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Small Scale Water Providers in Paraguay

by Fernando Troyano

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Introduction

In Latin America as in the rest of the world, after decades of water supply provision by public utilities, governments are increasingly willing to turn over the business to private operators. Where water supply has always been seen as a basic service to be guaranteed by the State, public monopolies are slowly being replaced by private monopolies in the pursuit of efficiency gains, private investment and better service under a regulated environment.

While many countries in the region are experimenting with the new concept of private provision of water supply service, Paraguay has for some time been the ground for another type of experiment: the free entry mode of service provision. For more than a decade now, about 400 small entrepreneurs have been operating under this extreme case of competition, in a service long believed to be a natural monopoly. In an almost unique case, the private water providers of Paraguay -or *aguateros* as they are called -have demonstrated that competition within a given area is possible as water lines are installed in the same streets to vie for the same potential customers. It is not unheard to have three or four water suppliers in many of the suburbs of Asuncion where the public utility has long experienced difficulties to extend its network.

While much remains to be learned on the dynamics of water supply under the free entry mode, its limitations and its economics, Fernando Troyano's report provides the first thorough

analysis of this unique case. His insightful analysis of the incentive framework faced by the *aguateros* and its comparisons with the public monopoly already provides a good starting point for policy review and strategies for the sector. The main message that emerges from this case is undoubtedly the profitability of the water supply business even under a competitive environment and that appropriate legislation should be enacted to encourage the private sector to invest in the provision of water service.

Fernando Troyano is in a unique position to make this analysis. From his base in Buenos Aires he has been a Consultant to the World Bank and his advice is equally sought and valued by most Latin American water utilities. His vast experience in the water supply business lends credibility to the viability of the *aguatero* experience as documented in this report.

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Small Scale Water Providers in Paraguay

In contrast to other service sectors, like electrical power or communications, which generally function as networks, water and sanitation services can operate in different sized systems isolated from one another. Logic would indicate that water and sanitation systems be commercially independent businesses. As in the case of electrical power, each service in itself can be subdivided into smaller and highly differentiated units. For example, we can distinguish the "primary mains" (like highways in transportation), from the secondary distribution networks for water. Naturally enough, are usually a greater number of secondary mains than primary ones, simply because there are more small population groups than large ones. And, if we consider further the break up of primary systems into smaller units differentiated by the type of service provided, then this tendency becomes even greater. Nonetheless, in most countries water and waste water services have tended toward integration and conglomeration of small service units into large "single-operator systems" - usually public. There are many reasons for this tendency, some of which follow:

- *It is not easy for public agencies charged with setting up service companies to establish and regulate a number of businesses of different sizes.*
- *Once a public utility has been established it has a natural tendency to grow and to remove itself from competition or even comparison with others.*
- *Political authority, more than controlling the service company, will exploit service delivery. For this reason, the utilities always develop along political lines rather than along geographic or even cultural lines, even though there are clear technical reasons why these make more sense than divisions along national, state or municipal lines.*
- *In many cases, the tradition of large national or state water companies grew from a historic desire to centralize services precisely to remove them from municipal control. While justified by the "immaturity" of the cities -their lack of technical capacity and organization; the solution of centralized management effectively reduced the cities to a state of permanent adolescence.*

The widespread presence of large public companies in Latin America has effectively obliterated the notion that the single operator - charged with water supply and waste water removal for many heterogeneous settlements - is but one model among many and is by no means the sole model for consideration. Furthermore, when the public authorities, facing the mounting debts and grating inefficiencies of the large public utility, decide to privatize they tend to pass the company wholesale to a single private operator, without rationalizing its inherent structural problems. In this way, the problems of a public utility are perpetuated despite its transformation into a private company. It should not surprise us then, to find that user surveys report that the private companies are as bureaucratic and inefficient as their predecessors, insofar as customer access can be complex.¹

During its life time, the public company stifles any emergence of small scale private operators and, when it goes private, with exclusive operational rights - either legal or de facto within the fixed limits of a political nature - it continues to prevent small or medium sized entrepreneurs from developing businesses on any scale which matches their own possibilities of management and investment. The private entrepreneurs who might be able to fix the problems of gigantism and inefficiency by risking their own money in a rival business effort, are blocked from doing so.

But not everywhere. So begins our story.

The "Aguateros" of Paraguay

In many Latin American cities there exist "marginal" settlements which require non-conventional systems and approaches for water supply. While no systematic documentation exists to inform about the size of this demand, nor the way in which it is met, it is generally supposed that in most cases the needs are met by tanker trucks which distribute and sell water. Quality control over the delivery and source of the water varies from one site to another; sometimes it is provided by the public agencies (stemming, in general, from the

¹ Customer access to the company is the fundamental factor of the well worn concept of "quality service" Once the demands for water pressure, continuity and quality are met, the "quality" which sets one service apart from others is the ease with which the customer can resolve problems as they arise.

conventional provision to a privileged sub-sector of the population) and sometimes it is left to the ingenuity of the provider, increasing the risk of abuses in the water quality and in the hygienic methods used in its distribution.

In Paraguay the relatively abundant presence of underground water in the outskirts of Asuncion and Ciudad del Este has fostered the emergence of a special type of operators, the "*aguateros*" who do not use trucks to distribute water, although they began as truckers, but have moved on to create small-scale water supply systems based on underground sources. A typical system consists of a well and pump house which supplies a series of houses close by through heavy hosing of polyethylene or other low-cost system which is simple to install. In general water is pumped for a limited number of hours each day and the customers plan their usage around this schedule, generally filling holding tanks with enough water for the family's daily usage.

An estimated one third of the water connections made in the past twenty years in these two cities have been provided by *aguateros*. There are somewhere between 350 and 600 independent "*aguaterias*" currently operating. They serve about half a million persons and represent an investment of some thirty million dollars, at roughly US\$250/household.

Development is completely private. The "*aguatero*" selects an area where he calculates that his business can take root in a growing settlement, buys a lot, builds a well and pump house and begins by providing water to the first wave of settlers, however few. The *aguatero* has to move fast, before another stakes a claim in the area because, although *aguateros* can compete for customers who reside on the edge of one system or in between two, once established, the "pioneer" *aguatero's* right to operate within a given area is generally respected².

² Even though the *aguateros* like to say that they work in an open and competitive market, it is clear that exclusivity must be respected to a limited degree; otherwise the battles for customers could make the business unsustainable. The existence of unclaimed areas "*on the edge of and between*" the *aguateros'* business zones where real competition goes on and the "competition by comparison" on this reduced scale, assures that the *aguateros* do not take unfair advantage of their customers, insofar as the residents in the unclaimed areas do have some choice. The existence of the *Aguateros Association*, at the same time, limits the possibilities for open flare ups between them and tends to standardize service quality and prices.

The *aguatero* makes the full investment and assumes all risks. The customer must pay a connection fee which is, in fact, the *aguatero's* principal income for the amortizing the investment. The precarious nature of the installations and, above all, their legal insecurity in the medium term, means that the investment must be amortized rapidly. The *aguateros* developments are based on a total recovery of investment costs before three years.

Naturally, there are many customers who cannot afford the up-front connection fee and part of the *aguatero's* business success depends on the organization of a payment system, something which in itself constitutes an additional risk and, at the same time, accounts for the main source of the *aguatero's* benefits since the interest charged could be considered usurious in some cases, if we did not keep in mind the fact that this credit system operates without any form of guarantee of collateral.

The water charges are, generally, well measured and, almost always, well below the charges levied by the public water company on its clients. The highly personalized nature of the *aguatero* business permits a great degree of flexibility in the *aguatero's* relations with clients. When customers find it difficult to meet payments the *aguatero* generally recognizes problems quickly and can find ways to work out solutions, accepting delayed payment plans and even canceling accumulated debt. Such relations are possible because:

- Cutting off connections is of no benefit to the *aguatero* given the virtually insignificant cost differential which cutting off an individual client represents, and the comparatively high cost of converting a client into a debtor;
- There is very little risk that other clients will pretend to be in difficulties to lower or to withhold payments given the personal contact the *aguatero* has with all clients which would make any such play acting impossible.
- Considering the connection costs together with the service charges, the *aguatero's* clients pay approximately the same or less than what the public water company charges for household water connections. The system thus appears to offer affordable services even to those who would qualify for subsidized or social tariffs from the public company. At the same time, the system demonstrates beyond doubt that clients can pay the full costs of water supply, including the

aguatero's profits. To the contrary, the *aguatero* wouldn't be in business. It is clear that even the lowest income groups can pay full costs of water, as long as the service forms are adjusted to their circumstances.

The *aguatero* works where the government does not, and does so without any subsidy whatsoever, while meeting all tax and regulatory obligations³. The *aguatero* thus fulfills the development objectives of any privatization operation, in the best sense of the word: namely, the objective of relieving the State completely from any financial obligation in delivering water services, while turning the same activity into one which generates jobs and profits and produces income for both the *aguateros* and, through tax payments, for the government.

And, coincidentally, the *aguatero's* clients come from the lowest income groups who would doubtless benefit from form of subsidies, were they to buy water services from a public company, or even through a *private concession*. If the *aguateros* were to include higher income groups from the inner city among their clientele their own profits would grow if they could charge the same prices presently applied by the public water company.

But, the most interesting feature remains the small size of the *aguatero's* installations. A typical system serves around one hundred families⁴. A number of *aguateros* live, along with their families, solely on the income from a single system, clear proof that the business can be profitable when the number of client households reaches three figures. Assuming 500 persons, or 100 households, as the minimum number needed to keep an *aguatero* in business, the numbers are still several orders of magnitude below what a large scale operator - public or private - would consider viable to charge affordable prices.

Two caveats apply to any attempts to generalize from the *aguateros' experience*

- The *aguateros'* existence depends on the availability of ground water

³ The *aguatero*, like any business man, has to pay local and national taxes without exemptions, quite the opposite case of the public water company.

⁴ Notwithstanding, the largest *aguateros* in Paraguay, operating a number of scattered sites, have up to a total of 50,000 clients (counting people, not connections).

- The *aguateros* could not operate conventional sewer systems and waste water treatment plants in the same conditions.

These two statements appear self-evident. The small scale of the *aguatero* would not permit the establishment of large scale water production and potabilization works given, on the one hand their high cost and, on the other, the insecurity of the *aguateros'* situation which prevents them from investing long term⁵. As regards sewer systems, the issue has not emerged among the peri-urban communities as a priority need, since most households use individual septic tanks and leach lines, soil quality and house lot sizes being perfectly adequate⁶.

Caveats apart, it can, nonetheless, be asserted that the *aguateros* could certainly operate the water and sanitation networks (the latter linked to the former to facilitate collecting payments) in any moderately sized settlement given the provision of a reliable water source and of waste water treatment as long as, at least as regards network sanitation, universal connection to the sewer network is established. Furthermore, if ground water is available, the *aguateros* can provide their own water source, as they do now. Similarly, it is highly likely that a simple waste water treatment system, such as mini-plants, septic interceptors, or ponds, would fall within the *aguateros'* investment and operational capacity.

⁵ The obvious alternative of forming larger companies through mergers or associations of the several *aguatero* operations has already come up in several secondary cities. The resulting complications, stemming from rivalries and the difficulties of behavior change, appear to be inevitable, but not necessarily insurmountable.

⁶ In most peri-urban areas a continuous ground water source is generally at 150 meters and below, a depth beyond the possibility of individual tube wells. At the same time, households can usually draw water from a depth of 20 to 30 meters, although these wells tend to dry up during the summer season when the household tends to turn to the *aguatero* for service. Once the family has paid the *aguatero's* connection fee, however, it makes little sense to go back to the tube well, since the family will simply have to reconnect again next summer. Thus, where *aguateros* offer service families using their own water supply tend to disappear. The *aguatero* needs some similar mechanism to break into the sanitation market, that is, some way to provide service with an obvious advantage or continuity compared to individual, on-site sanitation. The case of sanitation is not so simple.

What then are the obvious limits to the operations of the *aguateros*' as they currently exist ?

for water supply

- small scale systems
- accessible ground water (or provision of a water source)

for sewers or network sanitation

- small scale systems
- links to the water distribution system (for charging)
- obligatory connection
- without waste water treatment (or with primary treatment)

The *aguatero* can offer a better price than any other service, except for community managed systems. In fact such cooperatives are quite prevalent in Paraguay and work quite well in most cases, supported by the Government agency "SENASA" (Environmental Sanitation Service – a subsidiary of the Ministry of Health.) Theoretically at least they pose the only possible competition to the *aguateros* for small towns and communities. In reality, however, SENASA subsidizes 100% of the cooperatives construction costs, a fact which undermines any effective competition⁷. For this reason *aguateros* are not found in rural Paraguay, where the water cooperatives organized by SENASA offer a more attractive alternative⁸.

Small Scale Operators - a Workable Solution

There is good reason to support an increase in the scope of the *aguateros*' activities to include:

⁷ SENASA lends to the rural water cooperatives, but it does not recover its loans.

⁸ The *aguateros* could certainly operate the same systems which SENASA currently subsidizes, opening up the debate as to whether the SENASA funds could be better directed either to subsidize other sectors (health, education) or as recoverable loans to rural communities. Insofar as the water cooperatives frequently turn into political action groups defending special interests, the *aguatero* could offer certain advantages as a private and impartial operator. However, as long as the cooperatives have found in SENASA a regular source of grant funding for repairs, maintenance and expansion of their water systems, they have tended to become dependent rather than independent operations.

- Rural communities in coordination with SENASA, in cases where the *aguateros* participation can block the political finagling and corruption which characterize the user cooperatives
- Peri-urban and suburban communities, where the *aguateros*' responsibility grows from its present, unregulated and informal contract to one which is subject to certain controls and can function over larger areas in collaboration with the state (or with CORPOSANA, the public water company.)

But, in the long run the *aguateros* present model could expand into the small towns and rural communities while in the peri-urban and urban communities their operations should evolve into new forms which can meet the needs of the bulk of the urban population. This is because, at least as long as the notion of a single system for an urban agglomeration persists in the interest of avoiding problems of inequity arising from different levels of water quality and continuity, fewer and larger operators will emerge, replacing or absorbing the multiple *aguateros* presently operating in the peri-urban areas.

Moving the *aguateros* into the central city will mean a gentle conversion of today's largest *aguateros* into large scale operators able to compete with international firms tomorrow. We envision a number of such large scale operators offering services in Paraguay's urban centers competing among themselves and with international firms as well. In medium sized and small communities *aguateros* operating in their present form continue to offer the best solution, because they have proved their capacity to deliver water at competitive prices and acceptable quality to the most difficult sectors of the population. In the future, however, the *aguateros* could well modify their operating methods and adapt them progressively to respond at once to regulations and to the demand for sanitation as well. We should underline that word "progressively" because those attempts arising from generalized and theoretical solutions which apply regulatory systems copied from elsewhere can easily spell the end of what is in reality an effective and original solution, entirely appropriate for resolving the water distribution problems of Paraguay. Finally, the public sector can find its place in the capital, Asuncion and in the niches where water is required at high pressures requiring more complicated systems⁹.

⁹ We should not overlook the existence of the public works company in a specific large city. (In Paraguay Asuncion would be the logical place.) The presence of an

What works in Paraguay could work as well in any country in the hemisphere. However, if the small scale operators are ignored where they exist, or left unmentioned and ignored where they do not, then private sector participation will necessarily tend toward the places where business opportunities are greatest - the large cities - leaving behind and unattended the smaller communities. If such privatization take place *en masse*, in whatever size community, the basic illogic of such an approach will produce serious inefficiencies, regardless of the private sector participation. Even in the remote case in which a large scale operator manages to form a workable business, through carefully developing increased services to small communities, it will effectively block the entry of an entire class of smaller operators, with the consequent internalization of all the benefits which these can bring. In effect, promoting the small water company is of a general interest.

Transforming the Large Public Water Companies to their Logical End...

The move toward privatization of the public water companies is based on the idea that operating efficiencies will increase in private hands. But economic efficiency and social equity could be improved still more if the privatization could bring about the creation of an open market where suppliers of different sizes can offer alternative levels and types of service; rather than the transformation of a public monopoly into a private monopoly - regardless of the regulatory system¹⁰.

Such a system should take the following guidelines into account:

important public water company could well improve the technical level of operations, a point which could be jeopardized if the water sector were reduced to a collection of sellers and bereft of specialists, but its technical efficiencies must be accompanied by economic efficiencies if the public company is to justify its existence.

¹⁰ Considering that all the regulatory systems established to date in Latin America have run into serious problems, the moment has clearly arrived to question first the regulatory system and second the operative system under regulation. In the author's opinion, the operative system is primordial and should evolve into a new model other than that based on large scale monopolistic companies, be they public or private.

- Rather than privatize the large scale company as one unit, by whatever method or type of privatization, the commercial supply units should be privatized should be privatized one at a time, beginning with the small and medium sized service systems. This implies certain promotion of the local small scale operators, although small scale foreign operators can also participate where needed particularly in cases where there is a dearth of national operators¹¹.
- The privatization should assume the form of an operational contract between the *aguatero* and the water company. Clearly this would call for a competitive bidding, taking care that the bid documents are appropriate for the participation of small-scale operators. This implies the elimination of entry conditions involving the size of operations, and the assurance that the bid terms allow for the effective competition from small scale operators, including those of whatever nationality, not simply because the bidding is open to them, but more importantly because the actual terms of reference allow for a foreign company to work comfortably in such an environment¹².
- A conscious and intense effort to publicize and promote should accompany the first experiences of such competitive bidding. The process, a modification of the conventional practice, can take the following points as an overall guideline:
 - Information about the bidding should be widely disseminated through standard channels, both national and international, including fora and focus groups of small scale operators.
 - Any small scale or independent operator who wishes to participate in the bidding should be able to contact the responsible agency, expressing interest in receiving the bid

¹¹ Of course this model would be far less traumatic for any large scale company than a full-scale privatization. However, it relies on a greater degree of collaboration from the company in question.

¹² Insofar as the privatization's of large scale operators endeavor to put all bidders on an equal footing regardless of national origin, the same should apply for small and medium scale operators. Their own local knowledge and experience will favor nationals, but in principal the competitive nature of the bidding will be enhanced by the presence of foreign operators.

documents (on receipt the operator should pay a price for the bid documents to guarantee interest.)

- The key document in the bid packet is the *Contract* with a single item left in blank - the variable to be offered. Although each bid should be studied as a particular case, we suggest that the variable should be a monthly sum to be paid either by the public entity to the operator, or by the operator to the public entity in return for taking over operations described in the *Contract*. The contract should fix all other terms and conditions, including prices.
- All interested operators should let the public entity know of their intentions to be present at the Bid Meeting (see below). At this moment the operator can request that the public entity pay travel costs and compensation in case the operator does not win the bid¹³. It is understood that the payment of travel awards encourages attendance at the bid meeting (payments would be made after the meeting) but does not commit the operators to anything further, even presentation of bids. Obviously, the travel award could be reduced to zero when operators are ready to assume costs of attendance on their own.
- A certain number of operators (ten for example) should be pre-selected for their willingness to attend the Bid Meeting at lower travel awards or at their own expense. In case the number of operators willing to assume their own travel expenses is larger than the number set for pre-selection, the full number should attend the Bid Meeting¹⁴.

¹³ Logic would suggest limiting the travel awards to about 75% of the actual costs to the operators.

¹⁴ Paying travel costs should encourage the participation of small operators, above all in the first competitive bids. A small operator is likely to find it difficult to attend five or six bid meetings in different locales without assistance in paying travel costs. The system of pre-selecting operators who need less assistance with travel costs should favor the operators who are located closest to the Bid Meeting (and site of future operations), a positive outcome, while at the same time it allows the system to bring in operators from farther away should an insufficient number of locals appear.

- The Bid Meeting would provide an opportunity for representatives of interested operators to meet with those of the public entity, to review together the situation with respect to water and sanitation services in the communities in question, to make their offers to the public entity and to designate immediately the winning offer. The Bid Meeting could consist in one day for the public entity to present information available about the public services; three days for further research on the state of the systems currently in use; and on final day in which the operators present their offers to the public entity¹⁵ the offers would be opened and examined and a pre-adjudication tendered. On the same day the winner of the pre-adjudication should come up with the guarantee already determined (a bank guarantee which the operator should bring to the meeting.) In case the guarantees cannot be secured, the offer will go to the second in line for adjudication, and so forth.
- There might be an easier method which could produce a rapid and effective answer to the issue of finding appropriate operators to manage water in small and medium-sized communities. Once the first round of competitive bids has taken place, the remainder can quickly assimilate the experiences on the ground. Insofar as the contracts should take a similar form, subsequent competitive bids should follow at a rhythm determined by demand and capacity.
- The public entity should control the small scale private operators but through a separate unit established for this purpose and completely independent of the public works company, joined only at the level of executive director. The temptation to persecute the private operators as a means of covering up inefficiencies in the public company must be avoided. If the public entity cannot manage the public works company and control the private operators objectively at the same time, then the control unit should be taken out of the public entity, although this may be more expensive.

¹⁵ Offers for the variable in the competitive bidding being, as we have previously proposed, a single quantity, can easily be developed in the time allotted.

- The control of any particular private operator must include mechanisms to generate the participation of the users and of the local authorities. The optimal formula should be studied on a case by case basis to guarantee participation without jeopardizing efficiency.
- Technical assistance in elaboration of Operational Contracts which would assure the minimum and necessary contents;
- The competitive bidding process
- Investments in complementary infrastructure to support the small scale private operators

Agenda for the Future

A program like the one described here would generate important actions in several senses. In the first place it would encourage the following initiatives:

- Identification and localization of small scale operators, organizations and exchanges of experiences through seminars, focus groups, and training sessions on small scale operations and maintenance of an information network which would link small scale operators and help them to keep in touch and up to date on items of interest. This work is already underway in several countries and should be completed and brought to fruition.
- Promotion of an orderly privatization and progressive dismantling of the large scale public water companies in communities adaptable to an open market of small scale operators.

While some would debate the remaining role of the public sector, it is the position of this writer that the regulation should not be a major concern, as long as health agencies test and assure water quality, and as long as the juridical branches guarantee that fair and open competition exists between operators and serve to settle disputes between customers and operators and between operators. At the same time, the public sector still has an important role to play considering the needs for guaranteeing:

This last point is especially important. Small scale operators would take charge of existing businesses without commitment to any major investments (although exceptional cases could of course arise). The public entity would continue to own the infrastructure, and therefore, its privatization would offer an appropriate occasion for completing needed investments in the communities where its operation is to be contracted out. When monthly payments to the public entity figure in the winning contract, these resources should be earmarked for investments. In other cases the public entity could authorize an increase in tariffs to generate fresh resources for investments (which would, obviously, be collected and managed by the private operators.)

All these questions imply new areas for experimentation in the short run - and as soon as possible. It would be premature to attempt at this time to predict the final evolution of a program so complex; but, if a group of small scale operators can be found to specialize in small and medium sized communities and some public agencies to concentrate in larger conglomerations, the situation will be vastly improved over the present state of affairs, bringing about evident social improvements, such as the increase in small businesses without excessive traumas of a large scale public company.