS surveys. As more data become available in the coming years, it is expected that empirical research in this area will grow.

5. How to design and implement a PETS and QSDS

A. *General*

PETS and QSDS are now being applied by the operational staff within the World Bank and other donors, researchers, and developing country governments. The intuitive appeal of PETS and QSDS, however, can belie the complexity involved in planning and implementing these surveys.

First, the survey teams and stakeholders need to have a clear idea of why they are doing the study. When a new analytical tool is developed, there is a temptation to apply the tool, regardless of whether the situation on the ground warrants its application, and, indeed, without tailoring the instrument to the local conditions.

Second, the planning, design, implementation, and subsequent analysis of PETS/QSDS data are complex undertakings. A successful study requires a continuous and careful hands-on effort in accordance with clearly defined objectives. In particular, survey managers should not underestimate the importance and the difficulties involved in obtaining quantitative data from facility records. Unlike household surveys, PETS/QSDS cannot be based on recall data but require consultation of records.

Finally, there is a need to consult widely with the client government and other stakeholders about the objectives of the study. Lack of ownership may result in rejection of the findings. To ensure that the study meets its ultimate objective of informing policy reforms, it is essential that consensus building among stakeholders is nurtured prior to, during, and subsequent to execution.

In light of the lessons from past surveys, we outline the steps involved in successful design and implementation of PETS and QSDS. Many steps are common for both surveys, given that PETS typically includes a facility component and QSDS needs to relate public facilities to the government system. Typical steps involved in designing these surveys include the following:

B. *Fact-finding, consultations and purpose of the study*

In the initial phase, the survey team needs to consult extensively with a wide array of in-country stakeholders, including government agencies (ministry of finance, sector ministries, and local governments), donors, and civil society organizations. Such consultations are likely to reveal relevant hypotheses about major problems in service delivery and hence define the purpose and objectives of the study, as well as the sector(s) to be included in the study. Given that the survey requires considerable effort, it is advisable to limit the number of sectors to just one or two. Until now, the PETS and QSDS have mostly been carried out in the “transaction-intensive” health and education

sectors with clearly defined frontline service delivery points (clinics and schools), but there is no reason to limit the use of these tools.

After identifying the sector(s), the next step is to identify key issues and problems involved in service delivery in the chosen sector. Again, broad-based consultations are useful to

- reach agreement on the purpose and objectives of the study;
- choose the sector(s) for the study;
- identify key service delivery issues and problems (research questions) in the chosen sector;
- determine the structure of government's resource flow, rule for resource allocation to frontline facilities, and the accountability system;
- obtain a good understanding of the institutional setting of government, private for-profit and private not-for-profit providers;
- check data availability at various tiers of government and at the facility level;
- assess available local capacity to carry out the survey and to engage in data analysis and research; and
- choose the appropriate survey tool.

For instance, if the perceived problem is one of funds being captured *en route* to the service facility, or that facilities are not performing, given their resource receipts, or indeed a combination of both, the study can take the form of a PETS, a QSDS, or a combination of the two. In many cases a multi-purpose design is appropriate, because the performance of the facility is directly affected by the discretion, incentives, and behavior of officials at various tiers of government.

Consider the following example. Suppose the government initiates a policy change, which involves a large increase in education spending, possibly combined with decentralization and other institutional reforms. Suppose also that there are doubts about the capacity of local governments to handle the increased spending. Government may therefore decide to monitor the effectiveness of the policy change by using a longitudinal survey, combining both PETS and QSDS. A PETS would assess the actual resource flows from the central government via local governments to the frontline facility, while a QSDS would examine the efficiency with which the funds are transformed into services, and assess the supply of services.

C. Concept Paper

Once the consensus among stakeholders has been reached on the sector, issues, and survey tool, the survey team needs to prepare a concept paper. The concept paper

typically contains sectoral information on key issues to be investigated and how to investigate them. The concept paper records the stakeholders' agreements on the modalities of the study.⁴

D. Rapid data assessment

A rapid data assessment may be required to determine the availability of records at various layers of the government (as well as the private sector), particularly at the facility level. In the past, some studies have failed due to unanticipated lack of records in local governments and facilities; for example, the first health facility survey in Uganda in 1996 (see section 7 for details). Be sure to verify the availability of records early on, even if it means a delay and some extra up-front costs. The fact-finding and consultations at the concept design stage often take place in the capital city so the facilities in its vicinity can be easily visited to check on records, with the proviso that they may not be representative of facilities in remote locations. Therefore it is crucial that the data assessment is not restricted to one location. For a rapid data assessment, it is advisable to design a simple questionnaire.

E. Local consultant

It is likely to be more cost-effective as well as beneficial for local capacity building to use local consultants to conduct the PETS/QSDS. In-country consultants are likely to have a comparative advantage over their international counterparts regarding knowledge of local conditions. The consultant should be selected in close consultation with the survey team to ensure adequate survey skills (an issue in many low-income countries). The technical nature of the survey work implies that enumerators need to have sufficient research and statistical training. Where such institutions have insufficient capacity, the team managing the survey must supervise the training of the enumerator closely.

F. Questionnaire design

The instrument design should ensure that recorded data collected at one level in the system can be cross-checked against the same information from other sources. PETS/QSDS typically consist of questionnaires for interviewing facility managers as well as separate data sheets to collect quantitative data from facility records, and from local, regional, and national governmental institutions in recognition of the importance of the rest of the public sector for facility performance. The combination of questionnaires and datasheets is usually flexible enough to evaluate most of the problems under study. A beneficiary survey can also be added.

⁴ Examples can be found on the web http://econ.worldbank.org/programs/public_services/topic/tools/

A crucial component of PETS/QSDS is the explicit recognition that respondents may have strong incentives to misreport (or not report at all) certain information. To this end, it is important to carefully consider which sources and respondents have incentives to misreport, and what data/sources that to a lesser extent are influenced by these incentives. The data collection strategy should be devised accordingly. As a general guideline, information should be collected as close as possible to the original source. This implies that data is typically collected from records kept by facility for its own needs (for example, patient numbers can be recorded using daily patient records kept by the medical staff for medical use, drug use can be derived by studying stock cards, and funding to schools can be recorded from check receipts). It is also important to keep in mind that some information (for instance on corruption) is almost impossible to collect directly (especially from those benefiting from it). Instead, different sources of information have to be combined with a model of the agents' behavior to indirectly derive the information that is wanted.⁵

To be comparable a core set of questions must remain unchanged across waves of surveys, across sectors, and across countries. Six core elements for all facility questionnaires have been identified:

- *Describe the facility.* Record the size, ownership, years of operation, hours of operation, catchment population, competition from other service providers, access to infrastructure, utilities and other services, and information on the range of services provided. Information about income levels and other features of the population living in the vicinity of the facility may also be useful (as controls for subsequent econometric analysis).
- *Inputs.* Because service providers typically have a large number of inputs it may not be feasible to collect data on all of them. Some inputs are typically more important than others. For example, labor and drugs account for 80–90 percent of costs in a typical primary health care facility. For schools, the relevant costs are teachers' salaries and textbooks. In addition, there may be important capital investments. The key point in the measurement of inputs is that they be valued in monetary terms. This in turn requires that units be recorded carefully and consistently and price information (for example, wages and allowances for labor) be assembled for each key input.
- *Outputs.* Examples of measurable outputs include numbers of in- and out-patients treated (health care), and enrollment rates, numbers of pupils completing final

⁵ Or one can observe the provider over a long period of time on the assumption that agent behavior will revert to normal due to economic necessity. Unfortunately, this is an expensive and demanding approach, which therefore limits its use. The study by McPake and others (1999), which adopted this approach, was only able to sample 20 health care facilities.

exams (schools). Outputs may be multi-dimensional. In schools, for example, the objective is often not simply to teach children to read and write, but also to provide them with vocational skills, citizenship training, and the means for overcoming disadvantages from poor homes. Unlike inputs, outputs rarely convert to monetary values (public services are often free or considerably subsidized). Efficiency studies frequently use hybrid input-output measures such as cost per patient.

- *Quality*. Quality is multidimensional, and an effort should be made to capture this multidimensionality by collecting information on different aspects of quality. Examples of this include observed practice, staff behavior and composition, and availability of crucial inputs. Quality could also be captured by collecting information from the users.⁶
- *Financing*. Service provision may be sensitive to the source and continuity of financing. For example, a service provider, whose financing is intermittent will be less able to deliver services consistently than an otherwise identical provider with more reliable financing, *ceteris paribus*. Dependence on a single source of finance may also be risky and could weaken the bargaining position of the facility relative to facilities with multiple sources of finance. Information should therefore be collected on sources of finance (government, donor, user charges), amounts, and type (in-kind versus financial support).
- *Institutional mechanisms and accountability*. Public facilities do not face the same competitive pressures as private facilities. Instead, they are subject to supervision and monitoring by central, regional, or local government institutions, civil society, political leaders, and the press. In other words, they are often multiple-principal organizations. In addition, principal-agent relations between management and employees that affect performance. To understand the constraints under which public facilities operate, the information collected should recognize the multiple-principal nature of the provider. In practice, this means collecting information on supervision visits, management structures, reporting and record-keeping practices, or parent or patient involvement, and audits. Since graft may be particularly

6. Donabedian (1980) distinguishes between structural, process, and outcome quality. Structural quality relates to physical inputs and personnel as well as organizational arrangements. Process quality pertains to the functions carried out at the facility, where the emphasis is on the extent of staff compliance with “best practice” procedures. Finally, quality of outcome refers to standard measures of outcomes, such as pain and suffering and patient satisfaction in the case of health care. The problem of the “trilogy” approach lies in the tenuous links between different dimensions of quality. For example, quality of structural inputs by no means assures good care. Similarly, the link between process and outcome is not clear; it is likely to vary by process, and may not be visible for a long time. Favorable outcomes are often affected by factors not under direct control of the health worker. This then raises the question of how to weight different dimensions of health care quality.

relevant in the case of public sector performance, the survey instrument design needs to capture the sensitive nature of issues such as leakage of resources or moral hazard (shirking, ghost workers).

Variations to this basic template might include the addition of different modules to test specific hypotheses as has been done extensively in LSMS household surveys.

G. Training, field-testing, and implementation

Once the survey instruments (questionnaires and data sheets) are drafted according to the specific needs of the study, the next step is to train the enumerators and their supervisors. After the completion of the training, survey instruments should be field-tested and then finalized for implementing the actual survey. Supervision of enumerators is critical during implementation. It is also good practice to prepare a detailed implementation manual for the survey personnel.

H. Data entry and verification

Cost frequently limits the survey teams' ability to monitor the data collection process continuously. It is more cost effective to do spot checks and make field visits during data collection to discover problems of implementation in time to make the necessary adjustments. An alternative is to undertake an *ex post* check on data entry. In either case, the team will need to scrutinize the completed questionnaires and the data files, and, where necessary, request return visits to facilities and/or to various levels of the government. The output from this stage is the complete data set.

I. Analysis and reporting

Depending on the capacity of the survey consultant, the analysis is typically done either by the survey management team or by the consultant in conjunction with the team. The final report and analysis should be widely disseminated to encourage debate and discussion to facilitate the alleviation of the problems highlighted in the survey and for necessary policy reforms to ensure better service delivery. The success of reforms and problem alleviation, however, to a great extent depends on the ownership issue, as discussed below.

J. Ownership

Ownership is crucial not only for successful implementation of the survey itself but also for its impact. Public sector reform is often a difficult political issue requiring a process that involves both government and civil society. A necessary first step is therefore to ensure that the ownership of the PETS/QSDS rest within government and/or civil society of the country.

One way to overcome the ownership-capacity tradeoff is to implement the survey as a collaborative effort between government, local research institutions and/or statistical office, and donors. A key feature such collaboration is that local institutions become heavily involved in the survey design, its implementation, and analyzing the results. Experience shows that this can be a highly successful strategy. In Uganda, for example, while the first PETS in 1996 was initiated by the World Bank, the subsequent surveys in education and health were undertaken at the initiative of government and implemented by a local consultant (Government of Uganda 2000, 2001, 2002).

K. Linking PETS/QSDS with other surveys

Linking the PETS/QSDS with the household surveys (to include the demand for services) or public official surveys (to include political economy and administration issues), would obviously allow a much more comprehensive analysis of service delivery, and will be implemented in the future. The supply of services must ultimately be valued in terms of the outcomes, that is, the benefits they confer upon their intended beneficiaries. For households this means household welfare, while for firms, which consume publicly provided services such as security and those provided by utilities, a relevant outcome variable may be profits or dividends. The effect on outcomes is not just a function of the smoothness of resource flows through the government hierarchy and their conversion to services at facility level; a final critical link is that between the service provided and household and firm outcomes. That is future work it is desirable to link the PETS/QSDS with a household survey (or a firm survey) in order to determine impact of services on welfare and profits as well which aspects of quality matter to consumers and which services are in demand.

L. Panel data

For a careful policy evaluation, it may be useful to design the survey instruments in such a way that the data have a panel dimension. Unless the policy change affects a subset of facilities, it is generally not possible to evaluate its effectiveness using only cross-section data, because it does not uniquely distinguish the effects of the policy changes from those of other contemporary universal shocks.

The time dimension of the rounds of surveys depends on the speed with which policy changes translate into outcomes, that is, the time it takes for the policy change to be reflected in actual changes in spending, the speed with which the spending changes affect actual service delivery, and the time it takes the change in service delivery to produce changes in outcomes. Several years of data may be needed, either by returning to the facility each year, or, in the case of *ex post* policy evaluations, by collecting data on several time periods at once during the same visit. Thus, five years of data was collected from schools in Uganda, while the Tanzanian school survey collected three years of data (Ablo and Reinikka 1998, and Government of Tanzania 1999).

6. Sampling strategy and data availability

In this section we discuss sampling strategy, including the choice of the unit of study, ownership categories, sample size, and non-sampling error.

A. *Unit of Study*

Most sectors deliver services to the public from different service delivery points. In the education sector, for example, state-funded services are provided from primary schools, secondary schools, universities, various other types of technical colleges, and even from work, social, and community places, such as hospitals, churches, mosques, and community group meetings. Similarly, the legal system delivers justice (or order) via courts, prisons, and police stations. For a QSDS, hence an important question is what should be the units of study?

The unit of study is based on three considerations. Is it an important vehicle for delivery of the service in question? Is the unit of study sufficiently numerous to allow statistical analysis? Are the units relatively homogenous?

A reasonably homogeneous sample becomes important for analyzing cost efficiency, as unit cost substantially varies across different types of facilities (for instance, consider the case of a large hospital vis-à-vis an aide post). Of these three criteria, it is almost the most difficult one to ensure. Official classification systems, say for health facilities, may be completely out of date, or alternatively more indicative of the desired future status of facilities than their actual current characteristics. For example, in Mozambique and Uganda where new health facilities are being sorted into a new classification system, a modest size facility can be listed as a major regional health center on the grounds that the intention is to gradually upgrade it to that standard. Meanwhile other facilities in the same register correspond reasonably well with the new classification ranking system. In such circumstances—where official classification systems may thus be a poor guide for homogenous sampling—it may be necessary to supplement the official classification systems with information collected during the actual survey on the functional aspects of service delivery to enable a second-round *ex post* reclassification.

B. *Data availability*

The risks relating to data availability arise from two sources. First, there may be notable differences in financial and management arrangements across regions within a country. In particular, the relationships between facilities and other segments of the public sector in budget execution may not be uniform. Second, although records may appear to be kept in good order for some providers, this is not necessarily the case for others whose control systems may be weaker and/or the necessary data may be unavailable. Data risks should not be underestimated. Survey instruments have to be

made sufficiently flexible to capture variations in the budget execution systems, and as suggested earlier, it may be necessary to consider carrying out a rapid data assessment prior to initiation of PETS/QSDS.

C. Private for-profit and not-for-profit

It is useful to include providers with various forms of ownership in order to analyze the extent to which ownership and/or management affect the quality, quantity and overall efficiency of service delivery. Government, which often provides a considerable share of public services in developing countries, is typically not motivated by profit maximization, whereas private for-profit facilities behave more or less like enterprises. Not-for-profit providers in turn may perform differently depending on their motivation, that is, whether they are altruistic or perk (instead of profit) maximizing (Glaeser and Shleifer 2001).

D. Sample frame, sample size, and stratification

The sample survey needs to be based on information about the total population. Such information is useful in order to determine sample size and possible stratification of the sample, and it is the basis for the sample frame (that is, the list from which the facilities are selected). Preferably, the sample frame is a census, which provides reliable and up-to-date information on basic characteristics, including addresses. However many countries have no comprehensive, reliable census or up-to-date information available. This is particularly the case for private facilities.

When no reliable census exists, the next best alternative is to create a sample frame from other sources (administrative records of some kind). A list of public facilities is often available from central government or donors active in the sector. However, creating a reliable list of all service providers may be a considerable undertaking or may simply be unfeasible when it comes to private facilities. An alternative is to “mimic” the two-stage design that is typically used in household surveys. In this case that would imply that information on the private facilities is, in the first-stage, gathered from randomly drawn sampling units (this could be districts, or catchment population areas of government facilities). In the second stage, the required number of private facilities would be drawn from a list of facilities in the sampling unit.

When determining sample size and design, a number of issues must be considered. First, the sample should be sufficiently large and diverse enough to represent the number and range of facilities in the specified categories. Second, subgroups (rural facilities, private facilities) of particular interest may need to be more intensively sampled than others. Third, the sample size needs to be large enough to balance the need to reduce sampling error with the need to minimize non-sampling errors (typically increase with sample size). In this respect the sample size needed for a given level of precision is

almost independent of the size of the total population. Finally, these three objectives have to be achieved within given budgetary and organizational constraints.

These considerations often lead to a choice of a stratified random sample.⁷ Stratification entails dividing the survey population into subpopulations, and sampling these subpopulations independently as if they were individual populations. Stratification reduces sampling variance (increases sampling efficiency), and ensures a sufficient number of observations for separate analysis of different subpopulations. Stratification is a method for the surveyor to use his/her prior information about the population to improve the efficiency of the statistical inference about quantities that are unknown.

E. Sampling issues involved in linking PETS and QSDS

Sampling issues get further complicated when PETS and QSDS are linked. In PETS, one may want to sample a relatively large number of local government administrations. But sampling a large number of districts reduces the number of facilities that can be sampled within each district for a given budget constraint. From the perspective of a facility survey, it is desirable to have more facilities within fewer districts in order to characterize the intra-district variation among facilities.

Moreover, sampling a large number of districts (and therefore a small number of facilities per district) reduces the scope for applying sample weights. For example, if the sample size is 100 facilities from 10 districts with additional stratification by rural/urban facilities—not an unreasonable distinction in any study of health care facilities—there is in effect very little room to alter the numbers of facilities sampled in each district according to say, district populations, due to integer constraints. In essence, this is a small sample problem. The challenge in sample design lies in reconciling these different needs, and the solution is bound to be arbitrary to some extent, as there may simply not be a fully satisfactory solution to the sampling dilemma. A minimum requirement, however, is that facilities are chosen at random, even if the stratified populations from which they are drawn are small.

F. Non-sampling error and field-testing

Arguably, non-sampling error is more important than sampling error in service delivery surveys.⁸ A key source of non-sampling errors is poor survey implementation.⁹ Field-testing of the instrument is therefore a critical step in obtaining good quality survey

⁷ For further information on sampling and survey design, see Alreck and Settle (1995), Rossi and Wright, eds. (1983), and Grosh and Glewwe (2000).

8. One reason for this is that sample-to-population ratios are relatively large in these types of surveys.

9. Other sources of non-sampling error include refusals, respondent fatigue, recall questions, etc.

information. Field-testing ensures that survey instruments collect the intended information by revealing whether all major activities are accounted for and whether the wording is clear and provides unambiguous responses (that is, avoids alternative interpretations). All instruments should be field tested on each type of provider in the sample (e.g., government facilities, NGOs, and private facilities), because different providers may have different practices of record-keeping. Following major modifications to the structure of the questionnaire, the modified questionnaire should be re-tested. Experience to date shows that a field test for a sample of 150-200 facilities requires around 10-15 field tests. The full testing procedure takes between two weeks and one month to complete. More time is required if the final questionnaires are in more than one language, because each change needs to be translated.

Field testing is also an excellent way to familiarize enumerators with the instruments. When data sheets are used, more training may be required depending on the complexity of the information to be collected.

7. Findings from PETS

A. General

Several countries have implemented diagnostic public expenditure tracking surveys (PETS), while the first round of the quantitative service delivery surveys (QSDS) is only now getting underway in a number of countries. This section reviews the experience gained from PETS on the health and education sectors in Uganda, Tanzania, Ghana, and Honduras. In the first three cases leakage of public funds (defined as the share of intended resources/funds not received by the frontline service provider/facility) is the main issue, while the Honduran PETS focus on incentives for staff to perform (moral hazard), including ghost workers, absenteeism, and job migration. Preliminary findings of a recently completed QSDS in health sector in Uganda provide interesting insights on issues like ownership and performance, human resource, user fee and drug use.

B. Leakage (capture) of public funds

Uganda was the first country to carry out a PETS in 1996. The study was motivated by the observation that despite a substantial increase in public spending on education since economic recovery started in the late 1980s, primary enrollment remained stagnant according to official reports. The hypothesis was that actual service delivery, proxied by primary enrollment, was much worse than budgetary allocations implied because public funds were subject to capture by local government officials and did not reach the intended facilities (schools). To test this hypothesis, a PETS was conducted to compare budget allocations to actual spending through various tiers of government, including frontline service delivery points in primary education and health care (Ablo and Reinikka

1998, Reinikka 2001). The PETS also collected quantitative data on outputs from schools and clinics, as well as data on frontline provider.

Adequate public accounts were not available to report on actual spending, so the surveys collected a panel data set on spending and outputs (including in-kind transfers) for 19 districts (out of 39), 250 government primary schools and 100 health clinics and for 199195. Initially, the objective of the PETS was purely diagnostic, that is, to provide a reality check on public spending. Subsequently, it became apparent that, apart from diagnostics, a quantitative tool like the PETS can provide useful microeconomic data for analyzing, for example, service provider behavior and incentives in the same fashion as household surveys are used to explore household behavior.

The Ugandan school survey provided a stark picture of public funding on the frontlines. On average, only 13 percent of the annual capitation (per student) grant from the central government reached the school in 1991–95 (Reinikka and Svensson, 2002). Eighty-seven percent either disappeared for private gain or was captured by district officials for purposes unrelated to education. Most schools received very little or nothing (roughly 70 percent of the schools). In fact, based on yearly data 73 percent of the schools received less than 5 percent, while only 10 percent of the schools received more than 50 percent of the intended funds. The picture looks slightly better when constraining the sample to the last year of the survey period. Still, only 22 percent of the total capitation grant from the central government reached the schools in 1995.

An important finding from the Uganda PETS was that resource flows, and leakage, appeared to be endogenous to the schools' socio-political endowment. As discussed in Reinikka and Svensson (2002), larger schools received a larger share of the intended funds (per student). Schools with children of better-off parents also experienced a lower degree of leakage, while schools with a higher share of unqualified teachers experienced a higher degree of leakage. Interestingly, the extent to which funding reached the intended beneficiary had little to do with conventional audit and supervision mechanisms, but on the schools' opportunity to voice their claims for the funds. It was not possible to track teachers' salaries because disaggregated pay data was not available from the central government. Other available evidence (a payroll clean-up) suggested, however, that the average share of ghost works was at most 20 percent in 1993 (prior to clean-up). Records at the district level were also found to be patchy. Hence, a detailed comparison between budgets and actual spending could only be made about nonwage spending between the center and the school (without the middle tier of government, that is, the district).

The school survey unearthed other important information critical to understanding the education delivery system and the efficacy of potential interventions. First, instead of enrolment being stagnant, as official statistics indicated, the school survey showed a 60-percent increase in primary enrollments during the 1991–95 survey period. This suggests that, while the input flow suffered from major problems, performance of the education system (in terms of school enrollment) had improved much more than the information

system that reports on it. Second, the survey confirmed that public primary education was mostly funded by parents who, on average, contributed up to 73 percent of total school spending in 1991 (42 percent at the median school). During the repressive Amin and Obote regimes in the 1970s and 1980s, government gradually retreated from funding and managing primary schools, leaving the parent-teacher associations (PTAs) no option but to take over. According to the survey data this situation had not changed much by 1991. Government's share increased during the survey period, but by 1995 parents still financed 60 percent of total primary school spending on average (at the median school, however, the parental share was reduced to 23 percent). Namely, parental contributions continued to increase in real terms despite higher public spending.

The PETS approach did not work as well for health care. The survey confirmed that government health facilities did not keep systematic financial or patient records during 1991–95 and that most transfers from government were in-kind. Therefore, a quantitative assessment of the flow of resources to health centers or services delivered by them could not be achieved.¹⁰ The two (seemingly comparable) social sectors demonstrate quite different institutional behavior, at least as manifested in record-keeping at frontline service facilities.

From a policy perspective it is interesting to note that the Uganda PETS had a large impact. As discussed in Reinikka (2001), following the publication of the survey findings, the central government made a swift attempt to remedy the situation by publishing the monthly inter-governmental transfers of public funds in the main newspapers, broadcasting information on these on the radio, and requiring primary schools to post information on inflows of funds publicly. The objective of this information campaign was to promote transparency and increase public sector accountability by giving the citizens access to the information needed to understand and examine the workings of the capitation grant program for primary schools. By providing adequate information, schools and citizens would be empowered to monitor and challenge abuses of the system.

An initial assessment of these reforms a few years later, through a locally implemented PETS, showed a considerably improved flow of funds (Government of Uganda 2000, 2001). The improvement suggests that the provision and dissemination of information can indeed play a crucial role in improving outcomes. The Uganda case also

10. Interviews at health facilities indicated (qualitatively) that in-kind transfers, typically made directly to the health facility from the central medical store, reached the intended health centers. Using focus groups and direct observation, McPake and others (1999) highlighted problems in efficacy of service delivery at the facility level. Health workers were routinely found to charge users above the formal price, and the drug supplied by donors or the government were routinely used as a source of additional income. Their leakage estimate ranged from 40 to 94 percent of the public supply of drugs to the facilities in mid-1990s.

illustrates the impact of disseminating quantitative data on public spending and services on mobilizing “voice” (Hirschman 1970). While individual complaints about services or characterizations of services can be brushed aside, when systematic comparative data support to public feedback is made available, it is difficult to ignore and it can provide a spark for (public) action.

Tanzania implemented public expenditure tracking surveys in 1999 and 2001. As in neighboring Uganda, there was a strong suspicion that serious problems existed in the flow of funds from the central government via the local authorities to frontline service facilities. In Tanzania, as in many other low-income countries, basic service delivery is primarily funded by central government transfers (as opposed to local taxation). The first Tanzanian PETS, which was limited to 3 districts, 45 primary schools, and 36 health facilities, pointed to qualitatively similar problems observed in Uganda a few years earlier, but quantitatively they appeared to be somewhat less severe (Price Waterhouse Coopers 1999). As in Uganda, local (district) councils diverted a large part of funds disbursed by the center for nonwage education and health expenditures to other uses (that is, sectors other than education), as well as for private gain. Leakage was estimated at 57 percent in education and 41 percent in health care. Again, salaries appeared to be less prone to diversion, but payrolls suffered from ghost workers and frontline staff from delays in salary payments.

The second Tanzania PETS also tracked flows of money and materials from the central government via regional and local governments to basic service delivery points, using a combination of existing documentation and records and facility visits and interviews (REPOA and ESRF 2001). The sectoral focus was on health and education, while some information was collected on other pro-poor expenditures (rural roads, water supply, judiciary, and HIV/AIDS). The survey covered 5 districts, 4 primary schools, and 4 clinics in each district.

Considerable delays in disbursement of funds were found at all levels of government, but they were worse for nonwage expenditures and in rural areas. Also, rural districts received a smaller share of the intended resources than urban districts received. Underlying causes include cash budgeting leading to volatile transfers due to fluctuations in revenue, which in turn, gave rise to information asymmetry, as it became increasingly difficult for beneficiaries to know the amount of their monthly allocation or entitlement. In particular, council staff reportedly took advantage of the information asymmetries vis-à-vis service facilities. Similarly, highly aggregated government records were found to undermine transparency in public spending.

Although the findings of the two PETS were disseminated during the national budget consultations, they have not had as strong a catalytic effect on central government oversight or transparency arrangements (as in Uganda). The Treasury has initiated regular dissemination of itemized local government budgets to members of Parliament and regular publication of budget allocations for the selected pro-poor spending programs

both in Swahili and English language newspapers, covering allocations for ministries, regions, and local authorities (councils). This practice is still recent and an awareness campaign about these new transparency measures is very young. According to the 2001 PETS, only a few local authorities displayed budgets on public notice boards.

Ghana implemented a PETS in 2000. As in Uganda and Tanzania, its purpose was to measure actual expenditures (including in-kind transfers) on basic education and primary health care to estimate the leakage of public funds in the transfer process from central government via districts (local governments) to service facilities. In addition, a survey of user perceptions was carried out. The Ghana PETS covered 4 districts in each of the 10 regions. Apart from interviewing 40 district education officers and 40 district health officers, a total of 119 primary schools, 79 junior secondary schools, and 173 primary health clinics were included in the facility-level survey. The sample frame coincided with the 1998 household survey, but no explicit link with the household survey was made in the PETS (Ye and Canagarajah 2001).

The results from the Ghana PETS indicated that only about 20 percent of the nonwage public health expenditure and 50 percent of nonwage education expenditure reached the frontline facilities. As observed in Uganda and Tanzania, the leakage in salaries, in contrast, was much smaller (around 20 percent). Contrary to the Ugandan and Tanzanian experience, a large proportion of the leakage seemed to occur between line ministries and district offices at the point when public expenditures are translated from funds into in-kind transfers.¹¹

The in-kind nature of transfers was reported to give rise to information asymmetries and lack of accountability within the delivery system and discouraged opportunities for feedback from frontline facilities regarding their resource needs or for voicing their complaints. The possibilities for leakage were found to be much greater when the value of the materials distributed was unknown to their recipients.

The PETS opened an avenue for practical inter-ministerial collaboration in Ghana and provided a practical approach for assessing frontline expenditures and service delivery. However, it has not yet been able to catalyze a strong response to reduce leakage, either through innovations in transparency or increased central government oversight. As the first PETS was considered more of a pilot, there is scope for building on this experience in the future.

In conclusion, the three PETS with bureaucratic or political capture ('leakage') of public funds as the main focus reveal that nonwage expenditures (subject to an

11. The Ghana PETS applied recall methods rather than direct examination of facility/district records. Similarly, the ex ante budget allocation rules appear less clear (or were not fully specified in the PETS). This may bias the leakage estimates, which should be taken as indicative only.

intergovernmental transfer mechanism) suffer more from extensive leakage than salary expenditures. They also demonstrate that the sources of leakage can result from different tiers of government. In Uganda and Tanzania, the most serious capture arose at the local government level, while in Ghana it occurred before the resources reached the local government. In each case the level of leakage of nonwage expenditures is massive. For example, it is well known that availability of books and other instructional materials (nonwage inputs) are essential ingredients for improving the quality of schooling. If between 87 percent (Uganda) and 50 percent (Ghana) of the funding for these inputs never reach the schools, leakage must become a major policy issue to tackle in education.

C. Incentives to staff (moral hazard)

Honduras used the PETS to explore and diagnose moral hazard with respect to frontline health and education staff (World Bank 2001). The three previous PETS established that leakage due to bureaucratic and (or political) capture is a less critical factor in salary expenditures. Honduras demonstrates, however, that there are issues of moral hazard in staff behavior and incentives in public service that can have similar adverse effects on service delivery, such as ghost workers, absenteeism and capture of jobs by employees. The hypothesis for the PETS was that the central payroll office in Honduras has no means of ensuring that public employees really exist (ghost workers) and whether they are actually working where they are supposed to work (migration of posts). In particular, migration of posts was considered to pose a major problem, facilitated by the Honduran system of staffing which does not assign posts to individual facilities but to the central ministry. Given that the central ministry has discretion over the geographic distribution of posts, the system provides an incentive to frontline staff to lobby the ministry to have their posts transferred to more attractive locations, most often to urban areas. The implication is that posts migrate from rural and primary health care/primary school level toward cities and higher levels of health care/schooling. This is neither efficient nor equitable.

In light of the hypothesis, the objective of the PETS was to quantify the incongruity between budgetary and real assignments of staff and to determine the degree of attendance at work. The PETS 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 actual unit of observation in the Honduran study was not the facility but the sector staff, both operational and administrative, and at all levels of the two sectors from the ministry down to the service facility level.¹²

12. The health sample frame consists of 14,495 staff members in 873 workplaces. The education sample frame had 43,702 staff members in 9,159 workplaces. The total sample is 1,465 staff nationwide with 805 staff members from health and 660 staff members from education. These are clustered within 35

The Honduran PETS details a range of problems in the health sector. First, 2.4 percent of staff in the health sector did not exist (ghost workers), notably general practitioners (GPs) (8.3 percent) and specialists (5.1 percent). Second, absenteeism is a generic problem with an average attendance rate of 73 percent across all categories of staff, meaning that only 73 percent of staff worked during in the 5 days prior to the survey. Thirty-nine percent of absences were without justifiable reason (such as sick leave, vacations, and compensation for extra hours worked). This amounts to 10 percent of total staff work time.¹³ Third, multiple jobs are prevalent, especially for GPs and specialists. Fifty-four percent of specialist physicians have two or more jobs (of which 60 percent are in a related field). Multiple jobs probably reflect employee capture (that is, the post belongs to the individual). Fourth, 5.2 percent of sampled staff members had migrated to posts other than the one to which they were assigned in the central database, while 40 percent had moved since their first assignment. The highest proportions of migrators were found among GPs. Migration is always from lower to higher-level institutions, although there is also some lateral migration. Job migration was found to reflect a combination of employee capture and budget inflexibility.

In education, 3 percent of staff members on the payroll were found to be ghosts, while 5 percent of primary school teachers were unknown in their place of work. Staff migration was highest among non-teaching staff and secondary teachers. Absenteeism is less of a problem than in the health sector, with an average attendance rate of 86 percent across all categories of staff. Fifteen percent of all absences were unaccounted for. Multiple jobbing in education is twice as prevalent as in health with 23 percent of all teachers holding two or more jobs. However, half of multi-employment is by secondary school teachers who are paid for a set number of hours rather than full time jobs so that they can legitimately hold two jobs. Multiple jobs are almost always in a related field. Finally, 40 percent of all education sector workers work in administrative jobs suggesting a preference for non-frontline service employment.

In brief, migration of posts (rather than ghosts on the payroll) was found to be the central problem in both health and education. Employees seek movement upward through the system, taking their posts with them. Inflexibility of the budgeting system contributes to this situation, as managers prefer to shuffle posts rather than apply for new ones. Absenteeism was also considerable in health care. The PETS study was carried out fairly

health establishments and 44 education establishments. The samples were stratified by type of facility and by type of employee. Population weighting was used to determine how many of each type of employee to draw from each type of facility. Two questionnaires were used for each institution from which individual staff members were sampled. One questionnaire was for the institution's manager and one was for each individual employee working in the sampled institution on the day of the visit. If the individual was not there, close colleagues filled in the required information about the employee.

13. The average attendance rate (based on attendance in previous 5 days) was 73 percent. Attendance was lowest among general practitioners (61 percent). No group attended more than 76 percent of the time.

recently, so there has not yet been much follow-up within government related to the findings.

8. Findings from a QSDS

Over the past decade the Ugandan government has steadily achieved considerable improvements in budgetary management and composition of spending for economic infrastructure and social sectors, including health. However, the perception remains that budgeted expenditures do not translate adequately into actual service delivery. According to Hutchinson (2001) household survey evidence suggests facility-related characteristics rather than household-specific factors influence the utilization of health services.

When the first effort to survey frontline health facilities was carried out in 1996, it was not possible to obtain systematic quantitative data on inputs and outputs due to the dominance of in-kind transfers and lack of records (Reinikka 2001). However, a rapid data assessment carried out in 1999 indicated that it is now possible to compile daily patient, user fee, and drug use data from the majority of Ugandan health units, which facilitated a detailed analysis of service delivery performance in primary health care.

With these concerns and objectives in mind, a QSDS-type sample survey of dispensaries and dispensaries with maternity units was carried out in 2000. A total of 155 health facilities (dispensaries) were surveyed, of which 81 were government facilities, 30 were private for-profit facilities, and 44 were operated on a non-profit basis.¹⁴ The exit poll queried 1,617 clinic clients.

By collecting data at three levels—district administration, health facility, and client—it was possible to capture central elements of the links between administrative and support systems, the facility, and the user. In addition, comparisons of data from different levels (triangulation), permits cross-validation of information. At district level, a District Health Team Questionnaire administered to the district director of health services collected data on health infrastructure, staff training, support and supervision arrangements, and sources of financing. The District Health Facility Data Sheet used at the district level collected more detailed information on the sampled health units, including information on staffing and the related salary structures, vaccine supplies and immunization activity, and the supply of basic and supplementary drugs to the facilities for fiscal year 1999/2000. In addition, patient data, including monthly returns from

¹⁴ The MOH facility register contains limited information on private facilities. In the absence of a nation-wide census of health care providers, the structure of the sample was based on available information on the importance of different types of providers. Without census information on service facilities, it is difficult to assess the extent to which the sample is representative of all primary health care providers in Uganda.

facilities of total number of outpatients, inpatients, immunizations, and deliveries were reviewed for a shorter period.

At the facility level, the Health Facility Questionnaire collected a broad range of information relating to the facility and its activities:

- characteristics of the facility (location, type, level, ownership, catchment area, organization and services);
- inputs (staff, drugs, vaccines, medical and non-medical consumables and capital inputs);
- outputs (facility utilization and referrals);
- financing (user charges, cost of service category, expenditures, financial and in-kind support); and
- institutional support (supervision, reporting, performance assessment, and procurement).

Each facility questionnaire was supplemented with a Facility Data Sheet to obtain data from the health unit records on staffing and the related salary structure, daily patient records for fiscal year 1999/2000, the type of patients using the facility, vaccinations offered, and drug supply and use at the facility. Finally, also at the facility level, an Exit Poll was used to interview about 10 patients per facility on the cost of treatment, drugs received, perceived quality of services, and reasons for preference for this unit instead of alternative sources of health care.

By focusing on dispensaries and dispensaries with maternity units, the survey only captured part of the national health system. However, the limited scope permitted a larger sample, a more in-depth analysis, and the inclusion of private health care providers (both for-profit and not-for-profit) in the sample. This approach was motivated by the importance of primary health care for poverty reduction and the prominent role of the private sector in the health care market.

The survey was designed to provide baseline data for future evaluation of health sector and public expenditure management reforms and policies. However, there were also more immediate objectives:

- Measuring and explaining the variation in cost-efficiency across health units in Uganda, with a focus on the flow and use of resources at the facility level.
- Diagnosing problems of performance, including extent of drug leakage, staff performance and availability.
- Providing information on pricing/user-fee policies and assessing the types of services actually provided.

- Shedding light on quality of service and determining facility utilization rates.
- Examining the patterns and effects of remuneration, ownership, pay structure and oversight/monitoring on the quality of service and health unit performance.

The first round of QSDS survey data has recently been analyzed and further research is ongoing. A repeat survey is being planned to explore the effects of abolition of user fees, a new policy implemented in 2001.

Findings and emerging issues

Research based on the data from the Ugandan QSDS is ongoing, and the findings so far are preliminary. Still, the initial results shed light on some interesting emerging issues of considerable importance such as: (i) ownership and health facility performance; (ii) human resources; (iii) user fees and financing; and (iv) drug use. Below we highlight some of the key findings:

- *Staffing.* Comparing facility and district data on staffing in government facilities, reveals that only 56 percent of the staff at the facility level can be found in the district records. In other words, there are large numbers of staff working in government facilities about which the district authorities appear to have no information. However, there are also a large group of workers (roughly 25 percent of the staff in the district records) for which the reverse situation holds: they appear in the district records but not in the corresponding facility records. These are “ghost workers” in the traditional sense. However, a closer look at the data reveals that there are many cases where the existence of a “ghost” in a facility (i.e., individual appears only in district record) is matched by the existence of a facility level “ghost” (i.e., individual that is reportedly financed by district but appears only in facility records). This would suggest that, in part, the magnitude of the “ghost workers” problem derives from poorly updated district records. Work is ongoing to identify the extent of problem.
- *Drug management and use.* At the facility level, detailed information was collected on the use and distribution five main drugs. The survey tools were designed to capture stock movements for a period of approximately one month during which no new supplies were received, and during which the facility experienced no stock-outs. For such a period, the total removal of drugs from stocks can easily be calculated by looking at stocks at the beginning and end of the period. Patient registers were reviewed for the same period, and the number of patients was counted, distinguishing adults and children. By comparing these numbers, it is possible to derive a measure of drug use per patient. The initial findings suggest that while the drug use per patient in many facilities is as could be expected, it is very high in a few facilities. High use per patient for one drug appears also to be

related with high use for other drugs. High drug use per patient may have many sources, including high need, over-prescribing, and leakage. Work is ongoing to distinguish these possible explanations.

The exit poll offers a complementary picture concerning drug use at the facility level. On the basis of interviews with clients leaving the facility, it appears that most clients received some drugs following the consultation. What is perhaps more surprising, is the high proportion (roughly every other patient) that received some form of antibiotic. Work is ongoing to identify what determine over-prescriptions.

These findings are important because, (1) they suggest that although drug stock-outs may be important in certain areas or at certain times, there are plenty of drugs in the Ugandan health system, and (2) excessive and inappropriate drug use is not only inefficient, but can also be harmful.

- *Vaccination use and wastage.* Data collected at district level on the total amount of vaccines supplied to the sampled facilities during a six months period came from the District's Medical Store records and focused on five vaccines. Information on the number of actual vaccinations carried out was also collected from vaccination cards at the facilities. Comparing numbers reveals a big discrepancy between the number of doses supplied and the number of actual vaccinations carried out. In some facilities, the supply is 3 to 4 times greater than the actual number of vaccinations carried out. This could reflect national policy to open vaccine vials even for small numbers of patients. However, other factors may also be at play, and this issue deserves further attention.
- *Ownership and performance.* In many developing countries, the non-profit sector plays an important, and sometimes dominant, role in providing different social services. In the health sector, religious organizations are particularly prevalent. Uganda is no exception. What implications does that have on the type and quality of services being provided? To get a grip on these issues, one needs to know the behavior of the religious not-for-profit actors, compared to government run or private-for profit health providers. The QSDS can provide such information. The initial data analysis suggests there are systematic differences between facilities owned (and operated) by government, private for-profit, and (religious) not-for-profit facilities (Reinikka and Svensson 2002b). For example, government facilities pay staff in all categories better. There is some evidence that religious not-for-profit pay their qualified staff less than the for-profit facilities, although they pay their unqualified staff the same wage.

In general, government and not-for-profit facilities offer a broader range of

services (e.g., outreach, training of health workers and nurses, immunization), but there are some differences. Not-for-profit facilities are less likely to provide family planning, and government facilities are less likely to provide laboratory services.

Government facilities charge less than for-profit and non-profit facilities, and charges are generally higher for for-profit facilities than non-profit facilities.

There is some evidence that the private providers provide better service. For example, laboratory testing is much more common in the private facilities. For every 100 suspected malaria patient, the private providers test 25 more patients. Interestingly, this difference in testing is not driven by difference in health infrastructure or the prevalence of qualified staff. In fact, the government facilities are more likely than the private providers to have sterilization and refrigeration equipment.

As discussed in Reinikka and Svensson (2002), these initial findings are consistent with the view that the not-for-profit (i.e., religious) facilities are driven by altruistic concerns. Identifying the objectives and behavior of the different actors is crucial to assessing the general equilibrium effects of policy changes (such as the abolition of user fees, see below).

- *User fees.* User-fees have featured prominently on the policy agenda in Uganda and elsewhere for many years. The issue has moreover gained importance in Uganda recently, following the abolition of user fees for primary health care in 2001. The available QSDS data (prior to the policy change) thus can serve as a baseline to analyze the impact of abolishing user fees on utilization rates of government facilities vis-à-vis the private ones by conducting a second QSDS.

There are also other interesting issues to explore due to the policy change of user fees. For instance, abolishing user fees can be expected to lead to an increase in utilization, but what will happen to the quality and resource availability at facility level? First, many government facilities in the sample report using user-fee revenues to procure supplies, such as condoms, contraceptives, detergents, syringes, etc. In a context where stock-outs are common, a reduction in user fee revenues could have a deleterious impact on the capacity of facilities to deliver services. Second, a considerable proportion of staff in government facilities were financed by user fees in 2000. What has happened to these staff following the abolition of fees? If the reduction in fees has resulted in a reduction in the number of staff, what has been the impact on service delivery?

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Annex 1. PETS and QSDS surveys to date

<i>Country</i>	<i>Type of study</i>	<i>Sector and facility types</i>	<i>No. regions</i>	<i>No. facilities</i>	<i>Data freq.</i>	<i>Time period</i>	<i>Information collected?¹</i>	<i>Sampling methodology</i>	<i>Status and evaluation</i>	<i>Documentation available²</i>	<i>Contact</i>
Uganda (1)	PETS with facility characteristics	Education -Primary schools	7(19districts)	250	Annual	Annual (1991-95)	-Ministry of Finance capitation grant releases -Facility level receipts of capitation grants -Some facility level and district characteristics	-Random sampling of facilities within 7 non-randomly selected regions	-Complete -Revealed discrepancy between budgeted funds and actual expenditures -Revealed bargaining game between facilities and districts -Revealed need for greater focus on facility characteristics	-Ablo and Reinikka (1998) Reinikka (2001) -Reinikka and Svensson (2001) -Data set -Survey instrument	Rreinikka@worldbank.org
Uganda (1)	PETS with facility characteristics	Health -Health centers	7 regions; 19districts	Ca. 100	Annual	Annual (1991-95)	-Ministry of Health spending -Facility level data very limited	-Random sampling of facilities within 7 non-randomly selected regions	-Complete -Revealed data shortages at both district and facility level Only partially successful	Ablo and Reinikka (1998) -Survey instrument	Rreinikka@worldbank.org
Uganda (2)	PETS with few facility characteristics	Education Primary schools	11 districts	420	Four monthly releases	Nov. 1998- Nov. 1999	-Information on flows at levels of government, including the banking system -Facility level characteristics	-Random sampling of facilities from randomly selected districts in 10 regions (covering whole country)	-Complete -Revealed location of leakage and delays	-Republic of Uganda 2000 "Report on Tracking the Flow of and Accountability for UPE Funds" -Survey instrument -Data set	Idc@imul.com Rreinikka@worldbank.org
Uganda (3)	QSDS with triangulation with district and patients	Health - Government, private for-profit, and not-for-profit health centers	10 districts	155	Annual	1999-2000 fiscal year	-Facility: Inputs, outputs, facility characteristics, financing, institutional support and accountability -Districts: Drugs and vaccine flows, staff remuneration, supervision -Users: User charges, prescriptions	-Stratified random sample	-Data collection complete - Report available	-Concept paper -Rapid data appraisal -Sampling note -Aggregation note Research approach write-up -Questionnaires	Rreinikka@worldbank.org jakob.svensson@iies.su.se

Honduras	PETS	Education sector staff	Nation-wide	25	Annual	1999-2000	-Tracing staff (400) from central government level to individual facilities	Stratified random sampling	-Data collection commenced September 2000	-Final Report "..." -TORs -Design note -Survey instruments	Ymatsuda@worldbank.org
Honduras	PETS	Health sector staff	Nation-wide	35	Annual	1999-2000	-Tracing staff (705) from central government level to individual facilities	Stratified random sampling	-Complete	-Final Report "..." -TORs -Design note -Survey instruments	Ymatsuda@worldbank.org
Ghana	PETS with facility characteristics	Primary and secondary schools	40	200	Annual	1998	-Flow of funds	-Random sampling with link to 1998 household survey	-Data collection complete -Analysis in progress	-Presentation -Questionnaires	Scanagaraiah@worldbank.org
Ghana	PETS with facility characteristics	Health centers	40	200	Annual	1998	-Flow of funds	-Random sampling with link to 1998 household survey	-Data collection complete -Analysis in progress	-Presentation -Survey instrument -draft write-up	Scanagaraiah@worldbank.org
Rwanda	PETS with facility characteristics	Education -Primary schools	NA	351	Annual	1998-1999	-All levels of government, including regional and district administrations	-Random sampling, with possible stratification by performance (criterion unstated)	-Complete	-Draft report available	Cobidegwu@worldbank.org
Rwanda	PETS with facility characteristics	Health -Health centers	NA	351	Annual	1998-1999	-All levels of government, including regional and district administrations	-Random sampling, with possible stratification by performance (criterion unstated)	-Complete	- Draft report available	Cobidegwu@worldbank.org
Macedonia	Facility (department) survey	Obstetrics and gynaecology departments	NA	NA	NA	NA	-Costs -Facility characteristics -Invoices	NA	-Concept paper and draft TORs	-Draft TORs -Concept paper	Jan.dehn@economics.ox.ac.uk
Madagascar	QSDS	Health								-Draft survey instrument	
Albania	PETS								Completed	Report not publicly available	jorac@worldbank.org
Tanzania	PETS	Education Primary schools	3	45	Annual	1996-1998	All levels of government and all types of expenditure	NA	-Completed	Report by PriceWaterhouseCoopers "Tanzania public expenditure review: Health and Education financial tracking survey"	Bndulu@worldbank.org

Tanzania	PETS	Health -Hospitals -Health centers Dispensaries -Gov. & non-Gov.run	3	35	Annual	1996-1998	All levels of government and all types of expenditure	NA	-Completed	Report by PriceWaterhouseCoopers	Bndulu@worldbank.org
Mozambique	QSDS	Primary health care	Ca. 33	Ca. 120	Annual	2000	All levels of government -Wages -Components of nonwage recurrent	Stratified, clustered random sampling	-Concept paper and draft questionnaire	Concept paper: Lindelöw and Dehn (2001) (see refs).	Magnus.lindelow@economics.ox.ac.uk Jan.dehn@economics.ox.ac.uk
Pakistan	QSDS	Education					Focus on private schools		Design stage		Tvishwanath@worldbank.org , callison@worldbank.org , gmansuri@worldbank.org
Laos	QSDS	Education					School survey and household survey combined		Questionnaires		Rhood@worldbank.org Eking@worldbank.org
Chad	QSDS	Health					Facility and household survey combined		Questionnaires		Wwane@worldbank.org
Nigeria	QSDS	Health					Facility and community surveys		Questionnaires		Skhemani@worldbank.org
Papua New Guinea	QSDS	Education					Teacher deployment and nonwage		Questionnaires		Dfilemt@worldbank.org
Zambia	QSDS	Education					School survey Household survey Testing of children		Questionnaires		Jdas@worldbank.org
Madagascar	QSDS	Health							Design stage		Mover@worldbank.org

1. District and ministry level information, facility characteristics.
2. Write-up on sampling, actual report, questionnaire, data, etc.

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