IMPACT OF REGULATION ON ASSET MANAGEMENT: THE VALUE OF LOST LOAD IN ARGENTINA AS A REGULATORY SIGNAL TO GUIDE INVESTMENT INTO RESIDENTIAL OR INDUSTRIAL SECTORS

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ABSTRACT

The value of lost load (VOLL) is a key signal to guide investments in tariff system. The balancing of values between the industrial and residential sectors is not irrelevant; on the contrary, it is as important or even more than the numerical values. On this point focuses the work. The problem addressed is about whether or not the rebalancing done in recent years in Argentina on VOLL values for residential sector at the expense of the industrial sector denotes a unique sign for investment in Discos. The work covers the fundamentals of the VOLL as regulatory signal. After, it reviews the experience of Argentina and VOLL value developments in recent years. After it shows counterpoint between investments in residential and industrial policy as a result of the adoption of the VOLL. Finally it explains policy decisions as a result of the emerging logic of counterpoint between direct democracy and representative democracy. As a result, the paper shows clearly that there are no reasons for privileging the residential sector to the detriment of the industry through a rebalancing of VOL. We propose a proportionally better balanced treatment in relative terms, beyond the absolute numerical value of VOLL. This is a contribution from the economy of regulation to develop better management of assets for the distribution of electricity in Argentina.

Keywords: Regulation, Asset Management, Value of Lost Load, Rebalancing, Price Caps, Cost Plus, Tariffs.

INTRODUCTION

The existing regulatory framework devolves in the value of VOLL a unique importance when investments are required in distribution companies. However, in the last tariff review the government agency which controls the sector (Ente Nacional Regulador de la Electricidad - ENRE) laid down rules in which the values were rebalanced: the amount per unit of unsupplied energy among residential clients were privileged over the industry.

The regulatory importance of the VOLL, when an investment guide is required, is essential. Due to the lack of compliance within in terms of tariff reviews by the government authorities, the downgrade of those values results in negative impact on the performance of service quality.

STATE OF AFFAIRS

According to the laws, if a client suffers more cuts than the maximum permitted and/or if the client has no electrical supply more time than the allowed he or she will receive from the distribution company a credit on his or her bill proportional to the unsupplied energy valued according the following:

Residential, General and Public and Lighting Services: 1.40 US$/kWh
Small Industries and Large Industries in LV: 2.27 US$/kWh
Industries in MV and HV: 2.71 US$/kWh

The undelivered energy is valued as follows:

$$ENS(kWh) = SUMi(EA/525600 \cdot Ki)$$

where:
SUMi: Sum of i hours in which the user did not have service over the quality standards.
EA: Total invoiced energy of the user, in the last 12 months
Ki: representative load curve factor of each rate category.

The sum of investment costs, maintaining and operation and penalties has a minimum at certain point, in which the quality will be located. If the quality is represented as "fault" (and can be interpreted as the number of interruptions, duration of failures, failure rate), we can see that a smaller number of these, there are associated higher operating costs or investment costs. By having a number of failures greater than F, there are applied to the penalties company represented by the linear function [1] [2] (See Figure 1).

The total cost is the result of the sum of the imposed penalties and the investment cost associated with these failures. Companies tend to make the necessary investments for a number of failures such that the total cost is minimal. In the long run, the quality represented by the desired level of F* has a cost that must be paid by the users because it should allow the company a reasonable profit level to ensure continuity of service.

In tariff renegotiations in 2008, National Regulations indicated the following values for the calculation (ENRE's resolution 467/2008):

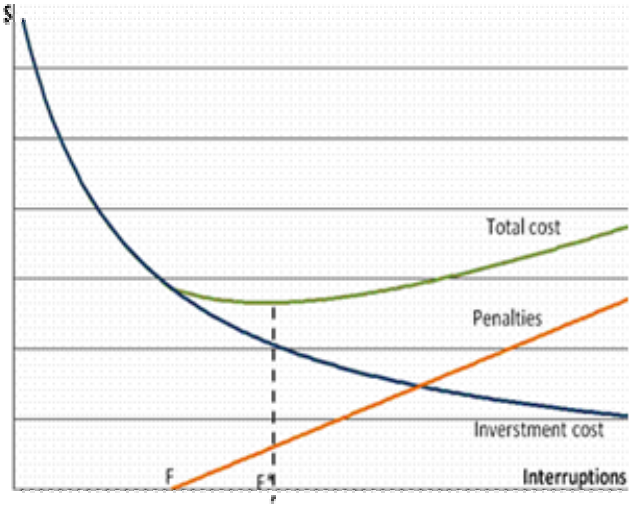

Figure1: Investment costs, penalties and total cost

Tariff	Original Values $/kWh	Values for tariff revision $/kWh
T1	1,40	10,10
T2	2,27	11,69
T3 BT	2,27	8,19
T3 MT - T3 AT	2,71	3,43

Table1: Original values vs.Aproved values

The situation posed here is perhaps the crux of the matter: as having a higher VOLL value implies that certain types of user have the preference of investment. Even more, they are certain that in failure situations or shortage in supply, will this kind of user be benefited, regarding others, because the distributor is not indifferent to the type of user who does not cater for the unequal values of the not delivered energy.
There is shown below two ways to estimate the value of the unsupplied energy base in some macroeconomic variables: GDP and RPI. From them, we will try to get the value of the VOLL originally sanctioned, at 2009 prices.

ACTUALIZATION METHODOLOGIES AND RESULTS

Undoubtedly, economic development and energy consumption go hand in hand: the more developed economic activity in a region, the greater energy consumption in the area. While experience shows that not always the GDP increase is accompanied by greater energy consumption (*i.e.* for the implementation of plans of Efficient Use of Energy), is applicable in our case using the ratio GDP/consumption, since no large energy saving plans are currently being developed or were developed previously. By making the ratio between GDP and electricity consumption we will have an idea of the value that each MWh of electricity consumed contributes to the gross domestic product. As can be imagined, we are overestimating every unit of consumed energy, just because not all the GDP is provided for electric consumption, nor each MWh contributes the same way. However, it does give a limit value that could have the energy not supplied, because when that MWh is not provided, in the worst case is to stop contributing that amount to the GDP. In Table 2 there are shown the values of GDP from 1993 onwards (in 1993 constant currency and in local currency) and the values of total energy generation in the country and the respective variations. If, as indicated before, we divide the GDP value by the total Energy generated, there is an idea of the VOLL. We show in Table 3 the values of the ratios between GDP values and Energy produced, for 1993 constant currency and in local currency. A first conclusion we found is that the VOLL will be susceptible to variations in the "economic moment" in which the measurement is made. To try to explain the cause, we can remember that changes in GDP and changes in energy consumption are related. However, if we look at the chart below we can see that the energy consumption is less elastic than the changes in the economy. This causes the value of VOLL that we obtain from the ratio indicated above will follow GDP variations than the energy consumption.
In order to make a quantitative analysis, there are shown in Table 4 the values of VOLL resulting from applying the RPI variations and WPI variations to the initial values specified in the concession contract. This analysis shows that if these values are updated by price indices, the values would be 3.4 Ar$/kWh for residential categories and 10 Ar$/kWh for industry.

	GDP in 1993 constant currency MMAr$	Variation	GDP in local currency MMAr$	Variation	Energy GWh	Variation
1993	236.505		236.505		58.505	
1994	254.241	7,5%	257.440	8,9%	62.500	6,8%
1995	241.733	-4,9%	258.032	0,2%	64.706	3,5%
1996	264.463	9,4%	272.150	5,5%	68.756	6,3%
1997	284.745	7,7%	292.859	7,6%	73.782	7,3%
1998	283.529	-0,4%	298.948	2,1%	76.492	3,7%
1999	280.664	-1,0%	283.523	-5,2%	75.891	-0,8%
2000	275.328	-1,9%	284.204	0,2%	83.758	10,4%
2001	245.903	-10,7%	268.697	-5,5%	86.015	2,7%
2002	237.326	-3,5%	312.580	16,3%	81.348	-5,4%
2003	264.964	11,6%	375.909	20,3%	86.442	6,3%
2004	288.754	9,0%	447.643	19,1%	93.286	7,9%
2005	313.873	8,7%	531.999	18,8%	98.160	5,2%
2006	340.473	8,5%	654.439	23,0%	104.627	6,6%
2007	371.282	9,0%	812.456	24,1%	108.482	3,7%
2008	385.762	3,9%	1.032.758	27,1%	112.382	3,6%
2009	394.625	2,3%	1.145.458	10,9%	111.333	-0,9%

Table2: GDP values evolution and Energy production
Source: INDEC [3] y CAMMESA [4]

	1993 constant currency $/kWh	Local currency $/kWh
1993	4,04	4,04
1994	4,07	4,12
1995	3,74	3,99
1996	3,85	3,96
1997	3,86	3,97
1998	3,71	3,91
1999	3,70	3,74
2000	3,29	3,39
2001	2,86	3,12
2002	2,92	3,84
2003	3,07	4,35
2004	3,10	4,80
2005	3,20	5,42
2006	3,25	6,25
2007	3,42	7,49
2008	3,43	9,19
2009	3,54	10,29

Table3: Annual ratio between GDP and Energy

	CPI April 2008 = 100	CPI Variation	VOLL $/kWh	WPI 1993=100	WPI variation	VOLL $/kWh
1993	45,55		1,40	100,00		2,70
1994	47,31	3,85%	1,45	99,81	-0,19%	2,69
1995	48,07	1,61%	1,48	106,27	6,47%	2,87
1996	48,10	0,05%	1,48	109,63	3,16%	2,96
1997	48,25	0,33%	1,48	109,74	0,10%	2,96
1998	48,58	0,68%	1,49	106,23	-3,20%	2,87
1999	47,70	-1,81%	1,47	102,19	-3,80%	2,76
2000	47,35	-0,73%	1,46	106,27	3,99%	2,87
2001	46,62	-1,55%	1,43	103,84	-2,29%	2,80
2002	65,70	40,95%	2,02	183,92	77,12%	4,97
2003	68,11	3,66%	2,09	216,83	17,89%	5,85
2004	72,26	6,10%	2,22	232,87	7,40%	6,29
2005	79,32	9,77%	2,44	252,56	8,46%	6,82
2006	89,16	12,40%	2,74	272,82	8,02%	7,37
2007	96,71	8,47%	2,97	306,74	12,43%	8,28
2008	103,71	7,24%	3,19	346,14	12,84%	9,35
2009	111,69	7,69%	3,43	370,60	7,07%	10,01

Table4: Actualization of VOLL values by RPI and WPI variations.

Clearly, this procedure is misleading, at least for energy uses in the home, as the consumption preferences of consumers may change (modifying the calculated values of VOLL in the methodology used for residential) but for industrial categories, as you consider the value of the goods lost and estimated value should not be very different from the real.

RESTRICTIONS ON POWER AND INSTITUTIONS: THE COUNTERPOINT INDUSTRIAL VS RESIDENTIAL AND DIRECT VS INDIRECT DEMOCRACY

Restrictions on the supply of energy in general and electricity in particular are not a new practice in our country. Quite the contrary energy crises occur cyclically, with shortages in supply since the dawn of the electrical industry, as soon initiated the twentieth century to the present, past milestones that led to successive nationalizations and privatizations, with intervening periods of exceptional abundance. What is new is the way it manages the handling of the crisis. We all remember the rolling blackouts residential service in the late 80s', when the combination of a lack of investment, poor maintenance of existing equipment and extra dry misfortune a year in terms of rainfall in the waterways leading system to collapse amid discontent of citizens. Instead, the crisis we are experiencing now has a distinctive: residential users do not perceive it at all. Not only because they not suffer blackouts, but because they perceive the prices are decidedly distorted downward, promoting energy waste, with brands such unprecedented in the sale and use of air conditioners. This counterpoint and brings up the traits of a specific policy: while in the '80s was unloaded much of the crisis on residential users, while preserving as much as possible the supply to the industry, in an attempt to not further damage the productive development during the present crisis is the opposite. It prioritizes the supply to residential users using all kinds of restrictions on large users, from much higher rates until consumption impediments through formal or informal, including phone calls to request a reduction in demand.

Clearly, the latter is an electoral strategy, as the number of voters present between multitudinously residential users is higher than among large users. But is it not this the ultimate meaning of democracy? Is it not desirable that if more people considered desirable this kind of decision, whether executed by the rulers? This would be a performance very close to direct democracy. This situation is one that refers to another counterpoint: the direct democracy of the indirect or representative. To dissect this counterpoint we will continue the work of Manin [5].

When examining the origins of representative government in the light of subsequent history, we see how the late eighteenth century raises a number of principles that are hardly questioned more in the post, among which is the principle that rulers retain some independence in their decisions against the will of the governed. This idea has led to the rejection or prohibition of two specific practices that have deprived the representatives of all independence: the imperative mandate and the discretionary permanent revocation of the elect. In England the idea is imposed during the eighteenth century: the deputies represent the entire nation and particularly the constituency that elected them. Therefore, voters in each constituency are not

authorized to give instructions. Consequently, election promises were never legally binding in England. In the United States when the first Congress (elected under the 1787 Constitution) debate the Bill of Rights had been added to the constitution amendment shaped, some members propose to include in the first one (which guarantees freedom of awareness and word) the right to give instructions to the representatives. The proposal was discussed at length, but ultimately rejected. In France, one of the first decisions of the National Assembly was banned in July 1789 the practice of mandatory instructions.

The difference between representation and self-government of the people not associated with the existence of a body of representatives but with the absence of binding mandates. Madison opposed, in many ways, the Republican-characterized by the representation and democracy-small ancient cities. Indeed, it describes the representation as an approximation to democracy becomes technically necessary by the impossibility of gathering the people, by contrast, sees a different representation of government and higher. The real novelty of the American republic is not related to the existence of a representation but with the total exclusion of the people as a collective for a system of government.

Then there is the matter of deliberation. It could have imagined that the representation is a unique individual spring, appointed and empowered by the people. However, it is incontrovertible that the community has been central. Now, in an instance collective wills is likely to be at the start diverging, so the only way to reach a common decision without resorting to coercion is a persuasive argument.

Each deputy is free to vote their conscience and judgment. Its function is not to convey a political will and made off campus. Not a spokesman for his constituents, but his henchman. Not being committed by representatives of their constituents precise wills, parliament can be an instance of deliberation in the full sense of the term, a place where individuals make their will through discussion and exchange of arguments. A discussion and justification makes sense only if the actors can change their minds between the time when the debate begins and where it ends.

As is apparent, it is not necessary nor desirable to simply carry forward the most immediate preferences of users. On the contrary, it may be preferable if there are compelling reasons contradict to act otherwise. In the case of electricity, it is clear that they must consider other elements apart from pure electioneering criteria when establishing policy to develop. Without addressing the problem of energy crisis and shortage in supply, which also has its causes, once immersed in the crisis does not seem appropriate tariff regime that promotes waste generated in a sector while severe restrictions in another. Or, at least, this action should be explicit as that policy is carried out by the existing institutional mechanism. It is a case where political institutional variable revealed a large explanatory power on the performance of an industry.

CONCLUSIONS

The purpose of the tariff revision is the legal definition of the right rate, which will satisfy the conditions of economic and financial balance of the distribution company, direct consumption to the wise use and conservation of energy, recognizing revenues capable to cover costs, with a reasonable return, catering for the needs of system expansion.

Through the development of this work, we have presented the importance of the values of VOLL in the regulation of the distribution service and its periodic recalculation. For the kind of regulation used in the country, it is essential for the calculation of the investments that are going to be done, to have the appropriate values the time the tariff revisions are made. There were no grounds to justify the change of direction that entails such a change in the absolute values of the energy unsupplied between residential and industrial customers.

Using development indicators, we calculated the approximate values for industrial clients, yielding values between 10 and 12 Ar$/kWh; doing both upgrades for inflation and for GDP.

We believe it is necessary, for all the above, the urgent review of the values and tariffs, as well as keep the dynamics of the reviews by the importance in the regulation of the electricity sector.

We hope, finally, that this work will raise awareness of those to whom the subject is of interest as a way of drawing the reader's attention to the importance of the VOLL and the update when we are trying to have a functioning electricity market to its full potential.

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