

Price Caps, Efficiency Payoffs,
and Infrastructure Contract
Renegotiation in Latin America

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Abstract

Twenty years ago, as the United Kingdom was getting ready to launch the privatization of its public services, Professor Littlechild developed and operationalized the concept of price caps as a regulatory regime to control for residual monopoly conditions in those services. Ten years later, Latin American countries, as they embarked into their own infrastructure reforms, also adopted the price cap regulatory model. Relying on a large data base on the factors driving contract renegotiation in the

region and a survey of the literature on efficiency gains, Estache, Guasch, and Trujillo assess the impact of this regulatory regime in Latin America. They show that while the expected efficiency gains were amply achieved, these gains were seldom passed on to the users. Instead they were shared by the government and the firms. Moreover, the adoption of price caps implied higher costs of capital and hence, tariffs, and brought down levels of investment.

This paper—a product of the Infrastructure Vice Presidency—is part of a larger effort in the vice presidency to improve knowledge of infrastructure needs. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Antonio Estache, room F11K-184, telephone 202-458-1442, fax 202-676-9594, email address aestache@worldbank.org. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. Jose-Luis Guasch may be contacted at jguasch@worldbank.org. August 2003. (19 pages)

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Price Caps, Efficiency Payoffs and Infrastructure Contract Renegotiation in Latin America*

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1. Introduction

Until the 1990s, infrastructure services in most of Latin America were provided by state-owned enterprises with local, provincial or national service monopolies. Throughout the 1980s, fiscal constraints had increasingly been inhibiting the public sector's ability to perform some of the basic operation and maintenance on infrastructure and to expand coverage of services to meet demand.¹ This slow-down led to a growing dissatisfaction among users, generating the necessary political momentum for reforms. Those reforms combined stabilization programs anchored on public sector expenditures with a new vision of the appropriate role of the state in the economy.

For most countries, the infrastructure reforms of the 1990s consisted essentially of a vertical and horizontal unbundling of the sectors into multiple business units—when allowed by country size-- and “privatization” of as many as possible of these business units. Competition for the residual monopolies through auctions was the first step towards improvements in efficiency levels in the sector. The reward for the winner was a long term contract with the often exclusive right to deliver the service. The adoption of incentive-based regulatory regimes and the creation of regulatory agencies to enforce the regulation was the second step designed to ensure sustained efficiency gains in the sectors. UK-type price caps and the related revision processes were part of what increasingly looked like a “standard regulatory regime” in the region. Price cap revision timings “à la UK” had the advantage of allowing the governments to buy time to get the regulatory agencies in place and to get them going since in most cases the first scheduled tariff revisions were 5 years down the road. They also allowed governments the time to create the additional incentives for quick efficiency improvements.

At a very first glance, the story was a successful one. By the end of the 1990s, the reforms had generated total private infrastructure investments of US\$360 billion. Moreover, there is ample evidence suggesting that the reforms, including the widespread adoption of prices caps, were generally associated with improvements in efficiency and reductions in the costs of producing many of the services.²

A closer look at the stylized facts provides a somewhat more complex story. First, as impressive as they were, the private sector investment flows represented only about one third of

¹ According to Calderon, C., W. Easterly and L. Serven (2002), public infrastructure investment reductions were used to ensure over 50% of the primary budget deficit during the 1980s and 1990s.

² More specific examples are provided below.

the investment needs of the regions.³ Contrary to the hopes of many reformers, the private sector did not become the major financier of the sector, although there was rarely a call for private sector participation in projects in Latin America that went unanswered.⁴

Second, there was a downward trend in public infrastructure investment in the region. Yet, according to Calderon and Easterly (2002), private sector participation does not explain this downward trend in public infrastructure spending. In fact there is little correlation. The evidence suggests that there was a lot of cream-skimming, and that governments were left with the responsibility to meet the high costs and high risks associated with service needs of the weak cash flow operations, without the benefits of the intra-sectoral cross-subsidies of the past. Most often, countries offered only the crown jewels of their infrastructure to the private sector, usually because they brought substantial resources to the treasury, they were clearly attractive to the private sector, and the transaction and operation were financially viable.

Third, while there were widely noted improvements in efficiency, it is not clear, however, that the cost reductions were sufficient to compensate for the decline in total investment levels.

Fourth, while evidence on the efficiency gains is increasingly widespread, the evidence that not much of these gains were shared with the users is growing just as fast.⁵ Indeed, there has been at best a weak correlation between the size of efficiency gains and decrease in tariffs. Also if coverage improved, it did not improve as much as expected. Coverage quickly expanded on unfulfilled demand with high commercial payoffs and then expansion trickled down very slowly along income levels, because prices did not fall as much as expected. Coverage went from a supply problem to a demand problem.

Fifth, the contracts proved to not be the predictable regulatory instruments they were made out to be by the advisors to the reformers. About 30% of total contracts were renegotiated,

³ According to Fay (2000), the annual investments needed for 2000-2005 should amount to about US\$ 57 billion, equivalent to 2.6 percent of Latin America's GDP.

⁴ Note that this is to be expected since the private sector is not supposed or expected to come in as an investor in projects not financially viable. In those cases, the investment needs or at least part of them will have to come from the public sector. The real failure is the fact that privatization commissions seldom took into account the residual fiscal consequences in the design of the degree and form of restructuring. The residual fiscal burden could often have been reduced with better packages which combined cream and milk!

⁵ See for instance Estache et al. (2002), the various chapters of the Ugaz/Waddams-Price book (2003) or the various papers presented at the paper presented at the February 2003 Center for Global Development Conference on Privatization and Income Distribution

in 2 out of 3 cases at the request of the operators. The renegotiation incidence was, in fact, much higher in the transport and water sectors.⁶

These stylized facts may seem like a puzzle in which the pieces do not fit together. The main purpose of this paper is to show how the various pieces actually do fit together. In particular, we examine the extent to which the decision to adopt price caps in the highly uncertain environments with weak regulatory capacity that characterized Latin America, affected (down) the investment levels, the cream-skimming strategies, the efficiency levels, the high renegotiation rates, and the overall sector performance. The paper draws on the collective field experience of its authors in Latin America, the slowly growing literature on infrastructure regulation in developing countries and on the preliminary results of a recent research project on contract renegotiations in the region.

The paper is organized as follows. In section 2, we first review briefly the diversity of infrastructure reform experiences and the relative role of incentive-based regulation in Latin America. In section 3, we draw on the main lessons from a recent empirical analysis of the impact of the adoption of price caps on the odds of contract renegotiations. In section 4, we review the empirical evidence on the efficiency gains that were associated with the adoption of incentive-based regulatory regimes in the region. In section 5 we present Argentina's experience to discuss the allocation of the efficiency gains between the various actors involved in the regulatory game. In section 6, we discuss the impact of the adoption of price cap regimes on the cost of capital. Section 7 discusses how other factors contribute significantly to solve the puzzle. We conclude in section 8 on what the review suggests in terms of the inheritance left by Prof. Littlechild in Latin America's infrastructure sector.

2. Latin America's infrastructure privatization and regulation mechanisms

While casual observers continue to associate infrastructure reforms with privatization-divestiture of assets-Latin America's reality is more subtle. What casual observers usually refer to as privatization often did not actually imply any change in property. Divestiture is, in fact, only one of the four main categories of contracts generally associated with privatization. The others are management contracts, BOT/O (Built operate and transfer/own) contracts and concessions. Table 1 shows that 2 out of 3 contracts during the 1990s were concession contracts

⁶ see Guasch (2003) as well as Guasch, Laffont and Straub (2003) and Guasch, Kartacheva and Quesada. (2000)

and that almost all water and transport privatizations were concessions while in telecommunications, the norm was divestiture. The popularity of concessions is easily explained by the fact that they allowed a relatively easy handling of constitutional, legal or political constraints on privatizations. With concessions, governments could, for instance, argue that they were not selling the assets of the country and hence bypass legal or constitutional constraints and reduce the criticisms of reforms by anti-privatization segments of civil society.⁷

These concession contracts also became the main regulatory instrument, while the main mandate of the regulators established as part of the reform process was to monitor compliance with these contracts.⁸ The more specific the content of the contracts on all parties' obligations, the clearer the mandate of the regulators. In most cases, these contracts cover a wide spectrum of regulatory issues such as regulatory regimes and tariff design. It is thus in these contracts and the related legal instruments that the concern for efficiency stemming from the proposals made by Professor Littlechild for the UK had the most impact.

**Table 1: Relative importance of Concessions Contracts
in Infrastructure Privatization in Latin America
1990--2000**

Sector	Concession as a % of PPI Projects
<i>WATER</i>	89%
<i>TRANSPORT</i>	97.5%
<i>ENERGY</i>	54.4%
<i>TELECOM</i>	0.5%
<i>TOTAL</i>	65.5%

Source: World Bank PPI Database

The practical institutional solution adopted by most reforming governments to monitor these contracts was very similar to the British model. To control private operators, reformers created a regulatory agency, which was sector specific in most countries, but multi-sectoral in a few others, covering a group of sector industries. The formal role of this agency was to ensure compliance by all parties with the terms of the contract, and to balance the interests of users, operators and government, and to act and interpret on circumstances loosely described or not

⁷ Bolivia offered an additional interesting creative experience and combined traditional privatization transactions with capitalization a new mechanism to transfer of public enterprises. Under capitalization, the State transferred shares equivalent to 50 percent of the firm to the operator who won the right to run the service in an auction. It also yields about 45 percent to private pension fund who use the funds derived from this share to pay old-age benefits complementary to those stemming from individual retirement accounts. The remaining 5 percent accrues to the company's employees. For more details, see for instance, Barja and Urquiola (2003)

⁸ For a longer discussion, see Gomez-Ibanez (2003)

covered by the contract but under the general jurisdiction of the regulatory mandate. While most of these agencies were supposed to be autonomous and accountable in principle, very few enjoyed these qualities. In most countries, the degree of political control over regulatory decisions continued to be a dominant source of conflict between operators and governments. There are many instances in which the operator considered its main counterpart to be the sector minister or secretary rather than the regulator. And in fact in many cases the formal appeal to regulatory decisions went to the line Minister, wresting autonomy and authority from the regulator. Moreover, while the regulatory agencies were established statutorily, they were rarely given appropriate resources, training, and instruments to carry on their mandate effectively. Overall, the weakness of these institutions proved to be one of the main determinants of the social and efficiency outcomes of the reforms as discussed later.⁹

3. What the Incidence of Renegotiations Reveals

To identify the importance of the choice of the regulatory regime on the success of reform, we rely on a data base of 954 concession contracts awarded between the mid 1980s and 2000, in the Latin America and Caribbean Region.¹⁰ The database contains detailed information about the characteristics of these concessions, including general details about the projects (sector, activity, year of award), the award criteria, size and duration of the concession, information with respect to the institutional context and degrees of freedom of the regulator, the type of regulatory framework put in place (price cap, rate of return, no regulation), and other details of the concession contract like arbitration clauses, nationality of operators, among others. In this data base, 56% of the contracts were regulated under a price cap regime, 20% under rate of return regulation. For 24% of the contracts, the regime was a hybrid one.

Table 2 shows how the choice of the two polar regulatory regimes, price caps. vs. rate of return, influences the odds of renegotiation. As mentioned earlier, the majority of the contracts were subject to a price cap—and the hybrid ones were closer to a price cap than a rate of return since they only allowed cost pass-through for a few cost categories. Formally, the choice was consistent with the advice of the international consultants recruited to assist in the preparation of

⁹ For an early discussion of these issues throughout Latin America, see Guasch and Spiller (1999), Berg and Gutierrez (2000), Stern and Holder (1999) or J. Stern (2000). For a more formal one, see Laffont (2003).

¹⁰ For a full description, see Guasch (2003), and Guasch, Laffont and Straub (2003).

the reforms. The marketing for this choice was based on now common but then innovative theoretical arguments. The regime, it was argued, would provide high powered incentives for securing efficiency gains, at least between tariff reviews and the regime was low maintenance in the sense that it did not require, at least between tariff reviews, large amounts of information-about firm-operation- levels. The fact that it induced a higher cost of capital because they tended to pass on to the operators a larger share of the project risks was very seldom considered. Also the fact that the regime was associated with a risk of under-investment (which has happened) was surprisingly seldom addressed in a region in which one of the main reasons to try to reform and privatize was to attract private investment to compensate for a reduction in public investment. At the time also, the fact that, in practice, both regimes tend to converge in terms of process with the level of convergence depending on the frequency of tariff reviews, was also largely ignored.¹¹.

Table 2: Incidence of Renegotiated Concession Contracts According to Sectors and Characteristics

	All infrastructure sectors %	Transport %	Water %
	30%	54.7%	74.4%
% of Contracts Renegotiations within regulatory regimes			
With Price Cap	38.1%	55.1%	88.%
With Rate of Return Cap	12.8%	38.1%	14.3%
With Hybrid Regime*	24.4%	46.2%	39.6%

* Hybrid regimes are defined when, under a regime of price caps, a large number of costs components are allowed automatic pass through into tariff adjustments.¹²

Source: Guasch (2003)

Table 2 shows that 1 in 3 contracts were renegotiated in Latin America and that the rate goes as high as 1 in 2 for transport and 3 in 4 for the water sector. These renegotiations took

¹¹ See Green and Rodriguez-Pardina (1999)

¹² The numbers for the hybrid regimes should be taken with some care, since there is some subjectivity in that classification and also incomplete information in determining the classification.

place on average 2.19 years after the award of the contract.¹³ This was for concessions granted for about 20 to 30 years and that had a five year period for a tariff review (for concessions granted under a price cap regime). Table 2 also shows that the choice of the regulatory regime matters. In particular, Table 2 shows that a price cap regime strongly increases the probability of renegotiation well ahead of the scheduled tariff revision—which usually was scheduled for the end of the fifth year after the award of the contract. Hybrids regimes did, as expected, better than pure price caps, but not as well, in terms of renegotiations, as rate of return regimes.¹⁴

While Table 3 shows the important role operators have in initiating the renegotiations, it is also interesting to analyze the extent to which the regulatory regime is correlated with the originator of the request for renegotiation. Essentially, in 2 out of every 3 contracts, the change is requested by the operator. This is a significant proportion. Within the context of this paper, the obvious next question is the extent to which the request for renegotiation is driven by the choice of the regulatory regime. Table 4 provides the answer.

Table 3: Who initiated the Renegotiation?
(% of total requests)

	Both Government and Operator	Government	Operator
All sectors	13%	36%	61%
Water and Sanitation	10%	24%	66%
Transport	16%	27%	57%

Source: Guasch (2003)

When examining the data on the regulatory regime, Table 4 shows that the initiator of renegotiations, was overwhelmingly (86%) the operator when under a price cap regime, corroborating our hypothesis. The percentage drops considerably (26%) when the operator was under a rate of return regime, as expected under our hypothesis. Table 4 might imply that the efficiency gains achieved by the operators may not have been large enough to provide them with

¹³ It was 3.3 years-accounting for construction lag time- in the transport sector and 1.6 years in the water sector (Guasch, 2003)

¹⁴ It may be useful to point out that the adoption of a hybrid regimes was generally the result of renegotiations of contracts initially subject to a price cap regime. Indeed, in general, the main change in the regime was an increase in the number of cost categories that enjoyed automatic pass-through. In sum, the initial price cap choice has tended to be short lived in Latin America, in particular in the transport and in the water and sanitation sector.

the rents they were expecting to get when they signed the contract, or that they saw a favorable environment to secure more favorable terms through renegotiation demands.

A review of the evidence on the efficiency gains achieved as a result of the restructuring is thus a necessary step to be able to assess the contribution of the adoption of price cap regimes to the degree of renegotiation in the region.¹⁵

**Table 4: Who initiated the renegotiation conditioned on regulatory regime?
(% of total requests)**

	Both Government and Operator	Government	Operator
All sectors			
Price Caps	11%	6%	83%
Rate of Return	39%	34%	26%
Hybrid Regime	30%	26%	44%

Source: Guasch (2003)

4. The efficiency payoffs from the adoption of price caps and other reforms

A plethora of studies evaluating different aspects of the impact of the reform program in infrastructure in Latin America have been recently completed (e.g. Birsdall and Nellis (2002) and Ugaz and Waddams (2003)). Practically all of them show significant performance gains, improved quality of service and increases in coverage (but not as large as expected). For example, in their study of the regulation of the electricity sector in Latin America and of the telecommunications sector, Fischer and Serra (2000, 2002) argue that the privatization-cum-regulation of these Latin American sectors has been, in general terms, successful: privatised firms have sharply increased their efficiency and coverage.

Most of these studies, however, shy away from the economic efficiency concept associated with the adoption of a price cap regime. The evidence on this measure of efficiency is much more scarce and does not cover all sectors nor all countries equally well. We thus need to rely on highly diverse types of studies to document the efficiency gains. Among the studies on

¹⁵ For Argentina, see Chisari, O., A. Estache and C. Romero (1999), Delfino, J.A. and A. Casarin (2003) or Ennis and Pinto (2003); for Bolivia, see Barja and Urquiolo (2003); for Brazil, Mueller (2001); for Chile, Bitran, E., A. Estache, J. L. Guasch and P. Serra (1999), Engel, E, R. Fisher and A. Galetovic (2000), Paredes (2003) or Rudnick and Raineri (1997); and for Peru, Torero, M and A. Pasco-Font (2003) for evidence on the effects on prices, quality and investments but this is less directly associated to the adoption of the price cap regime.

efficiency, the electricity sector is the only one to enjoy a representative coverage thanks to a series of papers by Rossi (2001, 2002 and 2003). Rossi works with data on 39 firms covering a dozen countries between 1994 and 2000. He finds an annual average rate of productivity change around 1 percent for that period, mainly from the technical change component. Moreover, his evidence also suggests that private firms are the firms that are pushing the South American production frontier in the right direction. He finds no evidence of technical progress in public firms, whereas technical change in private firms is around 2 percent per year. Since the renegotiation rates are fairly low in this sector, it seems to suggest that both the regulators and the operators were satisfied with these gains.

There is unfortunately no comparable cross-country coverage for the other sectors; most of their evidence is for specific experiences. Accounting for this limitation, the various studies provide reasonable anecdotal evidence suggesting that reforms have on average improved efficiency quite significantly throughout the region. For railways, Estache et al. (2002a) estimated TFP with *Tornqvist* indexes for Argentina's passenger and freight railways companies and for Brazil's freight railways companies which both work under price caps. In Argentina, they find an average annual efficiency gain of 5.3% for freight and 9.8% for passenger concessions. In Brazil, the average TFP growth has been 8.4% in the first two years after the private operation of the sector started. Before the annual efficiency gains achieved during a gradual restructuring process started in 1985, the average improvement in TFP was 5.5%. An interesting difference between the two countries' experience, is that all Argentinean freight contracts ended up being renegotiated while all the Brazilian freight contracts worked out well and are on track for a scheduled tariff revision. Additional differences between the two countries include the fact that demand was grossly overestimated in Argentina in comparison to Brazil and that the resources allocated to the monitoring of the contracts were much larger in Brazil than in Argentina.

For telecoms, Benitez et al. (2002) relies on an engineering-economic model (also known as hybrid cost proxy models-HCPM) to estimate that in one of Argentina's provinces, the efficiency gains achieved between 1991 and 2000 were about 3.9% per year, including the benefits from the major technological changes the sector enjoyed. Some degree of renegotiation also took place in that sector to allow contract extensions. For Brazil, Resende and Facanha (2002) using a Data Envelope Analysis (DEA) do not find any statistically significant impact

during the first 18 months after the opening of the sector to private operators under a price cap regime.

For ports, Estache et al. (2002b) focus on the effects of the 1993 port reform Mexico over the 1996–99 period. They rely on a stochastic production frontier to show that Mexico's ports achieved 2.8–3.3% average annual efficiency gains since reform under a price cap regime. In that experience, there was no renegotiation.

For water, Estache and Trujillo (2002) also rely on a *Tornqvist* index to assess the efficiency gains achieved with reform in Argentina and find average annual TFP gains between 3.7% and 6.1% depending on which provinces are included in the sample. In one of the provinces covered by the study, the regulator has been in permanent renegotiation which has resulted in a regulatory regime which is moving slowly but surely towards a cost-plus regime. In another one, the company was returned to the public sector but continued to be in a price cap regime and has managed to continue improving efficiency under the renewed public management.

Overall, this overview of the studies on efficiency available for Latin America suggests that in the vast majority of cases, the reforms, including the introduction of price caps, generated improvements in efficiency. Why would then operators request so frequently renegotiations, in particular in water and sanitation and in transport? Three scenarios could explain the drive for renegotiations or unhappiness of the operators. Under the first scenario, they could not retain the efficiency gains, at least not long enough for the effort to be worth the cost. This implies that these gains might have been captured by another player in the regulatory game. Under a second scenario, the adoption of an incentive-based regulatory regime could have resulted in a cost of capital that was inconsistent with the rate of return generated by the business in spite of the efficiency gains achieved. The need to cut the cost of capital would be what leads them to review some cost categories as part of the renegotiation. Under the third scenario- a combination of the previous two scenarios-operators saw a favorable environment to secure additional benefits, using their effective leverage, through renegotiation of the terms of the contract. These possible explanations are explored next.

5. Where did all the efficiency gains go?¹⁶

¹⁶ For more details, see Estache, A. (2003)

An easy, although admittedly weak, test of how the regulators distributed the efficiency gains is the correlation between efficiency and average tariff changes.¹⁷ Two main outcomes can be expected from this analysis. First, either tariff and efficiency gains are highly negatively correlated, in which case, the adoption of the price cap achieved a fair outcome for users but this can explain the requests for renegotiation by the operator. Second, there is no correlation and this suggests that incentive based regulation did not achieve much for the users. The more interesting story is the reason for why there is no correlation. One explanation could simply be that the regulator was unable to deliver on its mandate and the operator appropriated the gains (Table 6 below provides some evidence on that). Another is that the government may have hijacked part of the gains for fiscal purposes through tax increases.

To illustrate the point, the Argentina case is analysed here as a representative of the 1990s in the region. Table 5 summarizes the evidence for Argentina and shows that the increasing use of the privatised sector as a tax handle may provide a good explanation as to why operators were not happy with the price cap system.

Table 5: Comparing annual real tariff levels to efficiency changes since privatization

	Electricity Distribution	Gas Distribution	Water Distribution	Telecoms
Average tariffs and efficiency changes do not seem to go hand in hand				
Annual average tax inclusive tariff change	-0.75%	-0.8%	+1.75% (for Aguas Argentinas)	-0.6%
Possible approximation of annual efficiency Gains to be used in tariff revision	1% (shift)	2.9% (shift + average catching up)	6.1% (shift + average catching up for 4 water companies) 3.7% (without Mendoza) 1.9% (for Aguas Argentinas)	3.9% (shift + catching up) [set at 2% between 91 and 96 as part of cap] (in Mendoza)
but the government gets an increased share of rent generated				
Indirect Tax	20-57%	20-30%	20-30%	40-50%

Source: Authors tabulation based on Delfin and Casarin (2001), Benitez, et al. (2001), Rossi (2001), Estache and Trujillo (2002)

¹⁷ A second test is to check on the changes in the tariff structure across user and consumption types and to see how each one compares to the evolution of efficiency. If each category gets a similar cut of the efficiency gains in terms of reductions in tariffs, the perception will be that the distribution was fair—even if differentiated distribution of gains may simply reflect improvements in allocative efficiency, in which there is a better match between cost and tariff per user and usage type.

The table suggests that the efficiency gains have indeed often been significant but were generally not quickly passed on to users, during the 1990s. More specifically, while technical/productive efficiency improved, which means costs dropped, average tariffs did not drop commensurately. It suggests that a rent may have been created through efficiency gain improvements. The bottom part of the table reveals the beneficiary of the rent: the government. It may have hijacked the efficiency gains through the tax system. While there are obvious advantages to this for any country in fiscal crisis, it significantly reduces the signaling effect of the price system.

It turns out that, in Argentina, as in most of the other countries of the region, all three levels of government have contributed to minimize the redistribution of the efficiency gains to the users, through major increases in indirect taxes. For Argentina, the infrastructure sectors are such an effective tax handle that they generate over 1% of GDP in tax revenue across government levels. Total indirect taxes add up to 40-50% on telecoms services, 20-57% on energy and over 20% on water services. This is 4 to 5 times the revenue it used to generate when these services were public.

The upshot of this review of the distribution of the efficiency gains is a—rational—discontent by the users. Users grew unhappy as average tariffs slowly increased. In water, this was due to a major catching up of tariffs with costs in a sector in which average costs recovery rates have long been around 25%.¹⁸ As for passenger transport, the effective increase in tariff was infinite in many cases, since prior to the reforms, roads were free and the effective fares in buses and rails were quite low since many users evaded the payment obligation under public operation. Even for those users, including non residential users, who were used to pay for the services, over time, the improvements in service quality were insufficient to compensate the fact that tariff appeared to be creeping up—and no one seemed to really notice the role of taxes in this creeping up.

In sum, it seems that the successive public administrations have benefited from the efficiency gains. In addition to the lump-sum payments at the signature of the contract or the annual payments due by the operator, the governments are now able to cash in more from reforms through the tax system. The problem is that in water and transport, the reforms have

¹⁸ See World Development Report (1994).

often not been as financially successful as they were in energy and telecoms, which may explain why there are so many requests for renegotiation by the private operators in these sectors.

6. Did price caps push the cost of capital too much?

In addition to the unhappiness of the operators with the taxation of some of their potential rents, the second reason why some of the operators may have been eager to renegotiate was the impact of the adoption of price caps on the cost of capital relatively in the region. Table 6, focusing on the cost of equity, shows how this cost of capital has evolved in the region during the 1990s through the early 2000s. Of course, the data is very rough since the increase reflects many changes, most importantly, the effect of the Tequila and Asian crisis in the region, but it provides interesting basic insights. In particular, it shows that in transport and water, the cost of capital has been the highest throughout the period.

The two cost of equity columns show its average value at the time of the award-initial and the value in 2001-current. The obvious increase in this cost of capital across sectors corroborates the hypothesis made above.¹⁹ It is also in these two sectors-water and transport-, that the investment needs were the highest but that at the same time cost recovery through tariffs was the most politically difficult for obvious social and political reasons. In these two sectors the expected fiscal contribution of the public sector in the form of subsidies for operational or capital expenditures was also expected to be the highest and seldom delivered on.

Table 6: The cost of equity in Latin America in the 1990s²⁰

SECTOR	Initial Cost of Equity	Current Cost of Equity
Telecom	13%	17%
Energy	14%	18%
Water	16%	19%
Transport	18.5%	21%

Source: Foster, Guasch, Pinglo and Sirtaine (2003), preliminary results

As a risk mitigation strategy aiming at offsetting the increase in the cost of capital, the request, as part of the renegotiation, for automatic pass through rules for as many categories as

¹⁹ But it understates the actual total cost of capital since it does not recognize the significant increase in the costs of debt.

²⁰ The cost of equity is a measure of the appropriate return that investors should expect on equity investments in a specified country and sector, given the level of risk of such investments.

possible was thus a rational strategy for the operators.²¹ It was, of course, not the only instrument and in many instances the renegotiations were aimed at increasing the rate of return to keep it consistent with the increasing cost of capital. This is why slowing down investment, reducing service obligations or increasing direct or indirect subsidies were all addressed as part of the renegotiations, in particular in the water and transport sectors. This is why a common outcome of most renegotiations was a decrease in the level and pace of investments.

In balance, it is difficult to use this data to isolate the effect of price caps on the cost of capital. Even from the rate of return perspective, assessing the extent to which the rate of return has simply been adjusting to an increasing risk premium associated with a price cap regime is not an easy task. Indeed, in most Latin American countries, the accounting systems are not very good and hence easy to manipulate. Depending on how costs are allocated and depending on whether management fees collected by operators are classified as a revenue or as a cost, the rate of return on capital can vary 9% to 33% in any given sector. Considering that the cost of capital varied between 15% and 25% in most of the sectors for most of the countries, it is clearly not very easy to assess how much the regulatory regime mattered.

In sum, the only evidence available on price caps as a source of concern for the operators comes from the preference for less risky regulatory regimes which is shown by the changes brought by renegotiation. As already mentioned, renegotiation tends to lead to a transformation of most price caps into hybrid regimes, and de-legitimizes the price cap regime, both on grounds of the speed of change of the agreed terms and of the outcome. This, in turn, suggests that if costs plus regime had been adopted to begin with, renegotiation may have been avoided. However, the question then becomes: if rate of return regulation had been adopted from the start, would the efficiency gains observed have materialized? To be able to address this question it is necessary to account for many more factors than we have been focusing on up to now.

7. The relevance of institutions, process and contract design

While the main purpose of the paper was to study the interactions between regulatory regime and contract sustainability, the research conducted by Guasch (2003) suggest that it

²¹ These requests are consistent with the results of the two papers which show that price caps are indeed associated with higher cost of capital than rate of return regulation both for utilities and transport operations, see Ian Alexander et al. (1996 and 2001).

would be naïve to focus only on the choice of the regulatory regime to explain the outcome of reforms in Latin America. Table 7 summarizes the main statistics on the occurrence of renegotiation according to the main characteristics of the reforms.²²

Table 7: What drove renegotiations?

Renegotiated Concessions as a % of the category	All sectors %	All Sectors (w/o Telecom) %	Transport %	Water %
Total				
	29.0	42.5	54.9	75.0
Award criterion				
Lowest Tariff	60.4	61.0	60.0	81.9
High Price paid to government	11.0	26.2	32.5	66.6
Multiple Criteria	34.3	34.3	38.1	0.00
Regulatory Framework				
In Law	17.2	25.7	53.4	55.6
In Decree	27.8	28.0	58.6	83.5
In Contract	39.7	40.6	50.8	70.7
Institutions				
Regulators in place	17.1	25.2	50.2	40.9
Regulator not in place	60.9	73.5	62.5	87.5
Type of Tariff Regulation				
Price Cap	38.1	43.8	55.1	88.8
Rate of Return	12.8	13.1	38.1	14.3
Regulatory Obligations				
Regulating by means (Investment obligations)	51%	70%	76%	85%
Regulating by Objectives (Performance indicators)	24%	18%	19%	25%

Table 7 shows that in addition to the choice between price caps and rate of return, the award criterion, existence of investment obligations, the form of the legal support to regulation and the timing of the establishment of the regulatory institutions also substantially affects the probability of renegotiation. The design of the auctions and contract is also significant because it opens opportunities for renegotiation and reducing lock-in effects on operators. The legal grounding of regulation in a highly reversible legal instrument-such as a decree- does not help much. All that made it easy for operators to expect and thus ask for better terms and compensation for changes requested in the contract and ended up increasing the percentage of the costs benefiting from a time of escalation and indexation clause, and reducing or delaying investment obligations or performance indicators.

²² For a longer discussion, see Guasch and Spiller (1999)

Yet, having said that, the fact remains that risk factors and the allocation of risks do affect significantly the cost of capital and financial equation of projects. On that account, the choice of the regulatory regime and how one accounts for its implications remains a key factor on the outcome of reforms.

8. Concluding comments

Latin American countries adopted the price caps regime with a vengeance. Unfortunately, they merely swallowed rather than digested the concept, not accounting for its full range of implications. The problems the region has experienced with the reform program in infrastructure and with the adoption of price caps as shown here are the result of this eagerness to adopt a concept in theory rather than in practice.

The way the price caps, and more generally reforms, were handled in practice, as shown in this paper, raises some frustrating questions. Would a less incentive based regime have resulted in more and better investment? Had the region created earlier, stronger and better regulatory institutions, would the outcomes have been better? Was the problem the choice of the regulatory regime or are we trying to blame everything on one of many factors that contributed to the high renegotiation rates? Finally, could the high incidence of renegotiation have been avoided? And was renegotiation all that bad?

The answers to most of these questions boil down to an understanding of how price caps and cost of capital interact in high risk, weak governance environments. Weak regulatory capacity and weak effective government commitment to improve that capacity in Latin America led to the fact that price caps alone did not yield the expected benefits for the users. Price caps did provide incentives for operators quickly securing efficiency gains, but many of these gains were then captured by the governments or firms rather than shared with the users. Users were in fact penalized twice, since these efficiency gains came at the cost of a higher cost of capital and thus higher tariffs to cover that increase--relative to a rate of return regime. Compounding the pain inflicted on the users is the fact that renegotiations, generally associated with the adoption of price cap regime, tended to delay or bring down investment levels, as firms do not get immediate rewards--through tariff adjustments--on investments (either the existing tariffs already

account for expected investments or tariffs will be adjusted but only at the next tariff review period, usually a few years down the road).

Ultimately, the easiness and fast renegotiation of contracts-before the usual five year review- may eventually lead to the adoption of new regimes which will result in fairer tariffs, better access and stronger commitment to fair returns to investors. This seems to be happening through the adoption of hybrid regimes which will retain some of the incentive effects of the price caps while introducing cost recovery guarantees that may ultimately reduce tariffs because they will reduce the uncertainty of doing business in the region, and hence the cost of capital. In sum, what the 1990s Latin American experience shows is that, just like privatization alone (e.g. without competition) is associated with few benefits for an economy, price caps alone will not do much for the users .

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