Infrastructure reforms and the performance of privatized utilities in Latin America: the way ahead

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1. MOTIVATION

As part of structural reforms in infrastructure industries during the 1990s, more than US$ 750 billion was invested in 2,500 private infrastructure projects in developing economies. Nearly half went to the Latin American region, mainly through the divestiture of public assets in telecommunications and electricity sectors. Six countries – Argentina, Brazil, Chile, Colombia, Mexico and Peru – absorbed more than 90 percent of all private investments. Overall, the region was the most important beneficiary of the huge flow of private investments for infrastructure worldwide with private investment peaking at around US$ 130 billion in 1997. Since then, investors' appetites have waned, public support to privatization decreased, and the role of public investments in the provision of infrastructure services has gained momentum again[1]. While the increase of public investments is welcomed, given the magnitude of infrastructure needs in the region – roughly 4 to 6 percent of GDP per year to catch up or keep up with countries that once trailed it, such as China and Korea – and the fiscal limitations of the public sector, private sector financing for infrastructure will always be important in Latin America[2]. And while privatization has received most of the public attention, reforms have involved much more than asset transfers.

* World Bank, 1818 H Street, Washington D.C. Findings, interpretation and conclusions expressed herein do not necessarily reflect the views of the Board of Executive Directors of the World Bank or the governments they represent.

1. In Brazil, for example, dissatisfaction with privatization has increased from 40 to 60 percent of the population during 1998-2004 while in smaller countries, such as Guatemala and Panama, this index reaches more than 80 percent of the population. Even in Chile, commonly seen as the champion of structural reforms, dissatisfaction is predominant (see *Latinobarómetro* surveys for 1998 and 2004). Indeed, public authorities and multilateral institutions, such as the IMF and the World Bank, once sponsors of privatization, are now discussing ways of increasing public investments in infrastructure without jeopardizing sound fiscal management. The policy-making pendulum is, then, back to public investments as either if infrastructure reforms and privatization had never been implemented or, even worse, if reforms were fully completed, all lessons had been taken, and adjustments had been made.

2. See The World Bank (2005).

In this note, therefore, we try to highlight some of the lessons of infrastructure reforms in LAC during the 1990s with an emphasis on privatization. In the next section we try to understand how much infrastructure reform – including competition and regulatory change – was in fact implemented during the 1990s. The third section offers evidence on the impact of privatization on utilities' performance.

The last section, summarizes the results and offers some policy implications in terms of the way forward. Two main results emerge. First, infrastructure reforms, including privatization, are still incomplete – either in the sense that several countries have not even initiated such reforms or because those that started earlier have virtually stopped in a dangerous intermediate stage of partial reform.

Second, privatization generated important improvements but they were neither extended beyond a transition period around the event itself nor always transferred to final consumers.

These two results suggest one main policy implication: the need to complete reforms, particularly the so-called second generation regulatory reforms. Without those reforms – that include the completion of the regulatory framework, avoiding excessive contract renegotiations and increasing competition, where feasible – post-privatization improvements will be limited and, probably, unsustainable.

2. HOW MUCH TO REFORM?

Infrastructure reforms during the 1990s were motivated by operational, fiscal and technological factors. On the operational side, state-owned monopolies were both providing inefficient services (poor quality and high cost) to consumers and generating financial losses to the shareholders. The need to tighten fiscal policies, on the other hand, reduced the capacity of the public sector to counterweigh the financial losses and invest in services' expansions. At the same time, high indebtedness levels created additional incentives for the sale of public assets. Finally, technological progress had significantly reduced the minimum efficient scale in segments of these industries, creating the possibility of using competition as the main mechanism for resource allocation. Considering country and sector nuances, it was expected that de-verticalization, privatization and (new) regulation would increase efficiency, generate profits and create the conditions for network expansion.[3] Competition – mostly seen as an automatic result of de-verticalization and privatization – was seen as a key incentive for improved performance.[4]

Privatization, therefore, was just one of the components of structural reforms. In this sense, before discussing the performance of privatized firms, it seems appropriate to look at reforms' evolution more broadly. Measuring reforms, however, is a difficult task. In this section we provide evidence on the evolution of two main variables – privatization (the share of private provision) and competition – and discuss the evolution of infrastructure, focusing on telecommunications, electricity and water and sanitation.

3. De-verticalization of state-owned enterprises would separate natural monopolies segments (e.g. transmission of energy) from those where competition could be feasible (energy generation).Privatization would bring the discipline of budget constraint and profit-objective to firm management; while regulation would protect consumers from monopoly power and investors from capital expropriation.

4. When competition in the market was not possible, as in the water and sanitation sector, competition for the market and yardstick competition were considered appropriate replacements.

TELECOMMUNICATIONS

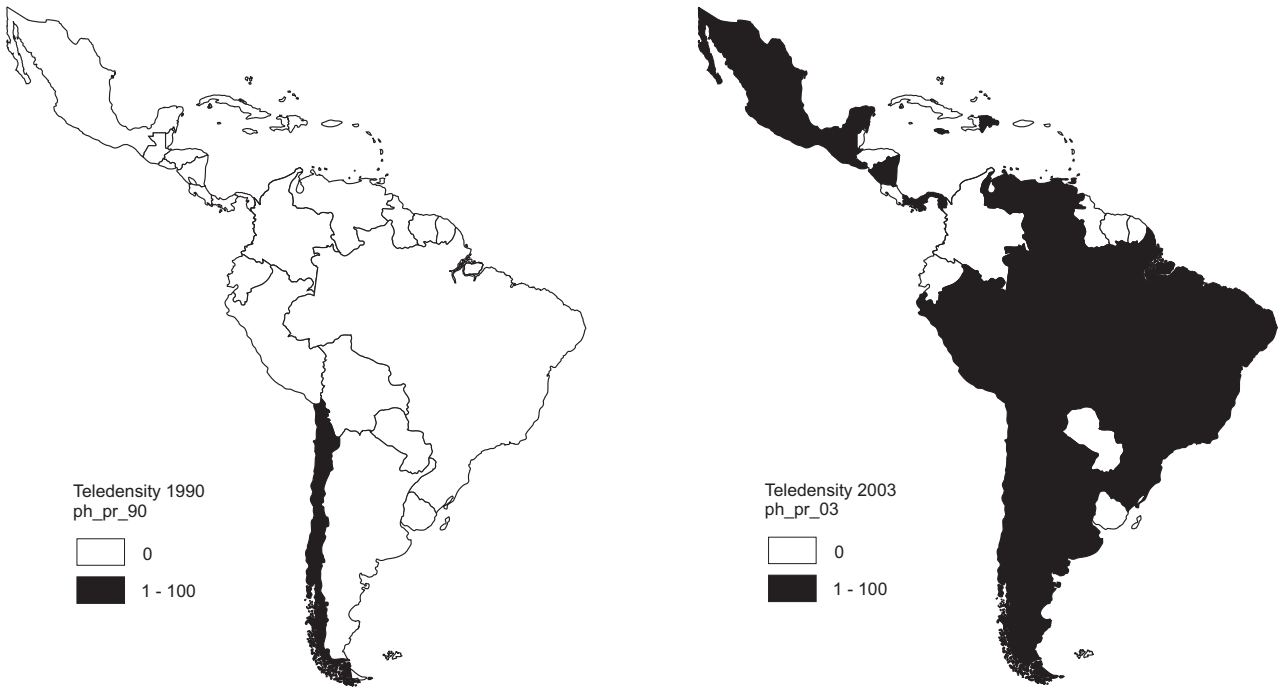
Telecommunications reforms were essentially motivated by technological advance, particularly in microwave, satellite and optoelectronic technologies. Technical progress tremendously reduced the operating costs of long-distance and traffic-sensitive segments, redefining minimum efficient scale and opening up opportunities for multiple providers in the long-distance market. The potential for introducing competition in the local network was lowered but appropriate regulation of access to the "last-mile" or the local loop would mitigate dominance abuse by incumbent firms and increase contestability. While privatization was a common ingredient among reform strategies, several countries – such as Argentina, Brazil and Panama – opted for granting a period of exclusivity to the newly privatized incumbent to compensate for investment and coverage requirements established by the privatization process. On the other hand, few other countries – such as Chile, Colombia and El Salvador – introduced competition since the beginning of the process. Exclusivity periods varied from 4 years in Nicaragua to 10 years in Argentina.

Figure 1 shows the evolution of private participation in fixed telecommunications in the region during the 1990s. Latin America was the leading region among developing economies in terms of privatizing former state-owned enterprises.

Private participation, at the beginning of 1990, was rare, with only 3 percent of households being supplied by a private company. This share significantly grew, reaching 86 percent in 2003.

Privatization and sector reforms were much slower in Costa Rica, Ecuador, Honduras, Paraguay and Uruguay while privatization was not emphasized but market reforms were implemented in the case of Colombia. Despite significant progress in privatization, competition in fixed telecommunications has shown slower progress. In none of the Latin American countries, new entrants were able to gain more than 15 percent of the market: even in Chile, usually considered the main reformer in the region, new entrant's share after almost 20 years of market liberalization was slightly less than 15 percent. Results in developed economies are not much better, reflecting difficulties in regulating access to the local loop ("last" mile) and market power from incumbent firms. Data on fixed telecommunications, however, do not reflect competition among technologies: thanks to technological change and convergence, not only private participation is greater in related segments (such as mobile telecommunications, cable and internet), but substitution for these segments is increasingly possible. By 1999, a large number of Latin American countries – including Panama, Paraguay, and Venezuela – had the number of mobile subscribers being larger than that of fixed-line subscribers.

FIGURE 1. EVOLUTION OF PRIVATE PARTICIPATION IN FIXED TELECOMMUNICATIONS IN LATIN AMERICA IN THE 1990s



Unlike fixed-line services, the mobile industry tended to face competition since its early periods of liberalization: half of liberalizing countries in the region had licensed a second mobile operator by 1999. Despite lower required fixed investments, competition in the mobile segment also depends on institutional features, such as mobile number portability and technical standards.

In spite of the fact that most Latin American countries enacted new sector laws during the 1990s, the regulatory framework in telecommunications significantly varied in the region. In terms of autonomy, for example, Chile and Uruguay kept regulatory bodies within a particular ministry, while other countries – such as Argentina, Brazil, Dominican Republic and Peru – have established specialized autonomous institutions. In some cases, as in El Salvador and Panama, regulatory bodies are autonomous and multi-sector. Following the international trend, most regulatory institutions are collegiate bodies, instead of single-headed institutions.

Finally, price-capping was the most frequent source of tariff-policies – although sometimes restricted to market segments subject to imperfect competition, such as the case of Colombia – while cross-subsidization for long-distance was extinguished in most cases. Overall, managing competition and regulation – in a context of fast technological change and convergence – is a critical challenge for telecommunications regulators if consumers are to benefit from price reductions and innovation in the industry.

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ELECTRICITY

Electricity sector reforms in Latin American countries significantly varied during the 1990s. Chile was the pioneer in the early 1980s and its success inspired several other countries in the region one decade later. While privatization was a key element in Chile's reforms, prices were set by an administrative system rather than through interaction of demand and supply and the role of competition were minor. By contrast, the Colombian and Salvadoran models of centralized auctions were similar to the "England and Wales" pool. In an intermediate position, Argentina and Dominican Republic adopted a cost-based dispatch but vertically and horizontally broke-up the sector structure and limited cross-ownership. Bolivia and Peru followed the Chilean model. In other countries, such as Costa Rica, Ecuador, Mexico, Paraguay, and Uruguay reforms are still in their initial stages.

Table 1 presents the share of private participation in the electricity sector by 2000. Data indicates that reforming countries have extensively privatized. For example: in Bolivia and Chile, private sector accounts for 90 percent of the supply in the generation, transmission and distribution segments. Interestingly, privatization has been relatively more extensive in distribution than in generation and transmission: in El Salvador and Guatemala, two extreme cases, private sector accounts for 100 percent of the distribution sector but no more than 50 percent of the generation. Private participation in transmission is still very low in the region, with the exceptions of Argentina, Bolivia, and Chile. Table 1 also provides data on market concentration. Contrasting with the extension of privatization, competition in generation, as proxied by the share of the three largest producers, is still very limited. In extreme cases, such as Bolivia, El Salvador, and Guatemala this concentration rate is 70 percent or larger. Even in Colombia, where competition was supposed to play a key role, the market-share is still relatively high, around 50 percent. These results, that reflect at least in part the small size of Latin American economies, are worrisome because the generation segment is expected to be the main source of competition in the industry. Concerns increase as one takes into account that geographic market segmentation and demand variation during the day may increase market power of certain firms.

TABLE 1. SHARE OF PRIVATE SECTOR PARTICIPATION AND MARKET SHARE OF THE THREE LARGEST FIRMS IN THE GENERATION SEGMENT (IN PERCENTAGE)

Country	Share of private sector participation			Market share of the three
	Generation	Transmission	Distribution	Generation
Argentina	60	100	70	30
Bolivia	90	90	90	70
Brazil	30	10	60	40
Chile	90	90	90	50
Colombia	70	10	50	50
Costa Rica	10	0	10	100
Dominican Republic	60	0	50	50
Ecuador	20	0	30	50
El Salvador	40	0	100	90
Guatemala	50	0	100	70
Jamaica	20	0	0	90
Mexico	10	0	0	90
Paraguay	0	0	0	100
Peru	60	20	80	100
Trinidad and Tobago	40	0	0	100
Uruguay	0	0	0	100
Venezuela	20	10	40	90

Source: Espinasa (2001) *apud* Milan, Lora and Micco (2001).

Most reforming countries also enacted new sector legislation during the 1990s. Broadly speaking, these new pieces provided for the creation of a sector regulator, which, in most of the cases, was formally autonomous with its own budget and appointments lasting up to 4 years. New legislation also provided for the separation of attributes between the regulatory body and the government. The latter tended to be responsible for policy-making, but not to tariff setting, standards supervision, and monitoring compliance to contracts. A World Bank study estimated that, overall, Latin America had advanced relatively more than other regions in the world in reforming the electricity sector[5]. Does it mean that the appropriate regulatory framework is in place?

It clearly does not. In one extreme illustration, Guatemala's regulator was placed under the Ministry of Energy. Colombia's regulator did not have oversight attributions. In El Salvador, until recently, the government had no mandate to define energy policies. In most countries, regulators are poorly staffed and funded, in addition to the lack of appropriate regulatory instruments and the occurrence of serious procedural problems. Therefore, it is not surprising that several regulatory decisions have been overturned by the courts, reducing regulatory credibility. Finally, almost 10 percent of concession contracts have been renegotiated and concession returns have barely matched the cost of equity[6].

5. See ESMAP (1999).
6. See Guasch (2004) and Sirtaine *et al.* (2005).

WATER AND SANITATION

Technical change was a minor motivation for reforms in the water sector during the 1990s. In fact, the most significant innovation in this sector was the widespread introduction of metering at the point of consumption, far from major breakthrough in product costs that happened in telecommunications and, to a certain extent, electricity generation. The sector reform seems rather to have been motivated by a downward spiral of weak performance incentives for state-owned monopolies, low willingness to pay by consumers, insufficient funding for maintenance, which lead to asset deterioration, and political interference[7]. As a consequence, reforms have naturally focused much less on competition and much more on attracting the private sector as a new source of capital and efficient management. As the economics of water supply remained essentially unchanged with respect to the sector's natural monopoly characteristics, the achievement of such efficiency gains would necessarily need to rely upon well designed concession mechanisms and appropriate regulation.

Private participation at the beginning of 1990 was rare, reaching roughly 11 percent of households. It is interesting to notice that the list of the least reforming countries in this sector has significantly increased by Central American countries. Even El Salvador and Panama, two champions of infrastructure reforms, did not significantly advance institutional changes in the water and sanitation sector. Therefore, it is not surprising that private participation grew at a lower pace as compared to telecommunications and electricity. And it is not by accident that 94 percent of municipal water systems in the U.S. – approximately 5,000 utilities – are publicly owned. But, in Latin America, apart from industry-specific structural reasons, another important limitation was the political opposition to tariff changes aiming at rationalizing subsidies and water consumption.

At this point, a better pro-poor tariff structure and well focused subsidies may be important accompanying tools to increase private participation in the sector. In addition to discouraging private investments, these circumstances have resulted in a wide variety of approaches to private participation, ranging from short term management contracts, such as a three-year contract in Trinidad and Tobago, to long term concessions, such as a 40-year concession in Cochabamba (Bolivia).

Another characteristic of the water and sanitation sector is excessive contract renegotiation. This generates, in some cases, unnecessary high costs to consumers and, in others, artificially low costs to service providers. Roughly 74.4 percent of water and sanitation contracts (compared to 9.7 percent in energy) were eventually renegotiated on average 1.6 year after its signing (compared to 2.2 on average for all sectors) by initiative of the government (in 66.3 percent of the cases)[8]. This does not imply that water and sanitation concessions were excessively profitable. On the contrary, telecommunications and energy concessions have, on average, feared better than water and sanitation: indeed, this was the only case in which the long-term financial return of concessions was expected to remain below the sector's corresponding weighted average cost of capital by a 2 percentage points[9]. Table 2 indicates that certain contract characteristics are associated with higher incidence of renegotiations: non-existence of regulator (87.5 percent of contracts eventually renegotiated), regulatory framework embedded in the contract (70.0 percent) or decree (83.3 percent) instead of embedded in law; and regulation by means, such as investments (85.0 percent), as opposed to performance indicators[10].

7. PPIAF (2002).
8. Guasch (2004).
9. Sirtaine *et al.* (2005).
10. *Op cit.* footnote 7.

TABLE 2. WATER SECTOR INCIDENCE OF RENEGOTIATED CONCESSION CONTRACTS ACCORDING TO CHARACTERISTICS (IN PERCENTAGE)

Feature	Incidence of renegotiation (%)
Award criteria	
Lowest tariff	81.9
High price	66.6
Regulation criteria	
Regulation by means (investments)	85.0
Regulation by objectives (performance indicators)	25.0
Regulatory framework	
Price cap	88.8
Rate of return	14.3
Existence of regulatory body	
Regulatory body in existence	40.9
Regulatory body not in existence	87.5
Impact of the legal framework	
When regulatory framework imbedded in law	55.6
When regulatory framework imbedded in decree	83.3
When regulatory framework imbedded in contract	70.0

Source: Guasch (2004), p.156.

3. HOW DID IT GO?

Table 3 summarizes the evolution of coverage, technical losses, prices (in real local currency) and labor productivity (connection per employee) for fixed telecommunications, electricity distribution and water and sanitation before, during and after the privatization process, as reported by Andres, Foster and Guasch (2005).

TABLE 3. STATISTICS FOR AVERAGE ANNUAL GROWTH IN FIXED TELECOM, ELECTRICITY DISTRIBUTION AND WATER AND SANITATION

Variable	Stats	Average annual growth			Annual difference in growth		
		(1)	(2)	(3)	(2) – (1)	(3) – (2)	(3) – (1)
Fixed telecommunications							
Coverage (number of lines per 100 HHs)	mean	4.9%	11.0%	6.0%	6.1%***	-5.9%**	1.2%
	p50	4.4%	9.4%	4.9%	4.5%***	-8.0%*	-0.1%
	sd	5.9%	6.2%	7.8%	8.1%	10.8%	10.0%
	N	16	16	14	16	14	14
Quality (percentage of incomplete calls)	mean	-1.5%	-16.4%	-14.3%	-13.9%	-0.2%	-13.7%**
	p50	-1.5%	-7.8%	-9.3%	-5.1%	0.0%	-8.8%**
	sd	1.0%	23.4%	14.7%	26.4%	14.0%	15.6%
	N	6	8	7	6	7	6
Price Avg. price for a 3-minute call (in real local currency)	mean	35.7%	-2.5%	-0.6%	-9.6%*	-5.7%	-32.6%*
	p50	44.3%	4.3%	0.6%	-5.2%	-2.6%	-18.2%
	sd	55.4%	19.1%	4.9%	36.5%	44.6%	40.1%
	N	7	10	9	9	9	4
Avg. monthly charge for residential service (in real local currency)	mean	35.6%	16.5%	7.1%	-12.7%	-9.4%	-29.4%
	p50	-0.9%	15.6%	3.2%	-32.9%	-1.9%	0.6%
	sd	50.1%	32.1%	13.1%	52.9%	30.9%	54.6%
	N	9	12	10	9	10	7
Avg. charge for the installation of a residential line (in real local currency)	mean	-8.6%	-16.1%	-11.6%	-4.7%	-6.7%	-19.1%**
	p50	-26.3%	-20.0%	-30.5%	-35.0%	-2.0%	1.4%*
	sd	32.3%	46.4%	40.4%	43.5%	48.0%	48.4%
	N	7	10	7	7	7	4
Efficiency (total number of lines per employee)	mean	7.8%	17.6%	16.0%	9.8%**	-3.1%	8.0%
	p50	6.6%	21.3%	15.7%	10.9%**	-9.9%	9.4%
	sd	11.6%	15.3%	11.5%	15.5%	18.9%	16.7%
	N	15	15	14	15	14	14
Electricity distribution							
Coverage (residential connections per 100 HHs)	mean	2.0%	2.2%	1.9%	0.4%	-1.0%**	-0.6%
	p50	1.5%	1.9%	1.3%	0.4%	-0.9%***	-0.3%
	sd	3.9%	3.0%	3.6%	65	50	42
	N	65	76	50			
Quality (freq. of interruptions per year per consumer)	mean	2.7%	-10.6%	-11.4%	-11.1%*	-2.9%	-17.8%***
	p50	-5.0%	-10.8%	-6.6%	-2.8%*	-2.4%	-14.4%**
	sd	29.0%	20.3%	20.5%	32	26	11
	N	32	51	26			
Price (avg. tariff per residential GWH, real local currency)	mean	10.2%	2.0%	0.6%	-7.8%***	0.2%	-12.3%***
	p50	5.9%	2.3%	1.8%	-5.3%***	0.9%	-9.7%***
	sd	12.6%	7.3%	7.9%	59	56	35
	N	59	86	86			
Efficiency (connections per employee)	mean	13.4%	18.4%	5.5%	4.2%**	-16.4%***	-4.2%**
	p50	11.1%	14.0%	5.6%	4.5%**	-10.6%***	-3.5%**
	sd	12.6%	16.8%	5.1%	53	43	32
	N	53	66	43			

Water and sanitation							
Coverage Residential water connections per 100 HHs	mean	1.0%	4.1%	3.3%	1.1%**	-1.3%	0.4%
	p50	0.3%	2.8%	1.6%	0.2%	-1.3%*	0.1%
	sd	1.7%	5.0%	4.4%	2.1%	6.1%	1.7%
	N	16	34	19	16	19	5
Residential sewer connections per 100 HHs	mean	1.6%	8.0%	2.8%	2.9%	-0.9%	-1.6%**
	p50	1.4%	2.9%	0.6%	0.1%	-1.6%	-0.9%**
	sd	17.9%	17.9%	6.1%	6.0%	6.2%	1.3%
	N	14	25	14	14	14	5
Quality (continuity in hours per day)	mean	0.0%	7.2%	4.6%	22.4%	-0.1%	0.0%
	p50	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
	sd	0.0%	16.0%	8.7%	38.7%	6.0%	1
	N	3	18	11	3	11	
Price Avg. price per cub. meter of water (in real local currency)	mean	10.1%	9.4%	4.5%	-6.0%**	-8.9%	-3.9%
	p50	10.1%	5.4%	2.6%	-4.3%	-6.5%	-2.1%
	sd	6.7%	18.4%	10.0%	8.1%	25.1%	10.1%
	N	8	17	9	8	9	3
Avg. price per cub. meter of sewer (in real local currency)	mean	-1.1%	7.0%	9.7%	5.0%*	-4.3%	-15.1%
	p50	-1.1%	1.4%	9.8%	5.0%	-18.4%	-15.1%
	sd	13.9%	13.5%	16.0%	1.8%	24.7%	1
	N	2	5	3	2	3	
Efficiency (water connections per employee)	mean	5.5%	17.5%	7.3%	11.6%***	-9.6%***	1.2%
	p50	4.9%	15.8%	4.5%	9.9%**	-7.8%	0.1%
	sd	5.4%	13.5%	10.1%	13.7%	14.3%	8.3%
	N	13	32	32	13	19	6

Note: (1) Pre-privatization. (2) Transition. (3) Post-privatization. *Significant at 10%; **significant at 5%; ***significant at 1%.

In Table 3, the sample consists of an unbalanced panel data set (number of observations reported in the table) that goes from 116 firms in the electricity distribution sub-sample during the transition period to less than 10 in the case of price variable in the water sector. The "pre-privatization" period is defined as the one in the years previous to 2 years before the award of the concession, while the "transition" period starts when the concession is announced and lasts until one year after the concession was awarded, and the "post- privatization" period is defined as the period after the transition. The motivation for this segmentation was that some of the more important changes started as soon as the privatization was announced and lasted one year after the change in ownership. In addition, some of these indicators were driven by firm specific time trends and not privatization itself. Thus, the authors controlled for that effect, too. The main results can be summarized as follows:

(i) After controlling for a (positive) firm-specific time trend, data for service coverage suggest that privatization had a positive impact on telecommunications, but no effect on electricity and water and sanitation;

(ii) Indicators for technical losses were positively affected by privatization. While most of the improvement for electricity happened during the transition period, for telecommunications and water and sanitation, it happened later on;

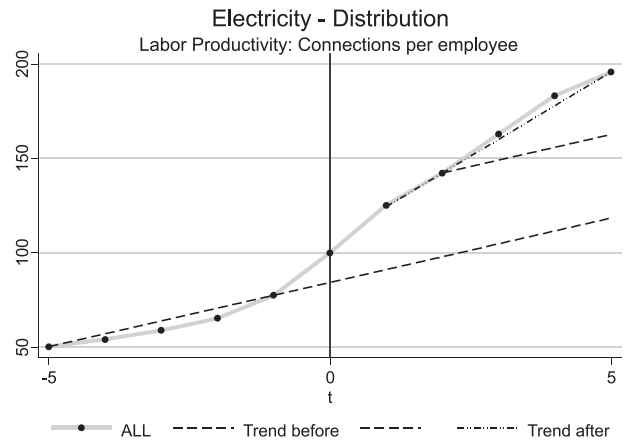
(iii) Prices had also significantly increased for two sectors during the transition and after that (except in telecommunications). In telecommunications the average cost of installation of a residential line decreased in every period (the monthly charge for residential service, however, increased substantially); and,

(iv) Labor productivity had a significant change in all the three sectors, mainly during the transition period, and fundamentally caused by an important reduction in labor redundancy: in the electricity and water and sanitation sectors, employment decreased, on average, 10 percent per year during the transition period.

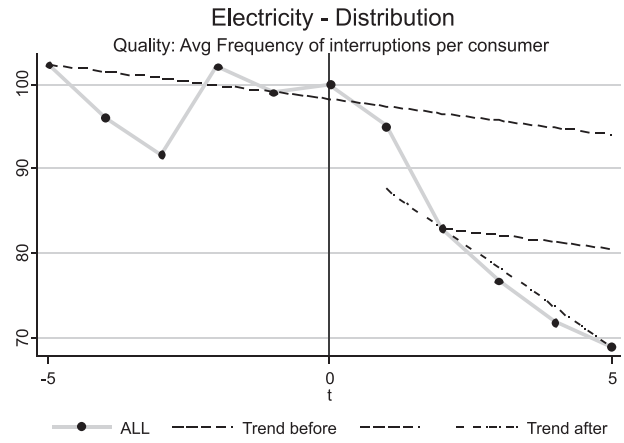
Figure 3a provides a more specific illustration. It describes the average level of labor productivity measured as connections per employee. First, the levels across companies are standardized with a level equal to 100 for the last year when the company was owned by the government. Then, in order to aggregate the information across companies, we define as "time zero" the last year when the company was owned by the government. The continuous line plots the average weighted standardized level, starting five years prior to the change in ownership and lasting 5 years after the privatization. This graph enlightens trend changes during the transition period. Roughly, the average increases in labor productivity were 10 percent per year. For the years after the announcement of the change in ownership, the average annual growth doubled.

Figures 3b and 3c provide additional examples for electricity. Figure 3b shows that there were no significant differences in the level of quality – measured as the average frequency of interruptions per consumer – during the years prior to the privatization. However, after that, a significant reduction in the average number of interruptions can be observed. An additional example is the average price (in real local currency). This indicator suffered a remarkable increase prior to the change in ownership. The accumulated change was over 65 percent. After the privatization, there were still some increases in which these changes were significantly smaller than the previous rates, with a total change of 13 percent.

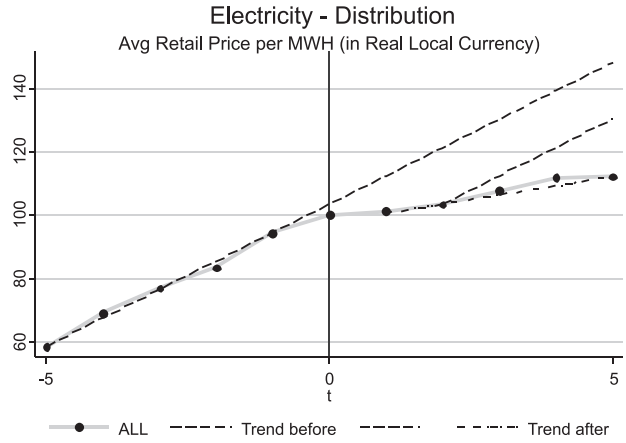
FIGURE 3. ELECTRICITY DISTRIBUTION



(a) Labor productivity



(b) Quality



(c) Average price

A related issue is how institutional characteristics of the reform process may have affected the performance of the privatization. Andres, Foster and Guasch (2005) focus on the eight basic characteristics: (1) the award process (direct selection *vs.* auction process); (2) the award criterion (highest price; lower tariff or investment plan); (3) age; (4) budget autonomy; (5) legal autonomy of the regulatory body; (6) tariff regulation (price cap, rate of return, other); (7) public provision of guarantees; and, (8) the nationality of the concessionaire. The basic idea is that these differences may significantly affect the incentives on the managerial decision, which, in turn, affects firms' performance on efficiency, quality and price.

Some of the main results are:

(i) When the process was awarded through an auction, higher improvements in quality and efficiency were observed in contrast to those cases when the mechanism was a direct sale;

(ii) When the criterion was according to the best investment plan, more expansion of the network was observed than the case when it was awarded according to the highest price. Consistently, the first firms also had lower reductions of their labor force during the transition period and some additional improvements on distributional losses;

(iii) When the regulatory body was generally autonomous, there were higher reductions in number of employees, while older (longer duration) had lower price increases;

(iv) When pricing was regulated according to the rate of return, companies had higher network expansion than in the case of price-capping regulation. Consistently, those firms under price-cap had higher reductions of their labor force, but lower increases in labor productivity. Additionally, the latter firms presented less improvement in both distributional losses and quality. Finally, these firms also showed higher price increases compared to those under the rate-of-return regulation; and

(v) Firms with only foreign investors had higher reductions of their labor force than those with only domestic investors. Contrary to this case, when there were foreign and domestic investors together, there were larger reductions than in the case of firms with only domestic ones, but less than in the case of sole foreign investors.

4. THE WAY AHEAD

After this short overview of infrastructure reforms in Latin America during the 1990s, three main results emerge. First, infrastructure reforms, including privatization, are still incomplete – either in the sense that several countries have not even initiated such reforms or because those that started earlier have virtually stopped in a dangerous intermediate stage of partial reform. Second, privatization generated important improvements, but they were neither extended beyond the transition period around the privatization event nor always transferred to consumers. In addition, significant heterogeneity within and among sectors may be explained by intrinsic characteristics of the reform process, such as the privatization mechanism, the level of regulatory development and concession design. The emerging lessons seems very clear: the way governments reform (or privatize, in particular) can significantly affect outcomes.

These results suggest one main policy implication: the need to complete reforms, particularly the so-called "second generation regulatory reforms." Without these reforms – that include the completion of the regulatory framework, avoiding excessive contract renegotiations, and increasing competition when feasible – post-privatization improvements will be limited and probably unsustainable whereas private financing will be difficult to attract. Obviously, the importance of competition, regulation and contract design will be closely related to technological characteristics with an industry. For example, reduction in the telecommunications costs and substitution by means other than fixed telephony increased the role of competition, with regulation as a tool to avoid abuse of dominance (and relatively less relevance for contract design).

In water and sanitation, remaining natural monopolies make the move to competition in the market a more difficult task. This implies relying more on well-designed concession contracts with regulation as a tool to guarantee the appropriate contract management. In either case, regulation is a key instrument, especially if one needs to reduce regulatory risks and attract private investments to support the Latin American needs in infrastructure. ■

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