CHAPTER 6

Governance and Regulation: A Tale of Two Concessions in Argentina

Daniel Artana, Fernando Navajas, and Santiago Urbiztondo¹

Traditionally, the water sector has been managed by the public sector in Argentina. However, in the last 10 years, Argentina has experimented with private participation on a scale and at a pace beyond other experiences in Latin America. The first two concessions granted in Argentina were in the province of Corrientes and the city of Buenos Aires. Each of the two concession processes, regulatory frameworks, and institutional contexts had relative advantages and disadvantages. These differences may have affected both the resulting performance of the two water companies and the post-contract negotiations. This chapter demonstrates the impact of the institutional and political context on the outcomes of concession arrangements, and highlights the strengths and weaknesses of the various actors involved in the process of improving water services with private sector participation.

In Argentina, as in most countries, the water industry traditionally has been managed by public companies. However, the wave of privatization over the past 10 years has crested over this industry too, forcing it to reconcile the advantages of private supply and the social demands typical of public utilities. Whether those advantages are capitalized upon depends on the design of the rate structure, the level of prices imposed on private operators, and how those prices are adjusted.

¹ Daniel Artana is Executive Director of the Fundación de Investigaciones Económicas Latinoamericanas (FIEL) in Buenos Aires, Argentina; Fernando Navajas is lead economist at FIEL; Santiago Urbiztondo is an associate economist at FIEL.

The first two potable water and sewerage concessions in Argentina² were in the province of Corrientes and the Greater Buenos Aires region. These concessions commenced operations in September 1992 and May 1992, respectively. They were followed by other concessions in the provinces that are still in the development phase.

The two cases share several common features. Both are concessions (i.e., they do not involve a transfer of assets) and both utilized the same method to select the winning bid. However, there are also major differences between the two: their regulatory designs, their institutional contexts, and their results thus far. Their common features are an advantage for comparative analysis, since they provide a control for certain variables and demonstrate the effect institutional differences have on the performance of each concession. Since the conclusions presented here are drawn from only two cases that were analyzed only three to four years after the concessions were granted, they must be viewed with caution. However, the information contained herein supports the modern theory of economic regulation. It can also help guide the study of other experiences to add to the stock of relevant case studies.

Both regulatory designs are flawed. With regard to the rate structure, which is a crucial factor for regulated public utilities to operate efficiently, the Corrientes concession has a better system than the Buenos Aires one. It is more transparent, has fewer cross-subsidies, and almost universal metering. The rate structure in Buenos Aires has kept the previous price structure nearly intact, giving the concessionaire, at least until now, no incentives to maintain or improve service quality. Instead, its earnings depend on its ability to collect, and on the real estate reassessment of the properties served.

With regard to the institutional design of the regulatory body, which is fundamental in determining the regulated companies' incentives to invest in sunk assets, the Buenos Aires concession is better than that of Corrientes. As an independent body, it is less subject to the meddling of those currently in political office and has a more specific and regulated mandate. In Corrientes, the regulatory body is under the direct control of provincial politicians in power, and there are few restrictions on interpretations and

² To put the cases into context, see a summary of Argentina's privatization experience in Artana, Navajas, and Urbiztondo (1997).

regulations.³ The broader legal environment has gained increasing importance as a determinant of available and efficient regulatory options in other contexts (Levy and Spiller 1994). At both the federal (Buenos Aires) and provincial levels (Corrientes), the shortcomings of the courts highlight the importance of defining the regulatory body's discretionary power, especially in the case of Corrientes, where judicial power in the province is even more dependent on the executive branch than its federal counterpart.

In short, given the two institutional characteristics considered—regulatory body independence and recourse to a politically independent judiciary—the Buenos Aires concession is better because it generates higher levels of investment, a requisite in both cases given the low degree of initial coverage. Thus, the predictions regarding rate structure may prove to be unfounded. It appears that regulatory and judiciary independence are more important than the rate structure, since the behavior of the concessionaire in Corrientes has been adversely affected by political changes that encouraged more opportunistic behavior on the part of the regulatory body. This problem has not occurred in Buenos Aires, despite the downturn in the economy, which could also have modified priorities for those in political power.⁴

Performance Indicators Prior to Privatization

The first potable water service of Argentina was provided by Obras Sanitárias de la Nación (OSN) in 1870 after the cholera epidemic that ravaged Buenos Aires. Initially it served 30,000 people and coverage continued to expand until 1960. That expansion ended in the 1970s, and in the 1980s, coverage as a share of the population actually contracted. While in existence, OSN was financed with grants from the National Treasury and the provinces.

³ In the Buenos Aires concession, the regulatory body potentially has an even more important link to the regulated company (Aguas Argentinas) than to those in political power due to the way it is funded.

⁴ Political changes had not occurred in Buenos Aires until 1996, when the first election for mayor of the city of Buenos Aires was held. The winner was the Radical Party candidate. Prior to that, the president (who belongs to the Justicialista Party) had filled that position by appointment.

Until 1980, the basic features of government supply of potable water and sewerage services were the same throughout the country because the OSN provided all the service⁵ and because institutional problems between the various provinces and the federal government stemmed from governments run by the same party at both levels. (During this century, oscillation between military and civilian governments has been much more significant than variations in political party labels during democratic periods.)⁶

The indicators of the OSN that depict the "low-quality equilibrium" characteristics of a public corporation are: a sharp decline in rates, uncontrolled expenditures (especially excessive payroll), and insufficient investment.⁷

In different studies of post-World War II utility rate cycles in Argentina (Núñez, Miñana, and Porto 1976), successive cycles in real rates of public utilities were found to reflect various factors. Attempts were made to use them as a nominal anchor, along with wages and the exchange rate, to stabilize prices for political ends and for the purposes of redistribution.

The public service most hurt by such policies was potable water and sewerage. An estimate of a double logarithmic ratio between public rates and overall price levels made by Núñez, Miñana, and Porto for the 1960–76 period for public corporations as a whole showed that the inflation elasticity of OSN rates was approximately 0.8, the lowest of all public utilities. Using SIGEP data, and 1960 as the base year (=100), it was shown that while the real level of public utility rates in 1976 was 123.8, the index for the OSN was 51.1 and had been even lower in previous years—the lowest of all public services. In other words, the real level of potable water rates fell by half in 15 years. The OSN represented the most extreme case of rate decline among government companies. This situation worsened throughout the 1980s and early 1990s. The last recorded information on SIGEP was in 1990. Figure 6.1

⁵ The OSN's jurisdiction was nationwide until 1980. At that point, it was restricted to the Federal Capital and 13 districts of Greater Buenos Aires. Responsibility for service in the rest of the country was transferred to provincial governments.

⁶ The difference may be due to the greater degree of coverage found in the city of Buenos Aires with respect to the national average, but that difference tended to vanish as the rest of the country came under the area served by the OSN (see FIEL, 1992).

⁷ This feature is shared by all of Argentina's provinces. The level of investment made in water and sewerage during the 1980s was 43 percent lower in constant prices than it had been the decade before.



shows the decline in the real rate for water and sewerage services from 1960 to 1990 and its relationship to the general level of public rates.

While there may be reason to assume that the SIGEP index overestimates the decline in the real price of potable water and sewerage service for reasons that may be better understood in section 5, which describes the workings of the rate system⁸—the evidence on rate decline is quite strong.

Table 6.1 provides some indicators of the low-quality equilibrium that characterized the OSN. Clearly, the rate decline is only one of many company indicators. In the early 1980s, the company had too many employees at low-wage levels, so much so that it ranked next to last on the public corporation pay scale, had the highest absentee rate among public corporations, and had very high labor costs as a percentage of total revenues. By the mid-1980s, the company had cut its staffing, but the average employee age was

⁸ In estimating potable water and sewerage rates, SIGEP used the movement, over time, of what is called the K-coefficient, which is the main factor in rate adjustment, but only one component of the rate. Changes in other components, such as property assessment or in zone coefficients, may involve changes to the average price that are not captured by this calculation.

	1980	0*	198	35	199	0
Indicators	OSN	Other companies	OSN	Other companies	OSN	Other companies
1. Real Rate (1960 = 100)	58.9	103.1	19.6	128.1	24.1	105.0
2. Employment (000)	13.6	315.5	9.6	310.0	9.0	_
3. Real wage (1978 = 100)	100	100	164.1	124.1	nd	nd
4. Absenteeism (in %)	17.5	13.7	20.4	14.5	20.5	16.2
5. Labor cost						
Total revenues (in %)	63.8	41.4	57.0	25.6	60.0	30.0
6. Investment (1981 = 100)	100.0*	100.0*	67.8	68.7	19.5	55.4

Table 6.1 OSN Performance Indicators: 1980–1990

*Data from 1981.

Source: Prepared on the basis of data supplied by SIGEP.

Table 6.2 Detailed OSN Performance Indicators: 1985

Total surface (subsequently, regulated area) (in hectares):	281,5	00	
Surface with water service (in hectares):	50,90	00	
Surface with sewerage service (in hectares):		00	
	Fed. Cap.	13 Districts	Total
Population with water service (millions of inhabitants):	2.9	2.6	5.5
Population with sewerage service (millions of inhabitants):	2.9	1.7	4.6

Water production:	3,578,000 m³ per day
Water connections:	1,002,176
Water meters:	148,354
Sewer connections:	665,347
Treatment:	97,080 m³ per day
Employees:	9,600 (average age: 52)
Average consumption per person/day:	600 liters (equals 36 cubic meters per person every two months)
Age of the water system:	in Federal Cap.: 83% over 40 years and 55% over 60 years
Average delay for repair	1 month in Federal Capital and 2 months in Greater
or handling leaks:	Buenos Aires

over 50, thereby raising payroll costs and exacerbating absenteeism. These characteristics remained largely unchanged until 1990.

In general, the evidence shows that in the 1980s, the OSN suffered from low rates, low collection (cumulative delinquency was estimated to be around 85 percent), a bloated payroll, an imbalance in the quality of human resources, low investment levels, and deteriorated facilities. Information on company service for 1985 is spelled out in Table 6.2.

Privatization and Regulation: The Basics⁹

Privatization of potable water and sewerage services poses problems similar to those of other public utilities, but with some unique features:

- Economies of scale or scope mean there are few service providers;
- Sunk investment costs carry the risk of direct expropriation, or a more subtle type of expropriation through changes in contractual conditions that may be difficult to prove in court; and
- Residential consumers have low demand elasticity (hence the need to regulate the monopolist), and are also voters, thereby increasing the aforementioned risk of expropriation.

How is the regulatory body kept in check? How are conflicts resolved? How are company prices controlled? What are the entry rules for the service? Should there be cross-subsidies? These are the types of questions that must be considered when evaluating the regulatory design in this unique sector.

It is argued that sunk investments are more important in the case of water and sewerage service than in other public services. This is said to have led English officials to set up a regulatory framework in which a major portion of investments was financed with funds generated by the concession-aire.¹⁰ It is also difficult for the consumer to determine service quality since adverse health effects from potential contamination are not always apparent to the eye, or are felt only over time. Such problems suggest that regulating rates through price caps is potentially more problematic than in other types

⁹ For more details see Armstrong et al. (1994), Laffont and Tirole (1993), and Levy and Spiller (1994).

¹⁰ See Armstrong et al. (1994).

of activities. Regulation through price caps is preferable to control by rate of return with regard to cost cutting, but is more problematic in assuring service quality and protecting sunk investments, hence the emphasis on the need to accentuate collection when designing the regulatory body and the tasks assigned to it. Specifically, efforts must be made to prepare a rather detailed contract in order to limit the discretionary power of the regulatory body as much as possible. That entails a potential cost passthrough, even if it partially undermines cost cutting—or providing clear guidelines for service quality—with credible sanctions to deter breach of contract.

Privatization of water and sewerage services presented some additional problems in Argentina:

- Country risk and, in the case of the Corrientes concession, risks associated with the provincial government, along with dependence of the judiciary on the federal or provincial executive branch posed a challenge in developing a reasonable framework that would encourage investment in the industry. This highlights the advantage of specifying the discretionary power of the regulatory body as much as possible and employing a system that limits the use of the judiciary.
- Delinquency in paying water utility bills was greater than in other privatized public utilities. Arguing that water is essential to public health, there were strong political pressures to prevent service from being cut off to residential users for nonpayment.
- Many families supplied their own water and sewerage services with pumps and pit latrines. Particularly in the case of latrines, where system coverage was low, individuals did not recognize the risks and assigned a low priority to receiving service through a system for which they would have to pay connection costs. The possibility of providing for oneself at a reasonable cost does not arise with other services for which the supply alternatives to the family are either nonexistent (telephone) or very expensive (liquid gas in lieu of natural gas).
- Rates were not set on the basis of consumption, but of property value, thereby contradicting the principles of efficient rate setting for public services.
- Lack of investment in the sector in the years prior to privatization had to be reversed. That posed a problem in designing regulatory frameworks, particularly in light of the first problem listed.

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In developing a regulatory framework, a number of instruments were combined to achieve a regulatory context compatible with the institutional constraints of the country and region to be put up for concession.

The Regulatory Body

The design and role assigned to the regulatory body in both instances were extremely important for adequately protecting sunk investments without allowing the regulatory body to be captured by the regulated company. As already indicated, given the problems of the judiciary system, it was preferable to restrict its use for conflict resolution. In principle, there are several ways to respect that restriction. First, one can design the body in such a way that it has suitable incentives to "appropriately" interpret—in accordance with the general principles guiding the concession—the conflicts and regulatory adaptations that may not necessarily be foreseen at the beginning of the concession. Second, in the event that is not feasible to design an institution with such incentives, for example, in cases with accountability problems, precise language in the contract¹¹ effectively becomes an intervention.

The regulatory body for service in the Buenos Aires area is the ETOSS, Ente Tripartito de Obras y Servícios Sanitários (Tripartite Body for Water Works and Services), an independent entity created under the concession's regulatory framework (Decree No. 999). Under the regulatory framework (article 25), the ETOSS is financed by all the company's invoiced customers, who are charged a small fixed sum. As applied, however, this regulation has not achieved the goal of separating ETOSS funding from its own regulatory decisions in order to preclude its "capture" by the regulated company. This is because the regulatory body receives funding in proportion to the revenues of the regulated company, which equals 2.67 percent of billing. As a result, the budget increased 40 percent two years after the concession, and the provisions of article 25 of the regulatory framework were violated. In particular, the regulatory body was a budgetary beneficiary when it approved

¹¹ Naturally, this second alternative also requires (at least potentially) court intervention because in principle the regulatory body could obviate the restrictions placed on it by the contract. However, greater contractual specificity raises the visibility and therefore the cost of violating the contract, and thus constitutes a better solution to the institutional problem raised.

an extraordinary rate increase of close to 15 percent in 1994 (analysis of that decision is addressed in section 6). On the other hand, chapter 13 of the Concession Contract provides that fines levied on the company be set aside for customers through rebates on the first bill of the year.¹² Thus, fines do not increase the ETOSS revenue, unlike the regulatory body for natural gas (ENARGAS), which is explicitly allowed to receive income through fines. Clearly, the financial fortunes of ETOSS are directly related to those of the regulated company and there is no economic incentive to levy fines for wrong-doing. Together, these conspire against the regulatory body's objectivity and effectiveness.

ETOSS' decisions are subject to audit and legal monitoring by the Judge Advocate's Office of the nation, but there is no public hearing system for resolving conflicts or addressing significant regulatory decisions as is provided for in the regulatory frameworks for electric power and natural gas. Thus, ETOSS has a greater margin of discretionary power.

The makeup of the ETOSS board is highly political: it has six members, two each from the federal government, the federal capital, and the province of Buenos Aires. Moreover, members are appointed by the executive in each of these jurisdictions (Congress has no say in this sense), although once appointed, they may serve for six years, be reelected for another term, and may only be removed for just cause.

Finally, as is the nature of all regulatory bodies recently created in Argentina, the occupation of its members can be related to the regulated company's business. The only incompatibilities in effect are those that apply to government employment according to Law 22,140, which are entirely generic and provide no limitation in this sense. This suggests that the regulated company is an obvious potential employer when a member's term ends, a factor that can prompt a conscious or unconscious procompany stance on the part of the regulatory board.

In the Corrientes concession, the design selected for the regulatory body and its financing were highly unsuitable. The most noteworthy problems were:

¹² According to the 1994–1995 Annual Report and Financial Statement, they amounted to \$464,000 in one year, equivalent to 8 percent of all ETOSS revenues.

- The AOSC, Administración de Obras Sanitárias de Corrientes (Corrientes Water Works Administration) is the regulatory body for water in Corrientes, but it continues to provide service in three cities—outside the concession area—performing two tasks that could cause conflicts of interest;
- The president of the board is appointed by the governor and can easily be dismissed;
- The monthly charge, all of which is set aside for financing the body, is adjusted according to rate changes. This ties financing only to the rate level, not to increased service coverage, which is what actually happens with the ETOSS in Buenos Aires; and
- The wages of agency staff are set according to cubic meters of water at the regulated price value, thereby introducing obvious problems with incentives against the consumer.¹³

An alternative that would have lowered the risk of politicizing the body would have been to create an agency with jurisdiction in several provinces, or to utilize the services of a national body. The Corrientes problem lies in that it was the first province to place water and sewerage services up for bidding at a time when such regulatory alternatives were not yet available.¹⁴

With regard to procedures in the ETOSS, the body has a very well organized structure, in which each department has to sign-off on a decision. There is even an outside ad-honorem commission that must pass judgement, thereby increasing the likelihood that rulings will be clear. In the case of Corrientes, the rules for the AOSC did not prevent it from consulting with the government inspector's office about economic problems when conflicts arose over contract interpretation.

In short, the regulatory agencies' design problems can create a framework that favors their capture by the regulated companies or politicization of

¹³ Nevertheless, when the company requested a rate increase of almost 17 percent in 1993, it only succeeded (after two attempts) in obtaining one of approximately half that amount, when the increase in wages paid by the company was disregarded, even though this passthrough was envisioned in the contract. It could thus be inferred that there was a certain equilibrium between the counterbalancing incentives for the body, that is, being captured politically (political opportunism) and being captured economically (helping oneself by helping the regulated company through its rulings).

¹⁴ In any case, the decision not to create an independent regulatory body whose financing and makeup would be different from the public sector in general was made by provincial officials.

their rulings. The contract in Buenos Aires specifies that any changes must be approved by the regulated company, and the appointment and dismissal of regulators in Corrientes is directly controlled by whoever is in office, thereby minimizing alignment with the company that arises from the nature of financing. Given this situation, the following biases are expected: the ETOSS tends to be biased toward the regulated company, and the AOSC tends to faithfully respond to the interests of whoever is in power politically. In fact, these turn out to be the biases that are actually at work in regulators' decisions.

Rate Structure and Contractual Adjustment Mechanisms

The objectives of the regulatory framework design are to stimulate investment, encourage adequate service quality, and charge efficient prices. What were the specific features of the regulatory frameworks of concessions in the city of Buenos Aires and the province of Corrientes, and how did they fare in view of these objectives?

Protection for Sunk Investment

In considering protection for sunk investment, the following issues are important:

Sale of Assets or Concession of Service

In both cases, the choice was made to grant the service through a 30-year concession rather than transfer ownership of the assets. The decision may have been based on the difficulty of assessing and precisely defining, at the time of bidding, the assets that would have been transferred (see World Bank 1996 and Price Waterhouse and Infupa 1990).¹⁵ Moreover, if ownership of the company had been transferred, it would have been difficult to reduce

¹⁵ Such arguments have had substantial political weight because, to the extent that there is a high degree of uncertainty about the status of the assets to be sold, participants in the bidding will likely compensate by offering a lower price for them. Should that be the case, and given the problems involved in making accounting sums reflect the true economic price of the assets, potential legal problems could arise for those responsible for the sale, who could easily be accused of "improper sale" of public assets. Other public asset bidding processes, such as that for the telecommunications company, required assessment by a government bank and by the investment banks advising the sale in order to establish a baseline value. The very uncertainty

the expropriation risk involved in the high amount of sunk capital stock. In the case of a water utility, assets are as, or even more, specific as those for transmitting and distributing electric power or natural gas.

Nevertheless, the decision to offer the concession rather than sell the company raises two problems:

1) The well-known problem of the final period. At the end of the concession, all assets return to the concession grantor, thereby creating an incentive to disinvest in later years. In principle, this problem is relatively minor in the case of Aguas Argentinas because the initially anticipated expansion was concentrated in the first 15 to 20 years of the concession, and because the water rates anticipate amortization of the investments during the concession period.¹⁶ The problem becomes more serious in the case of Aguas de Corrientes because the winning bid proposes a sharp rate cut in year 15 when the discount, with regard to the base rate level, goes from 5 percent to 25 percent in year 14. While it is acceptable for a rate to be relatively high at the beginning of a concession to finance the required sunk investments and lower the expropriation risk vis-à-vis "regulatory opportunism," the magnitude of the reduction at the end of the concession is surprising, especially when compared to the 8 percent cut envisioned by the consulting companies. The winning bid involves a 17 percent rate cut for the 30-year average, but is concentrated in the second half of the concession. The bid was to be awarded to the company offering the largest discount, but was not limited to a particular time frame. A larger contractual guarantee ought at least to be required, even if a major discount in the middle of the concession could be justified as a way of financing initial investments. The required guarantee of \$ 5 million amounts to only 25 percent of one year's billing (or

about assets in water has led the World Bank (1996) to suggest that short-term management contracts be granted for privatization in the provinces so as to more clearly specify the price of the assets to be sold. The problem with this suggestion is the possible asymmetry of information that favors the one operating the contract (either because it is directly involved in the bidding or because it sells the information to some bidders).

¹⁶ With the exception of those made during the last 10 years of the concession, for which a residual value must be estimated. In the event the operator changes, that value must be paid back to the first concessionaire.

7 percent of the total investment thought to be made by the concessionaire),¹⁷ and might not be enough to ensure this problem would be overcome, should it arise. Neither case envisions the concession continuing if the concessionaire is the winner in a bidding process that occurs before the initial 30-year period expires. That procedure has been adopted for the electric power concessions.¹⁸

2) The concession option increases the risk of opportunistic behavior because it is basically governed by a bilateral contract between the state and the concessionaire. In the case of an asset sale, in addition to being spelled out in the transfer contract, the impersonal rules that regulate other markets in the economy clearly dominate, and are therefore harder to change for the sake of a particular company. An asset sale would have caused fewer subsequent problems associated with renegotation, even though the political discussion would certainly have been more intense.

Finally, in Corrientes, bids were accepted on concessions for service in 10 of the 13 cities served by the provincial public utility in order to make privatization more attractive, and because shared management was expected to inspire some cost savings.¹⁹ However, the economies of scale when dealing with service in different cities are unclear. The decision may have reflected the desire to maintain a subsidy from the capital city to less populated areas since rates are equal throughout the concession area, and costs

¹⁷ The World Bank (1996) calculates that the total investment to be made in the province of Corrientes is US\$ 75 million. Aguas de Corrientes has invested US\$ 32.4 million in the first four years of the concession. The initial rate level and metering requirements encouraged much of the investment to be made at the outset. That being the case, it is contradictory for the World Bank (1996) to speak of the problems that would have existed in Corrientes in obtaining private financing for the investment.

¹⁸ In any case, there would still be a risk of opportunistic behavior on the part of the regulator because the value of the concession is affected by its decisions. However, because their effects become visible in the bid amount, protection of the company's sunk investment is potentially greater. Using an alternative system in which the government pays the company the accounting increase on its assets incorporated during the concession resolves the problem of regulatory opportunism, but raises another problem—namely, accounting values, where opportunistic behavior may again be manifested (although perhaps to a lesser extent).

¹⁹ See Price Waterhouse and Infupa (1990).

are presumably higher in smaller cities.²⁰ Thus, a further burden is placed on the regulatory body because the company clearly has an incentive to expand or improve service in the areas where rates exceed costs, and to neglect cities where the average price does not cover costs. A political decision to subsidize particular locations by means of a direct charge to the provincial budget would have caused fewer problems while keeping rates in cities with lower costs in line with those costs.

Popular Capitalism

Allocating 10 percent of shares to workers through the Program for Shared Ownership was intended to "buy" the consent of former OSN workers for the concession and has been a common practice in other privatizations undertaken by the federal government. Of course, it is difficult to argue after the fact, once privatization has occurred successfully, that this was a necessary or excessive price for its political viability. But the conditions at the time of bidding were propitious for labor unions to accept the transfer of management to the private sector. For one thing, employees knew that no investments had been made for a decade, and that the company was on the brink of collapse. Moreover, the initial wage level was quite low and the average age of employees was very high, thereby making the voluntary retirement program offered by the OSN very attractive in the context of an open economy with low unemployment. Moreover, the labor union was involved in the privatization from the beginning (it had a representative on the Privatization Committee), and its good relationship with the company has lasted through the present.

In Corrientes, privatization provided 2 percent of shares, and 15 percent of profits, to employees. Here again, this device was clearly used to reduce the opposition of employees who were losing job stability.

Neither case provided for a portion of the share package to be distributed among small investors. Instead, the remaining shares were assumed by the operators—in both cases well known international companies—and by local or foreign companies.

²⁰ Studies conducted by consulting firms charged with the privatization suggest that costs are higher in the three cities not included in the concession area.

Bidding Procedure

The method for choosing the concession operator was appropriate in both cases. In Buenos Aires, the expansion and quality requirements could not be changed during the first five years of the concession. Expansion plans for subsequent years could be changed on the basis of well-founded arguments, as long as the concession's principle of "company risk" was not changed. Consequently, the company could not be penalized for, or benefit from, actions prior to granting the concession and rates could only be reduced during the second five years. The rate system could not be changed during this time either,²¹ and no royalty would have to be paid for the use of current assets. Firms that were qualified as technically and financially competent to meet these obligations competed for the concession on the basis of the lowest water rate they were willing to receive.

Since the competition was based on such a crucial aspect of the concession's financial conditions as the rate level, the bidding process would not make sense if the contract were to be renegotiated immediately after the concession began (see Spulber 1991). The process would be equally flawed if the bidding participants' ability to evaluate the company's condition and the problems to be faced in meeting contractual requirements were limited by the speed of the transfer process and unreliable information.

In Corrientes, goals were set for service coverage and specific construction works (waste plants) and the concession was awarded to the company offering the lowest average service rate.

Awarding concessions on the basis of the lowest rate has been criticized for encouraging only a modest expansion of coverage in relation to the service coverage prior to the bidding process. It could also mean a price cut for users who had historically received subsidies from the central government. Both arguments are mistaken.

First, there is an inescapable relationship among the three major variables that define a concession's feasibility: investment, rates, and concession fees. The government can only determine two, because the third is deter-

²¹ In connection with this, article 17 of Appendix VII to the Concession Contract provides that changes in the demarcation of each geographical zone for calculating the fixed component of the rate must be billing neutral for the concessionaire.

mined by those interested in participating in the bidding process. If a more ambitious investment plan is chosen, lower income from fees or higher service rates must be accepted. In Buenos Aires, the fees had been set at zero, and therefore increased investment would lead to higher rates. Second, the strategy of having an extremely ambitious investment plan led participants to offer bids with higher rates. This was very risky because many users were accustomed to not paying their water bill, and because there was strong political pressure against charging "excessive" prices for an essential service. To ignore these characteristics would have unnecessarily raised the "expropriation" risk on sunk investments. Setting up the bid for the lowest rate reduced the risk of ending up with a low-quality equilibrium.²²

The natural monopoly in supplying water and sewerage in the city of Buenos Aires was legalized through an extension of the OSN Organic Law (Law 13,577) by demarcating the regulated zone and prohibiting users within the borders from receiving service from neighboring concessions. The intention of this concession, contrary to the argument made in the transfer of ENTEL and Aerolíneas Argentinas, was not to "collect and deposit the money," as was evident in the decision not to charge concession fees for using the pre-existing assets. Thus, the prohibition of cross-border competition can be understood as an additional tool for lowering the average service rate offered in the bidding.

Service Cut-off of Delinquent Accounts

Article 75 of the Buenos Aires Regulation for Users provides for cutting off service to delinquent accounts for failure to meet three successive payments (art. 38 of Law 13,577 already contemplated it for the OSN). A tem-

²² In the case of the province of Tucumán, for example, there were serious problems at the beginning of the concession. In keeping with an ambitious expansion target, the price set for a cubic meter of water was several times higher in that province than in Buenos Aires and Corrientes. Likewise, the alternative of setting the rate and the fees, and awarding the bid to the company offering the largest amount of investment raises the problem of generating efficient costs because competition takes place in a realm in which real resources can be wasted. Moreover, it is hard to compare bids, and hence the process becomes less transparent. To illustrate the problem of rent dissipation when bidding is based on investment plans, see Nellor and Robinson (1984). The problem of the lack of transparency in the case of bidding on the water service for the city of Buenos Aires on the basis of investment plans is mentioned in Gaggero et al. (1992).

porary exception may be made at the request of the ETOSS or the Ministry of Health and Social Action, but it is not specified who is to pay while exceptional treatment is in effect. While this may seem natural in light of the health aspects and priority of water services, the concessionaire runs the risk of expropriation since no limit is placed on the state's power to prevent service cutoffs. It would have been more appropriate for the state to compensate for a portion of the cost for services provided and not charged; it should be only a portion so that there would be no serious moral hazard for either party.²³

Article 44 of the Aguas de Corrientes contract provides for service to be cut off for failure to pay. It should be noted that cutting off service is the only short-term tool available because attaching property to collect what is due has to be pursued through the ordinary channels of justice and usually takes several years.

The Concession as a Monopoly and Tax Stability

Aguas Argentinas has been able to maintain a monopoly because all customers, residential and nonresidential, are required to have a connection, and therefore, "home service" (defined in article 10 of the regulatory framework) refers to any service with indoor facilities for users. It is therefore mandatory that residential, business, and industrial customers be connected, and that any alternative source be blocked (i.e., made unusable), although nonconnection or disconnection may be requested for an uninhabited property (art. of the Regulatory Framework). Article 6 of the Regulations for Users refers to the obligations of inhabitants in the service area.²⁴

In Corrientes, service may also be provided to anyone who requests it and property owners are obligated to install water and sewers at the discretion of the company. The user must pay for the connection and must close

²³ According to company information, cuts in service occur all the time for all types of customers, although some have been suspended at the request of the ETOSS (users really unable to pay), in which case the company has gone to court as plaintiff. On the other hand, 90 percent of government customers pay for the service, although only 60 percent do so on time with no collection actions taken.

²⁴ This differs from England where business and industrial users are not obligated to close off other sources of water supply. See Armstrong et al. (1994).

wells, although compliance with this requirement apparently has not been strict.²⁵

Government also has the power to charge taxes after the concession has been granted. Article 42 of the Aguas de Corrientes contract provides for the service rate to reflect the impact of changes to the VAT and the provincial gross revenue tax. That protects the company from subtle "expropriation" by means of changes to indirect tax pressure. However, there is no similar protection for property taxes.

Billing Efficiency

One of the most problematic aspects in providing potable water and sewerage in Argentina has been the lack of a framework that allows water rates to cover the opportunity costs of providing it, offers incentives for rational water use, and enables financing of expansions efficiently and fairly (see, for example, Guadagni 1973). The main features of billing "technology" remained unchanged during the industry's reorganization after the Aguas Argentinas privatization, although the groundwork had been laid for the (as yet undefined) shift toward the use of meters. In the case of Aguas de Corrientes, it was changed when it became clear that consumption by all users would be metered by the end of the third year of the concession.

An analysis of the rate design adopted in both concessions and the consequences of successfully handling institutional change after privatization illustrates the various consequences of inefficiency—notably the lack of metering and the absence of a positive marginal price—and the implications that the potable water supply has on the political economy. This framework is then applied to a simple case to evaluate the recent decision to revise water rates in exchange for increased investment or investing ahead of schedule.

Rate Design in Concessions

For Aguas Argentinas, the rate structure prior to the concession generally preserved the previous situation. Commercial and industrial users are to

²⁵ It should be noted that for environmental reasons, the obligation to close existing services seems more reasonable with respect to sewerage than potable water.

be metered, as was previously the case for all but a few exceptions that were supposed to be eliminated during the first two years. Residential users still without meters at the time of the concession (approximately 95 percent) would be metered at the discretion of the concessionaire, or at the user's request—in which case, the user would pay for the meter and its installation.

Thus, the envisioned transfer to a metered system is slow and inefficient. It is slow because the choice can be made only once, and users are discouraged from doing so because they do not know how much water they consume and therefore cannot determine the relative attractiveness of each system. Residential users may only change their minds once if, as a result of metering, the cost of the service changes by over 20 percent. The company must then compensate users if it wants to meter service by a sum equal to the cost of replacing and installing the meter.²⁶ It is also inefficient because the fixed charge in both systems depends on the characteristics of the property served, while the cost of the meter and its installation does not. That creates a situation where the owner of an expensive piece of property, with inelastic water consumption, is more likely to request metering while the owner of a less expensive plot, with elastic consumption, does not. From the standpoint of productive efficiency, such differentiation should not occur because for society it is preferable for customers to have metering when the savings in water consumption as a result of metering, assessed in terms of its production cost, is greater than the cost of the meter itself.

Reference values were also set for connection and infrastructure charges, which apply to customers whose service is being expanded within the regulated area.²⁷ Moreover, cross-subsidies, a rate feature distinctive to this service, are explicitly allowed (article 43, section 3, of the regulatory framework), whereas subsidies are explicitly prohibited for both electric power and natural gas. Specifically, the selected rate structure contains a

²⁶ Indeed, thus far (according to information provided by Aguas Argentinas) the number of residential users who have requested metered services is minimal.

²⁷ A connection charge must be incurred whenever the user is connected to the system if, under some circumstances (e.g., a home is abandoned) the customer decides to be temporarily disconnected. In contrast, the infrastructure charge goes into effect when service is available at the respective property, regardless of whether or not actual network connection has been made.

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subsidy from those customers who already have service to new customers in expansion areas because the infrastructure charge is not high enough to cover the full cost of incorporating new customers.

In principle, the rate adjustment criterion is like a ceiling price. Nevertheless, article 11.11.1.3 of the contract provides exceptions for ordinary (or periodic) and extraordinary revisions. Ordinary revisions—to expansion plans and improvements according to five-year plans, for instance—are based on contract enforcement. Extraordinary revisions refer to rate changes that arise from modifications of the concessionaire's costs by more or less than 7 percent, or changes in expansion plans, quality requirements, exchange rate, and taxes. In other words, there is an adjustment clause that should neither reward nor punish the company (passthrough). On the other hand, there are numerous references to the economic and financial equation and regulatory framework authorizations that the concessionaire must contract services for sums over US\$ 10 million through a bidding process. This sends contradictory signals that introduce a degree of "noise" and lend themselves to interpreting the spirit of regulation as "rate of return," thereby creating a problem of consistency in regulation by fixed price with passthrough.

Finally, article 47 of the regulatory framework states that the variable for rate regulation is average revenue, whereas article 11.4 of the contract states that (each of the) regulated prices must be understood as maximum prices. The concession grantor may offer discounts without discriminating between customers in similar situations, assuring that the resulting discounts will not allow for rate changes among customers. The decision to regulate only by average rate and not delegate the choice of rate structure to the company—even in the case of a natural monopoly in all areas of its operation is justified by strong health externalities associated with water service. These externalities would not be taken into account in the Ramsey prices that might be chosen by the company.

In Corrientes, regulation is designed on the basis of a ceiling price criterion with passthrough of some costs (wages, aluminum sulfate, and electric power). But, as in the case of Aguas Argentinas, article 7 of Decree 5118 (1990) says the rate must be fair and capable of covering costs while providing a reasonable profit. This indirectly introduces the idea of regulation through the rate of return. In addition, the contract itself provides for renegotiating the rate every three years if costs change. Partial passthrough of some costs presents an obvious problem of moral hazard since the company is involved in negotiating wage agreements. With regard to the market price of aluminum sulfate, the company's consumption is so crucial to total demand that it can affect that market price.

In Corrientes, the rate schedule is the same for residential and nonresidential consumers. This structure is better than that envisioned for Aguas Argentinas (where the residential rate is lower), because presumably the cost of dealing with a residential customer will not be lower than that with other customers. Likewise, with regard to the fixed charge, there are no varying "elasticities of access," since all customers must pay. (There could be different elasticities of water consumption that would justify higher variable charges to industrial customers from a Ramsey price standpoint).

Problems Setting Rates

Basic Formulas for Metered and Unmetered Systems

The rate-setting system for potable water in Buenos Aires follows a cadastral system in which each property's area, location, and age are used in a complex way to determine charges that maintain a rather unclear system of cross-subsidies. As a result, charges are completely unrelated to the volume of water consumed. In addition to the issue of measuring consumption, which has dominated much of the discussion regarding reform, other aspects of the system seriously complicate the political economy of providing service.

Water service rates are broadly divided into two categories: residential or family (which includes a portion of small businesses), and commercial or industrial. Each of these, in turn, can be either unmetered (the main category in terms of both physical volume and revenue) or metered service.²⁸ To understand the rate system, it is useful to start with the description of the formula for unmetered service, and then describing that for metered service.

²⁸ From the revenue structure of the OSN company at the time of privatization, it is apparent that only 10.5 percent of revenue came from metered water supply, equally divided into residential and commercial/industrial categories. The unmetered residential category contributed 57 percent of total revenue (of which 41.5 percent came from the Federal Capital—with full coverage—and 15.5 percent from the districts of Greater Buenos Aires supplied by the company—with average coverage of 48 percent for water and 33 percent for sewers). The relationship between the physical number of meters and connections was 14 percent for the Federal Capital and 22 percent for Greater Buenos Aires. Somewhat over 13 percent of these meters were out of service.

The basic formula for the unmetered service rate (P) is as follows:

$$P = T \cdot K \cdot Z \cdot (Sc \cdot E + S/10)$$
(5.1)

where T is a basic or general rate, K is the adjustment coefficient, Z is a "zone" coefficient that discriminates by district, Sc is the surface covered by the property, E is a coefficient of the dwelling quality which depends on the age and type or category of building, and S/10 is a tenth of total property surface (whether covered or not). Given the base or general rate, and the cadastral structure that defines the other components of the formula (5.1), the companies that competed in the bidding for the utility concession offered the lowest possible value for the K coefficient.

There are several aspects to this formula. First, the P rate can differ according to class of user. Second, it can also vary by the zone classification adopted (historically, the Z coefficient could range between 0.8 and 3.5). Third, it can differ by variations in the E coefficient (which historically ranged between 0.6 and 2.6). Fourth, it can vary by changes in the declaration of cubic meters of a particular property that are covered and not covered. The result of all these factors is a complex web of unclear cross-subsidies, since the resulting charges have no relation whatsoever to the volume of water consumption nor to the costs of servicing the property.

The rate system in the province of Corrientes is designed better because the fixed charge does not depend on any property feature and is the same for residential and nonresidential customers. The system is therefore more transparent. However, some problems that were not corrected at the time of bidding persist. For example, because the concession includes 10 cities in the province with the same rate schedule but markedly different housing densities per sector, there are some distortions where the prices paid by consumers do not reflect the opportunity costs of providing the service.²⁹

²⁹ The incentive to the concessionaire to reduce investments in areas of lower population density does not lead to an optimal solution. True, the company's natural response to invest less goes in the "right" direction (in the sense of adjusting the regional investment pattern to its marginal yield, which presumably is lower in areas of lower population density). But there is no guarantee that optimal capital expansion will occur in every zone (utilizing concessions as a tool to obtain efficient capital allocation is a strange way of solving the problem of moral hazard). Moreover, the regional price pattern is distorted in relation to the optimal pattern, and that produces welfare costs that could be reduced with rates that better reflect costs.

Additionally, the investment cost per sewer connection in this province would be approximately double that of water given the need for larger diameter pipes and waste treatment plants, whose cost is higher than that of water intake. Nevertheless, the connection fees would not reflect this cost differential. However, the possible positive externality toward other customers who would thereby have sewers instead of pit latrines could justify charging a lower connection fee.³⁰

Even if this externality were significant, the rate system introduces some distortions because the company is not encouraged to invest in waste plants and sewerage systems. Therefore, the regulatory body needs to monitor carefully to prevent that bias from being realized. While setting coverage goals for each location's population should restrict this moral hazard problem, in practice, expansion by region and service occurs in a way that best serves the company's interests. A more efficient alternative for solving the externality problem is to subsidize the rate paid by the customer by reimbursing the company's cost differential.³¹

In contrast to the unmetered rate, Aguas Argentinas has a metered rate (PM) that is defined as one-half of the unmetered rate plus a variable rate that depends on the amount used above a pre-established consumption level:

$$PM = P/2 + K pm \cdot (X - Xb)$$
(5.2)

where PM is the price per cubic meter applied when consumption X exceeds basic consumption, Xb. The average rate then turns out to be a threepart rate: a fixed charge, P/2; a block of free consumption up to Xb, where the marginal price equals zero (Xb equals 15 m³ per month) and the average price is declining; and a block where the marginal price equals PM and the average price is rising or falling depending on the system design. The price,

³⁰ This justification of a lower connection fee for sewers does not lead to the conclusion that the current rate is socially optimal because there is no proof that the value of the externality coincides with the differential between charges and connection costs.

³¹ It should be mentioned that the most important expansion plans are discussed with each municipality, since they supply the employees and, in some cases, materials. Thus, the company may impede expansions in areas where, from its standpoint, it is less desirable for it to do so.

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PM, the fixed charge and the unmetered rate are doubled if the user receives sewerage service along with potable water.³²

In the case of Corrientes, there is also a three-component rate for metered service (which should soon apply to all customers). It includes a fixed charge of 3.75 m³ of water (presumably to cover the cost of the meter rental, reading, and maintenance services), and an average price per cubic meter. However, beyond 10 m³ per month, there is a declining average price.³³

Implications for Consumer and Company Decisions

Much of the discussion surrounding the potable water rate system has involved evaluating possible incentives for consumers and companies to go from an unmetered to a metered system, where meter installation costs are factored in. This discussion emphasizes incentives for voluntarily accepting micrometering by comparing formulas (5.1) and (5.2). (See, for example, World Bank 1996). As a rule, however, it does not cover all the consequences an unmetered system may have on company incentives, particularly the rather unclear manner in which the system (5.1), supposedly the basis for "negotiating" a transition toward the metered system, is defined.

Starting from an unmetered system such as (5.1), consumers are assumed to have a utility function in which water consumption can be separated from other goods, and the company has a cost function that depends on the amount of water produced, its quality, and a given capacity. From this a set of implications relating to consumer and company incentives are derived. This exercise was carried out in Porto (1991) and leads to the following predictions or expected results:

First, given that the consumer faces a marginal price equal to zero, consumption is set at the partial saturation point for water, that is, when marginal utility equals zero. Second, because connection is mandatory (the consumer cannot disconnect) and the water rate has property tax features,

³² With regard to the technological aspect of supplying water and sewerage service jointly, the economies of scope are significant for commercial service (billing): if water alone costs a user \$1.00, the cost to a user with water and sewerage is approximately \$1.50. This suggests that the decision to double the bill when sewerage service is also offered is not very justifiable.

³³ Current average consumption is somewhat over 11 m³ per month, which suggests that a significant portion of residential customers is not included in the second segment.

the company may individually extract sums higher than the consumer's surplus. In other words, there are levels to the parameters in formula (5.1) that may imply that consumers are required to pay more than they are willing, and yet they may not opt out.³⁴ This problem also exists in Corrientes, although the obligation to be connected is not universal.

There are incentives for the company to minimize costs, if it limits passthrough and uses formula (5.1) as a ceiling price; but it also has to lower the amount produced, since marginal revenue for producing and selling an additional cubic meter is zero. There are also incentives for the company to reduce system losses by improving macrometering—including detecting losses from unmetered customers. This problem is less acute for Corrientes since 100 percent of customers have to be metered, but it does occur with a significant number of consumers whose monthly consumption is less than 10 m³.

Another major problem with this kind of system is that the company has no incentive to improve service quality. This problem is not as serious in Corrientes.

There are incentives for the company to concentrate its efforts on influencing rate system components by adjusting not only the K coefficient, but pushing for change along three lines: the "zone" structure or the Zs, the "quality of residence" structure or the Es, and the reclassification of properties by updating the proportion of covered to uncovered surface. These changes can take place in a relatively concealed manner, given the obscure nature of the rate-setting system. The political economy connotations of this last point for Aguas Argentinas can be quite significant, because these coefficients, in fact, determine the level and rate structure for water.

Since it is related to the property registry system, the rate-setting problem may be associated with determining the real estate or property tax. There are incentives for the company to have property assessments adjusted to account for home improvements, as is normally sought with changes in the real estate tax. This is not the case in Corrientes, however, where rates only differ between developed and undeveloped properties, although there is a

³⁴ The regulatory framework governing Aguas Argentinas allows the customer to stop paying for service when the property is unoccupied. However, this freedom is diminished, not only by the fact that its use is inevitably restricted to those who have at least two properties, but by the difficulty in proving to the Regulatory Agency that no one is, in fact, occupying it.

clear rate schedule. The problem here results from the passthrough of some costs in a poor design that exacerbates incentive problems, and from the aforementioned cross-subsidy.

Compensatory Rate Adjustments and Rate Renegotiation

Profits (p) for the company providing water services in the city of Buenos Aires come from the difference between revenues (R) and Total Costs (TC), which can be defined as

$$p = R (a, T, K, Z, E, Sc, S, pm, X, Xb) - TC (Xp, q \cdot S)$$

= $\Sigma\Sigma\Sigma \{[(a+(1-a)/2], [T \cdot K \cdot Z \cdot (ScE + S/10] + ((1-A)/2.k.PM. (X(pm,q) - Xb))\} - TC (Xp, q, \Sigma X), (5.3)$

where a denotes the percentage of unmetered customers, Xp denotes the volume of potable water produced, q denotes its quality, Σ denotes the sum over the total set of customers served, and the remaining terms denote previously defined variables.

Thus, revenues come from: unmetered sales (in proportion a), metered sales (proportion 1-a), and the parameters of the corresponding rate systems. The triple sum indicates variations between classes of customers, zones (Z), and types of housing (E). Costs depend on the water produced, its quality, and a measure of capacity or coverage in relation to the total surface of residences served (Σ S).³⁵

Formula (5.3) shows that company revenues are unit elastic with respect to the K coefficient because the latter enters all its components linearly. That is, a 1 percent increase in K raises sales revenues in the same proportion. Hence, when production costs remain constant, an increase in K causes a more than proportional increase in earnings.³⁶

³⁵ This formula omits other revenues (connection, infrastructure, bulk sale of water) in view of their relevance to the rate issues being addressed.

³⁶ The equivalent formula for Corrientes is much simpler: all customers are measured in the same way; residential and nonresidential customers all face the same rate pattern, with no distinction made on the basis of property characteristics, except for unoccupied land. Never-theless, Aguas de Corrientes revenues also have a unitary elasticity vis-à-vis the K coefficient.

Therefore, the rate adjustment that would compensate the company for increasing capacity or quality by raising the K coefficient, while it keeps its earnings constant, will depend on the elasticity of profits to such a capacity/quality increase. It is easily shown that it will never be in the same proportion.³⁷ That is, even though revenues do not rise as a result of the expansion plan (which is not the case in the example posed because revenues rise with S), under no circumstances should K rise in the same proportion as S. In this regard, it is strange that the 1994 rate renegotiation that increased capacity by advancing the investment program has established (at least so it seems) a proportional relationship between the increase in the K coefficient and the increase in investment. It is difficult to specify the quantification that would justify such a step, especially because company revenues are not expected to be neutral with respect to investment. On the other hand, the more these investments are aimed at improving service quality, the less impact they would have on revenues (due to the rate system) and the less inappropriate the measure adopted would be.

Further Implications and Possible Lines of Reform

Thus, there are disadvantages to the property assessment system on which potable water rate setting is based, especially in the case of Buenos Aires, because it feeds into a political economy already conducive to socially nonproductive negotiations hidden behind a murky system. Discussions of reform have generally focused on the possibility of introducing metering and incentives for negotiation between the parties (consumers and company).

These negotiations can depend on, or be conditioned by, earlier developments in rate adjustments that modify the parties' incentives to accept

³⁷ For example, if, in order to simplify notation, formula (5.3) is reexpressed as p(k,S) = I(K,S) - CT(S), the percentage increase in K that leaves profit p unchanged in the face of an increase in surface served, S, is obtained by entirely differentiating this formula, and results in (dK/K)/(dS/S) = -(dp/l)/(dS/S) (for this result, the unit elasticity of revenue with regard to K must be kept in mind). Given that I = p+C, the term on the right side is less than -(dp/p)/(dS/S) (i.e., the absolute value of the surface expansion elasticity of profit). Likewise, in the worst case scenario, dI/dS = 0, that is, serving more areas does not generate further revenue. (For example, if a service is uncollectible, or if the expansion in question is a quality improvement for customers with unmetered service.) Then the surface expansion-elasticity of profit would be -1 (maximum absolute value), thereby proving that (d/K/K)/(dS/S) is, in all cases, less than one.

metering. In a recent study, the World Bank (1996) examined possible incentives that encouraged consumers to voluntarily go to a metered system. It noted that the relative advantage depends on the set of unmetered rate parameters (like Z and E) compared to the "quasi-tax" portion of it. This study speculated as to the values that generate incentives to accept metering, but downplayed the complex web of differentiated coefficients and the possibility that the company or pressure groups would change those values. For example, consumers of potable water cannot lower their charge by reducing consumption in the unmetered system and wind up paying sums higher than their demand. However, they must be wary lest changes in the rate components through utilization of quasi-tax changes that increase consumer demand be used later to force metering. The best recommendation seems to be to discontinue the property assessment classification system as soon as possible, perhaps at the end of the first five-year period of the concession to avoid violating the contract clause and introduce "legal insecurity." This eliminates incentives to reclassify consumers while it protects the company from being pressured into changing the distribution of charges.

The three-part rate systems implicit in the two concessions analyzed here also focus on equity. It has been argued (World Bank 1996) that this rate design is equitable because it "limits" the decline of average water price to an assigned range. Depending on how the system is designed, the average price may rise beyond basic consumption. This result is not immediate. On the one hand, note that formula (5.2) is not in two parts but three, and that the middle block operates with a falling average and marginal price equal to zero; that is, it is a locally regressive arrangement (which is why the report mentions limiting average price growth).

Given the fixed-price features, and assuming that the poor consume less, equity-oriented reform would lower slightly the fixed charge and increase the marginal price of the next segment. In the case of a three-part rate, it is unlikely that a suitable design would leave a high fixed charge and lower the marginal price of the next segment to zero.³⁸ On the other hand, a marginal price of zero in the bottom layer of a three-part rate may be consistent with the definition of a priority potable water and sewerage service,

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³⁸ The telecommunications industry has proposed social rates that involve a lower fixed cost and a higher marginal price. See Artana et al. (1995).

that is, one where health officials want to encourage families to consume an indispensable minimum of potable water to avoid greater social harm (i.e., externalities, such as infections, epidemics, excessive Public Health expenditures, etc.).

On the other hand, from the standpoint of both efficiency and fairness, the cross-subsidy that exists in both concessions, from current to new customers, merits analysis. In this regard, the World Bank (1996) estimates that current Aguas Argentinas customers are subsidizing the expansion of service to new customers by a present value of \$ 480 million (for 30 years of concession at a temporary discount rate of 10 percent a year).³⁹ While this calculation may overestimate that subsidy, there is no doubt that it exists and is quite large.⁴⁰ In terms of efficiency, it can be argued that this subsidy acts as a disincentive for Aguas Argentinas to expand (World Bank 1996). However, this conclusion can be challenged. First, expansion was not left to the economic interests of the concessionaire, but was established as part of a contract, and should be interpreted as a counterpart to the rate level offered in the bid. The company's ability to determine the speed of expansion (below the concession requirements) is therefore reduced. Second, without a cross-subsidy, it is unclear whether new customers, who are typically lowincome and located in the districts of Greater Buenos Aires, would be willing or able to make higher payments. In this case, there would not only be no incentive to expand, but the financial balance of the company could be jeopardized. Indeed, the company would prefer to raise the cross-subsidy by lowering the infrastructure charge and financing the reduction with higher rates to existing customers (a rebalancing to eliminate the need to deal with new customers in the southern and eastern areas of the concession who are unable to pay). This year, for example, out of a projected \$50 million in revenues from an infrastructure charge, it is now estimated that only between \$10 million and 20 million will be collectible. That would also be

³⁹ The calculation method, however, is not clear. The cost for connecting water and sewerage service is a per capita \$47.60 per year (with 10 percent discount, assuming five persons per connection), which implies a present value of \$520 per person, or \$2,600 per connection. If that were the case, the subsidy would actually be high (80 percent) because a connection cost \$450 prior to ETOSS Resolution No. 83/95.

⁴⁰ In view of the investments required in the First Five-Year Plan and according to estimates by Aguas Argentinas itself, the expansion subsidy is approximately 60 percent.

"fair" because "expansion" is more redistributive than present service, since the new areas typically consist of populations whose incomes are lower than those in the federal capital and other areas presently served. Finally, from the standpoint of intragenerational transfers through potable water service financing, given the deficits of the OSN in the past, and investments financed as outright grants by the National Treasury and the provincial government of Buenos Aires, initial customers contracted an unrecorded debt to future customers within the regulated area. The latter also paid taxes, which went toward the financing, but never received the service. This constitutes another reason for including expansion costs in the usage rate. Note that the regulatory framework explicitly allows for such mechanisms, contrary to that for gas and electricity.

In conclusion, there is a disincentive to expand that could be remedied if the company were to be rewarded for expansion only after it was completed, with the regulatory body holding funds contributed for this purpose from customers who already have service. That way the company would perceive a "subsidy-free" price structure even though cross-subsidies would continue to exist.

Contract Performance

How effective are the regulatory frameworks in assuring reasonable investment flow and high quality service? The main problems arise from the decision to establish concessions rather than sell assets and the distortions created by the rate systems (due to the lack of metering in Buenos Aires and cross-subsidies in Corrientes), which make it more likely that contractual issues will be renegotiated. This in turn may result in a procompany bias or a bias toward expropriation due to design flaws in the regulatory agencies. In spite of this, other instruments were used to provide some guarantee in awarding the concession. These include allowing delinquent users to be cut off (although the rule is less rigid in Buenos Aires), granting strict monopolies, introducing price control features through rate of return by accepting some cost passthrough, and establishing investment goals for Buenos Aires, and service coverage goals for Corrientes.

The following observations offer partial evidence to conclude that Buenos Aires has experienced a degree of procompany bias. In Corrientes, however, design problems combined with a difficult political context had

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the opposite effect: discussions between the company and the provincial executive were highly politicized and led to a concentration of stock hold-ings in the hands of local investors.

The performance results for both concessionaire companies are consistent with expectations based on the above conclusions. The expansion goals envisioned in Buenos Aires were met (the first three years of the concession were evaluated). In the case of Corrientes, as the political situation grew more complicated, the company fulfilled the contract less and less.

Behavior of the Regulators

Buenos Aires

With regard to Buenos Aires, the regulatory design displayed both positive and negative features. Regarding the incentives of the main "players" (i.e., the ETOSS and Aguas Argentinas), the regulatory body, while supposedly political in identity, receives its financing in direct proportion to company billing and cannot benefit economically from the application of fines. Board members also enjoy stability in their positions, while the regulated company enjoys a strong monopoly, with incentives to maximize benefits more through property reassessment than by cost cutting or quality improvements. Moreover, decisions by the ETOSS are subject to only limited oversight, given the complexity of the rate system, and the absence of public hearings to discuss its future rulings. This enhances its discretionary leeway. Due to contract specificity and the consequent need to rely on the knowledge of the regulated company, combined with the aforementioned nature of financing, decisions are biased toward the company.

A discussion of various ETOSS decisions suggests there was bias toward the regulated company. This is only a presumption, since verification beyond any doubt is beyond the scope of this work. Section 6.2 presents company performance indicators of private management over the past three years. The attainment of various goals and high profitability—which according to *The Economist* (February 24, 1996) is quite unusual on a global scale—makes it hard to argue that the bias is anything but procompany. Only recently have some ETOSS decisions been questioned. For salient aspects of the requests for information that lawmakers have made to the executive branch, see Artana, Navajas, and Urbiztondo (1997).

ETOSS Rulings Included in the Customer Regulations

As stated in article 66 of the Customer Regulations, residential users have a one-time option to have metered service, except when the service cost increases by more than 20 percent as a result of metering. In that case, if the company had sought the meter, it must compensate with a sum equal to the meter replacement and installation cost. Of course, after a change of mind, the company would be in the best position to make the decision for metering itself, since it would undoubtedly be profitable to do so. In that sense, the protection of the customer's right to choose could have been improved by further restricting the company's power to meter after a customer who had requested metering changed his/her mind.

According to an ETOSS ruling, the installation cost for any metering device with a diameter less than or equal to 50 mm is \$99 for the work plus a unit price ranging between \$31 for 15 mm diameter devices, and \$219 for 50 mm devices. The sizable price difference occurs for 20 mm–25 mm devices, whose price jumps from \$36 to \$112. In Corrientes, the cost of small meters (with a capacity of less than 3 m³, used by 95 percent of residential customers) is \$15, and the more expensive ones (capacity over 10 m³) are \$30. Note that the ETOSS ruling setting meter prices for the city of Buenos Aires was made after the bidding process and constitutes postcontract protection for the company, given the high prices compared to other countries, and to prices set in Corrientes.

The Customer Regulations procedures for conflict resolution are also inadequate. For example, when a meter error occurs and the user asks that it be checked, it is done by the concessionaire. If the concessionaire says the meter is working properly, the user must pay the inspection cost. Thus, there is a problem of moral hazard; it suits the company to say there are no problems when its metering produces overestimates (see art. 26).

1994 Rate Increase (ETOSS Ruling No. 81/94)

The company requested a rate adjustment in order to achieve expansion and quality goals ahead of schedule (incorporating the shantytowns into the Municipality of the City of Buenos Aires, which made the request). The estimate by Aguas Argentinas of higher costs was subjected to outside auditing, and the Ministry of the Economy and Public Works and Services authorized a correction. The decision of the ETOSS Board was unanimous.

Planned improvements and expansion required investments totaling \$122,085,000 over a two-year period, divided as follows:

- Replacing water with nitrates: \$31,845,000
- Increasing investment goals
 - a. Expanding Gral. Beltrano stabilizer: \$14,000,000
 - b. Extending distribution systems (300,000 inhabitants, primarily in the districts of Lomas de Zamora and Tres de Febrero,⁴¹ representing an increase of approximately 6 percent in the number of customers): \$66,440,000

• Installing water and sewers in shantytowns, MCBA (Municipality of the City of Buenos Aires): \$9,800,00 (i.e., this is the least significant change, but it is always mentioned first in justifying the decision).

The rate adjustment was approved as follows:

- Rates linked to consumption (by the adjustment factor "K"): 13.5 percent increase;
- Rates for service reconnection and cut-off (art. 38 and 39): 13.5 percent increase;
- Charge for water infrastructure (residential system): 38 percent increase;
- Charge for sewer infrastructure (art. 40): 45 percent increase;
- Charge for service connection (water and/or sewers, art. 36): 42 percent increase;
- Charge for treatment of industrial effluents (art. 43): no change.

An initial conclusion would be that the balance shifted heavily against new users (although from the outset, the cross-subsidy for expansion was not reversed), and that the average rate increase was over 13.5 percent (according to Aguas Argentinas officials, the average increase was close to 15 percent). Public opinion paid little notice to this and there was very little protest, suggesting two possible explanations. First, since they were only "potential" or "future" users, the new customers did not recognize the 42 percent rise in the price of connections and infrastructure charges. They realized it when it came time to pay, but not when the decision was made (see

⁴¹ Note that the current governor of the Province of Buenos Aires, whose representatives make up a third of the ETOSS Board, was mayor of Lomas de Zamora.

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Ambito Financiero, February 23, 1996, p. 8 and *Clarín* April 24, 1996). Second, existing customers did not perceive the service as expensive, so they accepted a price increase. The increase for them was less than for new users anyway.⁴² This is quite different from what happened when an attempt was made to increase telephone rates.

How was the 15 percent increase calculated? Reliable information to answer this question is not available, but some speculations can be made. The 1994–95 ETOSS Annual Report (pp. 48–49) stated the timetable for goals had moved up. This was interpreted to mean a 13.8 percent increase in the investment program for the first 10 years of the concession⁴³ and a \$243.3 million increase in operating costs, equivalent to about 15 percent of previous operating costs. Thus, the 15 percent cost increase (including presumably greater cumulative costs) led to a corresponding 15 percent rate increase.⁴⁴

Putting aside the adjustment for higher costs, it is tempting to assume that the 10 percent cost increase resulting from moving up the investments⁴⁵

⁴⁵ The sum total of anticipated investments, \$ 122 million, distributed over 8 years and assuming an average financing cost of 10 percent, generates a cost increase of \$16.8 million a year in the first 10 years, which equals approximately 5.6 percent of annual costs at this time. To reach 10 percent, higher operating costs due to greater coverage must certainly have been included, but that could not be confirmed.

⁴² The average bimonthly bill for water and sewerage services is \$13.80 while the average bill for telephone, gas, electricity, and cable TV is approximately \$45 each. This also contributes to the absence of major complaints about service.

⁴³ Investments total \$333 million. Their composition is not spelled out, but surely contains a rate adjustment of approximately 5 percent for the cumulative cost variation from the time of the concession to that date. According to the contract, when cost increases reach 7 percent, a rate adjustment was to be made (in principle, for the same amount). Thus, when the investments were moved up, the extraordinary revision that would have been made in late 1994 (when the costs would have risen by 7 percent) occurred earlier. Hence, of the 15 percent average increase, 5 percent would be for higher cumulative costs from the time of the bid to the time of the revision. The Ruling states further that the reference date of the next extraordinary rate revision will be May 1994, when it will be reviewed. From that time, up to a year ago, the cost increase approached 7 percent, but is now approximately 5 percent, and the company has received no additional rate adjustment.

⁴⁴ Page 49 of the ETOSS Annual Report, in the section entitled "Extraordinary Revision" seeks to explain the calculation method. It involved keeping the debt level for year 10 of the Concession constant, and raising revenues during years 2 to 8 of the Concession. This explanation is not inconsistent with the hypothesis proposed here, and it should be noted that the economically appropriate criterion is not to hold debt constant, but to keep earnings constant. In any case, the increase seems excessive and there is no explanation for how \$122 million in improvements and expansion become the \$333 million used in the calculation.

caused rates to increase in a similar manner. If the calculation was actually made in this way, the critical comments below are in order.

If earnings are positive, revenue and cost increases in equal proportion mean greater returns, and if returns are highly positive, there is no reason to reward new capital in the same way as the extraordinary return for existing capital. This is because such a change does not account for greater current revenues (due to greater consumption resulting from a near 6 percent increase in the number of customers) accompanying greater current costs.

Being unable to specify whether or not these sums are reasonable, we should point out that the ETOSS annual report offers no clear information on such an important topic. Also, article 11.11.3 (Ordinary Revisions) of the Concession Contract refers to ordinary revisions as those having to do with rate changes due to adjustments in goals and/or capital disbursements envisioned in the Five-Year Plan for Improvements and Expansion. It goes on to state that this refers only to revisions involved in presenting the Second Five-Year Plan, and those following it. In this sense, moving up investments before the first Five-Year Plan has ended would not be in agreement with the terms of the Concession Contract.

Determination of the Infrastructure Charge (ETOSS Ruling No. 83/95)

Article 40 of the Concession Rate System set the reference value for the infrastructure charge for both residential potable water and sewerage systems. These values were then modified as indicated in the aforementioned ruling, but were still used as reference values. Therefore, the definitive (as opposed to the reference) value for the infrastructure charge was then set for potable water service (there is no mention of sewerage service).⁴⁶

Consequently, a water service infrastructure charge was approved that could vary in accordance with this formula:

 $ICi = LSi \cdot Km \cdot Pds + Pc$,

⁴⁶ Since this constitutes a change in the rate system and a company proposal was not mentioned in the justification of the ruling, article 11.11.1.1. of the Concession Contract requires the Ministry of Economy to give prior approval. The ETOSS does not say it received the necessary approval (Application Authority).

where ICi is an infrastructure charge on the property; LSi is the land surface of property; Km is a coefficient based on the type of soil and percentages of road and pavement work for each specific project (with a maximum range of approximately 100 percent difference, because the minimum value is 0.6944 and the maximum is 1.3713); Pds is the price of the "distribution network" component, which equals \$0.97/m² of the land surface of the property; and Pc is the price of the "connection" component (equals \$208.13 up to 22 mm diameter, \$266.22 from 21 mm to 33 mm, and \$297.40 from 34 mm to 41 mm).

According to an article that appeared in *Clarín* ("Notifications of Water Connection Suspended," April 24, 1996), this charge varies between \$400 and \$600, and hence on (linear) average, seems to be higher than the \$450 indicated by ETOSS Ruling No. 81/94. Still, we should remember that the system is being expanded in an area that has seen fewer improvements on average.⁴⁷

According to the explanation given by Aguas Argentinas, this calculation is correct. On average, the infrastructure charge rises for each user (except for those owning very small plots of land) because the reference value specified in the contract was calculated on the basis of a cost estimate for connecting a block, assuming there would be 40 lots (i.e., lots of 250 m²). However, the expansion zone is less dense (i.e., the typical lot has a surface area that exceeds 250 m²). Thus, the higher infrastructure charge each connection receives as a result of Ruling 83/95 generates the same total revenue for the company as the previous reference charge that referred to a higher estimated density.

Note, however, that the company should have anticipated that the expansion area is less densely populated, and accordingly, have specified as

 $^{^{47}}$ In any case, we can perform the following exercise: property measuring 400 m² (a typical 10 m x 40 m lot in the metropolitan area) with a low installation cost (softer soil, with no pavement or roads) and a small diameter connection must pay \$476.70. This is higher than the previous uniform sum of \$450 (which includes the 45 percent increase mentioned earlier). In Corrientes, it costs \$17 to be connected to the existing network. This sum cannot be directly compared to that in effect for Aguas Argentinas because it is only valid in circumstances where the customer has the system at the door of his/her house, and requires only the connection (which he/she must then pay for). There is no connection cost in Corrientes for zones requiring construction of the street system because these investment plans are negotiated with each municipality, which in many cases make contributions in kind (labor or materials).

much in their quote during the bidding process. Therefore, the ETOSS could have argued that the average user charge should remain unchanged, and the company's revenue loss, due to a lower density than initially anticipated, would have been treated as a business risk.

In conclusion, the infrastructure charge is related to cost, and since the demand elasticity is minimal, efficiency considerations are out of place because they tend to eliminate cross-subsidies from unimproved to improved properties. Nevertheless, the initial evaluation of the ruling is negative for the following reasons: it maintains a regressive cross-subsidy between properties under a single expansion project⁴⁸ and; it never seems to be the case that no customer would be better off, since even those at a lower cost must pay a higher charge than the prior reference charge. Since processing a new infrastructure charge within a particular time frame does not appear inevitable under the contract, and although additional information is needed to render the specifics of this assumption (i.e., average surface area of new users, average soil characteristics, degree of road paving, and the existence of access roads), the ETOSS ruling seems to have favored Aguas Argentinas unilaterally.

Rate Classification Adjustment (ETOSS Ruling No. 20/93)

In evaluating the reclassification of residential to nonresidential customers, who pay double the previous fixed charge and do not have unlimited consumption, the ETOSS granted the company a two-year extension in meter installation for the new nonresidential classifications. Customers have the option to request metering (cutting the fixed charge in half) or to wait for the company to do it. In any case, they are immediately classified as nonresidential (article 11.13.2.1 of the Concession Contract), and customers are responsible for paying meter installation costs (article 25 of the contract).

The decision is consistent with the specifications and the contract. According to article 45 of the Specifications, the ETOSS had the authority to make such an extension and agreed to grant it on the grounds that it was

⁴⁸ The paving characteristics are those of the average property. Thus, to the extent there is a positive correlation between paving and the wealth of their owners, there is a subsidy from those who are without improvements toward those with them because as the average degree of improvements and paving increases so does the infrastructure charge.

technically impossible for all the reclassified customers to be metered immediately. However, why was no thought given to transferring the company's economic benefit from that extension to consumers in another way?⁴⁹ It should be noted that the customers in question were certainly businesses and professional people, whose water consumption is low, and hence, it is in the company's interest that they continue to pay a higher fixed charge without metering.

It is also interesting to note that article 1 of ETOSS Ruling No. 66/95 further requires Aguas Argentinas to install and/or repair 80,000 water meters a year from May 1, 1995, to April 30, 1998. If it is referring to clause 11.12.1 of the contract, why does it not mention which event of noncompliance on the part of the company allows the regulatory body to place a further requirement on it. Noncompliance entails levying fines, and the obligation to install meters, which the regulated company would do in any case, is not an acceptable substitute.

Billing to Consortiums (ETOSS Ruling No. 12/94)

In general, it is technically impossible to place individual metering devices in condominiums. Consequently, the ETOSS allowed the company to measure the water consumption of a group owner (i.e., using only one meter), and made it responsible for assuring that each of the functional units pays its share. Even though this power had been granted to the previously existing OSN in its Organic Law (art. 72, Law No. 20,324), the following should be noted:⁵⁰

• Since the "fixed" charge on metered service is a "quasi-tax" proportional to the property surface served, the joint (group) "fixed" charge is equal to the sum of the fixed charges that the functional units would have been billed if they were individual. Thus, it is clear that this type of fixed charge is irrational;

⁴⁹ On the other hand, no deadline is set for the company to install the meter when requested to do so by the customer (ETOSS Ruling No. 44/93 sets a limit of three months and the only penalty is that the customer only pays half of the fixed fee).

⁵⁰ This revision did not conflict with the OSN, however, since there were about 4,000 metered ownership associations at the beginning of the concession, surely for lack of metering incentives under public ownership. In contrast, there is currently a court order suspending installation of meters on collectively-owned properties as the result of a case filed by the Ombudsman.

- Jointly metered apartment houses do not resolve the "free ride" problem, and therefore price-elasticity of demand is very low. These are the customers that the company is most interested in metering; and
- The decision also preserves the concessionaire's obligation to inform each functional unit about the charge to that user. This constitutes a duplication of tasks because, in fact, the management group will have to do that itself. If that concessionaire obligation were abolished, the savings could be passed on to consumers in the form of a lower fixed charge.

Corrientes

Determination and completion of the water and sewerage service concession for the 10 main locations in the province of Corrientes occurred during Governor Leconte's term (1987–91). The governor decreed the privatization on the basis of the provincial law that had followed the National Law on Reform of the State. The process was hastened by the absence of any discussion in the provincial legislature.

Provincial politics has been dominated by the PAL (Pacto Autonomista Liberal-Liberal Independence Party), which has been in power from 1983 to the present. Its only break in power was the 1992–93 period when the federal government stepped into the province after a tie had occurred in the Electoral College chosen in the 1991 elections. Nevertheless, political risk in the province has increased due to serious internal rifts within the PAL, which first became public in 1994 and finally exploded in 1996, when one faction of the party opposed the fiscal adjustment program championed by Governor Raul Romero Feris.

According to political analysts, the province has no strong labor unions, the church is not united in its position, the justice system—linked to the PAL government—is immersed in the political crisis, and the main media outlets are owned by the PAL and opposition political leaders. Moreover, the province's deteriorating financial situation produced a higher risk of expropriation of sunk investments. For example, politicization of public utilities could compensate for the need to cut back on payroll spending. In 1995 and 1996, the province adjusted payroll spending and took steps to lower the social security deficit. This was the political and economic context that suggested the water and sewerage concession in Corrientes was heading toward a low-quality service equilibrium in early 1996. Clearly, there was a greater risk of covert expropriation by the provincial government. The makeup of shareholders in the private company changed during that time, which has at least partially reversed the situation.⁵¹

Article 39 of the contract envisions rate modifications should any of the following costs vary by more than 5 percent: (a) the electric power price (set by the provincial government); (b) basic labor agreement wage; and (c) aluminum sulfate prices. In July 1993, the company requested a 16.84 percent rate increase, and the regulatory body authorized one of only 6.04 percent arguing that cost indexation was prohibited within the framework of the Law of Convertibility passed by the federal government in April 1991. It did agree to adjust the rate as a result of the change in the electric power price charged by the provincial electric company, however.⁵² This is a peculiar interpretation of the Law of Convertibility because that law eliminated general rate indexation, but not relative price changes, even if they should be the result of cost changes. Indeed, the federal government admits that changes in generation costs or costs to natural gas producers are subject to passthrough to final electric and natural gas bills, even though adjustments based on wholesale or retail general price indices in the distribution margins of both products are not allowed. It does, however, recognize dollar inflation.53

In September 1994, a provincial judge declared it unconstitutional to cut off water service for delinquency in payment. The provincial government stated its intention to comply with the contract. According to the regulatory body, the concessionaire is cutting off service for customer failure to

⁵¹ See Esfahani (1996).

⁵² In November 1993, it authorized another 2.65 percent increase for the same reason: a rise in the cost of electric power.

⁵³ It could be argued that measures taken by the regulatory body moderate the incentive problems caused by allowing cost variations to be transferred to the rate. Even though a decision to move toward a ceiling price with fewer cost passthrough aspects may in itself be reasonable, the text emphasizes that the decision adopted in July 1993 subtly changes the concession contract, because article 39 authorized transfer of these cost variations. Also, previous clauses in the regulatory body ruling cite as justification a report by the State Inspection Office, which suggests that wage hikes should not be recognized. (The Inspection Office comes under the executive power in the province).

Period	Number of fines	Amount (in m ³ water)	Average fine (m ³)
1993	6	32,000	5,400
1994	9	94,000	10,400
1995	12	151,500	12,600

Table 6.3 Fines Imposed by the Regulatory Body on the Aguas de Corrientes Company

Source: AOSC (regulatory body for water and sewerage service in Corrientes).

pay in accordance with its plans.⁵⁴ Hence, there is the possibility of political pressure to delay cutting off service to more sensitive users. In practice, service has been cut off, but never on a broad scale, and around 20 percent–25 percent of billing is noncollectable. About half of what is noncollectable is said to be that of the provincial government itself.

There have been problems with the labor union, in a province where labor union power is weak. For example, in 1995, the labor union sought to have the concession contract canceled because no board member represented the unions and because of effluent treatment problems. It also cited failure to comply with placing meters and breach of the collective bargaining agreement. (*El Litoral*, July 25, 1996).

The regulatory body raised the number and amount of fines imposed on the concessionaire for a variety of problems. Table 6.3 indicates sums for the 1993–95 period.

A number of politicians have questioned the contract and asked that it be canceled due to water quality problems (*El Litoral*, February 24, 1996). A PAL senator asked that the judicial system intervene on the issue of cutting off water because "the state's responsibilities in social matters are absolutely mandatory, and in the history of great epidemics in the country and in the world, this obligation has outweighed the mere legally binding nature of contracts" (*El Litoral*, June 13, 1995). At the request of this senator, on September 1995, the Provincial Senate gave half passage to a law creating a mixed commission composed of legislators and the company to review which

⁵⁴ Regulatory body responses to a questionnaire submitted by FIEL.

delivery cutoffs could actually be made. Passage was completed in 1996. Another law was passed that required the regulatory agency to revise interest charged on overdue payments collected by Aguas de Corrientes in line with those established (sic) by the Law of Convertibility.⁵⁵ This could force the company to return excess sums received.

In 1995, fulfillment of the physical service goals began to slow. Interestingly, the gap arises for two reasons: (a) the population growth rate in the concession area proved to be considerably higher than that envisioned in the specifications, and meant an automatic increase in those goals; (b) the company did not satisfy its obligation to install three purification plants. With regard to the plants, the company claimed that local and provincial officials delayed transferring the land on which they were to be installed, but regulatory officials recommended the contract guarantees be enforced. No final decision has been made on this conflict. With regard to the higher-than-expected growth rate, Figures 6.2 and 6.3 prepared by the regulatory agency show that political problems were at their height in 1995 and 1996, the same period in which the water and sewer connection plan was not being fulfilled.

Finally, in early 1996, the principle shareholder in the company sold its holdings to local shareholders, who presumably were better able to deal with the pressures of the provincial government.⁵⁶ It could be argued that in a high-risk province, the manner in which the company's shareholder capital was set up could have led to these events, and a company could have been established primarily with local capital. However, there are several reasons as to why that did not happen in 1990. At the time of privatization, the provincial political horizon was relatively stable and it was hard to foresee fighting within the governing party. In the bidders' prequalification, importance was given to technical requirements such as prior involvement in metering, billing, and payment; managerial and business capability (17 percent of the total number of points); background in providing public utilities in water and sewerage services (23 percent of the total); and shareholder net worth of over \$15 million (22 percent of the total). Taken together, these requirements reduced the likelihood that a company made up primarily of capital from Corrientes would be successful.

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⁵⁵ The Law of Convertibility does not set ceilings on interest.

⁵⁶ For a theoretical discussion on the dispersion of shareholding trends in public utility company stocks in the United States that supports this point, see Kahn and Urbiztondo (1991).

Performance Indicator Trends

Aguas Argentinas

As seen in Table 6.4, performance indicators have moved in a positive direction. With regard to surpassing water and sewerage connection goals, the company provided the information. However, the positive performance is not apparent with respect to the Specification of Terms and Conditions, because the expansion goals were set as percentages of the population in the concession area defined by five-year periods. Compliance depended not only on the number of new connections, but also on the area's population growth, and no annual goals were set. Therefore, the population growth assumptions used are crucial when comparing those goals to connections actually made. For example, at the start of the concession, 6 million people (70 percent of the total population of the concession area) were served with water. The coverage goal to be reached in year five of the concession is 82 percent of the total population, which translates into 205,000 persons per year if there is no population growth, and 351,700 persons per year if the population grows at a 2 percent annual rate. Actual annual expansion during the first three years of the concession was around 594,700 people. That is consistent with a population growth rate of around 1.3 percent, which is average for Argentina. Actual expansion is clearly not far from that estimated at the beginning of the concession.

As shown in Table 6.5, the Aguas Argentinas financial indicators are excellent. Company profits were negative the first year, but that was reversed immediately. The company achieved a net rate of return on equity of over 40 percent in the third year of the concession, basically due to the substantial increase in revenues for services annually (especially in the second year of the concession).⁵⁷

⁵⁷ The structure of real revenues (in millions of current dollars) unfolded as follows:

	Year 1	Year 2	Year 3
Residential	169	198	210
Nonresidential	93	124	126
Quilmes	8	9	11
Other	9	20	39
Infrastructure charge	0	0	14
Total	279	350	400

Table 6.4 Trends in Aguas Argentinas Performance Indicators

Increased population served with water	844,00 inhabitants (115 percent of goals as reported by the company)
Increased population served with sewers	386,000 inhabitants (340 percent of goals as reported by the company)
Repair of water pipe system	634 km (155 percent of goals)
Water not accounted for	31 percent (goal for year 15 attained) initially (in the specifications) the loss was 43 percent
Meter installation	92,500 (116 percent of goals according to ETOSS Ruling No. 66/95)
Increase in productive capacity	37 percent (24 percent due to rehabilitation of pre-existing plants)
Water Pressure in Federal CapitalPercentage of connections with over 8 meters pressure	From 15 percent (year 1) to 97 percent (year 3)
Percentage with pressure under 2 meters	From 2 percent (year 1) to 0 percent (year 3)
Water Pressure in Greater Buenos AiresPercentage of connections with over 8 meters pressure	From 13 percent (year 1) to 54 percent (year 3)
Percentage with pressure under 2 meters	From 4 percent (year 1) to 1.7 percent (year 3)
Hours of delay in resolving water complaints	From 70 in 1993 to 50 in 1995
Hours of delay in resolving sewerage complaints	From 70 in 1993 to 25 in 1995
Collection within 6 months	Rose from 86 percent at the beginning, to 89 percent by the end of the third year
Investment	\$625 million (\$145 in year 1—\$127 for upgrading the company—\$210 in year 2, and \$ 270 in year 3—\$157 in expansion, \$50 in rehabilitation of existing assets and \$64 in upgrading the company)
Staff	Initially 7,365; first year 3,800; since then, growing at 2 percent/year
Jobs created by investments	2,100 the first year; 5,300 the second; and 8,200 the third (including contractors of works and services, according to the company)
Growth in average gross salary (contract staff)	46 percent increase in 3 years

Year	1993	1994	1995
Net Worth (NW)	95	131.9	185.4
Net Profit	-23.2 (19 percent of capital contribution)	26.45 (25 percent of capital contribution)	53.6 (41 percent of capital contribution)
(Net) revenues for services	163.3 (with 8 months of operation)	305	360.8
Total Costs		303.2	341.45

Table 6.5 Trends in Aguas Argentinas Financial Indicators (In millions of current dollars)

In conclusion, the concession has moved in a satisfactory direction, both in terms of meeting expansion and improvement goals and in the bottom line achieved by operations. Thus far, there has been no fluctuation such as that seen in the Corrientes concession, which is discussed below.

Aguas de Corrientes

The private company took over water and sewerage services beginning in September 1991. Table 6.6 shows the results under private management for the 1991–95 period. In four years, the number of water connections rose by 22 percent and the number of sewerage connections by 50 percent, thus attaining greater service coverage (an additional 7 percent of the population with water, 12 percent with sewerage). Between September 1995 and March 1996, the number of connections will have risen even more rapidly (7.2 percent for water and 31.6 percent for sewerage). Figures 6.2 and 6.3 illustrate the degree to which goals were met during the period between August 1994 and June 1996.⁵⁸

⁵⁸ These figures, prepared with information provided by the regulatory body, should be interpreted with caution. For example, the jump in the number of sewer installations noted in Figure 6.3 is due to the AOSC's acceptance of homes where the system comes to the door but is not connected as counting toward goal fulfillment. This company claim was accepted after most of the capital stock had been transferred to business people in Corrientes.



Source: Administración de Obras Sanitarias de Corrientes (AOSC).



Source: Administración de Obras Sanitarias de Corrientes (AOSC).

	To Sept. 1, 1991	End of 1995	May 1996
Num. of water connections	80,000	97,954	104,974
% of population in water system	66.14	72.96	76.31
Number of sewer connections	35,939	53,908	70,962
% population with sewers	29.63	41.60	50.58
Daily consumption per inhabitant	471 L/day	421 L/day	377 L/day
Employees/1,000 water connections	7.38	2.55	2.59
Rates (\$/m ³ of water)	0.3275	0.355	0.355
Investment (millions of US\$/year)	1.4(*)	11.5	nd
Billing (US\$ million/years)	28.3(*)	21.4	nd
Water production (millions of m ³)	61.5(*)	55.1	nd
Estimated loss (% of prod.)	60.7	45.0	nd

Table 6.6 Performance of Aguas de Corrientes S.A.

*First year of concession.

Increased micrometering made it easier to lower average water consumption during the first years of the concession from 471 liters/day in 1991 to 377 liters/day in May 1996.⁵⁹ There was also a notable increase in the productivity of employees, the number of which fell from 590 at the beginning of the concession to 250 in September 1995. There were only 230 employees by the end of that year, although information from the regulatory body reports that it increased to 270 in 1996. The number of employees per 1,000 water connections thus fell from 7.4 in 1991 to 2.5 in 1995–96. Water loss was also reduced from 61 percent in 1991 to 45 percent in 1995.

In short, performance by Aguas de Corrientes has been reasonable, although its inability to collect for service has hindered its development. It does not seem accidental that company ownership has been transferred to local partners in order to avoid a low-quality equilibrium such as began to appear in late 1995.

⁵⁹ The company does not read 100 percent of the meters as specified in the contract. At the end of 1995, the reading percentage was somewhere above 80 percent.

Conclusions

The regulatory framework in Corrientes is better than that of Buenos Aires, although the two share many similarities. One major exception is the design of the regulatory agency, which is under the executive branch and whose salaries are based on the water rate. There are no major "fissures" to suggest a design problem that later led to opportunistic behavior on the part of the government. The exception is the design of the regulatory body and the transfer of service by concession, which opened considerable possibilities for renegotiation since each change in assets required approval. Nevertheless, the problems that did arise did not stem from this weakness in the contract. They were rooted in the significant change in the attitude of local political leadership when macroeconomic conditions changed. This impacted on the provincial treasury, thereby creating pressure not to collect delinquent accounts, even though the regulatory framework explicitly allowed for it.

Initially, the contract was appropriately applied in Corrientes, given the political context. In 1994, as the governing party was torn by political infighting, opportunistic behavior reduced the credibility and completion of the coverage plan. Majority stockholders even sold their shares to a local businessman who was more prepared to prevent expropriation as would be expected on the basis of a simple model of political economy. It therefore became clear that the contract was flawed, since its implementation is highly sensitive to the prevailing political context.

A decisive factor in the Corrientes concession problem was the high proportion of noncollection—much higher than estimated at the time of the bidding. The legal and political context made it very difficult to collect debts. An alternative for future concessions in other provinces could be to share collection on delinquent accounts above a certain billing percentage with the regional government in order to generate an extra revenue flow to the provincial government.⁶⁰

In Aguas Argentinas, the property assessment system remained in effect, limiting options for metering. Reassessments rather than efficiency improvements (improved quality, for example) were seen as the way to maximize profits. This decision may have been made to avoid redistribution problems: going to a metered system would have further raised the rate for

⁶⁰ In other words, the fixed monthly concession fee would be replaced by one tied to the concession's ability to collect.

the least expensive properties, which today are favored by the assessment system. In any case, the use of public utility prices as a way to distribute income is open to criticism and has not been adopted by the federal government in selling electricity and natural gas.

In Buenos Aires, funding of the regulatory agency is, in practice, tied to the revenues of the regulated company (notwithstanding a design to the contrary). Moreover, it cannot reap any economic benefit from penalties imposed on the concessionaire for breach of contract. This introduces a potential procompany bias into the ETOSS. Its effect is just the opposite of what might be expected from the design adopted for constituting its policy board, as compared to other regulatory bodies at the national level.

There seem to be more labor union problems in Corrientes than in Buenos Aires. Perhaps the postconcession government in Corrientes handled labor unions in a more political manner.

In Buenos Aires, the rate balance shifted in 1994, aided by its low visibility—it hurt new users with delayed temporary effects—and/or because the service had little impact on user revenues as a whole. This regulatory environment contrasts sharply with the current situation in the telecommunications industry where such shifts are prohibited for their visibility and their damaging effect on current users.

Furthermore, water rates are not transparent, and the shift occurred at a time when consumer groups and the public defender were not yet strongly organized, the economy was booming, and inflation was low. In short, when everything was more tolerable than during a recession and deflation (1995). Pressures in the opposite direction appeared in 1996, aimed at lowering the infrastructure charge and checking the company's monopolistic behavior.

In conclusion, the design of the regulatory body and methods for monitoring it are important (with regard to economic independence, political dependency, etc.). In Aguas Argentinas, its design disregarded funding provisions. In Corrientes, the regulatory body was kept under the government's regulatory scope and seems to have been used as an instrument of political harassment. The political and media context was also important. Pressure by regulated companies and pressure groups initially seems focused on problems of bill collection. In the case of Buenos Aires, the focus is on real estate reassessment of properties owned by utility customers. Once this pressure is lifted, the problems will likely spread to those regulatory areas that are susceptible to varying interpretations.

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