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Synthesis of evidence, analysis and implications**

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**Introduction**

During much of the 1990s, water utilities worldwide experienced a wave of privatization. The rationale for this, much like the rationale for the wave of privatization of state owned enterprises and other government services, is largely based on two hypotheses: the fiscal hypothesis and the efficiency hypothesis (Braadbaart, 2001). The fiscal hypothesis suggests that privatization will relieve governments the burden of investment financing particularly in the context of fiscal pressures faced by many developing countries in the 1980s. The efficiency hypothesis on the other hand suggests that water utilities performance will improve under private ownership because it is ‘obviously’ more efficient than the public sector.

These two hypotheses - widely supported by donors, think tanks and economists – is summarized by Francey (1997) as follows: “private sector participation is seen to increase efficiency and introduce new ideas of finance but above all to require a new emphasis on proactive, performance oriented commercial management that aims to match the demand of its customers with their willingness to pay realistic charges and tariff.”

The purpose of this paper is to examine the validity of these hypotheses based on a meta-analysis of the international experience on water utilities privatization. The extant literature on this subject remains fragmented as most studies either examine the efficiency argument in its various dimensions or some aspects of the fiscal argument. This paper attempts to provide a broad synthesis of these two strands in the literature, explain the outcomes and draw out the key conclusions and policy implications.

### **The Fiscal Hypothesis**

The essence of the fiscal argument, summarized by Palmer, Cockburn and Hulls, (2003) is that “governments and government controlled parastatals rarely deliver services costs effectively nor can they usually raise the finance needed to expand service provision.” In this view, the involvement of international water companies can facilitate cost effective delivery of services and can also facilitate mobilizing long term finance since participation on a risk sharing basis of international water companies enhances confidence of creditors that investment programs will be implemented efficiently. The implication of this argument, therefore, is that aid should be used to leverage private sector investments in water (Francey, 1997).

### **The Evidence**

One of the most comprehensive and in depth empirical review of the evidence on the fiscal hypothesis is provided by Hall and Lobina (2006). In their study, they have systematically debunked the myth that privatization will relieve governments of the burden of investment financing.

First, they find that most private contracts, notably lease and management contracts, involve no investment by the private company in extensions to unconnected households. In Sub-Saharan Africa, for example, 17 lease and management contracts did not result in any investment by the private company to poor unconnected household. Concession contracts do involve investment by private companies to extend the network; however, the commitments agreed when these contracts were made are invariably revised, abandoned or missed. For instance, about 37% of all private investments in the water and sanitation sector worldwide became distressed (or were cancelled or renegotiated), including those of the largest concessions which accounted for 80% of these commitments (World Bank, 2006).

The problem is more severe in Latin America and the Caribbean. Guash et al.(2003), for example, in a study of more than 1,000 concessions in infrastructure granted during 1985–2000 in that region, found that 74.4% of water and sanitation concession contracts were renegotiated very soon after their award, occurring on average 1.6 years thereafter. In Cape Verde, Gabon, Mali and South Africa, the story is pretty much the same.

Second, in most privatization contracts, actual investment on the ground particularly in connecting poor households often required public finance and/or guarantees from government or governments owned development banks. Table 1 provides an example of major build operate and transfer water projects which required public finance and/or government guarantees to deliver actual investments. In half of these projects the concessions were eventually terminated while a third were distressed and disputed.

Third, private water companies do not necessarily bring in new sources and volumes of investment finance. Hall and Lobina find that they rely heavily on the same sources that are available to the public sector. For instance, most private companies relied on sources that are also available to governments – donors, commercial and development banks, bonds and operating surplus. Private equity was rarely used by private investors.

Table 1 Major Build Operate Transfer Water Projects with Government Guarantees

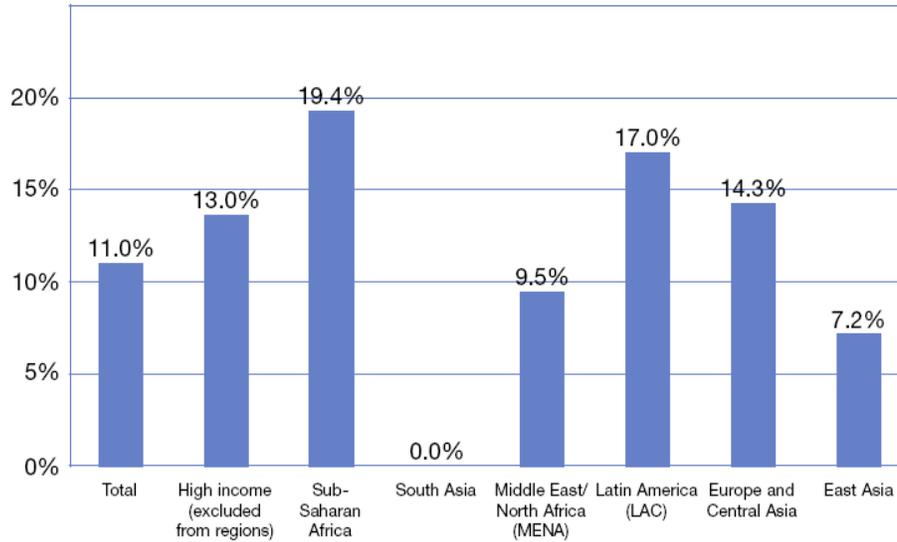
<i>Country</i>	<i>Project</i>	<i>Companies</i>	<i>Problems for water distributor</i>	<i>Public guarantees</i>	<i>Status</i>
China	Chengdu	Veolia	X	X	Distressed/ disputed
China	Da Chang (Shanghai)	Thames Water, Bovis	X	X	Terminated
China	Shenyang	Suez	X	X	Terminated
China	Xian	Berlinwasser (Veolia/Thames)		X	Terminated
India	Bangalore	Biwater	X	X	Cancelled
India	Sonia Vihar (Delhi)	Suez	X	X	Distressed/ disputed
Vietnam	Thu Duc (HCM City)	Suez, Pilecon	X	X	Terminated
Malaysia	Selangor	Puncak Niaga	X	X	
Thailand	Pathum Thani	Thames/Bovis, Karnchang	X	X	
Turkey	Yuvacik (Izmit)	Thames	X	X	Distressed/ disputed
Zimbabwe	10 dams plan	Biwater	X		Cancelled

Source: Hall and Lobina, 2006

Fourth, the contribution of multinational companies in water investments in poor countries is negligible and unlikely to increase. Most investors prefer to invest in middle income countries (50%) compared to low income countries (18%) where the need for water investment is greatest (Estache and Goicoechea, 2005). Figures 1 and 2 illustrate this geographical disparity. Overall, as a proportion of investments in infrastructure worldwide, the share of private investment in water utilities is not significant. For

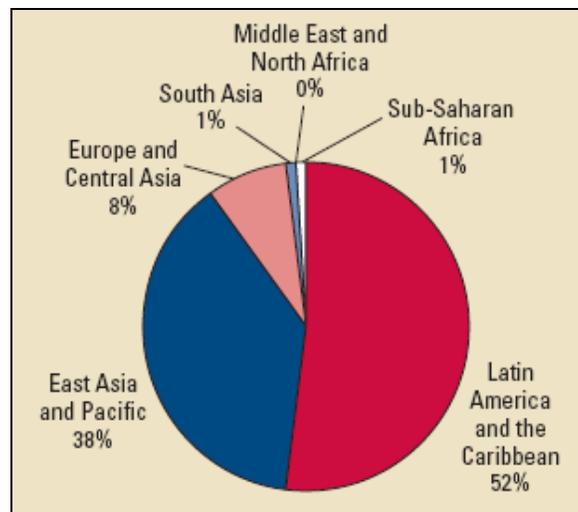
instance, from 1990 to 2001, only five percent of the total private investment in all infrastructure projects in developing countries went to water investments.

Figure 1: Percentage of cities with a population of over one million with water services Operated by private companies by region



Source: Hall and Lobina, 2006

Figure 2 Geographic distributions of investments in water and sanitation infrastructure



Source: World Bank (2004)

As a result, since 1997, only roughly about 600,000 households (or 3 million people) in sub-Saharan Africa, South Asia and East Asia (excluding China) have been provided with sustainable water supply arising from investments by private operators. This translates to roughly 900 people a day since 1997 which is way below the ideal of 270,000 people a day, the rate needed in order to meet the MDG target of reducing by half the proportion of people without sustainable access to drinking water and sanitation (Table 2).

Table 2 Estimated total new water connections financed by private operators in Sub-Saharan Africa and Asia (Ex-China)

	<i>Region</i>	<i>Total number of new connections to households financed by private operator 1990-2005</i>
Gabon	Africa	33,000
Nelspruit, South Africa	Africa	5,000
Jakarta, Indonesia	Asia	280,000
Manila, Philippines	Asia	267,000
Rest of sub-Saharan Africa and East Asia (excl. China)		15,000
South Asia	Asia	0
<b>Total</b>	<b>Sub-Saharan Africa and Asia (excl. China)</b>	<b>600,000</b>

Source: Hall and Lobina, 2006

In addition to the underinvestment by the private sector in water infrastructure, donors also held back their financing. For instance, from 1997 to 2002, donor financing declined by 47% to \$7 billion. Briceno-Garmendia, Estache and Shafik (2004) attributes this to the over optimistic expectations on private sector participation in the financing of infrastructure needs.

## **The Efficiency Hypothesis**

Another argument widely used in support of water utilities privatization is the efficiency hypothesis which suggests that performance will improve under private ownership because it is 'obviously' more efficient than the public sector. The intellectual roots of the efficiency argument against public provision are drawn largely from public choice theories of government behavior. In this view, the poor performance of public water utilities in developing countries can be attributed to four fundamental incentive problems associated with public provision.

First, governments in developing countries often succumb to populist pressures to keep prices below cost even though these subsidies do not benefit the poor (Harris, 2003). Second, public enterprises are faced with conflicts of interest because the owner is also the same as the regulator and as a result, performance contracts cannot be credibly enforced (Shirley and Nellis, 1991). Third, public enterprises are faced with perverse organizational incentives arising from non-credible threat of bankruptcy, weak competition, agency problems, rigidities and performance measurement problems (Stiglitz, 1988; Weimer and Vining, 1998). Fourth, State owned enterprises are insulated from capital markets as they face soft budget constraints and therefore are not subject to market discipline.

Indeed, there is widespread evidence of efficiency problems plaguing public water utilities. A survey by the Asian Development Bank (2007) of 20 urban public water utilities throughout India provides an illustrative example of the problems faced by public water utilities: water is only available 4.3 hours a day on average; unaccounted for water (UFW) - water that has been produced but is eventually lost before it reaches the

customers due to leaks, theft, unbilled consumption and inaccurate metering - a widely used measure of efficiency - is 32% on average which also could be understated because metering covers only about 25% of households on average.

The story is the same for other urban public water utilities in other parts of Asia. For example, McIntosh and Yniguez (1997), in a study of 50 water utilities in 19 countries in Asia found that UFW stood at 60%. In Latin America, a survey of six publicly owned and operated water utilities in major cities showed that UFW goes up to as much as 51% (Shirley and Menard, 2002) while in Lagos, Nigeria, it runs up to as high as 90%.

Thus, the confluence of poor performance of public utilities, fiscal pressures faced by developing countries, pressure from donors, arguments about the superior efficiency of privatized water supply and the public choice arguments of perverse incentives in the public sector have prompted many developing countries to involve the private sector in the provision and financing of goods previously provided by the public sector. On the basis of these assumptions, much of the previous debates about policy in infrastructure and services assume that achieving private sector operation is an objective in itself, and is always a desirable result (Hall and Lobina 2006). In fact, from 1990 to 2001, developing countries had seen over \$755 billion of investment inflows in 2,500 infrastructure projects (Harris, 2003).

### **The Evidence**

What has been the evidence on the efficiency hypothesis? Recently, there has been a stream of empirical evidence consistently and repeatedly showing that there is no systematic significant difference between public and private operators in terms of

efficiency or other performance measures (Willmer and Parker 2002; Clarke et al, 2004; Motta and Moreira, 2004; Kirkpatrick et al, 2004; Estache and Rossi, 2002; Estache et al, 2005; Hall and Lobina, 2006; Perard, 2007).

For instance, Willner and Parker (2002) observed that there is no consistent conclusion to be drawn in a survey of a large number of studies on the question of private versus public efficiency in both developed, developing and transition countries. They find that in some cases, there is evidence of greater private sector efficiency, some showing greater public sector efficiency or no difference. They conclude that based on the empirical evidence, a change of ownership from public to private is not necessarily a cure for an under-performing organization.

Perard (2007), in a comprehensive review of 48 case studies and 22 econometric tests on the subject comparing the efficiency of public and private water utilities, also finds mixed results. For instance, 58% of the case studies indicate a positive influence of private sector participation while 27% indicates no difference. Of the 22 econometric tests reviewed, Perard finds that 68% of these studies indicate no difference between public and private provision.

Likewise, Estache et al in 2005, summarizing the econometric evidence on water efficiency also concludes that there is no statistically significant difference between the efficiency performance of public and private operators in the water sector. They find that for utilities, it seems that, in general, ownership often does not matter as much as sometimes argued. They conclude that most cross-country papers on utilities find no statistically significant difference in efficiency scores between public and private providers. This finding is particularly significant since Estache has co-authored a number

of earlier studies which have been used by the World Bank to argue for the superior efficiency of the private sector (Hall and Lobina 2006).

Experience from other parts of the world pretty much tells the same story. A study by the Clarke et al (2004) in Latin America (Argentina, Bolivia and Brazil) compared cities which had private sector participation, and in cities which had no private sector involvement using household level data. They concluded that “while connections appear to have generally increased following privatization, the increases appear to be about the same as in cities that retained public ownership of their water systems”. Similarly, in Brazil, a study by Motta and Moreira (2004) involving 4000 sanitation operations shows that there is no significant difference between public and private operators in terms of the total variation in productivity. They note that regional operators have lower productivity levels than municipalities. In Chile, Bitrán and Valenzuela (2003) find that private sector operators had increased investment and labor productivity compared with public companies. However, they had also increased their rates by more, and had performed worse in dealing with unaccounted for water.

In Africa, Kirkpatrick et al (2004) examined 110 African water utilities, including 14 private and found no significant difference between public and private operators in terms of cost. In contrast, Estache and Kouassi (2002) in a smaller study of two private waters in Africa, did find that private operators were more efficient. However, they also found that institutional quality was a more important factor than private ownership in explaining differences in efficiency.

Likewise, the performance of privatized utilities in Asia is also mixed. For instance, the Asian Development Bank (2004), in a survey of 18 cities in Asia, including

Jakarta and Manila – the worlds largest privatization exercise, finds that they were performing significantly worse than most public sector operators on four indicators of coverage, investment, and leakage. In addition, Lobina and Hall (2006) find that the percentage of households connected to water supply in Manila and Jakarta is lower than all other cities except one; the percentage with access to sewerage in Manila and Jakarta is lower than in any of the other cities except in Vientiane, Laos; capital expenditure (US dollars per connection) in Manila and Jakarta is much lower than in cities such as Delhi and Dhaka, even though these latter are in countries with lower per capita income; in terms of the levels of non-revenue water (leakage and unpaid consumption) Manila is worst, and Jakarta fourth worst. On six indicators (unit production costs, percentage of expenses covered by revenue, cost to consumers of constant level of usage per month, 24 hour supply, tariff level, connection fee) their performance is middling, not outstanding. However, Lobina and Hall find that the private cities perform relatively well on two indicators: revenue collection efficiency, and minimizing the number of staff per 1000 connections.

Donors have taken cognizance of the steady stream of empirical evidence which has consistently and repeatedly shown the absence of systematic and significant difference between public and private operators in terms of efficiency or other performance measures. For instance, the IMF, in a policy paper on public-private-partnership admits that “much of the case for public-private partnerships (PPP) rests on the relative efficiency of the private sector. While there is an extensive literature on this subject, the theory is ambiguous and the empirical evidence is mixed” (IMF 2004).

This conclusion is crucial since the question of private sector efficiency is central for justifying any form of PPP. The reason for this is that public sector borrowing is invariably cheaper than private sector borrowing, and therefore the key issue is whether PPPs result in efficiency gains that more than offset the higher borrowing costs. As the preceding review of the literature has shown, the assumption regarding the efficiency of privatized water supply is not supported by empirical evidence.

### **Explaining the failure of privatization**

What could explain the apparent failure of water utilities privatization? While much is known about the outcomes of water utilities privatization, little is known about why this is the case. One explanation is provided by Shirley (2006) who attributes the failure of water utilities privatization to the disregard by conventional economist of the local political and institutional realities surrounding urban water supply. In the conventional view, urban water supply is treated as a private good and priced to cover costs, including investments and externalities. In this view, water utilities should be operated as an enterprise operating under state regulation to assure access and quality and poor consumers should be subsidized through means tested subsidies.

Using the case of the Buenos Aires water concession, Shirley suggests that the reason why few countries with weak institutions have followed the conventional advice has to do with four characteristics of urban water that is poorly understood by policy reform advocates: water is essential to life, local in supply, mysterious in information and dull in innovation. These characteristics, in turn, have important implications for urban sector water reform, which Shirley summarizes as follows:

First, water being essential to life is subject to strong beliefs. For instance, water being essential to life leads to strong beliefs that water should not be treated as a private good; it should be provided at very low cost or free and should be subject to government controls. Water being essential to life also implies that water politics is more intense and different from the politics of other utilities reform such as power and telecommunication. Water reform - particularly the inevitable tariff reform that accompanies privatization - often succumbs to populist politics precisely because water is essential to life. The stickiness and intense controversy arising from water tariff reform could perhaps partly explain the difficulty of governments to credibly honor their commitments to private concessionaires to undertake water tariff reforms.

Second, water being dull implies low dynamic gains. However, as Shirley suggests, investors could still be motivated to sink capital in water and sanitation if states can credibly commit to assure a low but reasonable return over a long period. However the intense politics of water tariff reform raises issues of credible commitment problems on the part governments.

Third, water being mysterious implies that the investor's information problems will be reflected in the design of the contract, and its vulnerability to renegotiation. For instance, the quality of water infrastructure – which are buried underground - is often difficult to ascertain ex-ante during contract negotiation. This information only becomes revealed during physical rehabilitation and concessionaires realize that they have underestimated the magnitude of costs involved. These pervasive information asymmetry problems could perhaps partly explain the fact that most water concessions were typically renegotiated shortly after contract agreement.

## **Conclusion and Implications**

The purpose of the paper is to examine the validity of the fiscal and efficiency hypothesis that have been used to justify the wave of privatization of water utilities in the 1990s. Two major conclusions can be drawn from the preceding review of the literature.

First, contrary to expectations, privatization has not relieved governments of the burden of investment financing and that private finance is unlikely to play an important role in achieving water and sanitation targets of the Millenium Development Goals (Hall and Lobina, 2006). The fact is that only five percent of the total private investment in all infrastructure projects in developing countries went to water investments. Most investors prefer to invest in middle income countries compared to low income countries where the need for water investment is greater (Estache and Goicoehea, 2005). In addition, in most privatization contracts, public finance and/or guarantees from government governments or development banks are of central importance in delivering actual investment on the ground, particularly in connecting poor households. Furthermore, private water companies do not bring in new sources and volumes of investment finance – they rely heavily on the same sources that are available to the public sector.

Second, the efficiency claims of privatization is ambiguous as indicated by numerous case studies and econometric tests (Willmer and Parker 2002; Clarke et al, 2004; Motta and Moreira, 2004; Kirkpatrick at al, 2004; Estache et al, 2005; Hall and Lobina, 2006; Perard, 2007). These findings now appear to be the consensus view as even the main proponents of privatization such as the IMF and the WB have also admitted as much (Wall Street Journal, 2003).

Realizing this, donors have begun to reform their water financing programs. For instance, UK is batting for the front loading of donor investments in the water sector through long term bonds backed by aid budgets of donor countries. USAID is exploring the route of improving the credit rating of public utilities and developing local bond markets as sources of finance. The ADB has doubled its financing commitment to the water sector to around USD 2 billion a year for the period 2006-2010 as well as offering a host of knowledge products and other initiatives such as raising the political profile of water issues.

These findings have important implications on the role of private and public sectors in water supply. Indeed, the inherent characteristics of water – i.e. essential to life, local in supply, dull in innovation and mysterious in information – would imply a rethinking of the role of governments and private sector. This does not imply a return to the old business model of water supply that has only led to poor performance of public water utilities.

Local politicians who make decisions on water supply need to change their mindsets as well – i.e. to treat water as an essential economic good and adopt sustainable cost recovery measures. For this, they need to be convinced that *good water economics is also good water politics* - an important lesson in the case of the PPWSA in Cambodia. This message is important as more and more local governments assume responsibilities for water supply as a result of widespread decentralization efforts in the 1990s.

Convincing *good water economics is also good water politics* requires, among others, providing local governments with a variety of financing mechanisms in order for them to make credible commitments to their electorate – i.e. be able to promise improved

water services in exchange for adopting sustainable cost recovery mechanisms. One approach would be for national governments to provide water financing windows in the form of matching grants or competitive block grants for water investments. As the case of the Philippines shows, this financing window is an effective mechanism to generate local demand and facilitate progressive utilities reform in smaller cities. Scale is important to ensure widespread adoption of water supply reforms. The Nehru Urban Renewal Program in India is one such example to provide federal assistance to state governments to deal with urban water supply issues.

Outside of government programs, domestic private companies have also important roles to play, despite the problems with the first generation experience of water utilities privatization. For instance, domestic companies are also increasingly becoming important as they take over distressed concessions left by multinational companies. As the case of the two water concessions in Manila have shown, domestic water companies behave differently than multinational companies in terms of their approach to dealing with complex local problems.

This development on the increasing role of domestic companies has four policy implications. First is the need to rethink the role of fiscal policy instruments – for instance tax holidays and performance based sovereign guarantees – to encourage domestic companies to invest in water utilities. Second, as more and more domestic companies succeed in running local utilities, the next logical step would be to experiment with water franchising models to expand outreach and coverage in areas outside of major cities. This is important as most un-served households are found in smaller cities. This model is currently being tested in the case Cambodia using the PPWSA as the franchise

for other provincial utilities. Third, along with the development of domestic water franchising models, there is also a need to develop water regulatory capacities at national and local government levels. Finally, as the experience of the first generation of water utilities privatization has shown, many concessions became distressed, disputed or were eventually cancelled. This experience points to the importance on better understanding of the institutional economics of urban water supply particularly in the design of contracts and regulatory instruments.

Better approaches to providing water to urban poor communities would also have to be considered. Community based approaches to urban water supply, particularly in slum areas, is an effective model of service delivery. In this model, organized urban poor communities assume responsibilities and accountability for water retail operations. Reputational mechanisms, group pressure and credible threat of disconnection have been shown to be effective mechanisms in dealing with urban poor communities as the experience of urban poor communities in Manila and Phnom Pen have shown. NGOs have a comparative advantage in organizing urban poor communities and have also been effective in raising the profile of water issues among local politicians and should be supported in this regard.

Finally, improving the governance of existing public water utilities should be a key focus of water supply reform as 90% of all water delivered through networks in developing countries are provided by these utilities. Small investments in information technology solutions, performance based management, utilities benchmarking and staff capacity building through twining arrangements can go a long in way in terms of improving operational efficiencies. Beyond these, the creation of learning networks

among public water utilities, nationally and regionally, can serve as important platforms for training, role modeling, benchmarking and the creation of markets for reputation in water utilities performance.

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