Universal Service Obligations in Utility Concession Contracts and the Needs of the Poor in Argentina's Privatizations

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1. Introduction

Even when a regulatory framework responds to the most generalized and solid practical and theoretical recommendations, it always requires some sort of adjustment to the specificities of each economy, such as its legal standards or socio-economic characteristics. In particular, social concerns should influence tariff design, the specification of the investment plans, and the definition of the social supply obligations for the operators. Generally speaking, these social obligations are at the core of some of the emotional debates surrounding the privatization of infrastructure services. They refer to the required supply of a bundle of services under specific terms and conditions. Examples of social duties include:

- services to poor pensioners or to the disabled, by means of a differentiated price from the rest of the population under equal service conditions;
- special procedures for regularizing the non-performing status of certain users;
- explicit subsidies to different consumer categories based on their geographical location (rural tariffs, widespread markets), the specificities of their consumption curve (for example, electricity-intensive users), or their income level.

Besides the expected ethical justifications and more complex concerns such as the concern for political stability and state cohesion, there are several reasons why society may be interested in promoting the extension of a service to a greater number of consumers. These include fixed-cost savings (natural monopoly), positive externalities (which are either difficult to internalize or not acknowledged by consumers), and network operation profits. This is why, while access by citizens to basic telephony services is considered an entitlement that contributes to the normal and stable development of modern societies, the availability of drinking water is placed within a category of "merit goods", based on a positive externality (the correlation to lower health expenses for society). The expenditure for the services used by the disabled lies within the category of services rendered for ethical reasons.

Section I analyzes the conceptual aspects and financing options for obligatory service. An attempt is made to define and distinguish the concepts of Obligatory Service (OS) and Universal Service Obligation (USO). Section II summarizes Argentina's experience with Obligatory Service and Universal Service Obligation for the Water and Sewage, Telephony, Gas and Electricity sectors. It shows that this experience has generally been positive, although there are some outstanding issues that are worth discussing. Section III highlights the main lessons of Argentina's experience for countries following a similar infrastructure privatization strategy.

1. The Conceptual Issues

I.1. Obligatory Service vs. Universal Service Obligation

The concepts. One of the main concerns that policymakers have in the context of infrastructure privatization is to avoid a decline in the consumption of services. This risk stems from either insufficient supply or insufficient demand. Insufficient supply is related to the concessionaires' lack of interest in supplying a market at the ongoing price. Insufficient demand simply reflects cases where the private level of consumption fails to reach a desirable level from a social viewpoint. While apparently somewhat artificial, this taxonomy is useful when it comes to defining regulatory tools. For instance, stimulating consumption (through tariff subsidies to customers) is inappropriate in the first case since the failure does not come from the demand-side. In the second case, compulsory service may not be efficient since it acts on the supply-side. In practice, regulators tackle scarce supply or lack of demand by imposing two conditions on the functioning of the markets: the Obligatory Service (OS) and the Universal Service Obligation (USO). [1]

[1] Part of the international experience is summarized in ITU (1994), Wellenius, et. al (1994) and OECD (1995).

Obligatory Service occurs when a company is asked to allow access to its services to all users who wish to join the supply system at the ongoing tariff or when a user is required to consume a service. To be specific, there are two types of obligatory service: the uni-directional service (obligation to serve), in which the supply-side is warned not to introduce rationing mechanisms on the demand-side (or not to discriminate through prices); and the bi-directional service, in which the demand-side cannot self-exclude from consumption (it has an obligation to accept service). Telephone, gas and electricity services are included in the first classification. Water and sanitation are included in the second group for health and environmental protection reasons. However, in many cases, obligatory connection is also related to financing the extension of the network.[2]

Universal Service Obligation[3] encompasses the idea of giving all community members the possibility of gaining access to product consumption by paying a sufficiently low or affordable tariff. While the production capacity is endogenous but adjusts to the ongoing tariffs (demand must be faced at these tariffs) under Obligatory Service, USO focuses on giving all members of the community the possibility of reaching an "acceptable" consumption level at a generally low tariff since consumption would be unreachable without investment plans that are compatible with growing demand.

The implementation for regulatory purposes. The distinction between OS and USO is useful because it implies very different rules of the game for the operators responsible for implementation. In addition, the usefulness of imposing USO (the stronger form of obligation) varies across sectors because it depends on the social valuation of the product or services and whether or not there are any substitutes. Many services may be highly valuable from a private viewpoint but not necessarily from a social viewpoint. This highlights one of the dilemmas of regulation. The use of the service should encourage consumption and access and at the same time, the regulator must restrain free-riding and misuse.

Table 1: USO vs. OS

Obligatory Service arises:
*When there are location differences that increase supply costs for some consumers. *When some consumers present "accessibility" problems, particularly those with physical or motor disabilities. *When the degree of availability of certain privately supplied services is lower than the socially desired level (public telephones, special numbers, among others).
Universal Service or Universality arises:
*When the product is essential *When there are groups of consumers that cannot gain access to a product or service at current tariffs. *When the lack of supply or impossibility of gaining access limits consumers in other markets or activities (for instance, in the labor market) *When the impossibility of gaining access also entails the exclusion of the consumers from technological progress and the evolution of modern societies (typical case in the field of communications).

On the other hand, the regulator must also sometimes ensure that self-exclusion from a service (on the demand side) is not the main source of divergence between social and private interests or is not a source of conflict between suppliers and users. Self-exclusion from sanitation services has an impact on the economy's productivity and on hospital costs. Self-exclusion from telephone services lessens the value of the network. It is even valuable for the agents to use services which are normally not included in the universality objective; for example, a fax machine. Self-exclusion from the electricity network, and, to a lesser extent, from the gas network, reduces service quality in terms of safety and stability.

In this context, an obligatory service imposed on the suppliers—extending the network to poor neighborhoods away from high-density, high-income centers—may be inefficient because the consumers are

[2] This is clear when the obligation of connection applies even in cases where there is no dwelling, for example, on empty land lots

[3] OFTEL (1995) (1997); Analysys (1995); Muller (1997); Graham, (1995)

not willing to use the service (lack of demand due to low income).[4] However, at the social level, allowing the poor to continue using substitutes may not be a good idea either. Indeed, the substitute may be either more or less costly than the network service (in water supply and sewage, for instance, the alternative is to buy bottled water which is often more expensive, or to rely on sources that contribute to the spreading of diseases), or the self-exclusion of potential customers may reduce the financing of the network itself.

The obligatory service may then best become a universal service by accepting a specific tariff reduction for some or all users. Openly admitting the possibility of reducing tariffs for some users paves the way for free-riding, even in cases of certain clearly identifiable users (such as the pensioners). Bringing down tariffs, particularly access tariffs, endangers the sustainability of the suppliers or instills the need to exert pressure on public finances in order to somehow subsidize the service.

The risk of self-exclusion and hence the attractiveness of universal service obligations are particularly important when situations of lasting high unemployment levels create the problem of how to deal with the unemployed within the general definition of Universal Service and Obligatory Service. This argument is relevant in the case of Argentina, where the economy went through and is still facing high levels of unemployment that are unusual compared to the mean for the seventies and eighties. While the normal rate stood at around 6%, by 1993, unemployment had reached 9.3% and went up to around 18% after the "Tequila" effect (end of 1994 and beginning of 1995).

Tables 2 and 3 show the results of "naive" estimates of "tariff-pressure." Average tariffs were considered by decile. Notice the high level of unemployment for the poorest deciles and the significant proportion of total income when all services are provided simultaneously (thought financed). Financial commitments are not seen to be too significant when infrastructure payments and the connection charge are left aside (they amount to less than 7% of total income of a family belonging to the poorest decile). Overall, this reinforces the case for the explicit inclusion of USO in the privatization process, decided as part of an overall structural adjustment of an economy. [5]

Table 2: The cost of water and sanitation for the four poorest income classes in January 1998

Decile	Household total income (US$)	Fixed and Variable Charges (US$)	Fixed Charges (US$)	Total Expenses (US$)	Total Expenses as a % of Total Income
1	298.06	48.41	57.33	105.74	35.48%
2	464.11	56.88	57.33	114.21	24.61%
3	491.33	58.51	57.33	115.85	23.58%
4	669.95	62.66	57.33	119.99	17.91%

N.B.: Authors' calculations

Table 3: Estimate of user's expenses in electricity, gas and phone services in January 1998

Income Decile	Income per capita	Household Average per Person	Households' total Income (US$)	Rate of Unemployment	Monthly Fixed charges	Monthly Variable Charges	Total	Total Expenses as % of Total

[4] The legal demands to join the network (for example, if it runs in front of the door of a dwelling), or the social demands to do so (because others have done so and there are no longer any substitutes) may favor a progressive process of "dualization" where the poor "flee" from efficient services.

[5] The need to better define the tariff structure under unemployment is discussed in academic circles (see Marchand et.al. (1989) and Bös (1994)), but is also recognized by practitioners. Some of the gas distributors have envisaged mechanisms to facilitate access to credit for users who cannot afford the entire infrastructure charge. To be eligible, the user must have a statement of earnings in order to be granted a loan.

	(US$)			(%)	(US$)	(US$)		Income
1	56.8	5.25	298.06	40.7	29.04	19.37	48.41	16.2%
2	107.7	4.31	464.11	28.8	29.04	27.85	56.88	12.3%
3	148.4	3.31	491.33	21.3	29.04	29.48	58.51	11.9%
4	186.1	3.6	669.95	22.6	29.16	33.50	62.66	9.4%
5	233.6	3.28	766.25	16.6	30.58	34.48	65.06	8.5%
6	296.0	2.94	870.32	15.4	32.52	34.81	67.33	7.7%
7	372.0	3.07	1142.16	12.2	34.80	39.98	74.78	6.5%
8	486.0	2.78	1351.06	8.3	37.06	40.53	77.59	5.7%
9	684.5	2.69	1841.27	6.2	42.04	46.03	88.07	4.8%
10	1 383.7	2.25	3113.37	6.1	49.76	62.27	112.03	3.6%

N.B.: Authors' calculations based on data provided by Gasparini (1999). As of January 1998, monthly fixed charges are as follows: electricity: $2.32; gas: $6.95; phone: $16.45; water and sanitation varies per decile from $0.73 to $24.05.

1.2. Financing USO.

Universal service obligation entails providing the service at a lower price than the company would be willing to charge if it were a monopoly, or even if it developed its activities in a competitive market. USO determines that consumers whose supply is more costly than the average pay the same price as the rest. The regulated price will necessarily be below those costs for this group of users. Something similar happens, although for different reasons, with the lower-income sectors. In this case, the price could be above their payment capacity, independent of the market structure in which the company or companies operate.

In both cases, USO entails facing costs.[6] How can the supply of services to these consumers be financed at regulated prices? In principle, there are four financing systems for the Universal Service Obligation:

- Direct transfers either to consumers or through company disbursements,
- Establishment of a fund,
- Cross-subsidies among consumers and/or among products, and
- Adjustability of the duration of the concession.

a*) Direct transfers.*

In terms of economic efficiency, direct transfers to consumers are the best option because the relative prices of the economy are not altered. Each one pays the pertinent price. However, this system has two inconveniences that make it impractical. First, it is difficult for the regulator to know the exact payment capacity of each agent or the real production cost of the company for each location, so it is therefore difficult to make an efficient transfer calculation. This is an "adverse selection" problem. The regulator must also ensure that those who receive a transfer spend it on the service for which it was conceived, which is a moral hazard problem. The second inconvenience refers to implementation, since transfers to the consumer entail that he/she must pay the real supply price. By definition, this price is different than that paid by other consumers. These price differences affect public opinion, which does not accept any discrimination, making it difficult to put into practice, even by using a compensation system.

[6] If the prices move away from the opportunity costs of the resources used in production - marginal costs - a social cost also appears that may not be internalized by the company but will be paid by society as a whole. See Burns (1995) for an introduction to these issues in the framework of discriminatory prices.

Two changes have been proposed to solve this issue: transfers should be received by the company and consumers should not be discriminated by prices. Although this system solves the moral hazard problems since consumers do not receive any extra income that can be used for other purposes, it does not eliminate adverse selection because the problem of identifying the people who really need these transfers still remains. Nevertheless, this method has been used in different regulated sectors in Argentina (electricity, gas and water) for pensioners and consumers in the Patagonia region.

Of course, financing must then come from the collection of global public resources. Therefore, other publicly supplied products and services must be sacrificed and either taxes (distortive ones) or the financial exposure (indebtedness) of the public sector must be increased. In fact, the Argentine public sector started to accumulate a heavy debt burden with operators through the social security system.

b) Financing Fund.

This system is, in fact, a way of financing transfers such as those discussed above. The fund consists of a contribution from the different market operators toward those who have the universal service obligation. It is a mechanism applicable to situations where entrance into the industry is consented to, but USO is only compulsory for one operator. Different options have been proposed for collecting fund resources, although the main source is to levy taxes on sales registered by those entering the service. The other options include charges for granting licenses, a process which may be competitive and is known as auctioning, and inter-connection charges if the operator responsible for USO is the owner of a network that all others must use. In the same way that direct transfers to consumers are not applicable—specifically, the paucity of information handled by the operators regarding the specific characteristics of each agent—the last two systems mentioned have other deficiencies that may affect the functioning of the market. The acceptance of cross-subsidies among consumers or among services may affect the dynamics of the competition process by encouraging less efficient operators in more profitable segments (cream skimming). Likewise, imposing a fund with inadequate collection mechanisms may also affect the competition process since it may impose payment conditions that hinder long-term incentives.

c) Cross-subsidies.

The use of cross-subsidies is a result of the regulator's incapability to fix different tariffs according to production costs (Varian, 1989). The justifications for this decision generally follow three main categories. The first is associated with the equality that the regulator seeks to impose on prices and supply of the service in general. The second reason is linked to how information is distributed between the regulator and the regulated company. If the latter argues that the supply costs are different for one group or another, information regarding the real supply costs and a method to correctly fix prices may be out of the regulator's reach. If estimates of these costs are not exact, it may be preferable, as far as regulation is concerned, to fix a single price. One of the current problems in fixing telephone tariffs for rural areas in Argentina is defining exactly where the urban service ends and the rural service starts (the latter being more expensive). The third reason is related to specific social objectives. The phenomenon of localization occurs when higher prices in rural areas discourage the settlement of people in these districts, thus affecting society in ways that it is probably unwilling to ignore (defense and national security issues, among others).[7] This last reason admits, at least theoretically, alternative solutions, since direct transfers may be generated to those who settle in the most unfavorable or far away urban centers, without affecting relative prices. It is possible for a company's activity to be subsidized in areas where it is not profitable, but this would only be efficient if the exact amount of the subsidy could be calculated without affecting the company's incentive to recover losses. This scenario assumes a good level of regulator knowledge regarding production costs, which gives us an idea of how important the distribution of information between the regulator and the regulated company is.

[7] It must be recalled that this debate already took place when the issue of telephone tariffs was discussed, regarding the possible differences between consumers living in the interior and those in the more densely populated Buenos Aires Metropolitan Area (See: Instituto de Economía UADE, 1996).

Whatever their justification, cross-subsidies entail costs. The main ones refer to efficiency since relative prices move away from relative costs (marginal costs). In order to minimize these costs, the regulator must decide how to define these subsidies, either among consumers or among services. However, this last possibility is not open to all industries, or at least not to the same extent. For example, in telecommunications, the subsidy may be defined in both directions since this sector offers a range of products that may be affected by such a policy. If difficulty of access is the USO objective, for instance, the fixed charge may be brought down by adding a surcharge for use. Another example is basic telephony, which could be cheaper if financed with contributions from other services that are not considered to be basic. Normally, the latter possibility does not appear in an industry lacking a many-sided supply. Therefore, in water, the cross-subsidy could be implemented among consumers, or at the most, between the connection and consumption charges. Since this service is indispensable, it would be difficult to finance the cross-subsidy through consumption in favor of access.

d) Extension of the concession and coverage.

Lastly, the regulatory experience shows that there are other possibilities. Although they are not strictly financing sources, they do provide the means for alternative funding. The first is the extension of the concession through which the company enhances its monopoly on the basis of the exclusivity granted for its operation in the market. This mechanism allows the company use its own resources to continue financing the essential investments needed to comply with the USO. This mechanism was proposed in Argentina in order to cover the collection deficit in infrastructure charges, which occurred when the extension works reached poorer neighborhoods farther and farther away from densely populated districts. Another example is coverage extension. Through this policy, the regulator grants additional financing sources in compensation for the universal service obligation. If the company is obliged to provide services to non-profitable community sectors, the regulator offers to extend coverage to include consumers to which cross-subsidies may be charged. However, this is a case of cross-subsidies between different generations. In other words, the extension of the area is the mechanism through which the population base for the collection of subsidies that finance the universal service obligation is expanded. If the extension is not feasible because of geographic limitations, there is an alternative that entails the "reserving" of certain parts of the market for the operator in charge of providing USO. This policy, however, is difficult to implement because the consumers located in the reserved area would not benefit from competition.

1.3. Universal service in multi-product industries.

In many industries, providing a spectrum of services is a serious practical problem which can only be addressed through a very clear definition of the exact scope of the universal service criterion. For example, oral transmission, emergency calls, telephone directories and telephones for the disabled could be considered a basket of products provided within the definition of universal service. But why stop there and leave aside other special services (fax, Internet, point-to-point communications, among many others)? In practice, because the supply of these is subject to different market rules or regulations. But this is not the only possible distinction that can be made. Another common way is to distinguish between access and use. This means that there are two different types of demand, each with possibly very different sensitivity to prices and income. Access demand normally has less elasticity than use demand, according to some studies (NERA, 1994) and each will have different economic effects when the universal service obligation is applied.

From a regulator's viewpoint, it important to understand that the USO is essentially an *ad hoc* mechanism that acts on prices, driving them away from strictly allocative efficiency, with an economic impact that may be divided into two parts: distributive (among consumers) and allocative, with both affecting each their respective markets. In principle, there are few allocative inefficiencies in those markets where demand is less elastic.[8] In this context, a few questions emerge. Should the universal service obligation be applied to access (provision of the network), to its use by consumers, or to both? Which has a lower social cost in

[8] This idea is the basis of the price structure known as "Ramsey pricing". Berg, et. al (1988); Brown, et al. (1986); Mitchell, et. al (1991).

regard to USO implementation? These questions are essential to determining the economic impact that USO would have, as well as possible financing methods.[9]

To continue the telecom example, if a price that is lower than the competitive market price is sought, the efficiency of the market will be affected because it is assumed that in the long run, the production level will be provided at socially optimum costs. In addition to the competition potentiality of the service's operation, the use demand elasticity tends to be greater than that of access; therefore, efficiency costs could be significant if prices move away from the long-term marginal costs. Regarding access, it moves slightly away from the fully competitive market, an issue which has long been discussed since the companies that provide it have a certain market power. This analysis suggests that imposing the universal service obligation would have fewer distortive effects if it was enforced on connection and not on use charges.[10] In this way, USO would permit access to the connection network by the greatest possible amount of consumers without imposing *ad hoc* effective consumption or use, which would be the case should the prices of the pulse per time unit be reduced (three-part tariff). It is worth mentioning that the recent tariff reform implemented in Argentina has in some ways moved in this direction since free pulses were eliminated and fixed charges were reduced for those groups of low-income consumers.

1.4. Regulation of the obligatory service and alternative technologies.

When there are supply alternatives, the likelihood of successfully facing the problem of scarce supply mentioned in the example above increases considerably because such technologies are bound to generate different cost structures. This may be observed in the telecommunications industry in view of the constant technological changes. An example is wireless telephony, which applies a technology increasingly used in rural areas or low-density districts that are not attractive to companies operating with fixed networks. The lack of attraction from an economic viewpoint is undoubtedly due to the fact that the minimum infrastructure requirements (networks) necessary to meet the demands of the inhabitants of the area represent a cost burden that cannot be financed with what is collected from those consumers.

The advantage of wireless technologies consists of saving those costs, at least to a sufficiently important extent, so there is no economic income barrier. However, some of these technologies are normally more inefficient for areas with a higher population density, due to the congestion and interference inherent to urban districts. These technologies normally have lower costs than those of the fixed network telephony at low production levels (few consumers), but these costs grow rapidly if the population served in an area increases. In this way, the regulator may choose to permit the entry of companies with more efficient technologies for these particular areas. Under these circumstances, competition is possible, since the capital tends to be divisible, thus reducing the minimum scale. Therefore, the regulator has the possibility of introducing competition and demanding supply of the service. Likewise, the company that is already installed may be forced to adopt this technology through an additional clause to the universal service obligation (OFTEL,1997).

Finally, the possibility of competition presents an interesting perspective from the regulatory viewpoint since it diminishes the pressure on the regulator to fix prices. It is expected that a continuous competitive process will lead to a price reduction in services. However, the entry of new suppliers may lead to duplicating costs which are amortized once the company invests capital in the area under consideration. If such capital is "specific" for that activity, and exits in the market when conditions justify (this is also part of the competitive process), that capital cannot be freely reassigned. It subsequently stands idle, or is underutilized, and society faces costs that must be calculated from the regulator's point of view. ([11] *and* [12])

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[9] The debate on whether it will be financed by cross-subsidies (should access or use charges be subsidized?) or by direct transfers to the beneficiaries (dealt with in a later section) is still pending.

[10] This is still evident in conditions where variable costs represent a lower share of total costs in relation to fixed costs. The network industries are generally included within this definition. Therefore, the "affordability" problem is closely related to connection charges.

[11] The importance of capital specificity in decision-making for entering and exiting the market is highlighted in Klein, et. al (1978).

If the regulator has no alternative regarding supply and service is obligatory, the debate boils down to finding a mechanism to finance the activity when conditions do not allow self-financing. The regulatory experience shows that pricing with cross-subsidies is the most utilized tool.[13] These types of prices appear when there are differences in costs that cannot be reflected (at least not totally) in the tariffs or, alternatively, when there are differences in the purchasing capacity of the consumers.

2. Argentina's experience with Service Obligations

This section summarizes how Obligatory Service and Universal Service Obligation have been dealt with in the fields of Telephony, Electricity, Gas, Water and Sanitation in Argentina. However, it is worth clarifying that the debate focuses on the segments of these industries that are regulated at the national level. The emphasis is threefold: a discussion of the responsibility for expanding the networks, the financing of these processes, and the elements that determine both the normal tariff and the expected tariff, including the treatment of consumers with arrears. There are a few obligations treated similarly across sectors, but they are the exception rather than the rule. For instance, the preferential treatment given to pensioners is similar in the gas, electricity, water and sanitation sectors, but differs somewhat in telephony.

Decree 319/97 determined the conversion of the tariff subsidies granted in favor of pensioners for gas, electricity, water and sanitation services (stipulated in resolution 532/88). A direct payment of $13.50 went to each beneficiary (those collecting the minimum pension of $150). With this money, the pensioners must pay the companies the pertinent household tariffs. Within the new subsidizing mechanism for those collecting the minimum pension, some pensioners who receive a fixed amount do not pay their bills. In other words, they use the money they receive directly from the social security for other purposes, running the risk of service cut-offs. Therefore, the mechanism of paying the companies directly was substituted for a method that allowed for the deviation of subsidies toward unwanted aims. Similarly, there are no differential tariffs or special treatment for the unemployed users in any of the analyzed sectors (gas, electricity, telephony, water and sanitation).

2.1. Telephony

The National Telecommunications Act (Law No. 19.798) was a first approach to obligatory service. It determined that "everyone has the right to use telecommunications services open to public correspondence in accordance with the pertinent rules and regulations." No reference, however, was made to pricing. On the other hand, the Tender Specifications set forth the obligatory nature of the activity by "ensuring continuity, regularity, equality and generality in the provision of the public services under the responsibility of the company". Equality implicitly forbids any sort of price discrimination among consumers beyond those allowed by the tariff structures, in particular, tariffs for households, companies and professionals. Generality sets the target of disseminating the benefits of basic and non-basic telephony to all consumers who wish to have the service.

Universality is explicitly stated in several passages of the sector's regulatory legislation.[14] An example is the "Agreement signed between the two Licensed companies and the State (through the Ministry of Economy and Public Works and Services) for tariff reduction" (Decree 506/92). It states that there is a need to bring down connection charges in order to attract potential consumers, reinforcing the idea of universalizing the use of telephony, or at least Basic Telephony. Resolution 25.839/96 of the Communications Secretariat understood universality as "the universal promotion of basic telephony at fair and reasonable prices." The

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[12] The impact of technological change in defining the universal service obligation is highlighted in ITU (1994). The 1997 US Telecommunications Act accepts that the definition of USO is dominated by technological changes and recommends imposing a "dynamic" definition.

[13] There is still a problem regarding the definition of cross-subsidy, an issue which will be dealt with again in the section on financing.

[14] The criteria for defining public services include these four characteristics, cf. Mayral.

recently issued Decree 92/97 ("General Basic Telephony Tariff Structure. Amendments. Regulations") stipulates this regulatory line of action, thus confirming the enforcement of the above principle, and sets forth the commitment to elaborate a National Social Telephony Plan[15] (Section 6) to materialize the above-mentioned concept.

Finally, since the universality criterion is, in essence, a principle that aims at encouraging the entry of new consumers, it makes sense to believe that the connection charges, as well as the so-called fixed charges, which are part of the final tariff paid by the consumer, are important.[16]

Connection charges

The connection charge may be compared to a charge paid by the consumer and should be considered as such. Therefore, the fixing of this charge normally has important consequences on the issue of exclusion (a point considered in detail in Decrees 506/92 and 92/97). The companies agreed to lower connection charges when they took over because they were not in line with international levels. There has been a greater connection charge reduction in the non-household segment because there was a greater intensity of use of the telephone service in this sector (greater indispensability). It was also deemed convenient not to affect the production costs of these sectors with surcharges.[17] Moreover, these sectors demand services other than those that are considered basic.

Regulations in force until 1996 acknowledged three groups (the household or family group, the commercial, and the professional), but Decree 92/97 includes the government as a new category. This categorization is reflected in the fixed charge of the final tariff. Decree 92/97 authorized an increase in the fixed charges for all categories, which in the case of households meant an increase from $8.86 to $12.49 per month. The magnitude of this fixed charge was justified by the fact that the companies would show cost structures with a high share of fixed costs related to network maintenance and not the measured rate.

From the distributive standpoint, the impact is remarkable because high fixed charges somehow favor those categories that use the telephone service more intensely, since users in this category can "liquefy" the fixed charge with a decreasing mean tariff, as measured by the mean cost of each call. The problem with the fixed charge, therefore, is that it seems to impact more on the household segment than on other segments, since this category has a lower average consumption. Moreover, within the household segment, fixed charges more seriously affect the lower income groups.

Tariff structure

Historically, the fixed charge was in line with the density of clients in each area. This was established in Decree 2332/90 (Annex XVI.I) on property transfer. This criterion was justified because the maintenance costs of the exchanges were inversely proportional to the customers included in each exchange, thus confirming the idea that the fixed costs in this activity are very important. Despite the rationality of this measure, such a decree followed the sector's tradition of reversing this reasoning and charging higher fixed charges in locations where the telephone network was denser. In this way, the expansion of the network was financed when the service was state-run (profits obtained from the network "justified" that current customers pay for the connection of future clients).

[15] This plan should have been drafted within 30 days after Decree 92/91 became operational.

[16] The latter is analyzed in the following section together with the distributive aspects of said tariffs.

[17] Although, in the first instance, restructuring had acted contrary to the Ramsey rule, in fact, it is not possible to make a concrete analysis without resorting to a balanced evaluation mechanism. It is necessary to take into account the demand for telephone services versus demand elasticity regarding the rest of the products and the share of telephone services in total costs.

The recent tariff rebalancing[18] (still strongly debated) reversed this criterion and eliminated district differences by establishing a single fixed charge for the whole country. But the level of fixed charges discriminates among consumers in the same category. Therefore, within the household category (Resolution 348/88, Ministry of Economy and Public Works and Services, Resolution 127/91, National Telecommunications Commission) discounts of up to 25% were considered for pensioners collecting a minimum pension, plus a similar increase in free pulses. The goal is to avoid a considerable number of consumers abandoning the market by returning already installed lines. This reduction led to different modifications. Decree 92/97 created the "Low Consumption Customer" within the household or family category, with a view to achieving universality. Although to date there are no clear cost studies, according to estimates by the Communications Secretariat and private organizations, there is a suspicion that the tariff structure in force until January 1997 assigned values to inter-urban calls that were not in line with production costs. On the other hand, inter-urban communications represented 8% of the total number of calls, but accounted for 73% of TELECOM's income (during 1994-95).

This situation was not only indicative of a problem related to economic and allocative efficiency in service supply, but also highlighted an important distributive problem. The diagnosis study carried out by the Communications Secretariat noted that customers from the interior contributed more to the income of the companies than was expected, taking into account the different consumption structures for customers from the so-called Metropolitan Area. This diagnosis study was apparently based on the fact that inter-urban tariffs amply surpassed production costs, while urban tariffs were undervalued. The correction consisted of a remarkable reduction in inter-urban tariffs and an increase in urban tariffs (those of the Buenos Aires Metropolitan Area -BAMA). It must be noted that this measure is, to a certain extent, the opposite of what was decided regarding the fixed charges, through which BAMA made a greater contribution toward financing the service than the interior of the country, due to regional cost differences.

This is a long-standing problem regarding the regulation of the sector, one that was present before privatization occurred. It is worth stressing that in 1980, it was estimated that inter-urban calls, which represented 4% of the total, generated 20% of ENTEL's income. The argument set forth by the regulatory agency insisting on tariff rebalancing was that urban traffic accounted for 92% of total calls and that these were being charged at 30% below the marginal cost, thus resulting in a deficit that had to be offset with inter-urban calls. The implementation of changes brought the prices of the sector closer to international standards and aimed to affect regional redistribution (such as the fixed charges or the treatment of Key 1 in the interior) and social issues (benefits for reduced-consumption customers). Decree 92/97 explicitly states two principles, which undoubtedly have distributive effects: 1) equality in the treatment of consumers from different geographical areas; and 2) encouraging certain social sectors to enter the market, although an efficiency price may not be assigned to them (linked to actual production costs).

Expansion of Consumer Range

Social telephony also reflects the decision to enhance the consumer range. There is no doubt that this restructuring produced cross-effects among the different consumer segments which are difficult to measure since there are no official publications on production costs. However, the information gathered permits a superficial evaluation of the measures adopted, beginning with the average bills *ex-ante* and *ex-post*, as calculated by the National Communications Secretariat. This methodology has a clear disadvantage because it does not enable the differentiation between the origin and the destination of the cross-payments that stem from the tariff structure, although it does allow an estimate of the global impact on consumer categories.

The first evaluation made by the Communications Secretariat shows that the segment of consumers classified as households would suffer an increase in their average bills, while the remaining categories would

[18]The re-balancing was an attempt to correct relative tariffs, keeping the companies' total income at a constant level. It did not deal with costs, nor did it guarantee sustainability. It did, however, acknowledge that the current tariff structure allowed for cream-skimming. It was based on price/fixed charge demand elasticities in urban and inter-urban areas.

record a reduction. Average bills for these consumer groups recorded increases of approximately 21% for the Buenos Aires Metropolitan Area and 15% for the interior. The former is the group of consumers that are the most affected by the proposed tariff rebalancing. The impact of this structure on the affected categories seems to be very important. Households have average bills below those of the remaining consumers. On the other hand, the government and the commercial sectors, which benefit most from the change, spend the most, not only because of their activity, but also because of their consumption structure, which is more linked to the items for which tariffs have dropped (inter-urban and international). The reasons seem to be related both to the relative price of the fixed charges (more bills for lower amounts) and the intensity of consumption in inter-urban and international calls. Both effects somehow favor the commercial, professional and government categories over the household sector. Supply costs for basic services are not the same in densely populated areas as it is in those where the population is more spread out. Consumers in less populated areas are not less "wealthy" than others, but the costs of providing them with access to the network within the framework of the available technology are very high. Therefore, natural monopolies are also at stake. In fact, tariff rebalancing was an attempt to hinder the progressive use of mechanisms such as the "call-back".

The problems of obligatory service regarding basic telephony services are partly related to the provision of access to potential users located in places that are either far away or difficult to reach. Taking into account externalities, the system as a whole is interested in the provision of a minimum level of services. This sets forth several alternatives, including the use of the main network or of some alternative means of communication. Recently, licenses were granted for operating low-orbit satellites that would provide services at a high price, which, nonetheless, can still be afforded (US $3 per minute).

One of the main problems currently facing regulators is defining the limits between rural telephony and the remaining telephony services. There is the problem of information asymmetry between operators and regulators and that of potential opportunism since the companies may exaggerate costs for permitting access. Introducing substitution technologies, or at least making them available and potentially competitive, seems to be an appropriate solution.

Treatment of Delinquency

The treatment given to delinquent customers and the pertinent charges for disconnection and reconnection may determine a relatively higher 'expected' tariff for the users who have uncertain jobs and fluctuating wages. When a bill is not paid by the customer within 30 days after its due date, suppliers may suspend the service. According to a recent amendment to the Customer Regulations, this suspension for a prudent period affects "outgoing calls" exclusively and the licensee shall allow the client to continue receiving calls and to communicate with emergency services. In this way, they do not lose network gains, and society remains unpunished for an unpaid expense by the user. Once the service has been suspended, if the owed amount is not settled 60 days after the due date, the service is definitively cut off and the customer must pay the debt plus the reconnection charge in order to reestablish the service. This has led to attempts by users to elude charges for arrears or avoid payment for very high bills. They take advantage of the many extra lines and the low installation charges. Therefore, some users prefer to give up their line, avoid payment, and then ask for a new line under the name of another person (a relative, for example).

Preferential treatment for pensioners and low-income customers

The tariff structure prior to Decree 92/97 considered special discounts to benefit pensioners, but it did not take into account their monthly consumption. As was noted earlier, many pensioners had a monthly average consumption rate above that of household and commercial customers. A ceiling was set on the amount of pulses, and increasing bloc tariffs were introduced, which benefited pensioners who used up to 300 monthly telephone pulses and those households with a monthly consumption of up to 150 telephone pulses. These "low consumption customers" within a household or family category respond to a USO criterion.

Social Public Telephony Plan

According to Resolutions 2130/97 and 1716/97, the National Government must implement a "Social Public Telephony Plan at the national level, targeted at areas with high population density and scarce economic resources." The objective is to promote the maximum utilization and expansion of the telephone network, adjusting tariffs in such a way so as to facilitate the access of low-income customers.

In the 1997-98 period, both Telefonica de Argentina S.A. and Telecom S.A. were forced to install 1000 semi-public phones for receiving calls. The installation of these phones will not entail any connection charges or fixed monthly charges. They will be located in charities, municipalities, intermediate associations, schools, and first aid centers, but not in the streets, despite the Communications Secretariat being informed that the destruction of phones does not normally occur.

One of the most common complaints is that the semi-public and public phones do not give any small change; which means an implicit minimum tariff for poor users. The companies allege that it is impossible to transform telephones into change-giving machines (there is thus a moral issue). These public and semi-public phones will operate on legal tender valued at $ 0.05, $0.10, $0.25 and $0.50. The pulse is priced at five cents (VAT included) without any distinction between normal, peak or reduced tariff timetables. Although inter-urban calls may also be made at differential tariffs, the phones will be installed with a blocking mechanisms for incoming and outgoing international calls.

2.2. Electricity Services

Law 15.336/60 already stated certain obligations for the service licensee, such as service quality clauses, for instance. Law 24.065/92, which characterized electricity distribution as a public utility, stated that "distributors should meet all electricity service demands required from them," and moreover, that "they must allow indiscriminate access to third parties to transmission capacity," and may not "grant or offer advantages or give preferential treatment for access to their installations." The concession contracts of the Edenor, Edesur and Edelap distributors forces them to meet all supply demands for this public service within their concession area, and to see to all new requirements, whether it is an increase in supply capacity or a new request for services. Likewise, the contracts say that the distributors must make all necessary investments to fulfill their commitments regarding the provision of this public service. However, users have to fulfill certain requisites for supply to be maintained. Section 6 of the Supply Regulations states the conditions for cutting off supply, which include, among others, an unpaid bill, a user putting the safety of the distributors' installations at risk, or the reselling of energy. In all of these cases, the distributor must first demand regularization of the anomaly.

Distributive aspects of the tariff structure

The law states that tariffs must recognize efficiency costs and the economic cost, thus preventing any sort of implicit subsidy in the tariffs. Each tariff, therefore, for each type of user and service provided by the distributor, shall be calculated on the basis of the exact economic cost of the service. Consequently, Law 24.065, Section 40, Paragraph b, establishes that the tariffs "shall take into account the reasonable differences which exist between the costs of the different types of services, considering the supply system, geographical location and any other characteristic that the regulator may consider relevant," while in the same section of Decree 1398/92, it states that "distribution costs will be allotted to the different tariff categories bearing in mind: 1) the supply tension; and 2) the consumption modality of each user, taking into account the participation in load peaks in the distribution networks."

The principle of actual economic costs entails, on the one hand, the prohibition of cross-subsidies in relation to which Section 42, Paragraph e determines that "in no case may the costs attached to the service provided to a user or category of users be recovered through tariffs collected off of other users." On the other

hand, price discrimination is forbidden by Section 44: "No transmission company or distributor may have differences in their tariffs, charges, services or any other concept, except those resulting from a different location, type of service or any other specific distinctive feature as the regulator may reasonably approve. It must be clarified that compliance with this principle does not hinder the state's capacity to grant subsidies to certain groups. It only sets forth the need for these subsidies to be explicit and not concealed.

Among other remedies, the law envisages (Decree 1398/92) a reduction in tariffs for pensioners, charities, non-profit organizations and/or electricity-intensive industries. The cost is charged to the government area responsible for the subsidized social sector. Likewise, Section 70 of the law envisions the creation of a National Electricity Fund, 60% of which will be allocated to setting up a Subsidiary Fund for Regional Tariff Compensations, which will be distributed among the provincial jurisdictions that adhered to the tariff principles of Law 24.065. The remaining 40% will be contributed to the Fund for Electricity Development in the Interior of the Country.

Acuerdo Marco

In 1994, with a view to including the inhabitants of the shantytowns and poor neighborhoods as customers of the distributors Edenor S.A. and Edesur S.A. (and, in turn, diminishing non-technical losses), a four-year Guidelines Agreement was signed between the above-mentioned companies, the National Executive Power and the Executive Power of the Province of Buenos Aires. Different categories of needy inhabitants were defined. The National State pledged a contribution equal to 18% of the net billing for users included in the Framework Agreement. This contribution was used to cover the unpaid balances of the shantytowns, and the amount left over was allocated to the payment of the $20 million assigned to each distributor, discounting the municipalities' contribution (6%) and the province's contribution (9.5%) for electricity infrastructure works.

The Province of Buenos Aires had to cooperate to ensure that the distributors could enter the shantytowns to install meters to control consumption. It also had to contribute 9.5% of the taxes levied on distributors investing in electricity infrastructure works in shantytowns and poor neighborhoods, according to Decree-Laws 7290/67 and 9038/78. Moreover, the province was in charge of disseminating the contents of the Agreement among the municipalities, and negotiating their entrance into individual agreements. The municipalities had to collaborate to ensure that distributors had access to meter installation sites. They also carried out a census of the inhabitants and dwellings and opened up streets. The regularization process also included paving the way for the inhabitants to obtain title deeds in relation to their property. Moreover, the Municipalities waived the 6% municipal tax that was to be included in the bills collected from shantytowns and low-income neighborhoods and installed public lighting systems that prevented the theft of electricity, bearing the costs of installation and maintenance expenses.

The distributors waived their right to any claim and/or collection of bills, surcharges and interests accrued since 1992 due to direct connections or any other unlawful or irregular use of electricity. They also pledged: 1) to install collective meters and issue a monthly payment notice for each group according to the established tariff; 2) to comply with the installation of at least 10,000 meters a month; and 3) not to cut off supply to the shantytowns and to carry out a population and dwelling census in the poorest neighborhoods, informing the population beforehand. They could only cut off supply in individual cases due to non-payment or unlawful appropriation of energy. After a first analysis, it is possible to conclude that the Framework Agreement seems to have worked well, widely achieving the initially proposed targets. It included 650,000 users out of a population of around 3 million inhabitants.

Before the Agreement was signed, many inhabitants in the poor neighborhoods or shantytowns were illegally connected and did not pay for what they consumed. They also used electricity inefficiently (for high electricity-consuming devices, heating of the dwelling, or cooking). Moreover, their connections were unsafe (there was a high rate of accidents in which people were electrocuted) and the electric devices used in their homes were damaged (refrigerators were burnt out, for example). As a result of this Agreement, pre-assembled cables were laid, which prevented clandestine connections, and meters were installed (an average of 10,000 a month). In this way, the company improved its billing rate (the current collection rate stands at

85%), and the quality of service. The high degree of compliance is because the meter installation has made it possible to cut off supply and available substitutes are prohibitively expensive.

The Agreement was regarded as a good method for channeling strong social reactions to the prohibition of illegal connections and at the same time, it proved to be a successful means for disseminating the use of electricity and constructing the pertinent infrastructure. Extreme debts were covered by the state, the Province of Buenos Aires and the municipalities of Greater Buenos Aires (only two of them, San Isidro and Vicente Lopez, did not adhere to the Agreement).The Agreement favored the building of streets and the definition of property rights, an issue very favorably regarded by most of the neighbors. It must be remembered that in Argentina, it was believed that the payment of public service bills gave the inhabitants the right to own the land. Although the above-mentioned sector of the population has improved its living standard, shantytowns in Buenos Aires where the Agreement is not in force have continued to grow. Some inhabitants seem to "flee" from urbanized areas because either they have not paid their bills or they no longer have a place to live after the streets were opened.

Connection and reconnection charges

Concession contracts issued to the electricity distributors force them to meet all supply demands in their area of concession. According to the initial tariff table, connection charges for a household range between $56 and $489, depending on whether the connection is common or special, if the area is single-phased or three-phased, and whether or not it is an underground connection. Reconnection charges for services interrupted due to lack of payment (the service is cut off 14 days after the due date) are $4.60 for households. However, Section 7 of the Electricity Supply Regulations states that in the case of supply suspended due to lack of payment, the cut-off means withdrawal of the connection and of the meter. Consequently, to reinstate the service it is necessary to pay the costs for a new connection, in addition to a rehabilitation fee.

Special tariffs for pensioners

Before privatization and the subsequent implementation of the Argentine electricity sector reform, there was a differentiated tariff in place that granted subsidies to users with certain characteristics. In 1988, the Energy Secretariat set special electricity (and gas) tariffs for pensioners who used the services of SEGBA S.A. or AyEE S.E., with the consideration that "it is necessary to intensify the measures implemented by the National Government in relation to improving the general situation of pensioners, and an indirect way to achieve this is by establishing special tariffs for essential public services." This benefit, however, does not include all pensioners. In order to be eligible, it is necessary for the pensioner to collect the minimum pension and moreover, be a household user of SEGBA S.A. or AyEE S.E. electricity companies. The subsidies are explicit and are part of the general state budget. Their implementation should not affect the suppliers economic equation. These principles have been respected by Law (Decree 1738/92) but the implementation of the policy itself has undergone transformations. This pensioner subsidy is applied nation-wide and is exclusive for network electricity and gas. It is directly managed by ANSES (National Social Security Management Office). The difference in the billing at the Differential Tariffs and at the Maximum Tariffs for households was reimbursed by ANSES directly to the companies, pending prior verification by ENRE (Electricity Regulatory Agency) and ENARGAS (Gas Regulatory Agency) of the validity of the reimbursement requests submitted by the companies. ANSES had to compare the list of subsidy beneficiaries with the list of people on a minimum pension held by the social security system.

Decree 1398/92 (which regulates Law 24.065) stated that it was only possible to keep tariff reductions for pensioners whose income did not surpass the amount fixed by ENRE for “charities, duly registered non-profit organizations and/or electricity-intensive industries if a specific budget line was set up to pay the licensees the difference that the subsidy brought about in their revenue." Resolution 39/93 of the Energy Secretariat sets forth the extension of the special system for pensioners who are users of the

distribution companies at the national level; EDENOR S.A., EDESUR S.A. and EDELAP S.A. Regarding the bonus received by the beneficiaries of the system, it addresses the bimonthly consumption of electricity, stating the maximum amounts allowed and placing a ceiling on the final amount of the subsidy. The users framed in the tariffs called T1-R1 and T1-R2, small household users, are given a 50% discount on the fixed charge and on the first 210 kWh of electricity used in the last two months. All consumption above 210 kWh, if any, is billed at the normal tariff. No discount is applied to users who have bimonthly consumptions above 430 kWh. Likewise, the amount of the subsidy must be stated in each bill that is forwarded to the users. In order to implement this system, the distributors had to submit a timely affidavit with the pertinent information on the beneficiaries to ENRE and ANSES. In turn, ENRE requested ANSES to issue the payment orders for the distributors regarding billings accrued for the previous month, charging it to the pertinent line of the National Budget.

Scattered Rural Population

Users who live far away from the distribution network are treated according to the specific characteristics of each region. The concession contracts of the distributors at the national level envision a special reimbursable contribution to be paid by the users of the non-electrified rural areas. Some of the provinces (e.g. Jujuy, Salta and Rio Negro) have adopted a different mechanism to meet the needs of the rural population that lacks electricity supply and lives in low population density areas that are far away from provincial distribution systems.

In effect, the privatization process considered two different concession areas:

* the Concentrated market, meaning the market connected to the national or provincial distribution system and the isolated generation systems connected to local networks; and
* the Scattered market, which includes the remaining provincial territories (with no electricity supply).

Two different companies were therefore set up to provide services in areas with specific attributes, adjusting themselves, of course, to the quality, environmental and tariff standards for each region.[19] On the other hand, due to the fact that this market has specific characteristics, the extension of the distribution networks in order to supply electricity to scattered users is not optimum. Therefore, the inhabitants of these areas are supplied by using alternative systems (photovoltaic, aeolian, small hydraulic turbines or diesel-run systems). This way, the scattered areas have their own tariff tables[20] and the subsidy is paid by the provinces to the licensees. It is worth mentioning the Electricity Undersecretariat's Electricity Supply Programme for the scattered population in Argentina, through which assistance is provided to some provinces for the elaboration of similar mechanisms aiming at electrifying 1.4 million inhabitants (300,000 households) and 600 public services (schools, health centers and police quarters, among others).

2.3. Gas Supply Services

In June 1992, the only state-run gas company that was massively distributing gas by network at the national level was divided into two big pipeline transmission companies and eight distribution companies. The distributor must supply the service to all users who pay enough for said provision to be profitable for the company. However, unlike water supply, the users are not forced to connect to the network. Connection charges range from $15 to$70 (plus VAT) depending on whether the network has ready-to-be-connected household connections for providing the services or not. A fine of $23 is charged for reconnecting a service that was disconnected due to lack of payment, whether or not the individual meter was removed.

[19]The fact that there are different tariff tables for each licensed area would not allow for the existence of cross-subsidies among sectors with different consumption levels within the concentrated market areas.

[20]Unlike conventional tariff tables such as the one for the concentrated market, the user will pay for the energy made available, independent of the level of consumption.

Financing plan for gas installations

Since October 6, 1996, in accordance with Enargas resolution 412/96, distributors may finance works through banks. Under this resolution in May 1997, Gas Natural BAN, the northern metropolitan area distributor, launched a financing plan for the internal installations for low-income sectors who are reached by the distribution network but have not been able to gain access to the service (an estimated 150,000 homes within the reach of the distribution network have not connected to the service).According to the proposed system, the internal installation could be paid in pesos in 12, 24 or 36 fixed monthly installments, at an annual rate of 14% (prices are fixed at $732, $919 and $1,162, if 2, 3 or 4 devices are connected). Through this measure, distribution licensees plan to incorporate 500,000 potential users throughout the country who cannot afford internal installation costs and have no access to any sort of financing. Although these credits will allow low-income sectors to gain access to gas services, they leave aside the unemployed because credits will only be granted against the submission of a statement of earnings. Moreover, the regulatory agency allows the company to interrupt the services if the users do not pay the installments for the connections.

Subsidies in "low temperature zones"

When gas distributed by networks was a public service, Gas del Estado had a regional subsidy structure for households, similar to the structures that exist today (entailing substantially lower costs for those customers who benefit from the implicit subsidies). In fact, the tariff sub-areas used today, for the most part copy the zoning used by Gas del Estado. Resolution S.E. N1 169/92 established, as of January 11, 1993, differential tariff structures for households using natural gas in the provinces of Chubut, Santa Cruz and Tierra del Fuego, provided that they were serviced by the distributor "Gas del Sur." Bills were issued every two months.

Currently, there is a subsidy for households in the Patagonia region. When subsidizing gas consumption in particularly cold regions, the externality aimed at is ensuring that basic survival needs are met in order for the area to have a stable population. The subsidy is applied through a differential tariff table for each sub-area. The colder the region, the higher the subsidy, which then decreases gradually as consumption increases (until it is completely eliminated). This has brought about reactions from those users who believe their consumption is not being properly measured, or who feel discriminated against because they are just beyond the established threshold. The tariff is not bloc-increasing in the traditional sense. If the threshold is surpassed, the whole bill is increased (a flaw in the design). The subsidy is not applied to any sector other than households.

Universality and tariff structure

The concession contract sets forth regulations via the maximum prices in constant dollars, which is seasonally adjusted twice a year. Moreover, the agreements include the possibility of tariff adjustment due to technological advances (the X-factor) and an adjustment for financing investment plans (the K-factor). While the X-factor tends to bring down tariffs, the K-factor tends to increase them, resulting in a cross-subsidy by which users that already have the service finance the entry of new users to the network (it is a subsidy for all users, not only for the poor). Since the concession contract establishes that the licensees cannot generate cross-subsidies among consumers unless it is explicitly set forth in the budget this cross-subsidy is justified by possible positive externalities (which will be seized by the users that already have the service) stemming from certain network gains (stabilization of flow in the pipes).

The principle of universality is not present in the normal user/supplier relationship for the servicing of gas through networks, with subsidized consumption being the only exception to this rule. However, this

categorization does not yet allow the assimilation of a certain degree of the supply to the "universal basic service" principle, while only a certain type of consumer qualifies for the subsidies. The definition of tariffs is based on a cost allocation mechanism grounded in the principle of strict variable-fixed allocation. Therefore, the definition of distribution tariffs is an aggregate of three concepts: the cost of the gas bought and approved by Enargas, transportation costs (affected by the pertinent load factors that distribute the fixed cost of available transportation capacity among the cubic meters finally delivered to the client), and the distribution margin. However, this strict variable-fixed principle is not explicitly acknowledged in the license. Since privatization, household users and those belonging to the General Service category for small consumers are forced to pay a minimum bill in each bimonthly payment. This ensured revenue allows distributors to recover the hired transportation capacity costs.

Financing subsidies

Law 24.076 forbids cross-subsidies among consumers (which is understood as the capacity to recover costs incurred for supplying a certain category of customers through tariffs charged to another category or categories). After privatization, the privatized companies were allowed, through their Authorization Contracts (which were issued in the form of licenses in the case of the ten companies that Gas del Estado was broken down into), a guarantee that enabled them to collect the full amount of the authorized tariffs (which represents the ceiling). In the gas sector, these guarantees are backed by the Framework Law, which executed the privatization (Law 24.076).

Since its implementation, the subsidy settlement system has given the regulatory agency (Enargas) the faculty to authorize the maximum applicable tariffs, including differential tariffs. However, management of the funds, verification of the settlements and the capacity to propose the differential tariff structures to Enargas have undergone changes in ruling and application modalities.

Under the systems that have been in force during the post-privatization era, Gas Distribution Licensees using networks (regardless of the composition of the fuel flowing through the pipes) have received funds from those responsible for managing the subsidy (ANSES, in the case of pensioners collecting a minimum pension, and the National or Provincial Governments in the case of Patagonia households). These funds are used to compensate the licensees for the difference between the maximum authorized tariffs applied to households in each distribution sub-area, and those effectively paid by the benefited users.

The subsidy is also applied through a Differential Tariff Structure/Table and responds to provincial geographical boundaries and not to tariff sub-areas. There are two Differential Tables for each province, one for the Winter (May through September) and the other for the Summer. Winter tariffs are lower than Summer tariffs, and consumption levels are also wider in the Winter. Differential Tariffs are comparatively lower in the colder regions and are applied by consumption categories adjusted to each region's conditions (in the cold regions, the first category that receives a higher subsidy is the widest). If the first category is surpassed, consumption is again billed at the Maximum Tariff for that two month period. This last issue brought about severe complaints from users whose billed amounts jumped despite very slight changes in their level of consumption.

2.4. Water and sewage

At the time of its privatization, "Obras Sanitarias de la Nacion" (National Waterworks Company) needed important refurbishing, including the replacement of pipes and obsolete equipment, improvements in the treatment plants, and expansion of the network, which at that time serviced only 55% of the population within its jurisdiction with drinking water and 39% with sewers. The districts with the lowest per capita income were the most poorly supplied.

Most of the wastewater (95%) was not treated before it was discharged into the Rio de la Plata and there was a great amount of wastewater overflow due to the clogging of sewers.

The regulations set forth the investments that needed to be made, giving the licensees sufficient freedom to proceed according to each one's outlook, provided that certain coverage and quality targets were achieved, in particular, the goals outlined in the 30-year concession that is divided into five-year plans. The licensee may freely use water resources for obtaining superficial water (primarily from the Rio de la Plata, which provides 95% of the total amount). The licensee may also use the underground layers to spill sewer effluents, which are normally discharged into the Rio de la Plata without any prior treatment. The Regulatory Framework for the concession, as stated in Decree 999/92, explicitly forbids the licensee from voluntarily restraining supply.

Micro-measurement

Micro-measurement of water consumption was not widespread. It was applied to only 15% of the connections, and the recording of water consumed was not particularly trustworthy. Moreover, there were a lot of leakages due to the poor state of the system, and misuse was prevalent since there was no pricing mechanism. The reduction of the basic tariff (an element taken into consideration when awarding the bids) initially brought about a 27% decrease in bills. The users in households where the service is not measured can decide to shift to this option (optional pricing). When there is no meter, a fixed charge is billed; if there is a meter, the fixed charge is 50% less, but the usage cost is positive and is specified in the Tariff System.

An ETOSS 1993 resolution set prices for the meters and their cleaning and accessories, and also stated that the licensee had the option to provide users with a six-month credit at a rate similar to the Banco Nacion discount rate. Since the option may be reverted if the user notes an excessive increase in the billed amount compared to consumption prior to the installment of the meter, the alternative of choosing the tariff structure, metered or not, is favorable for the customer since the licensee must compensate the users for an amount equal to the price of the installed meter However, the user must pay a charge that includes the meter, its installation and accessories ($150 on average), as well as an annual charge of $15 for reading the meter. Connection charges for water range between $153 and $454 (depending on the diameter of the pipes), and the range for sewer installations is between $227 and $255. Reconnection charges for the services are between $113.50 and $340 for water and between $192 and $227 for sewers.

The base tariff for service provided without meters is broken down into a fixed charge, the Basic Bimonthly Tariff (BBT), total roofed area (RA), a building coefficient (E), which takes into consideration the type and age of the premises, plus a tenth of the land surface (LS):

$$BBT = K * Z * TG * (RA * E + LS / 10)$$

where Z is the geographical area where the premises are located and K is a constant which is equal to approximately 0.8 (a value of 1 at the time the privatization took place). For premises under the Empty Plot category, only a tenth of the land's surface will be considered. On the other hand, the area factor Z fluctuates between 0.8 for poor neighborhoods and 3.6 for the wealthiest neighborhoods, and just like E, it requires continuous updating.

The base tariff for measured service is the following:

a) A fixed charge equal to 50% of the basic bimonthly tariff (BBT),

b) A segment of free consumption according to the zone coefficient, and

c) A price for every additional cubic meter

The installation of meters in households entails that large low-income families living in small or old dwellings will pay more if shifted to the measured system, unlike high-income sectors where smaller families live in big, modern houses.

At the time of water meter installation, the licensee must inspect the user’s internal installations and should a leakage be detected, the user must repair it, bearing the pertinent expenses. The tariff structure expressly admits the possibility for the licensee to balance its economic equation through certain groups of

users. Before the privatization process, the economic cost of providing service was peripheral. To cover costs, including operation and maintenance costs as well as projected expansion costs, the Treasury had to aid the company on several occasions.

Due to the lack of a consumption/tariff ratio, a rational use was not promoted; the marginal price was zero for the user, thus encouraging misuse. In the tender specifications for 'Obras Sanitarias de la Nacion," daily consumption averages are mentioned as "ranging between 280 and 430" liters per inhabitant, which is imprecise. The world average, it should be noted, is 200 liters per inhabitant per day. Since the measured service was not widespread, the company found it difficult to locate leakages throughout the distribution network. As no seasonal variation was taken into account, and in view of the poor state of the system, water was scarce in Summer, which is when demand increases. The implicit subsidy for users with gardens was regressive, *ceteris paribus*. Services consumed by those users were financed in part by those who did not have gardens. This was more indicative of a regressive subsidy among users with different income levels than a progressive subsidy among users with different water consumption levels. It did not seem necessary to use drinking water for irrigation purposes when the area of operations in Obras Sanitarias has around 1,000 mm of rainfall per annum.

Network expansion and infrastructure charges

In order to meet community needs, a chronological schedule of coverage goals must be established. In this manner, those in political power do not delegate their responsibility for determining priorities in meeting the water and sewage needs of the population. A licensee would focus on profitability, perhaps at the expense of low-income sectors. The obligatory nature of connecting to the drinking water and/or sewage networks favors the dissemination of positive externalities. Regulations explicitly mention the complementary nature of both services. In addition to the obligation of connecting to the network, the households must make the internal installations. The regulations also established the obligation to pay for infrastructure and connection charges, something new in the privatization era.

Providing obligatory service to all inhabitants of the serviced areas, or to the regions covered by the expansion plan, as well as generality, are imposed on the licensee so as to force it to effectively provide the service without the possibility of any sort of discrimination. The licensee is also obliged to isolate any other water supply source once the service has been provided, permitting the user to keep the other source as long as there is no risk to public health or burden on public services. Once the service has been provided, the licensee must also fill in any septic tank or deal appropriately with alternative means of wastewater disposal. The licensee is obliged to supply water, free of charge, to firemen. Providing water to put out fires is explicitly mentioned in the regulations.

Infrastructure charges may be financed throughout two years in equal, consecutive bimonthly installments. However, the low-income users still find it difficult to afford these prices. Infrastructure charges are approximately $600 per customer for water and $1000 for sewers. Moreover, the licensee charges between $150 and $200 for connecting the service to each of the new users.[21] The infrastructure charge formula contains a network component and a connection component:

$$Cii = STi\ KM\ Pr + Pc$$

where Cii is the infrastructure charge for premises belonging to a specific project; STi is the area of land on which the premises are located; KM is a coefficient that depends on the type of soil and on the repairs of pavements and streets in each specific project; Pr is the price of the distribution network component, and Pc is the connection component price.

[21]Recent studies carried out in the United States have calculated that, on average, the costs of the basic infrastructure necessary to meet the needs of a three member family, providing them with drinking water and sewers, is around US$200, approximately a fifth of the values fixed for Argentina.

KM is negatively dependent on the cohesion of the soil and positively dependent on the underground sheet of water and the percentage of repair required for the pavement and street. These values appear in a table, and the ratio between extremes is 2:1.

Since payment of the infrastructure and connection charge is obligatory, and in view of the difficulties of low-income inhabitants affording such high amounts, there is currently a bill (promoted by Executive Power Decree 149/97) that proposes to replace infrastructure and connection charges with a fixed charge in service bills. According to the bill, a new charge of $120 would be implemented, payable in 30 monthly installments of $4 for new users. Part of the $4 would be allocated for financing sanitation facilities for wastewater that is currently spilling into the Rio de la Plata. Should this bill be successful, it would imply a cross-subsidy by which all current users will finance new entrants to the network.

The application of a fixed amount that would substitute the infrastructure charge is questioned by some sectors of society, who consider that it is neither fair nor equitable for lower-income users to face a higher increase in relation to what they pay than customers that consume more. The bill would aim to implement universal service (permitting the entry of new low-income users), but in doing so, it would threaten those customers who currently use the service that would find it very difficult to afford a monthly increase of $4 in fixed charges.

Treatment of delinquency

The licensee's right to cut off service due to lack of payment (if at least three terms have not been paid) is not applicable to hospitals and clinics, either private or public. The intervention of the Regulatory Agency may be necessary to avoid other cut-offs, in accordance with the regulations in force. The adopted system is more severe than others in force (in San Luis, for example, where water is still provided to a tap outside the premises). Disconnection charges are equal to nine bimonthly periods of service, with connection charges representing three of them.

Since the inhabitants of the serviced area are forced to enter the network, only the owners of empty premises may request that a property under consideration is either connected or disconnected. The user is not exempted from obligatory connection. If users wish to have their own water well or other alternative source and not be connected to the network, they must request permission from the licensee, who will accept the request as long as the water from the alternative source fulfills the relevant quality standards.

Besides the obligatory connection to the network, there is also obligatory installation of internal household services. However, as far as water is concerned, there is no regulation that allows for bank financing of the internal installations, as is the case in the gas sector.

Should the payment of bills be in arrears, the licensee may charge interest and, moreover, cut off the service when 180 days have elapsed from the due date. However, the service may not be cut off if there is an order from the ETOSS or the Ministry of Health and Social Action. In this way, service cuts come under the sphere of public health, thus preventing cuts in clinics and hospitals (either public or private), although the same does not apply to households. In the latter instance, only the situation of extremely poor users is analyzed.

The concession contract authorizes the licensee to bill drinking water in blocs to building consortiums. This measure facilitates dealing with delays in the payment of service. Since a water cut off would affect all of the users in the building, the neighbors of the delinquent customers would step in to prevent this from happening. However, this measure was deferred because the Ombudsman initiated proceedings for the protection of these rights.

Experience regarding network expansion

According to a recent MEYSP study (1997), out of the 27 million inhabitants of the urban areas, close to 5 million did not have their basic needs met, and most of them had no drinking water or sewers. There is

no comparative data to show how these figures have evolved, although it is believed that the situation has improved. However, the low-income population may have broken down into two groups. On the one hand, many low-income people have been included in plans allowing them access to services, some of these plans in combination with the Ministry of Labor (for example, the inhabitants of a low-income neighborhood were hired to carry out the infrastructure works) and the Province of Buenos Aires (more general community coordination and assistance plans targeted at all aspects of poverty). In this way, the low-income population improved the infrastructure and regularized their situation regarding the ownership of the land they live on. On the other hand, some residents have been unable to simultaneously face new obligations in addition to their real estate taxes, payment of their land installments and electricity and water tariffs, among others. Therefore, these inhabitants have shown a trend to migrate toward less formal districts, or to where these plans are not applicable, such as the Federal Capital shantytowns. This has led to the appearance of jurisdictional externality and elusive demand, which entails the migration of people seeking to avoid paying the cost of the service. Furthermore, the adherence of a great part of the neighborhood to the network would make substitutes disappear, forcing others to move into another area.

Decree 149/97 authorized the comprehensive renegotiation of Aguas Argentinas' goals and demands over a term of 180 days, which could be extended for an equal period. This would be the first privatization that is globally reviewed. The national authorities justified this review of the concession by noting the need to reestablish the licensee's economic and financial equation, which had been affected by the suspension of the infrastructure and connection charges that were to be paid by new users. The impossibility of paying for infrastructure costs did not change much in Greater Buenos Aires, as far as Aguas Argentinas is concerned. According to the budget estimate, in 1997 their revenue would have been around US$50 million, with total bills amounting to $400 million. In view of the population's situation, it was impossible to collect that much money.

It is worth noting that bills that contained the extra $4 cost per bimonthly period are already not performing to some degree (cf.MEYSP, 1997). The available figures regarding family income help to explain why this is happening. For the first decile, the nominal and real income reached a maximum value in 1994 and then dropped, while the unemployment rate remained high (affecting the poorest segments). In order to compensate for this imbalance, several alternatives have been considered since 1996. These include:

* modifications in the economic and financial parameters of the concession: fixed increases of $2 or a certain percentage of the tariff, or the reduction (by one-half or one-third) of the infrastructure and connection charges, together with a 7% tariff increase;
* extension of the serviced area to other districts in Greater Buenos Aires;
* extension of the concession term;
* temporary reprogramming of those works viewed as obligatory investments; and
* Treasury subsidies for the US$50 million not collected.

It is difficult to solve this situation because the target population is the low-income sector and the costs for making connections in poor areas is not really known. Moreover, the companies have little experience in solving and dealing with assistance plans because they are accustomed to operating in developed countries.

3. A checklist of potential problems based on Argentina's recent experience

From the application of OS and USO criteria in Argentina, it is possible to draw some useful guidelines, many of which relate to the fact that this specific privatization process was quick and far-reaching. Although there was some experience in dealing with OS and USO criteria in public companies, the private operators and regulators encountered a series of problems that were new to them. These problems were exacerbated by the changing economy and grew along with the persistently high unemployment rate.

(1) Anticipate inter-jurisdictional externalities

The mobility of users makes the targeting of any service obligation quite difficult. In Argentina, this issue appeared as a result of the migration of the inhabitants of poor neighborhoods toward jurisdictions where real estate ownership was not formalized. They bore the burden of fixed (and often simultaneous for all sectors) expenses to obtain connections.

(2) Minimize the risks imposed by elusive demand

In Argentina, the analysis of OS emphasized the minimum expansion and quality conditions that were imposed on regulated companies. After a geographical expansion of the network, the companies came across low-income neighborhoods which entailed high and uncertain access costs. This led to more difficulties in achieving the USO objective and more hesitation to progress on OS. The Agreement on guidelines (Acuerdo Marco) is a good example of a mechanism that seems to have worked properly. It blended the efforts of the companies and the national and provincial governments, overlapping with other social assistance plans. The question is whether it would have worked without these other plans. This simultaneous provision of new services may indicate that a gradual policy can sometimes work better than a "shock" procedure.

(3) Realize that unemployment leads to delinquency and lower expected tariffs

The demand-side may self-exclude themselves due to the tariff, which is related to their payment capacity, the expected unemployment rate, their expected salaries and the reconnection and delinquency charges. Within the framework of a static economy without unemployment, the optimum tariff structure depends on the elasticity of the fixed and usage charges. In an economy with persistent unemployment and an improper income distribution, these elasticities are even more important.

(4) Deal with the fact that the poor have less access to credit

Most of the financial assistance programs in Argentina did not take the unemployed into account, yet this is the group that usually has no access to credit. The expected tariff for the unemployed poor may be much higher than the normal tariff: these people know that they will go through periods in which they will not be able to afford the tariff, and that they will have to pay reconnection and delinquency charges, in addition to those for infrastructure. Moreover, the expansion of services was implemented side-by-side with the elimination of leakages, misuse and clandestine connections. In other words, there was a decrease in the availability of the services that were free of charge. It is true that normal tariffs, in general, are relatively lower than the cost of any substitute. But many times, these substitutes can be bought on the spot, when needed, while access to the network and a fixed charge entail an implicit contract and a certain degree of commitment and inflexibility. Ultimately, the plans that included credit for the payment of infrastructure charges were not that successful.

(5) Coordinate regulatory policy, employment policy and social policy

The regulatory policy was implemented faster and with clearer objectives than the unemployment policy, which may account for some of the difficulties encountered. To try to solve unemployment problems through the tariff structure is not an optimum solution, and to define a cross-subsidy structure is not sustainable in the long run. In some sectors, the cross-subsidy policy is explicit (such as in water), in others it is implicit. It includes both use (on-going) as well as expansion (one-off). The issue here is whether to operate under the assumption that full employment exists, or to allow for a provision regarding the informality and low income of the targeted users and permit cross-subsidies, or to address poverty at a different and more comprehensive level. Nevertheless, some of the more successful plans to ensure Universal Service were those that improved both things at the same time, in particular, using workers from poor families for infrastructure extension works.

(6) Beware of latent opportunism of users who benefit from special programs

The special tariffs in telephony which favor the pensioners collecting a minimum pension show that special treatment of a sector may induce free-riding. When these pensioners had unlimited special subsidies, their bills were higher compared to average households, and even when compared to some commercial users. In the telephony sector, this problem was corrected by establishing a maximum number of calls.

(7) Fixed allocations for payment of services do not ensure USO

In the cases of gas, electricity and water, the system shifted from a scheme subsidizing the pensioners using social security funds to a fixed monthly allocation included in their pensions for all service bills. The objective was to avoid burdening the pensioner with excessive bills for public services, but it has already been noted that many pensioners do not pay their bills. If the services are cut off, the desired externalities will have not been achieved. If they are paid from public funds, the above objective will not be fulfilled. Therefore, a solution has yet to be found.

(8) Anticipate the fact that operators have greater information than the regulator .

There is little knowledge of the cost of reaching agents located in regions far away from the densely populated areas. This may open the door to some sort of "moral hazard issue" with companies who exaggerate supply costs in these districts. If there are available alternative technologies, their use, in competition with currently used technologies, limits the above effect. An example is satellite technologies for rural areas. In addition, imposing a consultation process with the beneficiaries often provides useful sources of information to increase the accountability of the operators. Direct interaction with the poor users often leads the selection of much more cost effective technologies in electricity (with shared connections for poor neighborhoods with joint responsibilities to pay the bills) and in water where cheaper pipes can be used because they are maintained more frequently and locally at low costs

(9) Often “tailored" programs are much more effective than standardized programs

There is a wide perception ex-ante by politicians and policymakers that the social concerns to be addressed and the social goals to achieved are of a general nature and that setting fixed, homogenous rules among agents is good enough. However, the diversity of situations is quite impressive. For instance, there is a wide variety of agents, located in more costly areas, with or without a job, pensioned or not, and among the latter, those who have additional income and those who do not. The "tailored" programs are clearly more expensive, but they are often more feasible solutions and achieve much faster political support as well as local support from the users, and a large chunk of these social programs are probably more effective when they are demand driven!.

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