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Utilities Privatization and the Poor: Lessons and Evidence from Latin America

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Summary. — The perception that privatization hurts the poor is growing and creating a backlash against the private provision of basic infrastructure services. At the same time, governments are finding themselves fiscally strapped, searching for ways to finance the large investments needed to expand services to the poor. In Latin America, a laboratory for privatization, evidence exists which sheds light on the privatization experience. This paper analyzes the channels through which the poor might either lose or gain from privatization, examines the evidence accumulated on what has actually happened, and then discusses the policy options available to decision-makers who want to increase efficiency while at the same time dealing with the infrastructure needs of the poor that have been identified as being important for their welfare. In that context, the issue of whether welfare considerations should form part of the regulatory approach to privatized services is examined. The paper's major aims are to shed light on the issue of who can and does benefit from privatization of utilities, and to guide policy-makers in the choices. © 2001 Elsevier Science Ltd. All rights reserved.

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1. INTRODUCTION

The number of countries in Latin America pursuing utility sector liberalization policies and that rely on increased private sector participation in the sector has grown dramatically in the last decade. These reforms have generated total (private plus linked government) investments of US$236.5 billion during 1990–98 in Latin America, almost half of all the investment in developing countries. While this is significant, it initially tended to be concentrated in the largest southern cone economies, Argentina, Bolivia, Brazil, Chile and Mexico—although Central America and the Caribbean are now having their own privatization phase. Moreover, while this represents only a fraction of the infrastructure needs in Latin America, it

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detracts from the overriding need to increase productive public investment levels as part of a renewed growth strategy in the region. [1]

Of equal importance is the fact that the increased role of the private sector in infrastructure is producing secondary distributional effects that have been too often underestimated or ignored by policy-makers pressed by the concern to attract private capital to address fiscal problems. The emergence of the distributional issue often stems from the fact that many of the improvements in potential access are combined with changes in pricing and financing rules under which the private providers operate. [2] Even when costs go down as a result of greater productive efficiency, improved technology or more effective uses of scale economies, direct subsidies or cross-subsidies tend to disappear, either as an explicit government decision for resource allocation reasons or as a natural consequence of market forces acting in a liberalized market.

While average nominal tariffs have declined with privatization in many instances, the need to raise the effective tariffs or fares for some user groups follows from the need to guarantee the financial viability of service providers and their incentive to expand service coverage where it is the most needed. In the process, however, it may increase the financial burden imposed on some groups of vulnerable households. This is a real concern since the private investment figure quoted earlier is equivalent to UScts15/day/inhabitant which the investors will somehow want to recover. [3] Balance that against the fact that according to a household survey of 12 large countries accounting for 71% of the population of the region, one-third of the population lives on less than US$2/day,a standard definition of poverty. [4] This simple arithmetic exercise clearly illustrates the potential conflict and social problems that can arise as a result of the legitimate needs of operators to recover their investments and the poor who naturally feel privatization should improve services at an affordable price.

The paper provides a *tour d'horizon* of the "utilities privatization" experience in Latin America, focusing on some outstanding issues surrounding its impact on the poor, and delves into the reasons why its benefits may be undervalued by some, especially the poor. [5] The idea is to take stock but also to help policy-makers improve the integration of social dimensions in the reform of their infrastructure sectors and the education of the voters on the extent to which this integration is taking place. The perception that privatization policies hurt the poor is widespread in the popular press and is an important factor determining the political sensitivity of the reform agenda. This is why it is important to document the real impact on the poor of sectoral policies in the infrastructure arena. One of the main points we want to argue here is that, in view of the weakness of the general welfare systems in most reforming countries, there is a need to integrate the social dimension explicitly in the utility reform process.

We address the following specific questions:

—How and when can the poor lose from infrastructure privatization?

—How to mainstream the measurement of the expected effects of reforms in the context of utilities privatization?

—Is there a case for a special short- to medium-run "infrastructure specific welfare policy" while a country gets its act together in putting together a more encompassing welfare policy?

—How can this overview help in drawing guidelines for a policy advisor to minimize the risks of losses by the poor from the privatization of utilities given that not all countries face similar circumstances?

2. CAN THE POOR LOSE FROM INFRASTRUCTURE PRIVATIZATION?

There is a widespread impression that infrastructure privatization has hurt the poor in Latin America—even if there are many examples where governments have been able to benefit the poor through increased private sector participation. Three stylized facts lead us to question a naive acceptance of the proposition that equates privatization with harm for the more vulnerable in society.

The first (stylized fact 1) is that infrastructure privatizations are generally part of a wider set of reforms and the status of the poor reflects the interactions of multiple policy factors. A series of studies of Argentina—a country that undertook an encompassing privatization process—points to the limits of such blanket statements. Relying on a general equilibrium framework which models the main interactions across markets resulting from reforms, Chisari, Estache, and Romero (1999) and Navajas (2000) show that, if anything, infrastructure privatization hurt the middle

class relatively more through a redirection or suppression of existing subsidies (stylized fact 2) and may have even benefited the truly poor by increasing access to services (stylized fact 3).

The second stylized fact is well illustrated by Colombia in a study by Vélez (1996). A careful study of its public subsidies in 1992 showed that 38% of all public sector subsidies (including health, education, housing and other public services) were, in fact, spent on utility services representing 1.4% of GNP. Of these 80% were spent in the electricity sector where the study found that these subsidies benefited mostly middle-income households. Subsidies in the water sector were more focused on poor households, but were still not particularly progressive. More recent evidence shows that the distributional impacts of these subsidies have not improved much since 1992. [6] The main effect of this type of subsidy is often to increase rather than decrease inequality. The suppression or the redesign of this subsidy thus offers the potential to help the poor.

The third stylized fact is that privatization, if designed and implemented properly, provides an opportunity to end the exclusion of the poor, perpetuated by many cash strapped public utilities. Indeed, in many Latin American countries, the very poor did not have access to utility services before privatization and generally did not benefit from service expansions. Privatization, however, has the potential to change this. This point is illustrated by the Chilean case where in 1988, 2% of households in the lowest two income deciles had access to electricity and 3% had access to telephones. A decade later, only 5.5% of the very poor households lacked electricity and 60% lacked telephone access. [7] For Bolivia, Ajwad and Wodon (2000) show that access to water is the only service for which the poor benefit as much as the non-poor from an expansion of the service. In all other cases (sewage, electricity, garbage collection, and telephone), the non-poor benefit more than the poor from a service expansion.

(a) *Microeconomic linkages*

Starting with microeconomic linkages, it may be worth highlighting that privatization can affect the actual costs faced by poor households through several channels, as summarized in Table 1.

(i) *Losing from joining the formal economy and paying a higher effective tariff?*

Any type of private participation is likely to increase substantially the effectiveness of revenue collection. If poorer households were not billed prior to the reform or informal connections to the service were tolerated, the actual payments of these households is likely to increase after the reform. [8] This will occur even if nominal tariffs do not change (or even decrease), since these households would have to actually pay for the service whereas before they paid nothing.

There are also examples of countries in which the poorest formally unconnected users get illegal connections from illegal providers and pay these illegal providers for services equivalent to those offered by the formal operators. In the Dominican Republic, for instance, flat fees are commonly paid by the poorest for illegal connections. The introduction of a formal operator concerned with cost recovery may simply provide the poor with an option, and it may generate competition between the privatized operator and the informal operator at the retail level which can end up cutting costs for the poorest, as seen in evidence from Guatemala and Paraguay. [9] The evidence of deaths in the Dominican Republic related to improper handling of wires by users and the informal connected shows that in the case of electricity, informal connections also pose a safety threat to the household and the surrounding community. [10] Therefore, even if the formalization of the service and the concomitant increase in expenditure ends up being a higher financial cost to the household, this impact may be compensated by the increased safety. In the water sector this may also be the case when, due to an illegal connection, there is a serious reduction in the quality of the water that reaches the household. [11]

More generally, the co-existence of informal and formal providers is often the result of inefficient management by public utility companies—which are unable to identify and incorporate their implicit customers—rather than a strategy pursued by poorer households to obtain free services. In fact, there is mounting evidence from Willingness-to-Pay surveys undertaken in Central and South America indicating that even very poor households would prefer to pay a reasonable bill in order to have a formal connection to piped water services than maintain an informal connection. [12] This is partly due to the uncertainty

Table 1. *Summary of microeconomic linkages between increased private sector participation in infrastructure and welfare of the poor*[a]

Side effects of privatization	Possible sources of increase in cost burden for the poor	Possible mitigating factors and welfare gains for the poor
The cost of increasing formality	Revenue collection and discouragement of informal connections are likely to be more effective and result in increase in effective price paid	—A formal connection, even at a cost, may be a true aspiration of vulnerable households —Safety likely to increase with the formalization of connections —Informal connection may have been more expensive —Reform can bring technology choices that lower costs
The cost of tariff level adjustments	Average tariff levels can increase, due to cost recovery requirements and need to finance quality related investments	—Increase in average tariffs depends on pre-reform price levels and the distribution of the benefits of private participation between stakeholders —Reform can cut cost significantly enough through improvements in efficiency or new technologies
The costs of tariff structure adjustments	Tariff structures likely to be reformed in ways which could increase the marginal tariff faced by a poor household	—Competition likely to decrease average tariffs and may also compensate for any tariff rebalancing that affects the poor
The costs of increasing the price of substitutes	Privatization may restrict access to some alternative services, especially if connection to public network is mandatory	—Access to other types of alternative services will not be affected if foreseen in contracts —Availability of communal services may increase as a result of privatization
The costs of increasing the price of complements	The cost of obtaining a connection to the infrastructure service is likely to increase substantially	—The cost of obtaining other complementary equipment is likely to be unaffected by privatization, but will remain high
The costs of improved quality of service	Quality of service likely to improve, but this may make network services unaffordable for the poor	—There is considerable evidence showing that poor households are willing to pay reasonable amounts to improve quality of service

[a] *Source*: Adapted from Foster (1999).

regarding the continuation of access to the service faced by a household that is informally or illegally connected. In other cases, being a formal customer of a utility, certified by the presentation of a water or electricity bill, may be necessary in order to obtain other state benefits or in order to proceed with bureaucratic processes within the state apparatus. For urban households who live in recently created shanty towns without proper land titles, a formal connection to a utility, even at a cost, may be a first step in the direction of formal ownership of the property.

(ii) *Losing from changes in the tariff level and structure?*

The inclusion of users into the commercial cadastre of the companies is only the most obvious way in which the poorest can be affected. Their situation may also be influenced by the increase in average tariffs that can stem from privatization. This is usually the result of the need to make the utility providers financially self-sufficient. Prior to reform, many utility companies do not charge the true cost of the service and the resulting financial deficit of this implicit universal subsidy is funded from government budgetary resources. Since one of the motivating forces for reform is often the reduction in fiscal deficits, privatization will usually be accompanied by a rise in tariffs in order to cover costs.

Privatization, however, does not always increase effective tariffs. The impact of a reform process on prices will depend on the pre-reform tariff level and pricing formula as well as on

how the benefits of privatization are distributed between stakeholders. In particular, who receives the financial compensation for the assets sold or concessioned depends on the tendering mechanism used to award the contracts or utility company. When one of the main objectives of the reform is to reduce the fiscal deficit, governments may be tempted to set a high tariff level and award the service to the private investor who offers the highest up-front or annual transfer to the government. In some respects, high tariffs in this case can be viewed as a tax on consumers to fund the fiscal deficit through a high sale value of the company. If it hurts the poor disproportionately, it can be viewed as the result of regressive taxation rather than privatization *per se*. On the other hand, if a company is privatized to the bidder that offers to charge the lowest tariff, then consumers would receive more of the financial rewards of the reforms. This effect may even result in a reduction of average tariffs.

There is evidence from a survey of 600 concession contracts from around the world that in most cases contracts are tendered for the highest transfer or annual fee, suggesting that governments tend to use the auction to address more immediate fiscal concerns rather than to address efficiency concerns which would more directly meet the need of the final users (Guasch, 2000). Some cases illustrate how other stakeholders, and in particular consumers, can gain from lower tariffs when the contracts are tendered according to this variable. In 1992, the water and sanitation services in the Buenos Aires Metropolitan Region were concessioned for 30 years. The investment commitments were of the order of US$4,000 million during the period of the concession. The contract was awarded to the company that offered the lowest tariff. As a result, tariffs were reduced on average by 26.9%. A few years into the concession there was a renegotiation process that resulted in an increase in tariffs of 13.5% due to the need to bring forward the investment plans and increase quality of service. The net result was still a drop in average tariffs after services were concessioned which benefited all clients, including the poorest connected customers.

Generally, competition and effective regulation should serve to lower costs and tariffs. The evidence from a General Equilibrium Model for Argentina shows that the indirect gains from effective regulation of the utility industries tended to benefit the poorest income groups relatively more. [13] While privatization itself tends to benefit the new owners and hence the richest, the effective regulation of the new "private" monopolies cuts tariffs to their efficient levels, cutting costs to other sectors of the economy, increasing demand for their outputs and generating additional demand for key labor inputs, including employment for the poor.

To the extent that privatization introduces competition, private sector participation may have substantial effects in reducing tariffs. In Chile, when the long-distance telecommunications market was liberalized in 1994, call prices dropped more than 50% (80% for large clients). A drop in prices of a similar magnitude occurred in 1998 in the mobile telephony industry when the Personal Communication Services (PCS) system was introduced and the number of mobile telephone companies increased from two to four. In the electricity sector, generating prices fell by 50% during 1988–98. This was due primarily to the arrival of natural gas from Argentina to fuel new Combined Cycle Power plants and, therefore, cannot be attributed directly to the privatization process. Retail electricity tariffs have not fallen by the same magnitude as generating prices—during 1988–98 they only fell by 25%—because competition in generation exceeds competition in distribution; specifically the vertical integration problem has meant that all the gains from generation have not been passed through to end-users (Bitran, Estache, Guasch, & Serven, 1999; Serra, 2000). In Argentina, the effectiveness of the restructuring process and the success of the introduction of competition was such that the wholesale price of electricity in Argentina dropped by 50% in the five-year period after privatization due to the intense competition in the generation sector after the entry of 21 new generators. Residential customers enjoyed a 40% drop in the five years after privatization (1992–97) (Estache & Rodriguez-Pardina, 2000; FIEL, 2000). In all of the cases we examined, the critical variable seems to be competition. Privatization is generally a pre-condition for competition for political reasons but is not the key factor in cutting tariffs. Competition, however, is.

Tariff structures may also change in ways that may be detrimental to some vulnerable groups and not only in poor countries. Tariffs can be differentiated along at least two dimensions, the category of clients and the quantity

Table 2. *Substitutes for private household connections to infrastructure services*[a]

	Energy	Telecommunications	Water
Self-supply	Collection of firewood		Collection of river water Construction of wells
Communal supply		Public telephones	Stand-pipes
Alternative nonnetwork suppliers	Kerosene Bottled gas	Resale of telephone services	Tanker supplies Bottled water Resale of piped water
Alternative network suppliers	Informal networks	Pagers Mobile telephones Voice mail services	Informal networks

[a] *Source*: Foster (1999).

consumed by an individual client. In the first case, pre-reform tariffs will usually (but not always) contain an element of cross-subsidy, either from commercial or industrial customers to domestic customers or from more affluent customers to less affluent ones (usually through the geographic differentiation of tariffs). On the quantity dimension, tariffs may contain some type of lifeline rate or rising block structure to reduce bills of low-consumption households. In some instances, tariffs do not include fixed charges in order to protect households with low consumption. In the water sector, where increasing block tariffs have been known to have disappointing effects, practitioners are now considering the use of uniform price with rebate designs in which a volumetric charge set equal to marginal cost is complemented by a fixed monthly rebate (or a negative fixed charge); this can be targeted to the poorest and can be set to generate enough, but not excessive, revenue while preserving marginal cost pricing. [14]

(iii) *Losing from changes in the prices and availability of substitutes and complements?*

An unexpected effect of privatization on the poor is related to the prices and availability of substitute and complementary goods. Substitute goods are those that provide alternative forms of energy, water, light or communication. Table 2 provides some examples for each of the utility services. It is ironic that in many cases, due to the shortcomings of public utility providers, the poor only have access to utility services through these alternative goods, which for the most part are provided by the private sector. Therefore, for many of these households privatization is not so much a transition from public sector to private sector provision, as a transition from informal private sector provision to formal private sector provision.

In general, privatization should be neutral with respect to the availability of substitute goods or even increase the options and availability of communal supply. Throughout Latin America, private operators are promoting the use of alternative technologies in the power sector. Renewable energy sources are the upshot of a public–private partnership in an increasing number of countries. Cooperative arrangements have been introduced by some of the private distribution companies in poor neighborhoods to increase the number of shared connections (see World Bank, 1995). The main exception has been in the water sector when reforms are accompanied by a legal requirement prohibiting self-supply and the resale of piped water and where residential units are obliged to connect to the formal public network. This was initially a problem in the Aguas Argentinas concession, where the need to reduce losses in the network led the private operator to end informal agreements for the use of less reliable connections in the poorest neighborhoods, allowed by the public provider prior to privatization.

Note that the end of the need to rely on substitutes may be good news for many poor households. Consider some figures on the price ratio between what poor unconnected urban households are paying water vendors compared to the price charged by the public utility companies. They provide a stark illustration of how the status quo in many utility industries does not benefit the poor and that the poor are willing to pay quite significant amounts to access utilities. Table 3 shows that poor

Table 3. *Comparing prices paid by water vendors and charges at public utilities*[a]

Country	City	Ratio of prices paid to vendor to public utilities tariffs
Colombia	Cali	10
Ecuador	Guayaquil	20
Haiti	Port-au-Prince	17–100
Honduras	Tegucigalpa	16–34
Peru	Lima	17

[a] *Source*: Garn (1993) cited by Tynan (2000).

households often pay over 10 or 20 times the price paid by connected households with regular service, thus highlighting the benefits reaped by these households if services are expanded as a result of privatization.

Finally, the importance of the complementarity between some goods can be underestimated. To begin with, it is worth noting that in many countries urban water is pumped to the apartments in most buildings. This means that the access to water depends on the availability of electricity. In fact, increased reliability and lower prices in electricity are a major determinant of improved and cheaper services in water. [15] But there is a second dimension to complementarity. When investment is required to connect to the network, privatization may have an adverse effect on the poor if households are legally required to connect to the network and there are no connection subsidies or credit facilities that reduce the large up-front costs that households must incur in order to connect. This is a critical issue in the water sector where connection costs can be several hundreds of dollars. [16]

(iv) *Losing discretion in quality decisions*

Finally, privatization will also affect the quality of service. This may have beneficial effects on poorer households if the pre-reform quality was inadequate, especially as regards the continuity of service. Privatization, especially if accompanied by the introduction of competition, may also spur more diversity in the types of services offered, some of which may be more closely tailored to the needs of poorer households. Quality improvements may also be costly and will thus be reflected in higher tariffs, which may hurt the poor. The balance between quality and tariffs imposed by the regulator on a private provider may be based on standards relevant for the average customer and may not be the adequate balance for poorer households.

In many instances, the benefits poor households derive from improved service provision may more than compensate for the impact on tariffs. This depends on the exact magnitude of the tariff increase, although the evidence shows that poor households are usually willing to pay substantially more for a reliable service than the pre-reform tariffs. For instance, during 1995–98, ESA Consultores of Honduras undertook several WTP (willingness to pay) surveys in Central and South America trying to measure households attitudes and valuations regarding water and sanitation services. [17] The main conclusions from these studies included:

—Where households are not connected there is a high willingness to pay for a connection to the public network.

—Usually these households spend a significant amount of resources for alternative low-quality supplies and are willing to pay to be connected. [18]

—When users are receiving minimal coverage, they are willing to pay more for uninterrupted service. [19]

—Where the quality of service is relatively good, households are willing to increase their monthly expenditure in order to reverse a deterioration of the service. [20]

—Therefore, the fact that the poor end up paying more post privatization may not be welfare reducing.

(b) *Macroeconomic linkages*

The macroeconomic linkages between increased private sector participation and poverty are mostly indirect as seen in Table 4. To the extent that additional privately financed infrastructure promotes economic growth, it will be beneficial to the poor (see Kraay & Dollar, 2000; Leipziger, 2001). In addition, if the reforms reduce the fiscal deficit, more resources can be allocated to better targetted public expenditure programs. The magnitude and sign of the above effects will depend on the counterfactual considered. That is, how much would the growth rate be without privatization and how would extra fiscal resources be spent? The difficult problems arise during the transition. Significant changes in relative prices throughout the economy needed to unleash growth can be very damaging to the least prepared segments of the population. Managing the effects of privatization on the relative price of public services is one of the purposes of safety nets.

Table 4. *Summary of macroeconomic linkages*[a]

Macroeconomic effect	Areas of potential loss to the poor	Ameliorating factors
Economic growth	Relative price changes for infrastructure services can influence consumption baskets especially where no safety nets are in place to address specifically the needs of the poor	—Over the medium run, increased private sector participation in infrastructure should contribute to growth which in turn tends to reduce poverty levels
Reduction in employment	—Workforce often reduced soon after privatization —Wages may also decrease for some of the workers during a transition period	—Depends to what extent poor households were employed by public enterprises, on the nature of the compensation provided to workers laid-off, and labor market's ability to generate new jobs
Reallocation of public expenditure	—Reduction in overall subsidy allocation during transition as a result of fiscal adjustment may reflect lower priorities for privatized utilities	—"Privatization revenue" and better targeting may ease financing of the needs of the real poor

[a] *Source*: Adapted from Foster (1999).

A second and more direct effect might be the reduction in employment associated with the privatization of a public utility company. Both theory and evidence point to a significant reduction in employment after privatization—although there is also growing evidence, in the Argentine and Mexican transport sectors for instance, that in some sectors, employment will eventually rebound. In addition, wages may also be reduced. It is not possible, however, to make any general assertion regarding these effects since they will depend not only on the employment structure of the company, but also on the flexibility of the labor market and on the relative wages in the utility and outside. Chisari *et al*. (1999), for instance, show that much of the unemployment increase that occurred during the implementation of the privatization of Argentina's utilities could best be explained by the rationing of the credit market which prevented the adjustment needed to absorb excess labor.

Finally, it may be worth pointing out that changes in subsidy policies may be intended to help the poor but may also cause damage during the transition. It is quite common that a key companion of a privatization policy is fiscal adjustment. Most fiscal adjustments end up reducing subsidies. This cut in subsidy is commonly handled in a way to keep matters simple, favoring cuts across-the-board. This lack of discrimination is a potential concern for the poorest (*viz*., even if they only get a modest share of these subsidies it may account for a larger share of household income), and is often a high price to pay to achieve the longer run gains of reform.

3. MEASURING THE EXPECTED EFFECTS OF REFORM

Regrettably, there are no quantitative rules that guide policy-makers, essentially since the effects of privatization on the poor will depend on the particular situation of a country and the details of the reform process. Nevertheless, as a first step, policy-makers should try to ascertain and measure the potential impacts of the reforms on the poor. This would entail trying to answer quite specifically the following two main questions:

—*Who is benefiting from status quo implicit and explicit subsidies? Are they poor?* We have seen that many of the studies of the effectiveness of targeting prior to privatization suggest that the poor are not the main beneficiaries. Therefore a successful privatization program for water or electricity must measure the likely distributional impact of changes including changes to subsidy designs and programs. This requires an analysis of the tariff structure, implicit subsidies and explicit subsidies of the current service provider and a socioeconomic assessment of the status of the benefited households. [21]

—*Are the poorer households connected to the service?* This is a crucial question that needs to be addressed in order to clarify the potential impacts of the reform process on the

poor. If not, are they paying informally? What is the true economic value of access, taking into account social benefits or externalities?

Ideally the answer to these two questions would entail a comparison of the welfare of the poor with and without reform. At least in principle, the welfare impacts can be measured using a simple consumer surplus framework. But this is not just an academic exercise. Generating the information serves two purposes. First, it can be used to inform public opinion regarding the true effects of the privatization process. Second, it can generate the information needed to design the policy to counter any undesirable social impacts of the reform.

Why then is it that some of the most creative and politically astute governments in the developing world have not measured these impacts in order to better inform their electorate and better help their poor. Whereas in the initial round of reforms, governments might have been either genuinely or cynically unaware of distributional concerns, this is no longer likely. While we cannot rule out the interplay of some political economy factors (including potentially thorny issues regarding the relative political strength of winners and losers), the reality that gains take time has unfortunately led some reform actors and their advisors to underestimate publicly the distributional consequences. On the other hand, even the best-intentioned policy-makers have faced difficulties in assessing their options simply because they do not have the basic information needed to consider policy tradeoffs. In this respect, the main obstacle is the *weakness of the data* available to evaluate the relationship between infrastructure provision and the poor. To measure the microeconomic impacts, ideally a researcher would need a data set that contains:

—household level observations on a wide range of socioeconomic variables;
—information on expenditure and *physical* consumption of utility services; and
—information on households not connected or informally connected to services.

These data would permit the simulation of the welfare impacts of different tariffs, subsidy and connection policies related to reform. For example, rising block tariffs might be proposed as a way to harmonize distributive objectives with economic efficiency and financial sustainability of the service provider. The unit price of the service would be cheaper for the first units of consumption, up to the level considered sufficient for the basic needs of a poor household. All users benefit from this cheap tariff. Consumption in subsequent blocks could then be charged at its true economic cost or higher. The efficiency and effectiveness of these types of social tariffs will depend on the correlation between household physical consumption and household poverty levels. In order to evaluate this relationship—so that the exact size of the first block can be established fairly—a database which records for each household both socioeconomic variables and *physical* consumption of utility services is required. This approach has been adopted for water services in Cartagena, Colombia—where in 1998, the maximum rate is about seven time larger than the first block rate—and in Panama City where the tariff differentiation is done by type of users: social, residential or commercial.

More generally, such a household level database would be an extremely useful tool for calibrating impacts and evaluating designs. Such a database is rarely available, however, even in developed countries. Most countries undertake household level surveys—many following the Living Standards Measurement Survey (LSMS) methodology sponsored by the World Bank—which are valuable instruments to measure poverty, evaluate impacts of different social programs and design well targeted subsidy schemes. As regards the infrastructure sectors, however, these surveys have some serious shortcomings. [22] LSMS records a large number of socioeconomic variables which can be used to ascertain the poverty level of the sampled households. As regards water usage, all surveys incorporate a question on the amount the household spent on water services during the last month or the last payment period, although they do not tend to record the volume of water consumed. [23] As such, the only way that physical water use can be inferred from the information collected in the LSMS is to transform the monetary expenditure into a physical consumption variable by applying the corresponding tariff structure to the household's declared water bill.

The deficiencies with the LSMS methodology as regards the infrastructure sectors can be illustrated in the case of water in Panama where a conscious effort was made to anticipate the needs of the poor in the preparation of privatization. Experience with this approach revealed that the expenditure information was

deficient in a number of respects, which made it very difficult to draw reliable inferences about the physical volume of consumption. Shortcomings included:

—the fact that there are multiple tariff structures applied to residential customers and that the survey did not contain any information on which tariff applied to which household.

—the absence of a variable identifying whether the household had measured water supply. Therefore, it is impossible to know whether the expenditure transformation gave actual or imputed water consumption.

—the quality of the expenditure data can be poor, e.g., where the household was not able to produce a recent water bill, the estimate is based on memory. In these cases, it is not always clear whether the estimated consumption included the charge for refuse collection, which in the case of Panama is billed together with the water service.

To illustrate this point, consider findings of Gómez-Lobo *et al.* (1999) concerning the quality of the water expenditure data of the 1997 LSMS for Panama. In order to gauge how substantial the divergence might be between actual water expenditure and that reported in the survey, histograms were plotted comparing the frequency distribution of expenditure in the survey as against the client database of the Panama water utility, IDAAN. The resulting distributions for the standard residential tariff and the special social tariff showed such wide variation that they appear to come from widely disparate distributions.

Fortunately, these deficiencies can be eliminated by relatively inexpensive changes to the survey design and implementation. [24] Until that is done, however, there will be a lack of suitable data to analyze the social impacts of sectoral reforms in the infrastructure sector. There is still much that a creative analyst can do to try to answer the questions posed at the beginning of this section, even if only poor or incomplete data are available. Komives, Whittington, and Wu (2000) show how to squeeze as much information as possible from these LSMS. But more needs to be done. Foster (2000) suggests an expansion of the standard questionnaires used to collect the required information—and provides some guidelines as to how to go about it—but this collection is impossible without a political commitment that may be harder to achieve in view of the stakes for some of the beneficiaries of the existing policies.

4. IS THERE A CASE FOR A SPECIAL WELFARE POLICY FOR INFRASTRUCTURE?

To motivate the discussion, it may be useful to see how the potential costs of not having a special welfare policy work out in practice with the help of a recent crisis in Argentina. In 1995 the water and sanitation services for the Province of Tucuman in Argentina were concessioned to a consortium of Compagnie Generale des Eaux and a local investor for 30 years. To fund the required investment program, the concessionaire bid a tariff increase of 68%. The tariff increase would be immediate and would affect all customer groups equally in a population with a significant share of urban and rural poor. With hindsight, this last characteristic of the winning bid was probably a misjudgment. The tariff increase proved very unpopular and was considered unjust by low-consumption users. The situation deteriorated with a series of episodes of turbid water. The result was a nonpayment campaign by consumers which provoked a financial crises for the concessionaire. Provincial elections brought to power a new administration which was much more hostile to the concession program. At first the authorities and the concessionaire began negotiating the contract. One initiative was to introduce a special tariff for low-income users and a system of rising block tariffs for regular customers. The negotiations did not prosper, however, and the case ended in international arbitration.

This example illustrates the challenges of addressing social issues in the context of privatization. Although the causes of the failure of the Tucuman water concession are many and complex, perhaps earlier attention to the social and distributive issues related to the tariff increases would have increased the chances of success or an explicit subsidy program would have helped diffuse the explosive situation. The main problem may have been, however, that the government had not addressed the poverty issue as part of its general welfare program and was trying to get the job done through the renegotiation of the design of the concession.

A key question is whether as a matter of principle, the linkages between poverty and infrastructure in general should simply be viewed as just another manifestation of poverty generally and, as such, should be tackled through the general welfare system? The Pareto-optimal answer is yes, but we live in an

imperfect world. Therefore, the more pressing question is: given the unlikely prospect of a general welfare policy in most countries, if analysis raises concerns regarding the impact of reforms on the poor, is there a real case for welfare policies in the infrastructure? In short, are the "fuel poor"—a term used in the United Kingdom to refer to vulnerable households that underconsume energy resources—any different from the "general poor"? [25]

Unfortunately, linking welfare programs to changes in the utility industries is quite complex. First, it is quite difficult to isolate the effects on the poor of changes in utilities from the effects of other simultaneous policy changes. For example, it is not uncommon for privatization to raise tariffs faced by poor households, but other changes in the economy (possibly indirectly linked to the privatization process, such as higher economic growth) may compensate for this effect. Second, welfare programs aimed at utility consumers would not reach the unconnected poor, which in some cases can be a substantial proportion of vulnerable households. An alternative is to consider more general poverty alleviation programs which may be more efficient in their overall net impact on vulnerable households. This seems promising but hard to implement.

This discussion begs the recognition of a basic issue. Once social objectives have been recognized as important and once the limits of general welfare systems have been recognized, should utility regulators have social and welfare objectives in their statutory duties? Some critics, such as Vickers (1998), argue that "the advantages of regulators having discretion to pursue distributional ends are outweighed by disadvantages of capture, influence activities, uncertainty and unaccountability. Regulators, perhaps like central bankers, should have narrow objectives." At first then, it would seem that the distributional impacts of utility reform should be tackled through more general welfare policies aimed at alleviating poverty, and therefore should not be addressed directly in the utility industries nor should they be part of the concerns of the regulator.

Before looking into the options available to rely on utilities to implement the focused objectives chosen by politicians, it is worth revisiting a question currently haunting many reformers: how realistic is it to expect that the government will be able to put together general welfare policies which will support privatization policies.

Traditional economic wisdom is to let the government take care of the poor. Conventional public economics suggests that the most efficient tax/benefit system would be one based on lump-sum transfers. This assumes that governments have the ability to not only raise taxes without distorting resource allocation decisions but that, in addition, they know exactly who the poor are and how to reach them. In most developing countries, the tax system is usually quite inefficient and unable to raise resources at a low enough cost to enable sufficient funding of a welfare system. While distortions in raising taxes and transferring income are difficult to avoid, taxes should be introduced where they cause the lowest welfare loss. The rule of thumb is that distortions should be applied to goods and activities with low demand or supply elasticities—known as the Ramsey pricing rule. On the demand side, this can be quite dramatic since the poorest often are likely to have few reasonable alternatives to the services offered by the utilities and hence social and efficiency considerations would conflict.

To decide how much to rely on the general welfare system to address the need of the poorest in the infrastructure sector, it is worth considering the cost of public funds—a measure of the efficiency of the tax system. The cost of public funds is the welfare loss that occurs when an additional unit of tax is raised to fund an expenditure program. It is positive because taxes tend to distort some resource allocation decisions in the economy. [26] Most developed countries have costs of public funds between 0.15 and 0.35, meaning that to raise one additional dollar in taxes costs the economy US$1.15–US$1.35. The higher this cost, the more a welfare program funded through utility prices is likely to be the way forward. Indeed, while long-term efforts should be geared to improve the welfare system, addressing poverty problems directly in the infrastructure sectors may well be more efficient in a second-best sense than relying on the current welfare structure in many countries.

A new approach could be to make the utilities take care of the poor. The common practice of using two-part tariffs in utility industries opens up the possibility of following a Ramsey recipe. The connection and disconnection elasticity for utility services is probably very inelastic for a broad range of the income distribution. Therefore, taxing and transferring income through the design of tariffs and in

particular through the design of the fixed charges of utility bills may well be very efficient, at least for some limited range of tax values. Fixed charges in utility tariffs will be very close to true "lump sum" taxes if the disconnection elasticity is low, which is probably the case for most households. Therefore, implementing welfare programs through a transparent cross-subsidy in the utility rates, especially if undertaken such that only fixed charges are affected, may well be more efficient than a general poverty alleviation program undertaken with general tax funds.

This has implications not only for the efficient design of utility subsidy programs—where taxes or transfers should be based on the fixed charges of tariffs as much as possible—but it also opens up the possibility of using this vehicle for other poverty alleviation programs. [27] Indeed, tailoring welfare programs to the utility industries allows benefits to be linked or conditioned on the consumption of utility services. At first, this may seem suboptimal, given that unconditional cash transfers, such as raising the minimum wage or increasing benefit payments from other poverty alleviation programs, should increase the utility of households, since they are then free to spend the extra resources as they freely wish. There are several possible reasons why benefits in the utility industries should be linked to the actual consumption of the services.

First, policy-makers may be interested in guaranteeing that households *consume* a minimum amount of a service rather than simply guarantee that they have sufficient resources to purchase the service. This argument may be relevant where individual consumption provides important social externalities, such as the public health benefits of water and sanitation. It is probably less relevant for electricity and gas. Another type of consumption externality occurs in the telecommunications industry, where the value of the service to all users increases with the aggregate number of users. In these cases, the social value of consumption (or connection in the case of telecommunications) is higher than the private value. [28] Therefore, welfare transfers linked directly to observed consumption may be preferable to unconditional transfers to vulnerable households.

Second, as mentioned in Serra (2000), it may be that the consumption of certain goods by poor households enter directly the social welfare function of society. [29] In other words, the general public may care about the actual consumption of certain goods by poor households, not necessarily their income level. Therefore, equivalent cash transfers would not be a perfect substitute from a social point of view. This situation may also determine the way vulnerable groups articulate their welfare demands, since a petition for subsidies directly linked to utility services may have more political resonance than cash transfers.

Third, introducing distributive considerations into a reform process, perhaps by designing a special welfare program, may be unavoidable for political reasons. The success of the privatization process may depend on such a policy, even when strict welfare considerations may not justify it. This approach to welfare policy design may not be very recommendable since it risks generating public transfers that benefit particular interest groups and not necessarily the most needy. As the experience in Tucuman suggests, however, disregarding social issues altogether can be a very risky strategy for a reform process.

In summary, there is a case for adverse distributional effects to be addressed directly in the utility industries with measures aimed at lowering the financial burden on vulnerable households that consume the services. But, this does not necessarily entail that a utility regulator designs or even administers the welfare program. On the contrary, it is advisable that as far as possible these programs be integrated into the general welfare and poverty alleviation policies of a government, thus maintaining coherence with complementary poverty reduction efforts and to guarantee efficient and encompassing eligibility assessments. The Chilean water subsidy scheme and the Colombian residential utility subsidy provide two examples of designs in which policies in the utility industry are integrated successfully with more general welfare policies of a government. [30]

5. GUIDELINES TO PROTECT THE POOR

Recognizing that social issues should be an integral part of a successful privatization strategy in the utility sector, what would be some of the guidelines that policy-makers should consider when designing reforms? The first task is to generate the needed information to make an informed judgement. Armed with this knowledge, it is possible to distinguish the

groups affected, characterize the nature of the impact and devise effective and efficient counter measures. For possible policy actions, three broad spheres of public policy can be distinguished: the privatization strategy, regulatory policy and social policy. These three areas should be viewed as complementary, although the timing and institutional responsibility may be different in each case. Privatization policy and social policy actions have to be considered early in the reform process and will probably be the task of institutions distinct from the regulatory agency but they need to be specified first to ensure that the regulatory concerns are consistent with the privatization and social goals. Any future changes in policies and social priorities should also be anticipated and regulatory rules providing guidelines to address this kind of situation are likely to be part of the more general rules regarding renegotiation of the commitments made to the private operator at the time of privatization. [31]

(a) *Privatization strategy*

Evidence shows that, in general, competition is good for all consumers, including the poor. This reinforces the need to undertake reforms that promote competition, such as vertical and horizontal separation, elimination of exclusivity clauses in contracts and laws, and the development of a regulatory "culture" that promotes competition. These recommendations are also worthy from a strict efficiency viewpoint, a case where efficiency considerations and welfare considerations coincide. The only drawback that competition may have is that it forces the elimination of cross-subsidies, which may hurt the poor. But, the impact of the general drop in tariffs or the availability of services which usually accompanies competition may more than compensate for the effects of the elimination of cross-subsidies. Furthermore, it is still possible to maintain internally generated cross-subsidies, even in the face of competition through the creation of a universal welfare fund or to use Chilean-style targeted subsidies outside of the tariff formula. [32]

Another area which deserves careful attention is the investment and quality targets that are set at the time of privatization, especially in a concession contract as part of the definition of the service obligations imposed on the operators. It will often be the case that poorer households are not connected to the service; therefore, the connection targets set prior to privatization may have an important impact on the poor. If tariffs are sufficiently high so that it is profitable to serve poorer households, then a private company should extend services to these households out of self-interest—as happened in the residential telecommunications market in Chile, for example. But, if the economics from the viewpoint of the operators make it unprofitable to serve more vulnerable households, then it may be convenient to specify investment targets in the contract. These connection targets must specify the geographic area or the type of customer to be reached. In the La Paz-El Alto water concession there is an explicit number of new connections mandated for water, with specific neighborhood targets in fringe areas. There are percentage coverage targets for sewerage. In Monteria, Colombia, specific water and sewerage expansion targets were set and monitored similar targets can be found throughout Latin American concessions. [33]

The setting of quality standards also impacts on the poor. The recommendation is to avoid setting targets based on developed country benchmarks that may make the service too expensive for poorer households. This means leaving some flexibility in the contract to allow the company, the regulator and users in the future to agree to a different price/quality combination when it is convenient. This does not imply that quality standards should not be set in the contract, which may give an incentive for a company to reduce cost by eroding quality. It suggests rather, leaving the door open to allow, in certain specific circumstances (for example, when the representative leaders of a community demand it), the company, with due sanction from the regulator, to alter the price/quality combination for that community to improve efficiency within the same cost parameters. [34]

It is important to eliminate any legal obstacle that may prevent more innovative or alternative projects from being implemented. Although it may be the task of the future regulator to promote such projects, it is important to avoid at the outset any legal constraint in the contract which may limit this type of initiative in the future. One way of doing so is the inclusion of the clear specification of the universal service obligations (USO) in the scope of responsibilities of the monopolies. USO is an obligation imposed on the provider of infrastructure services. It ensures anyone in their service area the access to an

affordable minimum level of a standard quality service bundle. This does not mean that the provider has to deliver access to the infrastructure network which would be a more specific requirement. This distinction is important in the case of water, for instance, where alternative technologies can provide more effective ways of meeting the needs of the poor. But this requires more flexibility than most large utilities are typically willing to offer. One of the best known successful examples is the condominium system adopted in the Northeast of Brazil for the delivery of sanitation services. It is essentially a negotiated co-ownership agreement for a small community of users of local public services. The negotiation allows the adjustment of preferences to the form of supply of the service which explains why very different sewer systems can co-exist in cities such as Fortaleza or Recife. [35]

A major source of concern for potential investors is that sometimes "affordable" means at a price that may not necessarily cover the cost of delivering the service. Moreover, the precise definition of the range of services to be covered through the obligation varies by sector and country. In addition, who the main beneficiaries of the USO are can vary. USO obligations may address spatial or geographical differences, specifying for instance that rural areas or inner cities are to be serviced just like richer urban areas. The USO is then said to be aiming at benefiting high-cost customers. It can also be focusing on criteria more related to the income level of the potential users or to specific demographic or institutional characteristics (retirees, schools, hospitals). Low-income groups, for instance, cannot necessarily afford the connection costs to a water main at prices that other income groups can afford. Moreover, they typically cannot borrow either—because of capital market imperfections in many developing countries—which further limits their access to these services.

Attention should also be paid to the way a contract or company is tendered in the privatization process. As mentioned earlier, the variable chosen to award the company or contract will determine the distribution of benefits between all stakeholders, including poor users. Choosing a tendering mechanism is a complex issue, which should cover many considerations. As regards the poor, however, the following rule of thumb should be borne in mind: if poor households are connected to the service, then they will benefit more if tariffs are chosen as the competitive variable, while if they are unconnected, then choosing investment commitments as the tendering variable has a higher potential of benefiting the poor.

(b) *Regulatory policy*

Earlier we argued that it would be theoretically best that the regulator's duties did not include distributional or welfare objectives. Practically as well, we have little evidence that the governance of regulatory agencies exceeds those of national governments in a political economy sense. But, there are actions and decisions within the traditional sphere of activities of a regulatory agency that can enhance the benefits that poorer households can obtain from utility reform. There is merit in strict regulatory rules (that are enforceable) due to their higher predictability and lower susceptibility to corruption. Greater discretion granted to the regulator may, however, provide some margin in tariff design between, say, price- quality mixes, that can benefit the poor. [36] On the margin, therefore, regulators can make pro-poor decisions, if they are so motivated and if their mandate allows. Once these margins become too large, however, it is best to place decisions in the hands of policymakers.

Regulators should also be reasonably open to new and innovative approaches to solve investment and operational issues related to poorer users. These include, for example, community participation in the construction and operation of networks which may reduce their cost, the supply of communal services, or even permitting small-scale private vendors or networks in certain circumstances. This is the case of *aguateros* in Paraguay. There are hundreds of small-scale private service providers of water services, including relatively large companies supplying as many as 800 connections (Solo and Snell, 1998; cited in Ehrhardt, 2000). Another example is the telecommunications micro-entrepreneurs in Peru, who turn regular cell phones into mobile pay phones by charging a mark-up over the normal tariff, and who are often seen in public gatherings wearing brightly colored hats or clothes (Melo, 2000). These activities should not be suppressed by a regulator provided that they cater to an underserved market segment.

Perhaps the most effective means that a regulator has, however, to benefit lower income

users is to promote competition in the services where this is possible. Besides its impact on tariffs, competition will increase the range of available goods and services, often generating services specifically tailored to the needs of poorer households. A clear example was the introduction of a "calling party pays" system for cellular telephones by the telecommunication regulator in Chile. The introduction by telephone companies of cellular telephones based on the use of pre-paid cards together with the above regulatory decision has prompted an accelerated increase in the access of poorer households to cellular telephony. These households do not have the credit record to access more traditional credit plans and usually favor pre-payment methods which allow them to have a strict budgetary control over their expenditure. Thus, this system is especially attractive to poorer households. In Peru, pre-payment cellular users account for over 60% of cellular clients (Melo, 2000). The private sector may also develop other services which may be attractive to poorer users, such as special voice messaging services which can be accessed from any telephone (including a pay phone).

Besides promoting competition, a regulator can also allow and even promote the use of new and innovative tariff structures which may benefit low-income users. Ideally services should be offered as an optional or menu choice to users. Optional, or menu tariffs, have the advantage that users can decide what is the best choice for themselves and thus reduces the informational requirements of the regulator when it comes to deciding the best quality or service standards. Aguas de Illimani in Bolivia, for example, offers households a choice between the regular connection fee for the water service or a lower fee provided households supply their own labor for the connection activities (Komives, 1999 cited in Ehrhardt, 2000). In Peru, companies offer "popular lines" in the telecommunication sector, which have no initial connection fee, only a flat monthly rate has to be paid, but monthly traffic is limited (Melo, 2000). This may be an attractive service for some poor (and even non-poor) households with low-telephone usage. By offering this service as an option, users can self-select the option which is best suited for them and could be an attractive way to overcome the obstacle posed by high connection charges for poorer households.

(c) *Social policy*

If there is an overriding social concern regarding the impact on the poor of a reform process, then special measures can be introduced through the welfare system. It was argued above that there is a case for special welfare programs in the utility industries, although this does not necessarily mean that it should be administered by the sectoral regulator. Although the optimal design of a subsidy scheme goes beyond the limits of this paper, we attempt to give some criteria that may be useful to consider if special welfare programs are to be created. All subsidies, including implicit ones, can be classified according to: (i) the source of the funding, (ii) the eligibility criteria used to identify beneficiaries, and (iii) the good or service being subsidized.

The funding of subsidies can come from a variety of sources. First, governments can provide the funds from general tax revenues. This is quite typical in the case of urban transport and "negative concessions" as those awarded for many toll roads. Second, they can be raised by charging certain customers a price higher than the cost of service. This has been quite standard for public utilities in Latin America and is likely to continue to be common for private utilities when governments cannot make credible commitments to finance subsidies. Third, a fund can be established whereby all companies must make a contribution according to some proportional rule (e.g., proportional to the number of customers that each company serves or proportional to each company's revenues). Companies might still charge a price cost markup on customers in order to pay for this contribution. Unlike the second case, however, the company would be free to decide which prices and which customer to charge. In Argentina, a sector-specific levy finances the expansion needs in electricity distribution and transmission in the poorest provinces but the telecoms sector is the one in which subsidies are most commonly funded out of sector specific funds or fees as in various Central American countries. [37]

The eligibility for a subsidy can be determined according to some categorical variable, geographical zones, or directly through means testing. Argentina has subsidies benefiting specific groups (e.g., pensioner or students), and Chisari and Estache (1999) show that

while the intended categories benefit, many others do also. As mentioned earlier, in Colombia, a geographic subsidy has consumers taxed/subsidized in their utility bills according to a national socioeconomic classification system based on neighborhood characteristics. It is a consumption subsidy funded by price cost margins over some consumers, although an important part of the subsidy is also funded by transfers from central government. Vélez (1996) has shown that, while intended, in Colombia, the subsidy is not well focused on the poor. Rather it is neutral in terms of its impact on income groups. In general, in spite of the fact that they are easier to implement, categorical and geographic subsidies have major drawbacks. They will incur higher errors of exclusion (poor customers that should be eligible are not chosen) and inclusion (relatively wealthier households are erroneously deemed eligible) than a means-tested subsidy. [38]

Finally, once the specific type of subsidy has been decided, its object has to be picked as well and a criteria must be followed to avoid mistakes. Subsidies can be classified according to the good or service which is the object of the subsidy. In utility industries, this can either be the consumption of a utility service or the connection costs to the network. Ideally, the subsidy scheme should be directed to those goods with the highest difference between willingness to pay and costs. There is a strong presumption that in Latin America at least this would indicate that connections or network expansion subsidies should be favored over consumption subsidies. This is because the capital market failures have a stronger impact on connections. Indeed, while the willingness to pay for a connection is quite high—it is almost impossible to borrow to pay for this connection. [39]

6. CONCLUSIONS

The main conclusions of this paper are that:

—It is a myth to believe that *status quo* arrangements in the utility industries (i.e. public provision) are beneficial to poor households. Indeed, many poor would benefit from the service expansion that may be possible through privatization and which would allow them to avoid the high costs of alternative sources.

—It is a myth that existing subsidies benefit the poor; the middle class tends to be the main beneficiary.

—It is a myth that poor households are not willing or able to pay for a regular and reliable service. Many of these households currently pay much more for a deficient service from private vendors (in the case of water) or alternative sources (in the case of energy) than they would from a public provider.

—It is a myth that there is no role for government once the private sector takes over utilities services. The way markets are restructured, the way competition is introduced and maintained, and the way regulatory commitments are implemented determine whether privatization is beneficial to poor households.

—The weaker the regulatory structure, the less likely it is that the concerns of the poor will be accommodated in public policy decisions.

—With stronger governance and clear political support to social policy comes innovative reform—e.g., Chilean water subsidies that are targeted and support minimum usage or concession contracts that mandate access to rural electricity or phones, awarded to the lowest bidders for public subsidies.

What is really needed is not only a political commitment to privatize, but also institutional and regulatory reforms that make the poor better off as a result. *If pre-privatization policy on expenditure incidence was poor, unless something is explicitly done, it will be weak post-privatization as well. Privatization is not a substitute for responsible, redistributive welfare policies*. Welfare discussions are complex, especially interhousehold welfare discussions. Moreover, welfare options open up the possible, but not much more. Policies leading to *potential* welfare gains abound in economics. Policies leading to real welfare gains are a much rarer commodity. Whether a policy achieves a real gain consistent with its potential depends on its design, its implementation and, in particular, the political commitment behind it.

NOTES

1. See Leipziger (2000) or Canning, Fay, and Perotti (1992), for instance.

2. While in most sectors (with the exception of power generation) service concessions tends to be the norm and there is seldom a transfer of ownership of assets to the private operators, policy-makers, academic and casual observers continue to talk about privatization. This broad concept of privatization is the one retained throughout the paper.

3. This back of the envelope result is obtained by dividing the average daily investment made during 1990–98 and dividing it by the 1998 population.

4. Wodon (2000), including a detailed survey of recent studies on the topic.

5. See Sheshinski and Lopez-Calva (1999) for a recent survey of the more general linkages between privatization and poverty. See also Estache, Foster, Wodon, and Wellenstein (1999).

6. This observation is also documented by Benitez, Chisari, and Estache (2000) for Argentina for all utilities, by Wodon (2000) for electricity subsidies in Honduras and by Foster, Gómez-Lobo, and Halpern (1999) for Panama for water subsidies.

7. See Contreras and Gómez-Lobo (2000).

8. The evidence suggests that illegal or informal connections are much more common among poor households and therefore the implicit subsidy from nonpayment is bound to be progressive. For example, Vélez (1996) estimates that the implicit subsidy from nonpayment by informal or illegal connection in the main urban centers of Colombia in 1992 accounted for 6% of all subsidies in the electricity sector and 24% of all subsidies in water and sanitation. In the gas sector, whereas formally connected households paid a surcharge over costs, nonpaying households received an implicit subsidy. Overall, close to 9% of all subsidies in the gas, electricity and water sector in Colombia distributed in 1992 were accounted for by illegal connections or nonpayment. Furthermore, the distribution of this subsidy was highly progressive with more than 72% and 73% of the subsidy benefiting households in the five poorest deciles of the income distribution in the electricity and water sector, respectively (with close to 20% of the subsidy in each sector benefiting households in the first decile). The elimination of this implicit subsidy could have a negative effect on poor households if it is not compensated by other measures.

9. Solo (1999).

10. Estache (2000).

11. The crucial point in this argument is whether the household is aware and values the extra safety and health benefits of a formal connection. If this is the case then the household would presumably be willing to pay for a formal service. If the household does not value these benefits, however, then it is a public health concern which may justify some type of subsidy for the service.

12. Walker, Ordonez, Serrano, and Halpern (2000).

13. See Chisari *et al.* (1999).

14. See Boland and Whittington (2000), for more details.

15. Arguably, a privatization process may even be beneficial to the poor if reform promotes the development of a more dynamic and productive industry for these complementary goods. As such, privatization may increase the availability of low-cost durable goods for poor households.

16. In Buenos Aires for instance, the concession contract charged new customers the cost of the connection plus part of the cost of expanding the secondary network, which totaled between $1,100 and $1,500 per connection. The operator was allowed to recover its investments in two years. Many unconnected customers were in areas with an average household income of about US$245 a month, i.e. among the poorest, and were being asked to contribute almost 20% of their income to these complementary investments.

17. The cities and dates of these studies are: Honduras—Tegucigalpa (marginal neighborhoods), 1995; Nicaragua—Managua (marginal neighborhoods), 1996; Venezuela—Caracas, Barquisimeto, Mérida (all the population), 1996; Guatemala—Guatemala City (marginal neighborhoods), 1997; Venezuela—Caracas (marginal neighborhoods), 1997; Panama—Panama City and Colon (entire population), 1998.

18. For example, in Tegucigalpa, in 1995, unconnected households spent an average of \$10 a month for 3.7 m^3 of water. This expenditure represented 7% of household income for a volume that is significantly below the recommended minimum of monthly basic consumption of 15 m^3 . These households could reduce their expenditure and increase their consumption if connected to the public supply network.

19. Households in marginal sectors that were connected but did not receive a daily service, were willing to pay \$4.50 per month for a daily 4 h service. That represents 3% of average household income and is three times higher than the tariff they paid at the time (\$1.50). Similar WTP results were found in the other cities.

20. In Caracas, for example, households were willing to pay up to three times their tariffs at the time to maintain the quality of service.

21. For a study in this direction see Gómez-Lobo, Foster, and Halpern (2000) where an analysis of the impacts of current subsidies was undertaken for the Panamanian public water supplier.

22. See, for example, Gómez-Lobo, Foster, and Halpern (1999) for an analysis of the problems of the LSMS surveys related to water and sanitation.

23. Other water-related questions in LSMS include the source of water supply, the average number of hours a day in which a dwelling receives water, and whether there is a sewerage connection. Other questions that are sometimes included are the distance of the dwelling to the water supply, location of the tap, and other characteristics of the water and sewerage services.

24. See Gómez-Lobo *et al.* (1999).

25. It may also be worth wondering if the special treatment to be granted to the fuel poor is based on society's judgement that access to utilities is desirable from a more "philosophical" viewpoint—a merit good argument in the public finance literature—or is it based on more technical assessments of the needs of the poor since this would have to influence the design of the privatization strategy since the valuation of the activities are no longer based on commercial or social criteria alone.

26. A common source of distortion influencing the opportunity cost of public funds arises in capital markets because the financing of an expenditure program may end up crowding out private investments. The percentage difference between the present value of the stream of consumption that the private investment would have yielded and the present value of the consumption allowed by the expenditure program is one way of measuring the deadweight loss of a specific program. More "macro" measures are also used in the literature. For a more detailed discussion, see Boadway and Wildasin (1984), Ahmad and Stern (1991) or Sandmo (1998).

27. See Waddams-Price (2000) for a recent review.

28. This argument also justifies the imposition of universal service obligation considered now to be a standard to address the needs of the poor (see Chisari & Estache, 1999 for a discussion of the design of these obligations).

29. Arguably, this may just be another case of consumption externality, where the consumption of one household enters the utility function of another directly.

30. In Chile, the Ministry of Planning (MIDEPLAN), the social welfare ministry, and not the water regulator who determines the number of subsidies allocated to each region. This allocation is based on yearly household surveys that portray the socioeconomic conditions of each zone, the water tariff in each area, and fiscal budgetary constraints. This evaluation is better undertaken at a central level by an organism with expertise in poverty and social issues. Once the number of subsidies is determined at an aggregate level, it is up to the municipalities in each region to distribute these subsidies to eligible households. This is undertaken using the same socioeconomic assessment instrument as any other public subsidy, a "poverty score." This is a numerical synthesis of a poverty assessment exercise based on a household interview by a social worker. A household's poverty score is used to determine eligibility to almost all public subsidies and therefore guarantees that all poverty alleviation measures are correctly targeted. In Colombia, households receive a subsidy (or a tax in the case of wealthier households) for all utility services based on the geographic location of a dwelling. There are six categories depending on the characteristics of neighborhoods. The important point to note is that the category of each zone is determined by the Secretariat of Planning based on census data and other information. This means that one prerequisite for using the tariff for redistributive purposes is an accurate poverty mapping. This is, however, proving to be a challenging task as discussed later.

31. The arrival of the Blair administration resulted in such changes and an increase in social concerns and these were addressed without changing the financial equation faced by the private operators. Similar changes are occurring in Argentina and Chile with the arrival of Presidents De la Rua and Lagos, respectively, and a UK-type strategy to introduce the changes is likely being considered in both countries.

32. A recent report by Cremer, Gasmi, and Laffont (1998) provide detailed examples from many OECD countries in all sectors. For a longer discussion of universal social funds, see Chisari and Estache (1999).

33. Mandatory connection requirements in the sectoral laws should also be given careful thought. This is usually an issue in the water and sanitation sector, where public health considerations make this a reasonable requirement. However, connection charges, unless subsidized, could be an enormous financial obstacle for poorer households. See Esrey (1996).

34. Community preferences will have to be considered along with public goods aspects of the service of course.

35. Lyonnaise des Eaux (1998).

36. It is important that regulators be careful in sanctioning subaverage quality standards only when there is a real social expression from the community in this respect and not as a way for a private company to increase its profitability by reducing quality. But, of course, communities can be myopic or not anxious to pay full costs, including externalities.

37. Which type of funding is more convenient will depend in part on the efficiency, equity and administrative costs associated with the distortions created by the general tax system (the cost of public funds). When the tax financed subsidies are too costly to enforce and tax reform is not a realistic option, it may be more efficient to raise funds from the utility industry, especially if done through the fixed charge part of utility tariffs. The specific system selected should, however, depend on its sustainability in a competitive environment. Unlike general taxation which is quite neutral for the utility industry, cross-subsidies in a competitive environment will create incentives for ''cream skimming'' high-paying customers and ignoring low-paying customers. The third alternative avoids this last problem since all companies will have the same proportional responsibility in the funding of the subsidy scheme—although this may also allow for implicit and less transparent subsidies across operational zones.

38. While subsidies in utility industries generally account for a small proportion of household income, means tested subsidies have the undesirable consequence of affecting incentives, especially with respect to labor market participation. This is sometimes labeled the ''poverty trap'' problem in the welfare system. Geographic subsidies also have secondary economic effects that are often ignored. Such subsidies, for example, may alter the housing value or rental price of properties in the benefited areas, thus reducing the purported benefits of the scheme for those living in those areas.

39. In fact the net present value of the benefits from—and the willingness to pay for—a connection are for many poor and for society is, in many cases, likely to be higher than the amount of the loan which would be needed to finance the connection. An efficient capital market would be willing to provide this loan.

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