

TELECOMMUNICATIONS AND POWER SECTOR REFORMS IN LATIN AMERICA: LESSONS LEARNED

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The first country in Latin America to implement far-reaching economic reforms was Chile, which began the process in 1975.² Other countries followed after the debt crisis of the 1980s, and today almost every country in the region has implemented stabilization programs, liberalized trade and privatized large numbers of state-owned enterprises. Stabilization programs succeeded in reducing inflation markedly, and much greater emphasis has been given to market solutions. On the political side, there has been a steady move towards democratization that can be best exemplified by the election in Mexico of June 2000, where the opposition candidate won the presidency after seven decades of one-party rule.

Cuba, meantime, continues to follow fairly orthodox Marxist economic policies, there is no democracy and basic human rights are not respected. While other countries in Latin America are beginning to enjoy the benefits of more liberal economic and political systems, Cuba languishes in a low-level equilibrium and tourism and family remittances are the only areas that show some dynamism.

The founders of the Association for the Study of the Cuban Economy (ASCE), some of whom had been

involved in supporting transition processes in the former Soviet Union and in Eastern and Central European countries, believed that some of these transition processes had not benefited from the lessons learned in other areas of the world. Of course, a transition from a communist regime to a liberal political and economic regime was unprecedented. Nevertheless, the founders of ASCE believed that the experience of countries undergoing reforms, for example in Latin America, could be a source of useful lessons in a political and economic transition in Cuba.³

The purpose of this paper is to describe the important reforms in the telecommunications and power sector carried out in several countries in Latin America that could be applicable to a transition in Cuba.⁴ A logical question would be to ask why bother to speculate on such a thing, as Cuba seems farther from implementing liberalizing reforms than ten years ago, when ASCE was founded. An answer would be to quote George Bernard Shaw, when he said: "You see things as they are and ask, 'Why?' I dream of things as they never were and ask, 'Why not?'"

1. The opinions expressed in this paper are the author's, and they do not necessarily reflect the points of view of the Inter-American Development Bank.

2. Some countries implemented reform efforts before. These included Chile under President Alessandri (1958-61), Brazil under Minister Campos (mid-1960s) and Argentina under Minister Krieger Vasena (mid-1960s). However, these reform efforts did not attempt to reduce the role of the state in society.

3. Conversation with Joaquín Pujol.

4. The paper gives more emphasis to telecommunications, as that is the sector where the greatest innovations have taken place.

RATIONALE FOR STATE INTERVENTION IN THE TELECOMMUNICATIONS AND POWER SECTORS

The telecommunications and power sectors have often been viewed as natural monopolies, as they exhibit economies of scale and scope, network externalities, and economies of density. The sectors are also characterized by large, sector specific, sunk investments, i.e. investment with a minimum value in alternative uses. Additionally, telecommunications and electricity services are consumed directly by a large proportion of the population, which has a relatively inelastic demand for those services. As a result of these characteristics, it is generally concluded that there is a case of market failure and that there should be some type of government intervention in the telecommunications and electricity sectors.

Two common solutions to the monopoly problem were usually offered: state ownership, which characterized Latin America up to the 1990s, and private ownership with rate-of-return regulation, which has characterized the United States. Both solutions face problems. Government ownership is often highly inefficient, and the problems are well known, so there is not a need to discuss this at length. The problems of private ownership with regulation are discussed in the next section.

PROBLEMS ASSOCIATED WITH REGULATION OF MONOPOLIES

A good regulatory framework for monopolies should have two primary objectives. First, it should protect society from the monopoly power of firms, and second, it should protect private firms from the capricious and sometimes confiscatory behavior of the state. If this last objective is not met, investment incentives could be reduced or even eliminated. A copious literature has been developed in the United States on the reasons why it is difficult to achieve both objectives. These reasons are discussed briefly below.

Time Inconsistency of Economic Policy

In the case where there is discretionary regulation by the state, before a private firm invests, the best strategy for the government would be to agree on a rate that would give a strong incentive for investment. The optimal policy, however, could change after the investment is made, as the politicians may wish to reduce the rates (or let them be eroded by inflation). By reducing the real rate, politicians increase their popularity with consumers, who are always more numerous than investors, and they increase the probability of being re-elected, something that they may value more highly than social welfare.

Regulatory Capture

As has been amply discussed by George Stigler, regulators are often captured by the regulated enterprises, promoting the interests of the firms instead of the common good.⁵

Averch-Johnson Effect

Even if regulators attempt to protect the interests of society, it is possible that they do not have sufficient information to determine what kind of actions they should demand from the regulated firms. Fairly commonly, regulators adjust rates to reflect full costs of production, but it is difficult for them to determine if the costs reflect the maximum level of internal efficiency possible. If the regulator uses a rate of return under the real cost of capital to the firm, rate of return regulation can result in excessive employment in a bias towards capital intensive production.⁶ If the rate of return is lower than the real cost of capital, underinvestment will result.

As discussed above, the regulators may not have sufficient information nor the proper incentives to promote efficiency. If they are captured by the regulated, consumers will pay higher prices. More commonly in Latin America, government opportunism has prevailed, and there was a tendency to "expropriate" the assets of the telecommunications and electricity enterprises through a reduction in real rates which often resulted in a decapitalization of the firms and a

5. George Stigler, "The Theory of Economic Regulation," *Bell Journal of Economics*, 1971.

6. H. Averch and L. Johnson, "Behavior of the Firm under Regulatory Constraint," *American Economic Review*, 1992.

reduction in the quality of services. Once this deterioration occurred, the companies were often nationalized.

In summary, one may conclude that the solutions to the problem of market failure, government ownership, or private ownership accompanied by traditional (rate of return) regulation, also have significant problems. To avoid these problems, some countries have devised regulatory frameworks that minimize state intervention and give much greater emphasis to measures to encourage competition. The rest of the paper discusses the pioneering reforms implemented in the telecommunications and power sector in several countries in Latin America.

PRINCIPLES GUIDING MODERN TELECOMMUNICATIONS AND POWER SECTOR REGULATION

A good regulatory framework should achieve the following objectives:

- Credibility with investors.
- Flexibility to adjust when fundamental changes take place, such as the deployment of new technology.
- Protection of consumer from monopoly power.
- Low cost for the government and for the regulated firms.
- Provision of incentives for allocative and internal efficiency.

Important technology changes as well as regulatory innovation have permitted some countries to implement very modern regulatory frameworks that minimize some of the problems associated with the traditional forms of regulation (rate-of-return regulation) and that meet some of the objectives outlined in the preceding paragraph.

Technological changes have affected both the telecommunications and power sectors. The main technological change affecting telecommunications regu-

latory schemes has been the development of technologies for the provision of local telephone service. Television cable can be upgraded to provide telephone service, and here are now several options for mobile and fixed wireless telephony. The costs of wireless solutions are declining rapidly so that they are now cheaper than wired solutions at densities of less than 250 subscribers per square kilometer, and the unit costs of wireless are declining steadily.⁷

In the power sector, technological innovation has had a more limited effect. Essentially, the development of gas turbine technology has reduced the economies of scale of generation and reductions in transmission losses have increased the effective size of markets.

Individuals formulating innovative regulatory frameworks in Latin America were inspired by the U.S. literature on problems of traditional regulation. Essentially, these individuals endeavored to devise regulatory frameworks designed to minimize regulatory discretionality and to give a greater role to competition. These modern regulatory frameworks rely more on competitive market forces and concentrate regulatory action on “essential facilities.”

The essential facilities doctrine has a long history in the United States. For a facility to be considered essential it must have the following characteristics:

- It must be impossible or enormously costly to build an alternative facility.
- The facility must be necessary to enable a competitor to provide services in the relevant market.
- Providing access must be feasible.

The frameworks promote competition of the following types:

- Competition in the market by reducing or eliminating legal barriers to entry.
- Reduction of other barriers to entry and exit, thus increasing contestability.

7. See Peter Smith, *End of the Line for the Local Loop Monopoly?*, World Bank, December 1995, and Peter W. Huber, Michael K. Kellog and John Thorne, *The Geodesic Network II: 1993 Report on Competition in the Telephone Industry*.

- Promotion of competition for the market through concessions for the provision of services which are monopolistic, or to enter where resources are fixed such as a specific band of the radio spectrum).
- Yardstick competition (comparison with costs and quality of similar firms in other markets).
- Competitive joint ventures or clubs (joint ownership of segment of sector with monopoly characteristics, such as the joint ownership of the wholesale electricity market facilities by energy distribution companies in the U.K., or the joint ownership by all main market agents and government of the power dispatch center in Argentina).

TELECOMMUNICATIONS SECTOR REFORMS

Countries that have implemented modern regulatory frameworks include the United States, Chile, New Zealand and Australia. The U.S., with the breakup of AT&T in 1982, encouraged competition in long distance, and the Telecommunications Act of 1996 is trying to foment competition in local telephony, with limited success. Chile totally deregulated the telecommunications sector but this resulted in years of interconnection-related lawsuits. A second set of reforms required that disputes be resolved through arbitration rather than litigation, and the regulator now establishes interconnection charges based on long run incremental average costs. As a result of the later reforms, there is now competition for local telephony, and a very competitive market for long distance services has evolved. As a the result, Chile now has long distance rates that are probably the lowest in the world (roughly equivalent to U.S. rates). New Zealand eliminated all telecommunications regulation, relying instead on generic anti-trust legislation. Interconnection disputes arose, and these have delayed the development of competition. Australia, having apparently learned from the New Zealand ex-

perience, explicitly established the right to interconnection in the Telecommunications Act of 1991.

El Salvador and Guatemala enacted almost identical legislation in October, 1996, establishing very modern regulatory frameworks for electricity and telecommunications. These frameworks reflect the lessons learned from the reforms in the United States, Chile, New Zealand and Australia. Reform efforts in El Salvador and Guatemala received USAID support.⁸

The laws of El Salvador and Guatemala follow the same principles. These are:

- Main focus is the promotion of competition.
- Different aspects of regulation, such as dispute resolution and management of the spectrum, are largely “privatized.”
- The regulatory body has very limited discretionary authority.
- Mechanisms were established to provide direct subsidies, thus eliminating cross subsidies, as cross subsidies would be incompatible with the competitive model being implemented.

Laws in Guatemala and El Salvador promote facilities based competition, forced leasing of unbundled network elements, and resale of services.

The right of a commercial network to interconnect to another commercial network to terminate calls or to get a call from a customer is absolutely necessary to permit facilities-based competition in telecommunications. In the presence of positive network externalities, the incumbent would have tremendous power to keep potential entrants out. The connection must be offered at all feasible levels, and at costs representing the long run average incremental cost (LRAIC). If disputes arise on interconnection, or access to other essential facilities, an alternative mechanism for dispute resolution has been devised, and is discussed below. Connection charges have to be reg-

8. Some of the discussion that follows is based on Juan A. B. Belt, “Telecommunications Reform to Promote Efficiency and Private Sector Participation: The Cases of El Salvador and Guatemala,” USAID Economists Working Paper Number 10, June 1999.

istered with the regulator, and become the equivalent of unbundable tariffs. That is, the rates are made public, and are available to any other party on the same basis. Other essential facilities include signaling, (technical information needed for connection of different networks), automatic caller identification (necessary for billing calls from another network), access to telephone listing data as well as the right to include listings in the white pages of another network.

Interconnection alone merely allows a customer in a network to route traffic to another network but does not go far enough to give customers the right to choose a particular network or service. Equal access is another key element. For example, a network may demand that one of their clients dial 20 digits before they can access another long distance carrier. Dialing parity, i.e. that all networks can be accessed under similar terms, is an important aspect of the promotion of competition. Similarly, number portability, the ability of a client changing networks to keep the same number, something which is mandated in El Salvador and Guatemala, is another important provision to encourage competition. The numbering plan will be administered by the regulator in Guatemala and El Salvador, thus helping to ensure a more level playing field. A temporary measure was included in Guatemala and El Salvador prohibiting presubscription to long distance services for a period of two years in order to foment competition.

Unbundled access at reasonable rates is a temporary measure, with a duration of three years.⁹ It requires the incumbent to offer entrants basic network elements separately, and at cost (including a return to capital). This is an important provision to increase the contestability of the market, as it converts fixed entry costs into variable costs, thus also reducing or even eliminating exit costs. With unbundling a firm that is trying to enter service in a given area can lease facilities (sunk costs) from the incumbent without having to make new investments. For example, a TV cable company could lease switches and ports from

the incumbent, and provide dial tone to a client using its own TV cable network. Similarly, a firm with switching equipment could use the local loops of the incumbent. As both Guatemala and El Salvador want to give incentives for network expansion, unbundling will only last for the three years following the enactment of the laws (laws were enacted in October 1996). The alternate dispute resolution mechanism discussed below will be used to solve conflicts related to the unbundling requirement.

The laws of Guatemala and El Salvador contain an innovative alternate dispute resolution mechanism, something that was devised after the experience of Chile and New Zealand, where litigation through the justice system related to access to essential facilities delayed the onset of competition in those countries. In Guatemala, the alternative dispute resolution mechanism is as follows:

When an operator requires access to essential resources of another network, it will send a request with copy to the Superintendency. Parties have the duty to negotiate and have a period of 40 workdays to reach an agreement; but the period for negotiations can be extended by mutual agreement of the parties. If no agreement can be reached, the parties would submit to the Superintendency an analysis of the points of divergence. If one of the parties does not present a final offer on any point of dispute, the Superintendency would be obliged to resolve it in favor of the other party.

After the Superintendency has received the positions of the parties in dispute, the use of a private sector expert arbitrator (“perito”) would be mandated. The party denying access will receive from the Superintendency a list of all qualified arbitrators, and will choose three names from that list. The list with three names would then be submitted to the party requesting access, and it would then choose one “arbitrator” to provide expert analysis to assist in the resolution of the dispute.

9. The reason this measure is temporary is that the Government would like to encourage in the future an increase in facilities-based competition. The U.S. Telecommunications Act of 1996 also mandates unbundling until the FCC considers it is not necessary to promote competition.

The law establishes well-defined standards for arbitration that must be used by the arbitrators in the resolution of disputes. In conflicts related to fees for the use of essential resources the arbitrator must ensure that the requestor pay for the use of the network the long run average incremental cost (LRAIC) of an efficient firm. The law specifies the costs that can be included in the calculations as well as a detailed methodology to estimate the cost of capital. The arbitrator follows final rule arbitration and must base his decision on which offer is closer to the LRAIC. In the case of technical disputes, the arbitrator must adhere to the standards of the International Telecommunications Union, the standards of regional telecommunications organizations, and the standards of regional telecommunications professional associations.

Radio spectrum management has been privatized to a large extent, and it is here where the laws of Guatemala and El Salvador have been most innovative. The laws establish negotiable rights for the use of the spectrum (“derecho de usufructo”). These titles constitute private property, and can be sold, leased, and mortgaged. They can also be fragmented vertically (if new technology allows a more intensive use of a given band), geographically, and in time.

All transactions of “derechos de usufructo” have to be registered in the Telecommunications Registry, which forms part of the Superintendency. The law specifies the information that must be contained. In the case of Guatemala, titles are granted for periods of 15 years, and can be renewed if a request is submitted between 200 and 120 days of the expiration date. The only reason for not granting a renewal would be if it could be proven that the particular portion of the spectrum was not used at all during the period of ownership of the title. In the case of El Salvador, the titles are for 20 years, but at that time they would be auctioned again; an owner of a band of the spectrum can initiate the auction process before the 20 years expire, and can then share in the proceeds of the auction on a present value basis.

In both countries, a title is assigned to any person that requests it, and the Superintendency is obliged to respond to requests within three days. The Super-

intendency is obliged to award use of the spectrum and a title unless it is impossible, for technical reasons, to define that portion of the spectrum. If other parties are interested in that portion of the spectrum, then a public auction for that portion of the spectrum must be carried out. These auctions are carried out by the Superintendency and are supervised by reputable firms of external auditors. The title is awarded to the highest bidder.

The competition model being implemented in El Salvador and Guatemala makes it very difficult if not impossible to continue with the system of cross subsidies. In order to promote service in low-income areas, both countries established mechanisms to provide direct subsidies for telephone service expansion in those areas. The legislation in Guatemala establishes the Fund for Telecommunications Development. The purpose of the fund is to subsidize telecommunications services in low-income areas, and is financed from 70% of the proceeds of auctions of the spectrum, up to a maximum of US\$ 5 million. Firms wishing to use the resources from the fund would submit bids for covering an area, and the firm that can do it at the lowest cost wins. A similar fund was established in El Salvador, but it also covers rural electrification, and is financed from the national budget, as the Constitution of El Salvador does not permit the earmarking of revenues.

Both countries established regulatory agencies. In Guatemala, there are separate regulatory agencies for telecommunications and energy, while in El Salvador they were combined. The regulatory agency of Guatemala is the Superintendency of Telecommunications. The Economic Cabinet proposes the candidate for the office of Superintendent, who is appointed by the President for an indefinite period, i.e. serves at the pleasure of the President. Expenditures of the Superintendency are financed mainly from a proportion of the proceeds of auctions of the spectrum. Originally, the plan was to make the Superintendency more independent of the Executive, but to create an independent agency it is necessary to have two thirds of the votes in the Legislative Assembly, and the administration was unable to muster this support.

In El Salvador, the General Superintendency of Energy and Telecommunications (SIGET) was created initially with more independence, as the Superintendent was named for a fixed term of seven years, and could not be removed from office except under very well defined circumstances. Unfortunately, this was later modified, and the Superintendent now does not have a fixed tenure.

The laws of Guatemala and El Salvador contain a provision termed “administrative silence.” Basically, if a request made to the regulator is not resolved within prescribed periods of time, it is automatically resolved in favor of the requestor. The laws also establish well-defined time limits for many of the activities of the regulator.

The results of these innovative reforms in El Salvador and Guatemala have been outstanding. The number of service providers in both countries increased sharply. In each of the two countries, the number of basic telephone service providers increased from one to seven, and the number of cellular providers increased from one to three, and in both countries a fourth cellular provider has bought spectrum.

The number of users also increased sharply in both countries with respect to the period before the reforms were initiated. Basic telephony users increased from 350,000 to 800,000 in El Salvador and from 250,000 to 600,000 in Guatemala. Cellular subscribers increased from 24,000 to 350,000 in El Salvador and from 30,000 to 250,000 in Guatemala.

While the prices of local telephone services were increased, there were very sharp declines in the prices of long distance and cellular telephony. Long distance rates declined from US\$1.80 a minute in both countries to about US\$0.15 in El Salvador and to US\$0.30 in Guatemala. Cellular rates also declined sharply, by 70% in El Salvador and by more than 50% in Guatemala.

POWER SECTOR REFORMS

Power sector reforms began in Chile, ahead of the England and Wales reform, and the process was long. In 1979, the state-owned power enterprises were corporatized, i.e., forced to operate more like private entities. In 1980, tariffs were adjusted to reflect long

run marginal costs, rates for large clients were liberalized, and independent cost centers were established. In 1982 ENDESA, the largest state-owned power company was registered as an open stock company and was compelled to go to the capital markets for financing, thus eliminating the “soft budget constraint” that it enjoyed until then. Divestiture of ENDESA and its subsidiaries took place in 1987, almost ten years after the process started.

The regulatory framework developed in Chile is known as the “Chilean model.” Its main characteristics were:

- Monopoly franchise was eliminated.
- Generation (except hydro) was deregulated.
- Wheeling (transport of electricity) was mandated and wheeling rates were regulated.
- A private entity, owned by the generators, was in charge of dispatch.
- Dispatch was based on marginal costs declared by the generators and audited by the regulator.
- Rates for small clients were based on the sum of the cost of generation plus the cost of transmission plus the “value added for distribution” (VAD). The regulator determines the VAD based on the costs of an efficient firm.

A majority of countries in Latin America has implemented power sector reforms similar to the ones in Chile. These reforms, however, these reforms were carried out significantly faster, and some improvements were made on the Chilean model.

Main improvements made by Argentina on the Chilean model include:

- Firms cannot participate in more than one of the three market segments (generation, transmission and distribution).
- The dispatch center is owned jointly by distribution, generation and transmission companies; government; and large users.
- The maximum generation by one enterprise is 10% of the national market.

The results of the Argentine reforms have been outstanding. Almost all state-owned enterprises were privatized, and total proceeds from privatization reached US\$ 7.8 billion. New generating plants with a total capacity of 4,000 MW were built at a cost of US\$1.2 billion. As these new plants are fired by natural gas, the new energy is “greener.” Labor productivity has increased in generation, transmission and distribution. In generation, number of workers per MW of installed capacity declined from 1.0 to 0.33. The main transmission company reduced the number of workers from 150 to 70. In distribution, the number of workers per 1,000 clients declined from 4.0 to 1.5. More importantly, the wholesale price of electricity declined by 50%, from US\$0.05 per kWh to US\$0.025.¹⁰

While the “Argentine model” has had some very positive results, some important issues remain. The most significant concerns the expansion of transmission capacity, where some delays have been encountered as a result of the difficulty of establishing wheeling rates with adequate incentives. Another issue, prevalent in most countries in Latin America, is whether the wholesale market should move to a commodity type market, where generators bid on any price, as is the case in the so called second generation electricity markets such as California.

LESSONS LEARNED

- The far-reaching reforms of the power and telecommunications sector in Latin America have demonstrated that efficient regulatory frameworks can be implemented. The very favorable

results achieved in the power sector in Argentina and the telecommunications sector in El Salvador and Guatemala, demonstrate this.

- Technological changes in telecommunications, such as wireless telephony, make it easier to introduce competition in telecommunications than in the power sector.
- Alternate dispute resolution mechanisms can play an important role, particularly in resolving disputes related to the terms of access to essential facilities.
- Regardless of the regulatory framework, rent-seeking behavior will continue. Measures to enhance the independence and autonomy of regulatory agencies should continue to be emphasized.
- In telecommunications, the management of the spectrum is of the greatest importance, as wireless technologies offer an important channel to bring competition.
- Lessons learned are useful but “models” can not be copied in their entirety.
- Cuba, in comparison to the rest of Latin America, has lost several decades by not adopting a more liberal economic and political system. Cuba can, however, benefit from the lessons of other countries in the region in several areas, including power and telecommunications.

10. Some of this decline is the result of the improvement in the efficiency of gas fired turbines.