

Private sector participation and the poor: realizing the full potential of transactions in the water sector

Shane Rosenthal and Ian Alexander*

Doctoral candidate, Yale University, USA

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Abstract

An increasing number of national and local governments are turning to the private sector to manage and expand their networks for water and sanitation services. The trend has raised concerns about how the poor fare under such arrangements, but a growing body of evidence suggests that private firms are willing and able to serve low-income areas if given the incentives and flexibility to do so.

A given contract's *potential* for achieving pro-poor outcomes is derived from the incentives it provides for efficiency, and particularly from the basis for remuneration. Whether or not this potential can be realized depends on the extent to which the transaction is used to place downward pressure on prices, provides incentives for a pro-poor pattern of service expansion, and allows service providers the freedom to respond to demand. Examples are described from a number of countries.

*Senior Economist, South Asia Energy and Infrastructure Unit, The World Bank, Washington, DC, USA

Introduction

Worldwide, an increasing number of national and local governments are turning to the private sector to manage and expand their networks for water and sanitation services. More often than not, the public sector has failed to operate services efficiently to keep up with the ever-growing demands. This is particularly so in developing countries, where the urban population growth is rapid and government resources are severely limited.

The trend of PSP (private sector participation) has raised concerns about how the poor fare under such arrangements. Some fear it brings tariff hikes and makes service unaffordable, or that private operators prioritize high return, easy-to-reach customers (Hall 2003). Others argue that PSP is an important part of a wider set of reforms, one that has the potential to benefit the poor (World Bank 2003; Estache, Gomez-Lobo, and Leipziger 2000; WSP and PPIAF 2002). A comprehensive review of the impact of the experience of primarily Latin American countries of utility privatization and the impact on consumers, especially the poor, has recently been published (Ugaz and Price 2003).

A growing body of evidence suggests that private firms are willing and able to address the needs of the poor if they are given incentives and flexibility to do so (WSP 2001a; WSP 2001b; WSP and PPIAF 2002; Gray 2001). Governments embarking on a process of reform make decisions when engaging the private sector that in one way or another affect the operator's behaviour. *What should the private sector's mandate be? How should the private sector be remunerated? How should the private sector be regulated?* The way in which these questions are answered determines whether, and how much, the poor can benefit from PSP.

The purpose of this paper is to examine how transactions can be designed to benefit the poor.¹ It is concerned mainly with transactions for the provision of network services, but also addresses the impact of these transactions on markets for alternative services.

¹ Definitions and perceptions of poverty differ across countries and localities. Here we refer to those groups and individuals whose well-being is low relative to others.

Regulating markets for water and sanitation services

Markets for piped water and sanitation services are different from conventional markets, in a way that they cannot be served efficiently by multiple firms competing with each other on an ongoing basis. Due to the large investment required to set up a distribution network, and the declining cost of serving each new customer, these services are most efficiently provided by a single firm.² Markets with these characteristics are known as natural monopolies.³

The economics of scale associated with a natural monopoly serve as a barrier to competition, giving the incumbent firm 'market power' to charge prices higher than it could command under competition. This is perceived to be at odds with the interests of consumers and is the basis for regulating the industry. It is possible to make a case of no regulation (or very limited regulation), as there is always an alternative form of supply—even if it is the one currently being utilized. This gives rise to a form of contestability, which should help ensure consumers face prices that are lower than those faced prior to the entry of the new operator while also providing the new operator with an opportunity to earn profits, thus giving an incentive to enter the market. It could be argued that this creates the greatest incentive for system expansion (see discussion later). When some element of subsidy is involved the case for greater regulation becomes stronger. This discussion, however, goes beyond the scope of this paper. Consequently, governments often limit the provider's prices through controls, sometimes referred to as conduct regulation, which usually establish the prices that can be charged. Various approaches can be followed, the two standard approaches are price caps (multi-year price paths, often referred to as RPI-X or incentive-based regulation) and rate of return approaches.⁴

² Declining average cost is not a sufficient condition for natural monopoly to exist. Rather, natural monopoly occurs where the cost function is sub-additive with respect to the cost functions of other firms.

³ In considering the monopolistic nature of such markets, it is important to distinguish services for *distribution* of water from the *supply and retail* of raw water; markets for supply and retail may not have natural monopoly characteristics. This paper is concerned mainly with distribution. For further discussion, see Klein and Roger (1997).

⁴ It is not the purpose of this paper to discuss the differences between the various forms of price control. An explanation of the differences can be found in Viscusi, Vernon, and Harrington (1997).

Where price caps are used, the monopolist will be tempted to lower the quality in order to minimize costs, and governments must therefore regulate this. Governments can require operators to use certain materials or methods for constructing a network (input-based regulation), or to adhere to particular standards for customer service (output-based regulation). Minimum standards for water pressure, water quality and continuity of service are common.

Not all markets for water and sanitation services are natural monopolies, especially in developing countries. Markets for handcart water delivery and emptying of septic tank, for example, lack the economics of scale associated with a piped network and are contestable (even if no actual competition takes place). Competition helps to select the most productive firms and provides ongoing incentives to respond to consumers' needs. This has advantages over a regulated monopoly. Competitive markets need little or no conduct regulation, thus placing a smaller burden on government resources.

Competition cannot be taken for granted. For example, water vendors in Jakarta are thought to collude with one another, while in Manila a local on-seller of piped water services operates with little competition (Crane 1994). The role of the government in such cases is to reduce barriers to entry. These barriers take numerous forms, including non-competitive behaviour, restrictive legal requirements (including licensing), under-developed credit markets, and limited access to technology.

Formulating clear objectives vis-à-vis the poor

What is it that governments wish to achieve for the poor? The answer to this is not as straightforward as it may seem. If the goal is declared as *the availability of affordable services that meet the demand of residents*, then how 'affordability', 'services', and even 'residents' are defined needs to be addressed. Does 'affordability' refer to a proportion of household income spent on water, a government-mandated level, or something else entirely? Are only network services to be considered, or are alternative services also acceptable? Do squatters and seasonal migrants count among the ranks of residents? While answers to some of these questions depend on local politics and priorities, it is possible to make several generalizations about the poor and their predicament.

One of these is that in many cities – for example, Africa (Collignon and Vezina 2000); Jakarta (Crane 1994); Manila (PCWS 2000); Buenos Aires (Hardoy and Schusterman 2000) – the poor tend to live in areas that are not served by a citywide network. Instead, they rely on small-scale providers such as handcart vendors, water kiosk operators, and tanker trucks. Efforts to improve service by extending the network are typically hindered by the physical layout of poor neighbourhoods, and by socio-economic constraints including a weak land tenure (ADB 2002).

Another generalization is that households that lack a connection pay more per unit of water than their better-off neighbours for a network service. A growing body of empirical evidence shows that the poor are willing to pay as long as it would cover the ongoing cost of piped distribution (WSP 1999; Foster, Gomez-Lobo, and Halpern 2000). In many cities, the poor lack access to formal credit markets and therefore have difficulty affording upfront connection fees (World Bank 2001a; Walker, Ordenez, Serrano, and Halpern 2000).

Given this, the poor might benefit from PSP in three main ways.

- *Downward pressure on prices* Efficiency reduces costs; this frees resources so that downward pressure can be placed on prices, making the service more affordable.
- *Expansion of network coverage* The quality of piped service tends to be superior to alternatives used by unconnected users, and its price per unit is invariably lower due to the economics of scale (Kerf 1996). Qualities such as reliability and reduced levels of contaminants are particularly important for low-income households, who are less able to afford storage and have inferior access to health care.
- *Service levels that meet the needs of customers* The introduction of PSP is an opportunity to enhance the operator's incentives to respond to consumers' needs, especially those of the poor. Circumstances in many low-income neighbourhoods demand that service providers be innovative in the methods and materials they use.

These outcomes would benefit households to varying degrees, depending on whether or not they have access to a connection. Those with connections clearly have more to gain from lower

prices than from expansion. Likewise, cities with low coverage may have more to gain from expansion than from lower prices.

Indeed, policy-makers face trade-offs between prices and coverage. The cost of network expansion must somehow be paid for—passed on to consumers, either directly through prices or indirectly through the government in the form of taxes.⁵ Depending on the extent of cost savings from efficiency improvements, a tariff hike might be necessary. Turning this around, prices can affect investment decisions by acting as an incentive, or disincentive, to expand.

Maximizing a contract's potential to achieve pro-poor objectives

A contract's potential for achieving pro-poor objectives is largely a function of the efficiency gains it can bring about, because these are the basis for expanded coverage and downward pressure on prices. This section discusses efficiency and its relationship with contract design.

Incentives for efficiency

Before considering the impact that different contractual forms can have on meeting pro-poor objectives it is helpful to distinguish among the three types of efficiency.

Allocative efficiency is achieved when the most productive firms are engaged in service delivery—efficiency in terms of the service provider.⁶ In a competitive market, these are the firms that outcompete their less productive rivals. Where the market is a natural monopoly, a competitive bidding process can be used to identify and engage the most productive firm; competition on the playing field is replaced by a contest *for* the playing field.⁷

Installing the right firm (or firms) is not enough, however. They must also face ongoing incentives to maximize *productive efficiency*. Competition provides the basis for this in a multi-firm marketplace, though interventions may be required to ensure incumbents do not engage in anti-competitive behaviour. A natural monopoly lacks the competitive pressure of the

⁵ While the tax burden could theoretically fall on the same group of consumers, it is more likely to affect a broader group. This will depend on the tax base and fiscal policy.

⁶ Allocative efficiency is also relevant when considering consumption, which is discussed in this context in the section on using efficiency gains to place downward pressure on prices.

⁷ For a discussion on franchising and privatization, see Dnes (1995).

marketplace, so incentives are instead built into a contract with the monopolist.

Dynamic efficiency refers to the inter-temporal benefits of investment decisions. Contractual incentives to invest sooner rather than later clearly affect the poor, who tend to depend on the larger outlays needed to expand primary and secondary networks. Similarly, contractual incentives to consume a greater or lesser volume of water inevitably affect the availability of raw water.

Contracts

Contracts for public service provision are essentially an enforceable set of rights and obligations that limit profits or prices while specifying required outputs, and as such their design helps determine the monopolist operator's productive efficiency. To see why, consider four stylized contractual forms that are prevalent in the water sector: management, affermage, lease, and concession (Table 1).⁸

- *Management contract* The private operator receives a simple fixed-fee and has limited operational responsibility. It is not required to make investments. The duration of management and service contracts is usually 3–5 years. In the case of an enhanced management contract, the operator receives a fee that is adjusted by a set of performance benchmarks so as to give the firm an added incentive to achieve specific goals.
- *Affermage* Under an affermage the operator has the right to a fixed proportion of each unit of water sold. The operator has broad operational responsibilities but is not usually required to invest in expansion. Affermage contracts commonly last 8–15 years.
- *Lease contract* The operator has the right to all revenue in excess of a fixed fee it pays the government, but does not usually have obligations to invest. Leases are typically written for a period of 8–15 years.
- *Concession* The operator has the right to all revenues and can make investments. Concessions have a relatively long duration, usually 25–30 years. In some cases, the winning operator makes either an upfront payment or an annual payment may be required.

⁸ Several documents provide a description of the major contract types and their variants. See World Bank (1997); Kerf, Gray, Irwin, *et al.* (1998); and Delmon (2001).

Table 1 Types of contracts

Contract type	Scope of responsibilities	Basis for remuneration	Examples
Management/Service	Limited operational responsibility. Service contracts are for specific tasks, such as bill collection and civil works. Management contracts cover a larger set of operational responsibilities. Funding for new investment remains the responsibility of the public sector.	<i>Fixed fee.</i> Fixed fee or fee plus performance-related payments based on a number of pre-set benchmarks	Johannesburg Amman Gaza Monagas (Venezuela) Gambia Mali Namibia Sao Tome and Principe
Affermage	Greater responsibility given to the operator, including all management (technical and commercial) of existing operations. Funding for new investment remains the responsibility of the public sector. Limited risk is assumed by the operator, who is exposed to unexpected changes in demand and the possibility that a shortfall between revenues collected and the affermage fee will not be paid by the government.	<i>Per-unit share.</i> The operator collects the revenues and remits the difference between revenues and the calculated affermage fee (which is based on volume of water produced and sold to the contracting authority). The affermage fee may be modified to include performance bonuses related to efficiency.	Cote d'Ivoire Senegal Gdansk Niger
Lease	Greater responsibility given to the operator, including all management (technical and commercial) of existing operations. Funding of new investment is retained by the public sector. Risk assumed by the operator is greater than under an affermage; it includes not just unexpected changes in demand, but also changes in the composition of the customer base where a progressive tariff structure is in place.	<i>Residual claimant.</i> The operator is able to retain all revenue collected, minus a lease fee (fixed in advance, normally to cover the financing costs of the infrastructure) paid by the operator to the contracting authority. Performance bonuses may be paid related to efficiency.	Guinea Mozambique
Concession	Complete responsibility for management and investment transferred to the private operator. Responsibility for funding of new investment rests with the operator.	<i>Residual claimant.</i> The operator retains the revenue it collects, minus a concession fee (fixed in advance, normally to cover debt from earlier investments in infrastructure) paid by the operator to the contracting authority.	Manila Buenos Aires Gabon Casablanca Macao Cameroon Cape Verde Bulgaria Chile

Source WSP and PPIAF (2002)

While there are innumerable variations in each of these contractual forms, the three defining characteristics are the *basis for remuneration*, the *scope of responsibilities*, and the *length of the contract*. Together, these determine the potential of a contract to yield gains in productive efficiency.

The basis for remuneration can be structured in three basic ways.

- 1 Fixed fee, where the operator is paid a set amount for providing particular services.
- 2 Per unit share, where the operator is paid a fixed amount for each unit of water it sells.
- 3 Residual claimant, where the operator is allowed to retain all revenues above a fixed fee it pays to the government.

The scope of the operator's responsibilities can range from limited responsibility for a part of the operation in one section of a city, to full control over all assets and all areas. While, often there is a correlation between this mandate and the basis for remuneration, this does not have to be the case. For example, a lease can allocate complete responsibility to the operator to manage the system, including the freedom to make investments that expand the customer base. Similarly, a concession can give the operator limited responsibility over a particular set of operations, or a certain section of the city. In practice, it is expected that the basis for remuneration will drive the scope of the mandate. For example, the more the operator expects to benefit from efforts to minimize costs, the greater the control it may seek over assets.

The third defining characteristic is the duration of the contract, though in fact this can be seen as an extension of the scope of the operator's responsibilities. The longer the operator has rights over revenue, the greater the potential benefits it perceives.

Productive efficiency will be greatest when the operator is granted rights that mimic ownership. The higher the proportion of revenues retained by the operator, the more effort it will make to lower costs and raise output (Grossman and Hart 1983).

Why, then are all contracts not 'high-powered' arrangements that maximize productive efficiency? One explanation for the popularity of less powerful contracts is that they allocate more risk to the government and thereby lower the ostensible cost of contracting with the private sector. In the case of a management

contract, the government takes on all the commercial risk. Since the private sector need not hedge against such contingencies or otherwise incorporate them in its costs, it can charge a lower price. One downside to this arrangement, which affects all existing and potential consumers, is the lower potential for efficiency gains.

Another explanation for the range of contractual forms is that it is not always possible to choose the most efficient form of contract. Many governments are not in a position to award leases and concessions, or to implement the reforms that must precede them. Decision-makers and consumers are uncomfortable ceding responsibility of 'essential services' to a private firm. They perceive an unnecessary loss of control and an unwarranted transfer of resources—concerns that may be well founded if the transaction is not well designed.

Freedom to meet demands

Efficiency is pointless unless achieved in the production of services demanded by customers. The freedom of service providers to respond to customers' needs and to have control over the choice of inputs and methods are addressed in the section 'Giving service providers the freedom to respond to demand'. Two fundamental issues that warrant consideration here.

Allowing for a range of service levels can be difficult in the context of monopoly regulation. Where price controls are used, a corresponding service level must be specified. This, however, restricts the ability of the operator to respond to consumers' needs. While many service levels could be specified, in practice this would be cumbersome to administer. Limiting the operator's rate of return could help, but this has other drawbacks. Rate of return regulation can generate undesirable incentives. In particular, firms will use too much capital relative to other inputs, and thereby compromise productive efficiency (Averch and Johnson 1962). Where coverage targets are used in concert with price controls, these lead to the same dilemma. It is difficult to measure and verify expansion if the operator can satisfy targets with a range of service levels.

The operator's freedom to innovate is also important. Are some contractual forms better at this than others? In short, yes. Remuneration under low-powered contracts is structured over a short period of time, and does not provide incentives to use inputs designed to provide returns over a long term. A logical

response is for the government to demand higher quality inputs by describing these in the contract. However, in doing so it limits the freedom of the operator to innovate.

In sum, high-powered contractual arrangements have greater potential for delivering benefits to the poor since efficiency and net revenue growth provide the basis for lower prices and increasing coverage. However, there is no *guarantee* that the poor will benefit. Other stakeholders including rich consumers, the operator, and the government itself can be expected to compete for these benefits and are often better placed to win them. Van den Berg (2000) examines the allocation of benefits under several water concessions in Argentina and finds that transaction design is an important determinant of how much consumers' gain. Restrictions on the types of services an operator can offer, or the inputs it can use, also determine the outcome for the poor. The next section explores some of the policies that impact the interests of the poor.

Realizing the full potential of contracts

The previous section dealt with the determinants of a contract's potential to deliver benefits to the poor. The following factors are central to *realizing* this potential.

- 1 *Efficiency gains are used to place downward pressure on prices* The 'efficiency dividend' can be distributed in many ways.
- 2 *There are incentives for expansion in poor neighbourhoods* Incentives for expansion are no guarantee the poor will benefit; in fact, several factors may lead to an anti-poor bias.
- 3 *Multiple service levels are encouraged* The poor benefit from innovation and multiple service levels.
- 4 *All service providers are free to respond to demand* Transactions that hinder service provision by alternative enterprises can do the poor a disservice.

Using efficiency gains to place downward pressure on prices

Most public utilities survive on the basis of an external subsidy, and many draw down on physical capital as maintenance is neglected. When these practices come to an end, typically during a process of reform, higher prices are inevitable. Efficiency gains, however, work in the opposite direction. As costs fall and

collection rates improve, the need for revenue is reduced. Depending on the relative strength of these two forces – cost savings and cost recovery – prices under PSP can go in either direction (Gray 2001). Box 1 illustrates some examples of efficiency gains under PSP.

Regardless of which direction prices move, efficiency gains can always be used to apply downward pressure. An important step towards this goal is to award the contract on the basis of competitive bidding. Where a contract is allocated using a less competitive method, firms are not likely to offer their best price. Instead, each bidder will attempt to capture some share of the expected efficiency gains for itself. This can be distinguished from the other benefit of competitive bidding, that of ensuring the most productive operator is awarded the contract.

Where the private sector is made to surrender these gains, the government will find itself with discretion over their allocation. It can pass them on to the existing network customers by placing downward pressure on prices, use them to expand coverage to previously unconnected areas, or allocate them to any other group by spending revenue in a particular way. Contracts awarded on the basis of lowest tariff channel benefit the price level.

Box 1 Evidence of efficiency gains under private sector participation

- In Buenos Aires, the labour productivity improved significantly after a water concession was granted in 1993. The ratio of labour per thousand connections decreased from 3.3 in 1992 to 1.7 in 1998 and unaccounted water as a proportion of billed water fell from 0.45 in 1992 to 0.34 in 1998. As a result of these and other changes, the total productivity factor also increased substantially, from less than 0.5 in 1992 to 0.9 in 1997.
- In Cartagena, Colombia, the ratio of employees per thousand water connections fell from 14 to 4.5 in the first six months of private participation under a lease arrangement.
- In Gdansk, Poland, the ratio of employees per thousand water connections fell from 10.3 to 8 in the first three years of reform.
- In Guinea, a private operator significantly increased total factor productivity in the sector.
- A comparison of the performance of public and private water companies in Asia and the Pacific region found that private water operators are consistently more efficient than public ones.

Source Gray (2001)

The tariff *structure* can be designed to further allocate efficiency gains among different groups of network customers. An approach adopted by many governments, especially in developing countries, is to use an IBT (increasing block tariff). A per unit premium is charged at higher consumption levels while discounting prices at lower levels. Low-income households are thought to consume smaller amounts of water and thus benefit from this arrangement.

In practice, IBTs do not always achieve their goal (Whittington and Boland 2000). One reason is that the poor tend not to be connected to the network and therefore lack access to the subsidy. Low-income households that are connected frequently share their service with neighbours and as a result are charged high volume rates intended for the rich. Even where a household is the sole consumer, it is often subject to a fixed charge based on a minimum volume of water far in excess of what it uses, which again leads to higher per unit rates. Another drawback of IBTs is the disincentive they give operators to expand in low-income areas. How can affordability be achieved more effectively? While efficiency is the most important step, sometimes the poor need extra help. The first task in designing a subsidy scheme is to identify the target group, understand the constraints it faces, and articulate clear objectives based on this understanding. Information about consumer demand is essential, as this reveals gaps between willingness-to-pay for services and the cost of their delivery.

Subsidies can be designed to target assistance toward consumption or access. Where demand is sufficient, but consumers lack the resources to connect to the service, the subsidy should be designed to facilitate access rather than consumption. Where willingness to pay is insufficient, a consumption subsidy can be justified—although consideration of the quality of the service being offered should also be undertaken. In both cases, efforts should be made to reach as many intended beneficiaries as possible, while minimizing assistance to those who are not part of the target group. Subsidy schemes should also be designed to target beneficiaries with maximum efficiency, and be implemented with the least possible administrative cost.⁹

⁹ For a discussion on subsidy design, see Brook and Smith (2001); World Bank (2001b); and Coady, Grosh, and Hoddinott (2002)

Providing incentives for a pro-poor pattern of expansion

Low-powered contracts, such as management contracts, have limited potential for attracting outside investment but can nonetheless be used to commit the private sector to lay pipes and provide connections. Where a government adopts this approach to expand service in low-income areas, it must identify priority neighbourhoods and fund the requisite investments. This requires not just financial resources, but also information about the location of the poor along with the knowledge of appropriate methods and technologies.

High-powered contracts transfer these responsibilities to the operator, which bases its decisions about investments on expected profits. This naturally leads it to expand in neighbourhoods where costs are low and revenues are high, starting with the most profitable first. As the operator goes about assessing the return from expansion in each area, it takes into account many factors. Not all of these are found in the contract. Consumer demand and population density, for example, or the placement of existing infrastructure are simply given—and can have a significant impact on decision-making.

Other influences on expansion are very much a part of the transaction. Chief among these is the tariff structure. Where an IBT is in place, the return in high consumption areas will be boosted as higher rates are levied. As low-income neighbourhoods have lower demand for water, expected profits will be lower than in better-off neighbourhoods, all other things being equal.

The exception is where remuneration is based on a *per-unit share* basis, as in a typical affermage contract. Here the payment to the operator is based on the volume sold regardless of the level of revenue. The operator is insulated from tariff levels and structures, except where these affect demand (Box 2).

Even where an area is deemed profitable, legal restrictions may prevent an operator from serving it. Examples include regulations or contractual clauses that ban service in illegal settlements, or which make it difficult for residents lacking to connect (Calaguas and Roaf 2001; WSP and PPIAF 2002).

In practice, high-powered contracts rarely rely *only* on incentives linked to profit from revenues to ensure expansion to poor areas. Some contracts require that a certain proportion of

Box 2 Are affermage contracts inherently pro-poor?

It is possible to argue that affermage contracts, in which the basis for remuneration is *per unit share*, insulate the operator's from bias that might disadvantage low-income neighbourhoods under an increasing block tariff structure. As the payment to the operator is based on a flat fee per unit of water sold, it pays no attention to the amount of revenue going into the government coffers.

There are two faults with this logic. One is that prices affect consumption, and thus the basis for an operator's payment. The second is that in practice, the operator may take a keen interest in the amount of revenue being collected, since its share is usually paid out of this account. While the contract promises a payment regardless of the account balance, in reality the government may balk at payments that exceed it.

Source Alexander and Rosenthal (forthcoming)

consumption takes place in each 'block' of customers under an IBT; or coverage targets are established specifying service to a minimum proportion of the population. Targets are usually set out as the percentage of households or population to be served by a network connection, and are backed up by penalties for non-compliance. In order to encourage the operator to focus on the poor, targets are sometimes set for each sub-municipal area.

This approach was adopted in the lease in Dakar, and in the concessions in Buenos Aires and Manila where there are large peri-urban poor areas (Rosenthal 2002; WSP 2001a). It is ineffective in cities where the poor are distributed in very small pockets among the better off, or where targets are set low enough for the operator to be able to avoid unprofitable customers and still achieve the prescribed coverage. Whether precise coverage targets are effective is a moot point. Operators may try to move slowly in those areas that will be least remunerative, knowing that breaching a target may not lead to regulatory or government action, especially when the only action open is the suspension or cancellation of the contract. It has also been the case that operators argue that costs had not been fully known prior to winning the contract and using renegotiation as a way of cutting coverage targets for unprofitable areas.

Investments in expansion yield benefits over *long* periods, and decisions about their distribution and timing are made on the basis of expectations about net revenues over the life of the

concession agreement. This requires a certain amount of forecasting of future conditions and growth patterns in a given city; some areas will develop faster than others.

A long-term perspective warrants consideration of changes to tariffs and other contractual terms during the course of a concession. Periodic negotiations with the government usually attract attention from the media, pressure groups, and the public, not in the least because they concern prices paid for services perceived as essential to the public's well-being. As the operator expects the outcome of negotiations to be influenced by outside pressures, it may decide to alter expansion decisions to influence these.

Finally, the private sector operator may look to influences beyond the immediate contract. For instance, it may face pressure from its owners to make investments that deviate from the profit-maximizing pattern of expansion. Indeed, the long-term outlook of a company that owns all or part of a concession can depend on a range of factors beyond the return it gets from a single concession. It may perceive an interest in maintaining good standing with certain interest groups, prospective clients, and shareholders—for example by building a reputation as a 'socially responsible' company. This can translate into decisions aimed at reducing the return on one contract in an effort to raise it on others.

In sum, the pattern of expansion is determined by many factors, most of which are difficult to influence through transaction design and regulation. Tariff structure may play a significant role, and is certainly an important policy instrument. While there is little empirical evidence showing its relative importance, we suggest that tariff structure has a strong influence on expansion. IBTs warrant particular attention as they explicitly match prices with consumption and thereby make one group of customers more profitable than another.

Giving service providers the freedom to respond to demand

The poor tend to live in areas that are not easily served through conventional network approaches. As a group, they depend on a variety of service levels (Box 3). Low-income households are therefore affected when restrictions are placed on the methods that service providers are allowed to use, and the levels of services they can offer. Standards that prohibit the use of materials

Box 3 Why are multiple service levels important for the poor?

As a group, the poor use a wider range of services than the non-poor, particularly for water. Some residents purchase water in plastic containers that are hauled by pushcart. Others buy from their neighbours or landlord via a shared connection or yard tap. Many cities have a long-standing strategy of serving low-income areas with public standposts.

Each of these service types provides consumers with a distinct level of service, which can be further defined in terms of water quality and pressure, frequency of billing, legal eligibility, distance from the home, and other factors. These affect how far one must carry water, whether it is available around the clock, whether it is potable at the source, whether legal title for one's dwelling must be obtained, and how often one pays— all are of great importance to poor consumers.

Some service attributes considered unacceptable by high-income consumers tend to be *preferred* by low-income consumers, or vice versa. For example, daily bill collection is considered an inconvenience to richer households, while poorer ones prefer it since they earn daily wages, and lack the same access to savings mechanisms. Similarly, low-income consumers place a high premium on reliability, while higher income households with on-site storage may be more concerned with water quality.

or methods needed for expanding in certain areas limit the operator's ability to meet demand. Similarly, a transaction that makes alternative providers illegal raises costs and limits the availability of service levels (Baker and Tremolet 2003).¹⁰

The network operator

As seen, prices charged by an operator are controlled in order to prevent non-competitive pricing due to the operator's monopolistic position and, as such, standards are far from irrelevant. It follows that some level of quality must be specified in order to make the price regulation meaningful. Otherwise, the operator could use its monopoly power to lower the quality as a way of raising net revenue.

A further justification for setting a minimum quality of service is to avoid negative externalities associated with poor public health or environmental degradation. Especially where low water quality and interruptions in service could lead to an outbreak of disease.

¹⁰ These issues are also discussed in detail in Johnstone and Wood (2001).

Standards should be carefully managed because they may be burdensome for the poor. Higher levels of service quality are associated with higher costs, which are inevitably passed on to others—often to consumers through tariffs. At some point these become unaffordable for the poorest, who are among the first to turn to cheaper services that go unregulated for quality. This could reduce the extent of service which ultimately is the means by which public health and environmental goals are achieved (Brook and Smith 2001).

One way to increase the efficacy of standards, while mitigating their burden, is to focus on outputs rather than inputs. Most contracts specify goals for water quality, continuity, and pressure. Since these deal with the quality of the end product or service they can be thought of as *output standards*. Standards can also cover technical specifications for engineering works, such as the minimum diameter and depth of pipes. Use of *input standards* like these are important in cases where commercial risk is not passed on to the operator, or where the term of the contract is short. In most cases, however, output standards are a preferable way to regulate service qualities as they describe desired outcomes, while leaving decisions about methods and means to the operator.

Flexibility can also be achieved through a careful definition of coverage obligations. Allowing the operator a choice of service levels to achieve targets will reduce overall costs, while making poor areas more attractive. It will have the flexibility to adapt to local circumstances (Baker and Tremolet 2003). As an example, concessionaires in Manila have the choice of offering standposts in low-income areas instead of private connections to meet their coverage obligations (Rosenthal 2002). For the purposes of calculating progress toward targets, each standpost is equated with service to 475 people or about 100 households.

Alternative providers

Incentives can also be used to encourage an operator to work with alternative providers to install secondary and tertiary networks. The concessions in Manila, for example, define coverage in a way that residents are considered ‘served’ for the purposes of the contracts no matter who supplies the service. This has resulted in the installation of independently operated piped networks in some areas, using water purchased from the main network. The concessionaire benefits in two ways from the

arrangement. Firstly, it makes progress towards coverage targets, and secondly, it is paid for the water.

Facilitating the entry of alternative providers is not always so easy. Where coverage requirements are coupled with an IBT structure, operators depend on profitable customers to offset losses from unprofitable ones. Unburdened by an obligation to serve the latter group, alternative providers may 'cherry pick' the prime areas and clients. Consequently, high-powered contracts often grant an exclusive right to the operator to serve all customers.

Problems of exclusivity: The problem with exclusivity is that it can stifle competition and innovation, both of which bring economic and social benefits that are likely to outweigh any financial savings. As seen, unconnected poor households depend on street vendors, tanker trucks, water kiosks and the like. The continuation of these services is important for customers who cannot be scheduled for network connections until several years into the term of a contract—if at all. Therefore, exclusivity is better avoided or restricted. If granted and strictly enforced, it will prevent alternative providers from offering services in areas which might never be connected to the network – due to their location, land tenure status or terrain – or where network expansion is not scheduled for many years to come.

Exclusivity is usually unnecessary, or can be modified to eliminate its impact on the poor. Since networked services require large investments in infrastructure, there is already a significant barrier to new entrants who wish to offer the same level of service as the main operator. Off-network providers must compete against prices made low by the network operator's large economies of scale, so once an operator expands the conventional network into a given area, it is unlikely to have its market share threatened. If alternative providers can offer a cheaper and more appropriate service they should not be prevented from doing so. Exclusivity is seldom necessary or justifiable.

If warranted at all, exclusive rights are only applicable in protecting the operator's share of profitable customers. Since poor areas may be unprofitable due to an IBT structure, granting an exclusive right to serve them is pointless. Services to the poor can be distinguished from services to the non-poor—in most cases by geography or service type. Exclusivity need not apply to low-income areas.

One step to reduce the impact of exclusivity is to restrict its application to network services, as this will enable off-network providers to continue serving their clientele. Another is to allow on-selling of water past the metered point, in order to facilitate kiosks and other forms of small-scale water vending. The most important change is to allow for exceptions where a third party can provide acceptable services cheaper than the operator. This can be particularly effective if coverage targets can be met with the services of small independent network providers. As in the case of Manila (Rosenthal 2002), the operator may find itself with an incentive to encourage the involvement of low-cost providers. A similar analogy would be the community participation seen in the electricity sector in Orissa (Ramanathan and Hasan, 2003).

An issue that arises in such situations is the regulation of alternative providers. Most operate outside regulatory frameworks and are not committed to official tariffs except as purchasers. This frees them not just from quality and environmental standards (Box 4), but also from the pricing constraint that often makes low-income neighbourhoods unattractive for the network operator. This is particularly the case if alternative providers are not paying the full economic costs (for example,

Box 4 Regulating quality when network water is on-sold

In many cities, network water is sold through intermediaries such as tankers, street vendors, and small independent networks. What, if any, responsibility operators should have for the quality of these services is unclear since control over distribution is typically lost beyond the initial point of sale. In principle, operators could refuse to sell water where certain standards are not met. A contract could require an operator to monitor the condition of tanker trucks at filling centres, or of tertiary network distribution where provided by a community or small firm. The danger, however, is that operators may have a conflict of interest if they are competing with these alternative providers. This is something the contract should avoid.

Operators are put in a similar situation with respect to quality at standposts. In some cities these are operated as private businesses; in others they are controlled and managed by communities or local cooperatives. While water pressure, quality, and availability are in principle within the control of the operator, in reality quality at the standpost may have little to do with what reaches the household. Conditions at many public standposts are unsanitary.

scarcity and environmental value of groundwater or treatment costs of wastewater). Thus, the use of alternative providers may not maximize welfare benefits to society.

While alternative providers may be more flexible and able to respond to the particular characteristics of the market among the poor, this does not necessarily mean they are the most efficient providers. In fact, if pricing were less restrictive the main operator may well be in a position to offer less expensive and higher quality services than alternative providers. The issue then returns to pricing.

Conclusion

As governments contemplate reforms involving the private sector, they are faced with a choice of contractual arrangements. Some arrangements have more potential than others for meeting the needs of the poor, but realizing this potential requires a well-designed transaction. Efficiency gains must be used to place downward pressure on prices; incentives for expansion must include poor areas; and service providers should be granted freedom to meet the specific needs of poor and non-poor alike.

As for doubts about the private sector's interest in serving the poor, these are well-founded only where transactions are ill-conceived. IBTs, for instance, can make expansion in poor neighbourhoods unprofitable and thus undesirable. Exclusivity can lock out service providers that are essential in poor neighbourhoods. Where operators are not given the freedom to choose how they serve such areas, their ability and interest in serving the poor will surely be encumbered.

While technically straightforward, for decision-makers and their constituencies this involves new ways of thinking and a challenge to vested interests. They must be prepared to address popular concerns about the possibility of allowing foreign companies to operate 'essential services', fears of higher prices and job losses, and scepticism about the private sector's willingness to serve the poor.

This is not to suggest that concerns about higher prices and job losses are unfounded. Depending on the situation, efficiency gains may not offset the true costs of maintenance and expansion. Prices may rise, and cost-cutting will certainly lead to job losses. By planning carefully, however, governments can identify cost-effective and socially responsible ways of addressing these effects.

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