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The public-private mix in urban water supply

Andrew Nickson

Background

Urban water supply (UWS) systems are facing acute crisis in many low-income countries. Rapid urbanization has substantially increased the demand for water and in most of these countries the supply of services has not kept pace with this increasing demand. In many cities a significant percentage of the population still does not have access to piped water. Even where it is available, systems have often been severely degraded due to chronic under-investment and inadequate maintenance, resulting in excessive water loss through leakage, poor water quality and unreliable flow. In turn, this has contributed to serious disease and public health problems, especially in squatter settlements. Governments in these countries face the difficult challenge of finding enormous investment funds in order to improve UWS.

Yet until the 1990s the world water industry was surprisingly complacent with regard to this crisis, lacking a critical awareness of its own organizational failures and economic performance. Powerful stakeholders (water engineers, international construction companies and public-sector trade unions) had a vested interest in maintaining the status quo. This tended to operate within the tradition of an engineering or 'supply-led' approach in which little importance was accorded to the real structure of the demand for water in the planning of UWS systems. There were three inter-related causes of this structural imbalance between supply and demand: water was historically underpriced compared to its real cost of provision; water was often regarded as a public good which made it difficult to extract an economic price from users; and environmental externalities in its use were not reflected in the price of water (Winpenny, 1994: 7). More generally, this demand and supply imbalance was related to a lack of 'fit' between a colonially inspired urban fabric and a growing population of poorer migrants from rural areas.

High per capita design allowances, systems built for a large share of outlets through private house connections rather than public standpipes, and adoption of

Andrew Nickson is a member of the Development Administration Group, School of Public Policy, University of Birmingham, UK. An enlarged version of this article was presented at the IASIA 1996 Annual Conference, Durban, South Africa, 30 June-5 July 1996. CDU: 628.1: 351.01(42).

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long-range planning horizons all led to excessive capacity, under-utilized investment and high operating costs (Mustafa, 1993). Arbitrary international standards of per capita water consumption were imposed, based on an exaggerated perception of the contribution of clean water to overall economic development. Priority was then accorded to raising per capita levels of water consumption rather than ensuring the widest coverage of the urban population. This approach often dovetailed conveniently with explicit government policy not to provide basic infrastructure in 'illegal' unplanned squatter settlements (Cairncross and Kinnear, 1992: 181). As a result, over-investment in water production (reservoirs, treatment plants and pumping stations) took place at the expense of network expansion to peri-urban areas (Lee, 1969: 119–27).

One of the most crucial constraints on improving utility performance in UWS has been institutional. Until recently such utilities in most countries have been operated by the public sector. Yet most utilities do not have the power to set tariffs. Because the sector has been financially supported through central government grants, government-set tariffs have not had to reflect the full cost of service provision, resulting in significantly subsidized tariffs. Given this history of subsidization, governments have been reluctant to raise tariffs to meet cost recovery criteria in order to cover operation and maintenance costs, as well as debt-service obligations for capital investment.

The new consensus

In response to this growing crisis, in recent years a new consensus on managing UWS has emerged. At its core are the following two fundamental principles:

1. *The instrument principle* — Water has an economic value in all its competing uses and should be recognized as an economic good. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources. An important corollary is that water companies should be treated as commercial enterprises.

2. *The institutional principle* — Water management should be based on a participatory approach involving users, planners and policy-makers at all levels, with decision-making taken at the lowest appropriate level according to the concept of subsidiarity

This new concern for demand management necessarily involves a greater role for market forces in UWS. Basic economic principles suggest that water should be charged, not simply on a cost-recovery basis, but at its long-run marginal cost (LRMC) of supply, suitably adjusted to incorporate environmental costs and benefits. The introduction of marginal cost pricing has two important implications. First, it would invariably lead to the introduction of higher charges that have long been considered beyond the means of low-income residents of urban areas in adjusting economies. However, the recent application of the contingent valuation method for determining willingness to pay for piped water has revealed that such residents are prepared to pay well in excess of the previously considered 'affordability limit' of 5 percent of household income (Whittington et al., 1991;

McPhail, 1993). Second, marginal cost pricing is only possible through volumetric charging via the introduction of metering. A recent study of water utilities in Asia recommended that the reduction in unaccounted-for water (UFW) and implementation of demand management must be considered complementary processes (Asian Development Bank, 1993: 7).

The application of the 'instrument principle' — the introduction of an 'active' charging policy based on LRMC, and of efficient control of costs — is closely dependent on organizational reforms in accordance with the 'institutional principle'. Yet government organizations often lack the capacity to cope with severe deficiencies in UWS for the poor (Cheema, 1988: 247–58). An internal review of World Bank-funded water supply and sanitation projects from 1979–89 concluded that successful implementation happened in only a few countries where the quality of public administration was unusually good (World Bank, 1995). As a result, institutional reforms that involve private-sector participation (PSP) are increasingly being explored in the search for greater economic efficiency.

The argument for private-sector participation in UWS

The traditional argument in favour of direct public provision of UWS is based on the false assumption that it is a public good. In common parlance 'public good' is usually defined as any good or service that is provided directly by the public sector. In fact the correct definition of what constitutes a public good is far more restrictive. The essential properties of a public good (sometimes called common pool goods) are non-excludability (i.e. if provided for one person, it is automatically available for everybody) and non-rivalry (i.e. there is no less available for any one person because another person is enjoying it). It is these properties which dictate collective provision at zero cost to the consumer, and financing out of general taxation. In fact UWS is characterized neither by non-excludability nor by non-rivalry. It is feasible to charge users and it is feasible to exclude non-payers. Although collectively provided, there are very few cases in the world where UWS has been provided at zero cost to the consumer, as should be the case for pure public goods (Malkin and Wildavsky, 1991).

In fact UWS is a private good, but one with several features giving rise to the likelihood of market failure (i.e. the inability of an unregulated market to achieve allocative efficiency) in its production. First, UWS is a natural monopoly *par excellence*, a function of the enormous economies of scale associated with piped networks, whereby one firm can produce at lower average costs than can be achieved by two or more competing entities (Littlechild, 1986). As a result, operating costs per connection are inversely correlated with the number of connections. In the case of UWS (and unlike in the case of other network monopolies such as telecommunications, gas and electricity) there is no significant competition between deliverers, nor from products or services produced outside the industry. Second, UWS has considerable externalities, both positive (improved health) and negative (pollution by effluents). Hence where an activity's total benefits and/or disbenefits cannot be 'captured' in market prices, an unregulated

market system will result in a suboptimal allocation of resources. Third, UWS is a merit good, one from which consumers benefit to a greater extent than they themselves realize. It is these features — natural monopoly, externalities and merit good features — that provide the justification for public-sector intervention in order to counter possible divergences between private and social costs and benefits in UWS.

However, unlike the case of public goods, they do not provide any argument in favour of direct public provision of UWS. They do, however, provide strong arguments for public regulation in order to correct market failure in the event that direct provision is left to the private sector. Although UWS has natural monopoly characteristics (high investment costs and large economies of scale) public regulation of private-sector provision may be adequate to ensure optimal production. UWS also has considerable externalities in the form of health and productivity benefits. Hence public intervention is needed to ensure an optimal level of consumption through cross-subsidization or direct subsidization.

The argument in favour of private-sector participation (PSP) in the direct provision of UWS as opposed to the more traditional arrangement of public-sector provision is based on three arguments. First, PSP can potentially improve the productive and allocative efficiency of operations and the use of capital by introducing tariff systems based on volumetric and cost-reflective charging, or by reducing costs through a more flexible labour policy to avoid overstaffing. Second, PSP can potentially improve the overall fiscal balance of the public sector, in one or more of the following ways: by reducing subsidies to loss-making water utilities; by increasing tax revenue through expanding the role of the private sector; by reducing the public debt through the outright sale of state assets; or by reducing the government borrowing requirement through requiring the private sector to finance capital expenditure. Third, PSP can potentially improve the equity of UWS systems by introducing full costing to existing (subsidized) clients thereby providing revenue for network expansion to peri-urban areas. This expansion of the distribution network leads to lower water costs for peri-urban dwellers who were previously dependent on high-cost supplies from water vendors.

Factors responsible for the current trends

The factors responsible for this growing PSP in UWS around the world may be classified according to two broad groupings — factors internal to the government and those deriving from pressure by external actors. The overriding objective for governments has been the need to reduce the public-sector deficit, from which derive other considerations such as the shortage of new investment resources, the desire to depoliticize payment for water, the pressure to avoid patronage, the wish to reduce personnel costs in particular and the need to respond to the more complex nature of water supply activities. In most countries water utilities have not applied tariff policies based either on cost recovery or marginal cost pricing. Instead they have traditionally received substantial general subsidies from central

government, especially to finance the local cost contributions to capital expenditure. Following the debt crisis of the early 1980s, governments in low-income countries have sought to limit the level of these subsidies in order to reduce the size of the overall public debt (Lee and Jouravlev, 1992: 118).

One of the major factors driving PSP in UWS worldwide has been the shortage of public-sector investment finance required in order to expand and upgrade existing networks. Governments often see PSP involving off-budget financing of capital investment as a quick route by which water utilities may achieve financial self-sufficiency. In adjusting economies PSP has been encouraged by the growing shortage of concessionary loan finance available for investment purposes in the wake of the debt crisis. In the United States and United Kingdom PSP has been driven by the pressure for new investment arising from tighter environmental controls.

The wish of governments to off-load and to depoliticize unpopular decisions over the water tariff increases that are required to achieve cost recovery is another powerful pressure encouraging PSP in UWS. In many countries water tariffs fall way below commercial rates. For example, in Nigeria state-owned water authorities charge on average only 2 percent of the cost of producing water (Mustafa, 1993). In South Africa the refusal to pay water bills became a powerful tool in the hands of residents of black townships opposed to the apartheid regime. In the aftermath of the transition to majority rule, this legacy of non-payment undermined attempts to phase out subsidies and redress backlogs. As long as the state was perceived as the provider of urban services, this problem of non-payment was likely to prevail. Efforts have been made to resolve this problem through 'communitization' (a euphemism for PSP) in the delivery of UWS because the withholding of payment by residents would no longer serve any political purpose (Tandy, 1995b: 14,37). In Mexico the absence of political continuity in local government (a relatively short 3-year term of office and a prohibition on the re-election of mayors) militated against efforts by municipal managers to raise tariffs and rationalize staff in order to overcome chronic financial deficits inherited from the past. This factor provided an added incentive for PSP (Gómez Esparza, 1993).

Another powerful pressure for PSP is the desire to rationalize staffing costs through the elimination of clientelism and patronage in the recruitment and promotion practices of water utilities. Reduction in staff costs can release funds for improved maintenance and other necessary operating expenses. Personnel costs absorb a surprisingly high share of total operating costs in many utilities in low-income countries. On the other hand, utilities in high-income countries generally display lower ratios of staff costs to total operating costs, despite relatively higher unit labour costs. This problem has been particularly acute in Brazil. In the State of Bahia, the elected government appoints the board of directors of the state-owned water company, Embasa. After each election, there is a change in priorities within the company. Even when the new governor is a member of the same political party as the former one, he will place people of his own group in

key positions, who then use their position in order to entrench their political power for the next election. In many cases investment priority is granted to the governor's region, or that of the secretary of state, or of a director (Carteado, 1995).

A final major internal factor for the acceleration of PSP has been the increasingly complicated nature of water supply activities in many countries due to the combined effects of pollution, scarcity of water resources and increasing demands on drinking water quality. Since 1950 municipalities in France believed that the private sector was better at responding rapidly to these problems because of its greater flexibility, delegation of authority and management autonomy (Coyaud, 1988: 8). The emerging 'new' agenda of environmentally sustainable development represents a massive new financial burden for governments wishing to improve the aquatic environment. As the burden of public expenditure in the sector shifts towards a greater concern for sanitation and sewerage to reflect this new concern, the pressure increases to limit public spending on UWS (Serageldin, 1994: 5-6).

Several external actors have also exercised considerable pressure on governments for the introduction of PSP in UWS. The most important of these are international development agencies and transnational corporations. Pressure from the World Bank is probably the most important single factor explaining the trend towards PSP in UWS in most low- and middle-income countries. This pressure, which is often exerted through the leverage of structural adjustment lending, also reflects self-criticism of its own previous lending policies in the UWS sector. An internal review of World Bank-supported projects (probably above average performers) found that the effective price per unit of water was, on average, only one-third of the full economic cost of supplying that increment (Winpenny, 1994: 5).

Pressure from powerful transnational corporations are today a significant factor in the move towards greater PSP in UWS in many countries. Two diversified conglomerates with headquarters in France dominate the emerging global market in UWS. The *Compagnie Générale des Eaux* (CGE), founded in 1853, supplies water to 22 million people in France and over 8 million in more than 30 countries in the rest of the world. CGE is a highly diversified conglomerate and by 1994 water represented only 26 percent of its global sales (Ridding, 1995). The *Société Lyonnaise des Eaux* (LdE), founded in 1880, provides water to 14 million people in France in addition to 40 million in the rest of the world. Market penetration by these companies has been greatly assisted by the fact that the World Bank strongly advocates the Francophone model of PSP in UWS for developing countries (Triche, 1992a; World Bank, 1993; Richards and Triche, 1994).

Main trends in service delivery

Until the mid-1980s, UWS was the public service in which the private sector was least involved (Roth, 1987: 230). Yet from then onwards there has been a marked increase in PSP. Several attempts have been made to classify the variety of organizational arrangements for UWS that are currently developing around the

world (Lewis and Miller, 1987; Coyaud, 1988; Triche, 1992a; Moss and Terme, 1994). The following classification draws on these previous efforts, coupled with insights derived from more recent research. Eight organizational arrangements are identified, and listed in ascending order of private-sector involvement. While it may seem that each of the following is a discrete category, in reality this is not the case. The form that PSP takes is adapted to the cultural, economic, legal and financial structures of each country and as a result, there is a great deal of flexibility and overlapping between the various categories in the actual practice of PSP.

The state-owned enterprise

In several countries, where the public sector remains in control of the provision of UWS, there has been a noticeable trend towards improving efficiency without substantially altering existing organizational arrangements. The removal of statutory restrictions on their range of activities, the elimination of budgetary subsidies, a switch in their form of financing from a tax-based system to a more commercial charging regime, direct competition from private operators and/or the subjection of their internal cost centres to market testing, have made these public utilities appear to act more like private companies. These commercial-style arrangements under public-sector control, commonly referred to as state-owned enterprises (SOEs), have often been incorrectly referred to as a form of privatization. They can be found where UWS is the responsibility of local government, central government or where deconcentration to regional companies is taking place.

Municipal operation

The 'ideal type' of local responsibility is found in Germany, where UWS has long been a municipal responsibility. The most common organizational arrangement is the '*Stadtwerke*' model — a semi-autonomous, but wholly-owned municipal utility enterprise with separate book-keeping that is akin to the '*régie personnalisée*' arrangement found in France. Direct municipal responsibility is also common in Southern Africa. In Zimbabwe national guidelines for low-income housing policy require that municipalities provide residences with individual water, sewerage and electricity supply, a situation virtually unique in Africa. For example, the Municipality of Bulawayo owns and operates an efficient UWS system on the basis of financial self-sufficiency (Pasteur, 1992: 103). In 1990 96 percent of the low-income houses had individual water and waterborne sewerage supplies (Nel and Berry, 1992: 414). In South Africa the Municipality of Durban has achieved considerable efficiency gains in UWS without PSP. The Water Directorate has maintained a close linkage between revenue and expenditure through extensive use of a 'cost centre' approach to management and accounting (Tandy, 1995b: 18).

Central government operation

There are several examples around the world of efficient UWS where provision and production remains under the direct control of central government. In all

cases, however, there is an explicit separation of the indirect from the direct provider role. This is achieved by organizing utilities as quasi-independent public enterprises rather than government departments and subjecting them to the same legal requirements as private firms — standard commercial and tax law, accounting criteria, competition rules and labour law. In several East Asian countries explicit performance agreements are also negotiated between the government and the managers of such water utilities (Estache, 1994: 23–4). The Singapore Public Utilities Board, a wholly public-sector institution, is acknowledged to be the most efficient water utility in Asia (Asian Development Bank, 1993: 3). The National Water Supply and Drainage Board of Sri Lanka is another public-sector water utility that has achieved significant improvement in performance levels in recent years (Tillekeratne, 1993). In Southern Africa, the Botswana Water Utility Corporation (BWUC) has achieved a high level of efficiency without recourse to PSP, except in contracting-out some senior management positions (World Bank, 1994: 38).

Regional government operation

In some countries (e.g. Venezuela, Zambia) the main thrust of organizational reform is towards greater deconcentration of responsibility for UWS to regionally based utilities, but within the overall framework of public-sector control. The classic example of this approach is in Chile, where inefficient regional utilities previously operated under the aegis of the Ministry of Public Works (MOP). In 1989 the government introduced a more open regulatory system which was separate from operational functions which were henceforth run on a commercial approach, but within the overall framework of public-sector ownership. A national regulatory agency was created to regulate new regional water utilities, which were structured as stock companies, wholly owned by the national government through the national development corporation, CORFO (World Bank, 1993: 5–6).

The service contract

Under this organizational arrangement, known in Francophone countries as '*prestation partielle*', PSP takes the form of a contractor providing a discrete and clearly defined technical task (e.g. a mains rehabilitation exercise, emergency repairs, hire of specialized equipment, design engineering) or administrative task (e.g. billing, collection) for the public-sector provider. The service contract specifies the tasks to be carried out and payment is made on a fee-per-task basis (i.e. a lump-sum, cost-plus, time-based or fixed-fee basis). The corresponding payment is entered as a cost in the operating account of the public utility. Service contracts are subject to frequent competition and the normal period is one year. In large urban areas, several contracts may be awarded in different parts of the city for the same service, enabling comparative competition.

EMOS, the public water company of Santiago, Chile, has a long-standing tradition of contracting out. In 1977 it encouraged staff to take voluntary retire-

ment and to compete for contracts, and now has one of highest levels of labour productivity among Latin American water companies, even when the labour content of service contracts is included (Triche, 1992a). EMOS retains three kinds of operation: (1) those which it can carry out more efficiently than outside contractors, (2) strategic functions with a high risk attached to them in terms of quality assurance and plant maintenance, and (3) those in which the private sector could only be attracted through subsidies (e.g. artesian well exploration). Virtually all other operations are contracted out. These include long-term planning, feasibility studies for new projects, construction activities, the maintenance of production units and the distribution system, quality control, information technology, financial operations, administrative support operations, commercial operations and industrial relations (Fernandois, 1995).

The management contract

Under this organizational arrangement, referred to in Francophone countries as '*gérance*' or delegated management, the private sector assumes responsibility for core facilities such as operation and maintenance (O&M) of production units. Customers legally remain clients of the public sector-provider, and bills are collected by the private company only on behalf of the public authority. The contractor is paid for the work done in accordance with a clearly defined contract price structure. Payment is made on a unit basis (e.g. per number of connections, per volume of water sold or per volume of water produced). Typically such contracts are signed for between 3–5 years. Because of the difficulty in isolating policy functions from operational functions, a sharp delineation of their respective roles and responsibilities is critical to an effective relationship between the contractor, the water authority and the regulatory body. The form of payment for management contracts can encourage productive efficiency. For example, where the contractor is paid a flat rate per household served, he consequently has an incentive to determine the least-cost technical solution (e.g. septic tanks in low-density areas) in order to maximize profitability. Similarly payment on the basis of the volume of water sold encourages minimization of unaccounted-for water from leaks and illegal connections.

The lease contract

Under this organizational arrangement, known as '*affermage*' in Francophone countries, the private lessee (*fermier*) carries out all routine O&M as in the case of the management contract described earlier but with the difference that the financial risk is borne entirely by the lessee. Unlike in the case of the management contract, customers are clients of the private company, which is legally responsible for all obligations associated with operating the service. The lessee assumes more risk than under a management contract as it must typically finance working capital and replacement of certain components (e.g. connections and pipes below a certain diameter) but is not involved in the financing of new investment and debt service. In return for assuming this risk, part of the tariff is contrac-

tually due to the lessee. The percentage of the tariff retained by the lessee is a key competitive feature in the bidding process for lease contracts. In the event that bidding does not take place, it still forms a key part of the negotiation between the public-sector indirect provider and the private direct provider. The lessee may be involved in operations right up to customer billing, or alternatively may be paid by the public-sector utility that bills the customer separately. The lease arrangement for PSP has a built-in incentive for the operator to reduce labour costs. In countries where water utilities are still dependent on foreign management skills, this has the advantage that there is a greater motivation for the private operator to develop the capabilities of local staff, so that high-cost expatriate staff can be minimized.

The lease contract has become an increasingly common form of organizational arrangement in many countries in recent years and is now the most common form of organizational arrangement in France. Lease contracts are normally signed for 10–12 years, although the private companies involved are now lobbying for an extension to 20 years in order to reduce their risk. In recent years a growing number of municipalities in the United States have been signing lease contracts, generally of 5 years' duration (Haarmeyer, 1994: 51). The largest ever lease contract, worth \$350 million a year over 5 years, was awarded in 1995 by the Government of Puerto Rico to *Compagnie Générale des Eaux* (CGE), which will be responsible for all of the water supply and treatment activities of Prasa, the Puerto Rico Aqueduct and Sewer Authority. Prasa will remain in charge of the investment programme of the water supply system in the country.

The concession arrangement

This organizational arrangement has all the characteristics of a lease contract, but with the significant addition that the concessionaire finances both the working capital required for operation of the system as well as the investment costs required for expansion and/or rehabilitation of the system. The concessionaire is also responsible for billing the customer. The price of water sold is fixed under the terms of the contract and includes a proportion, higher than in the case of the lease contract, which is retained by the concessionaire to cover operating expenses, debt service payments and depreciation of new investment. Concession contracts have tended to fall in length in recent years from 20–30 years to 15–20 years. At the end of the contract period, the installations are handed over to the public utility unless the contract is renewed. The key negotiating issues when awarding a concession include the price paid by the private company to operate the service, the price to be charged to the consumer, the length of the concession period and the rights and obligations of the private company at the end of the concession period.

The concession arrangement originated in France and has spread to Francophone Africa and Latin America. In Cote d'Ivoire UWS has been operated since 1960 by a private company, SODECI, of which 42 percent of the shares are owned by a French company, SAUR. Until 1987 SODECI operated on the basis

of a concession for Abidjan and on the basis of lease contracts for the rest of the urban and rural water supply services. SODECI achieved a high level of efficiency in urban areas and in 1987 was awarded a contract (without it being put out to tender) that granted it the concession for UWS in the whole country (Triche, 1990: 7–10). In May 1993 the federal government in Argentina awarded a 30-year concession contract for the water and sewerage system of Buenos Aires to *Aguas Argentinas*, a consortium led by *Lyonnaise des Eaux Dumez*. The concessionaire assumed responsibility for commercial and technical operations, maintenance of all components, as well as the financing and execution of investments necessary to achieve service targets as specified in the contract. In 1995 Limeira, a small town in the State of São Paulo, became the first municipality in Brazil to sign a concession contract.

The cooperative arrangement

The cooperative is an organizational arrangement for UWS found almost exclusively in the southern part of Latin America. In Argentina 683 UWS systems, equivalent to 35 percent of the national total and 9 percent of the total population served, were owned and operated by cooperatives in 1988 (Brunstein, 1993: 28–32). The largest urban water cooperative in the world was formed in 1978 in Santa Cruz, the second largest city in Bolivia, when the municipally owned water company was converted into SAGUAPAC. All 72,000 domestic customers are automatically members of SAGUAPAC and every 2 years they elect representatives to its administrative board. This 20-member board appoints the general manager and fixes tariffs. Customers also elect two representatives to a separate 20-member regulatory board that monitors the performance of the administrative board.

SAGUAPAC is the most efficient water company in Bolivia. Its tariffs and staff salaries are both higher than the national average, and its customers are assured of clean water and a 24-hour supply. The main reason for its greater efficiency is that the cooperative structure shields management from undue political interference, especially with regard to personnel matters and the awarding of contracts. The cooperative structure also means that SAGUAPAC is not bogged down with legal delays in tendering procedures and the administration of external loan finance that bedevil those water companies belonging to the public sector. In practice, this means that it implements investment projects much faster and more efficiently than other companies. The SAGUAPAC model has spread from Bolivia — new water supply cooperatives have recently been established in Tarija (1988) and Trinidad (1991). A 1995 World Bank evaluation of SAGUAPAC concluded that it was 'one of the best water and sewerage companies in Latin America' and recommended no change in institutional structure.

The build-operate-transfer arrangement

Under the build-operate-transfer (BOT) arrangement the concessionaire is required to finance and design the project, to construct and commission the asset,

to operate and maintain it to an agreed standard for the concession period (typically 25–30 years), and to hand the asset over to the provider in good working order at the end of the concession. BOT contracts are still relatively rare in UWS and have tended to be used almost exclusively to finance new investment in water production (e.g. the construction of pumping stations and water treatment plants) rather than for water distribution (e.g. network expansion).

Several key principles are involved in this arrangement: the provider makes a long-term commitment to purchase water from the facility; long-term capital for construction is provided by the private investor and is secured by the non-revocable revenue stream generated by the completed project; timely construction is guaranteed by tying the construction loan to requirements that the project is constructed and placed into service within budget and on time; and performance guarantees ensure that the new facilities will be operated efficiently. By combining the design, construction, operation and maintenance functions in one package, the concessionaire is provided with an incentive not only to design for quick and economic construction but also for effective and economic O&M (McCarthy and Perry, 1989: 129).

At a time of growing fiscal stringency in many countries, the BOT arrangement has the advantage that the client government does not incur debt since the asset is constructed without the need for a direct sovereign guarantee of the loans. Nevertheless, the cost of BOT projects is greater than that of projects financed through international development agencies, because of the perceived private-sector risks and the cost of complex negotiations. The growth in their use has been hindered by several factors. First is the issue of exchange risk guarantees. This is especially of concern because of the foreign exchange risks involved in such projects in which revenues accrue almost exclusively in local currencies, many of which are neither stable against major hard currencies nor fully convertible. Second is the complex nature of the financing package, which is usually large in scale and lengthy in duration, involving a mix of share and loan capital from many different sources. Third, potential private-sector investors must undergo a lengthy process to get the appropriate legislation in place in order to facilitate the private ownership of infrastructure. Fourth is the extent to which demand for the service is guaranteed, given the difficulty of forecasting demand for water over the medium term.

Divestiture

Under this organizational arrangement the entire infrastructure and assets are sold off to the private sector. The regulation of the new private monopoly thus created is carried out by some form of statutory control. The only significant example of this arrangement for UWS in the world is in England and Wales. However, divestiture is unlikely to be pursued on a large scale in developing countries for several factors: the lack of private-sector interest; the complex regulatory implications given its natural monopoly characteristics; and the lack of local investment resources and capital market (Triche, 1992b: 9; World Bank, 1993: 2).

Governmental capacity to promote PSP in UWS

The capacity of government to promote PSP depends on five factors: macro-economic management; the fostering of a climate of political legitimacy among public opinion with regard to PSP; the clarity and continuity of its intervention; appropriate legal reforms; and the openness of the tendering procedure.

The capacity to manage the broad macro-economic environment

Appropriate macro-economic policies are needed in order to ensure that the net benefits of PSP in UWS are maximized. Macro-economic stability, by reducing uncertainty, lessens the risk premium associated with investment in the water sector and thus indirectly reduces the cost of PSP. More specifically, stable foreign trade and exchange rate policies, including a commitment to currency convertibility and profit repatriation, will lessen the risk premium associated with foreign borrowing and equity finance required for network expansion. Price stability is also important because a high rate of inflation makes price-cap regulation virtually impossible. Sound economic policies that aid the efficient working of markets are necessary if water is to be treated as an economic good and regulation is no substitute for an effective competition policy. The private sector of many countries is inefficient because of monopolistic features and de facto barriers to entry, even in sectors that should be contestable (Price Waterhouse, 1994: 4).

Government policies towards import-substitution, export subsidies, taxes and subsidies on output and input prices, interest rates, and price fixing for key goods all strongly influence the production and consumption levels of goods and services that differ widely in their 'water-intensity' and 'pollution-intensity' (Winpenny, 1994: 41). The promotion of water-intensive and water-polluting industries like iron and steel, petrochemicals and pulp and paper is deeply embedded in the industrialization strategies of many developing countries. Even if water tariffs could be raised to economic levels in such countries, their effect on water use would be buffered by an array of counter-signals; subsidies on other key inputs like power and raw materials; high protection against imports; and the ability to pass increases in costs back to the government or on to a monopoly state-owned customer. Furthermore, water pricing measures frequently have to contend with incentives to attract foreign investment in water-using and polluting industries which create a countervailing policy environment (Winpenny, 1994: 41–2). With regard to the water sector as a whole, government has a key role to play in re-allocating water from its low-value use in agriculture to a higher-value use in the form of consumption by the urban poor.

Political legitimacy

In the eyes of consumers two factors generate low levels of legitimacy for PSP in UWS. First, services that are more publicly visible attract higher levels of political attention (Batley, 1994a: iii). Second, PSP in relation to natural monopolies such as water is strongly linked in the public mind to profit at the expense of the

consumer. Associated beliefs explaining this unpopularity include: the fear of loss of control by the public sector; bureaucratic inertia; a lack of confidence in the ability and/or the integrity of the private sector; resistance to the need to tackle labour problems inherent in PSP; and popular apprehension about possible foreign involvement in UWS. For these reasons the government needs to involve the public from the beginning, by explaining the reasons for PSP. The government also has an important role to play in overcoming resistance to increases in tariffs associated with PSP in situations where tariffs have been historically well below cost. This raises the important question of the optimal sequencing of reforms — namely whether price increases should pre-date or post-date the introduction of PSP? The gradual phasing in of tariff increases in line with visible improvements in service performance is generally considered to be the preferred strategy for raising the political legitimacy of PSP.

Clarity and continuity

The promotion of PSP requires adequate preparation and should not be rushed. The most appropriate form of PSP must be identified by looking at all options. Solid contracts need to be prepared that are able to withstand public scrutiny and strong legal, technical and financial advice must be sought to assist in negotiation. The private sector wants clearly defined 'rules of the game' and efforts to introduce PSP can be seriously jeopardized by abrupt changes in policy and lack of clarity over the political responsibility for water provision. This danger is exemplified by the failure of the Acueducto Metropolitano project to promote PSP in UWS for Caracas, Venezuela because of the lack of clear strategic objectives and zigzagging policy decisions.

Legal reforms

Laws and regulations concerning PSP in UWS must fulfil dual functions. They must be both adequate to inform and guarantee the rights of prospective private-sector participants and to protect the rights of consumers through regulation after PSP has been established. In many countries such laws and regulations lack clarity and precision, thereby increasing the perception of risk to the private sector. Legal reforms are often required in the area of local labour law, tax regimes, import restrictions, banking and foreign exchange restrictions. In many countries, existing laws appear to be more relevant for short-term construction contracts, for which re-imburement takes place over a short period. Accounting laws may need to be amended and modified in advance, to accommodate capital investments made under longer-term concession contracts (Richards and Triche, 1994: 16).

Open tendering procedures

The establishment of an open system of tendering is a crucial area in which a high level of administrative capacity is required. The adequate preparation of tenders is very important and the tendering process should not be rushed. Bidding

documents and subsequent contracts should clearly specify the water quality and level of service standards sought, including specifications of levels of flow and acceptable levels of leakage. The amount and nature of investments required must reflect standards that can be achieved given the conditions of the asset base. Clear criteria for evaluating bids are also crucially important. Good practice suggests the need for a two-part, double-envelope bidding process. The first, pre-qualification stage determines the technical, administrative and financial capacity of the bidders, while the second stage evaluates the price bids.

Governmental capacity to regulate PSP

Monopoly power may be exerted by several means in the case of UWS: increasing prices; reducing the quantity, availability or quality of service; allowing the environment to deteriorate; or allowing efficiency to decline. Regulation is necessary to counter these adverse effects. Furthermore, the unique nature of the UWS industry has three important implications for regulation. First, because the water industry provides a vertical chain of services — water resources, water supply, sewerage services, sewage and effluent treatment and disposal — monopoly power can be exerted at any point in this chain. Hence regulation is needed to encompass all these services provided by the water industry. Second, although regulation must cover prices, quantity, quality and environmental standards, there is a trade-off in the supply of these various elements. The higher the various qualities and standards imposed, the more costly it will be to provide the required services. At some point, higher quality means higher prices. There is also a trade-off between these elements from the viewpoint of customers. Lower price provides some compensation for lower quality. Since no one of these elements can be pursued without regard to the others, regulation of prices or profits must be determined jointly with other regulations on levels of service and environmental standards. In a competitive market situation, private firms and customers would ascertain the trade-offs in cost and preferences. But in the case of a privatized water supply, it will be necessary for the regulatory body to develop mechanisms for ascertaining trade-offs in order to find the right balance between price and levels of service. Third, the more constraints that are imposed on a water company, the more difficult and costly it is to enforce them. The more targets that are aimed at, the less weight that can be attached to any one of them. So there is another trade-off between the effectiveness of regulation and the number of regulations imposed.

A major difficulty associated with PSP in UWS is how to effectively monitor and regulate the private sector to ensure that it carries out its contractual obligations without exploiting its monopoly power. A weak regulatory agency can undermine the potential benefits of competitive contracting for the operation of UWS (Triche, 1990: 10). An effective regulatory agency should have the following attributes — political independence, openness, access to legal recourse and the institutional strength to challenge the private operator. The task is not easy. Investors may lack confidence in the judiciary's independence or ability to

enforce contract law; the level of regulatory expertise may be inadequate to staff a regulatory office other than by seriously depleting other government functions; and there may be no adequate accounting basis or set of appropriate economic indices on which any formula for the control of prices or profits could be based (Price Waterhouse, 1994: 47).

The drawbacks of assigning responsibility for regulation to organizations previously entrusted with direct implementation of the same service have already been pointed out in the case of solid waste management (Pérez and Gamallo, 1994). The re-engineering of the provider from an operational to a supervisory role and a definer of objectives imbued with a new mentality of constructively seeking solutions to problems has enormous training implications for existing staff. Attention needs to be paid to new staffing requirements in order to ensure effective regulation. Low pay leading to poor motivation in the public sector often means that moonlighting is common, even among senior staff. This has negative implications for the effective supervision of contracts performed by the private sector.

Questioning the merits of franchising

The assumption that PSP necessarily results in improved performance of UWS utilities cannot be taken for granted. The act of converting a public monopoly into a private one need not necessarily produce gains in effectiveness, efficiency and equity. In a natural monopoly such as UWS, continued and effective public regulation will always be necessary and enhanced PSP inevitably creates extra-regulatory problems. Transaction costs (the costs of arranging a contract *ex ante* and monitoring and enforcing it *ex post*) will necessarily increase. Hence PSP changes the form but not the fact of regulation and raises the question of whether the public sector is likely to be any better as regulator than it was as direct provider (Batley, 1994b).

A recent worldwide study of urban basic services within the public sector revealed a diversity of formal responsibility for UWS but provided inconclusive evidence about the most efficient form of service delivery (Davey, 1992). There is little comparative information readily available about the relative efficiencies of public and private UWS utilities although several recent econometric studies suggest that, on average, public water utilities are more efficient than private utilities (lower transaction costs outweighing higher operating costs), but are more widely dispersed between best and worst practice (Bhattacharyya et al., 1994). Comparison is made difficult by the fact that most private systems are of very recent origin and, of course, factors other than ownership affect performance (Carney, 1991).

Franchising has been heavily promoted by the World Bank as the most acceptable organizational arrangement for UWS in adjusting economies — and one that overcomes the manifest weaknesses of direct provision by the public sector while counteracting the natural tendency of the private sector to exploit natural monopoly. Under the lease and concession arrangements, competition 'for the

market' (so-called contestability) is used as a substitute for competition 'in the market'. Private companies bid for the right to control the natural monopoly, competing on the basis of lowest cost subject to specified minimum service standards. In theory this arrangement promotes both productive and allocative efficiency. On the face of it, therefore franchising is an attractive approach to the natural monopoly problem, appearing to combine the advantages of competition and single-firm cost efficiency in a neat fashion (Vickers and Yarrow, 1985).

Advocates of the franchise system argue that (1) although the market is oligopolistic, markets have indeed proven contestable, suggesting that collusion is slight, and (2) it is cost-effective, as proved by its increasing use worldwide at the expense of direct public sector provision (Lorrain, 1993). It is also argued that the franchise system is particularly suited to the UWS sector for three reasons (Prud'homme, 1993):

1. *Time*: because the 'production cycle' of UWS is so lengthy, the quality, quantity and cost of water provided today is a function of the investment of many years ago and the maintenance during the intervening period, as well as new investments in the recent past. This provides the justification for the integrated and long-term provision of design, construction and operation which the franchise system affords. Hence what is lost in the form of competitiveness may well be gained in coherence and continuity.

2. *Technology*: simple economic analyses which assume that there are limited economies of scale in UWS ignore the ever-changing nature of new technologies involved in water treatment and toxic waste disposal, metering, etc. Only large and prosperous private companies can afford the heavy investment in research and development which these require.

3. *Uncertainty*: the state retains a political responsibility for the provision of basic services such as UWS. Customers want a certain level of service (in terms of affordability, quality and reliability) irrespective of changing economic, social, technical circumstances in decades to come. Since no written contract could adequately forecast all these possible changes over such a long period, and plan for them, the best hedge against this uncertainty is in the form of a relationship of trust between the provider (state) and deliverer (franchisee) which is strong enough to deal with these contingencies.

However, franchising suffers from a number of disadvantages:

1. The problem of *moral hazard* (i.e. where after agreement of a contract the behaviour of one party alters opportunistically at the expense of the other, knowing that the losing party would face costs in cancelling the agreement and so is unlikely to cancel). The temptation exists to neglect maintenance in pursuit of profit maximization towards the end of the franchise period.

2. The problem of *asymmetric information* (i.e. where one party to a transaction has more information about the quality of the good or service exchanged than does the other). The general manager of Lyonnaise des Eaux, the largest private company engaged in UWS in the world, has recognized that under the French system, which is based on long-term contracts with no regulatory

authority, elected bodies find such contracts too complicated and difficult to understand (Bekkada, 1995: 11).

3. The problem of *first mover advantage* (i.e. the advantage which the party winning a contract has in securing future contracts with the same customer). The bidding process favours the incumbent franchisee as external contenders must spend additional resources in order to gain information to bid, and will never accumulate information as accurate as that of the incumbent.

4. The franchisee is usually protected from market forces by an excessively long franchise period, in excess of 10 years.

5. Entering a bid is costly. This deters competition, and these costs are ultimately passed on to the consumer.

These problems raise three doubts concerning the capacity of the state to effectively regulate PSP in the case of franchise arrangements. First, given the often lengthy franchise periods, changes in costs and demand over this time make it difficult to specify in advance the details of the contract that will bind the franchisee. This problem is overcome by allowing for re-negotiation of the terms of the contract. However, this apparent 'solution' undermines the key advantages of the franchise arrangement as it frees the franchisee from the terms of the original contract agreed at the outset. Competition for the contract no longer binds the winner to a particular standard and price. Hence a firm might bid to supply below cost if it felt that it had the political skill to arrange a favourable renegotiation of the franchise when its unfortunate position became known. Whether re-negotiation is based on legitimate changes in circumstances, or illegitimate attempts by the franchisee to increase its profits, there is a clear requirement for government competence in management of these re-negotiations. By allowing such re-negotiation, the nature of the regulatory regime has shifted from competition for the market to price-based regulation in the market.

Second, the pressure on the franchisee once the contract has been awarded is primarily political. This is because the pressure that operates on the franchisee is basically the threat from the public sector of termination of the franchise, and not competition from outside firms in the market place. Hence in the framing of the service level agreement and in the re-negotiation of service levels and prices over a 30-year period there is ample room for the exercise of political pressure. Third, although under the concession arrangement the cost of capital expenditure is borne by the concessionaire, in order to attract the level of investment required, the return will have to be commensurate with the risk involved. Hence in countries where political and economic stability are perceived as low, the private sector will require large returns on investment in order to offset the greater perceived risk. Yet ultimately these costs are passed on to the customers in higher tariffs (Tandy, 1995a: 36-9). In conclusion, the strongest evidence that competition under the franchise arrangement is extremely limited in practice is the fact that there are hardly any known cases of an incumbent franchisee losing bids against contenders (Schmalensee, 1979: 71-2).

Finally, there is the problem of corruption associated with franchising. It is

generally assumed that greater PSP will enhance competition, itself a key factor in promoting efficiency, and will thereby reduce the level of corruption in UWS. This is not necessarily the case. There is considerable scope for corruption in franchising because long-term contracts tend to encourage monopolistic behaviour by the private operator (Paul, 1985: 43). The franchising arrangements used in France are known to have led to extreme market concentration such that the degree of contestability is in practice correspondingly weak. There is also a complete absence of any open system of regulation of the contracting process. There is no explicit legal requirement for competition in the tendering of such contracts, which are often formulated in general terms without clear specifications. Instead the essence of the relationship between the public sector and the private company operating the lease or concession is one based primarily on mutual trust. Technical regulation is substituted by a reliance on political regulation through the ballot box (i.e. the popularity of the elected executive head). In practice this produces an asymmetry in bargaining power between the municipality and the private company. In France itself this system has led to widespread corruption which takes the form primarily of illicit funding of political parties in exchange for the award of contracts (Mény, 1996). In many low-income countries with a prior history of endemic corruption in the UWS sector, this lack of openness and over-reliance on an essentially political relationship could make corruption even worse than before.

Concluding remarks

The major strategic challenge with regard to UWS facing governments in most adjusting economies today is the attainment of affordable access to clean water for all urban residents. The key policy objective in order to achieve this goal is to bring about organizational strengthening of water utilities to the point where they introduce self-financing, quite regardless of who owns them. Without the improved productive efficiency and cost-reflective tariff policies required to achieve self-financing, investment and the delivery of services will remain in deficit and the quality of the service will remain poor. The major attraction of PSP is precisely that it is perceived as being able to 'deliver the goods' in terms of achieving self-financing in a far more effective manner than by a reform strategy that retains public-sector control. The degree to which the introduction of PSP is an indispensable lever required to force the cultural changes within water utilities that are necessary in order to achieve self-financing is a moot point.

Five main features emerge from current developments in this field. First, the global trend towards PSP in UWS is a very recent one. Many countries especially in Sub-Saharan Africa, although committed to this, have yet to implement reforms in this direction. Second, in Latin America, where the trend is most pronounced, PSP is taking place overwhelmingly through the introduction of franchise arrangements based on the French model. Third, the British model of PSP via the divestiture of assets is not being followed anywhere else in the world. Fourth, a surprisingly wide range of countries, especially in Southern Africa, are

achieving major efficiency gains without PSP, preferring instead to follow the German model of using best practice in the private sector as a benchmark against which to measure improved performance by publicly provided and operated UWS utilities. Fifth, there is a wide variety of experience with regard to the regulation of PSP in UWS. In countries where contracts granted by the public sector to the private sector have traditionally provided fertile ground for corruption, the danger exists that such illicit rent-seeking activity could negate the efficiency gains associated with PSP. In many countries, regulatory structures are still embryonic, in others they lack openness, while in others they appear to be excessively complex in their organizational structure, laying them vulnerable to political interference.

Although the most common forms of PSP in UWS are currently service contracts and lease contracts (Triche, 1992a: 9), there is no particular form that is appropriate for all circumstances. The form will vary according to the political, legal and cultural traditions in each country, as well as with a range of institutional, financial and technical considerations. Ironically the evidence of successful PSP in UWS is greatest in those public institutions with better capacity (for example among white not black municipalities in South Africa, and among high-income rather than low-income municipalities in Latin America). This fact highlights the point that, far from displacing the need for governmental capacity, greater PSP requires it as a pre-condition for effective regulation (Davey, 1992). PSP is clearly no panacea for the UWS sector in developing countries. Ultimately it must be evaluated on the basis of its contribution towards attainment of the goal of affordable access to clean water for all urban residents. Enhanced public accountability, governmental openness and other democratic safeguards are crucial for reducing rent-seeking behaviour in the context of privatization. And here the administrative capacity of government will be crucial in determining the speed and direction at which private-sector participation contributes towards meeting this goal.

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The influence of institutional arrangements on the progress of privatization: the example of Kazakhstan

Waddah Saab and Mukul Kumar

Introduction

The successful implementation of privatization in transition economies depends on both the design of the programme and on the institutional framework within which this programme must be implemented. All countries in transition which design privatization programmes follow a combination of privatization methods. They also create new institutions for the implementation of the privatization programmes, which vary in nature from country to country.

Since the beginning of its economic reforms in 1991, Kazakhstan has implemented two privatization programmes and modified its institutional arrangements for privatization. Therefore, it provides a useful insight into how the institutional arrangements have influenced the implementation of the privatization programme. The dispersion of decision-making power, both horizontally (i.e. between various ministries or equivalent bodies) and vertically (i.e. between national and local levels) has been a particularly important factor in this respect.

In this article, we first describe the historical development of privatization in Kazakhstan and the institutions in charge of privatization and the progress of privatization. Then, we describe and analyse the resulting privatizations, in relation to the institutional arrangements. Finally, we propose a general framework in which to analyse the influence of institutional arrangements on the privatization progress, and we show how this analysis could be extended to other countries in transition.

Privatization in Kazakhstan

Historical overview

Kazakhstan initiated its privatization programme in February 1991 while it was still a member of the former Soviet Union. However, this programme met with various problems and was followed by a second stage in 1993.

First stage: February 1991-October 1992. Shortly after the creation of the

Waddah Saab is an administrator at the Commission of the European Communities, 15 Place Charles Graux, 1050 Brussels. Mukul Kumar is a consultant for countries in transition, Fribourg, Switzerland. CDU: 338.982.