

# Post-Privatization Renegotiation and Disputes in Chile

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# Foreword

During the nineties, Latin American and Caribbean countries moved decisively to privatize infrastructure services by advancing in the institutional and regulatory reforms necessary to foster a suitable environment for private investment. The reform process has been widespread in the region. With the support of the Inter-American Development Bank, most countries have undertaken an initial wave of reform that allowed them to transfer publicly owned utilities to the private sector either by selling the assets or through concession agreements. Because of the reforms, these countries were able to attract private participation to sectors like telecommunications, transportation, energy, and potable water and sewerage.

The IDB has been instrumental in the process of reforming the financing of infrastructure projects (through its public and private sector arms) to promote the provision of services that contribute to the long-term economic development of the region and to the well being of its people. To do so, the Bank has promoted the adoption of sector structures and regulatory policies that seek to achieve economic efficiency, ensure the long-term sustainability of the services, safeguard their quality and promote accessibility by all citizens.

As more experience is gained, a new set of issues is emerging, especially in those countries where the reform process began earliest. In general, these issues are related to unanticipated events or to flaws in the design of the reform and have translated into post-privatization disputes and renegotiations between governments and the private sector. For some countries, almost a decade has past since the start of the reform process. The experience gained in this period has provided evidence to the loopholes in the original design of the reform. This has called for the use of discretion by regulatory agencies and, in some cases, has led to renegotiations and disputes beyond the authority of the regulatory agencies, causing the intervention of public officials.

Chile started its reform process in the late 1980s. As one of the countries with the longest and deepest privatization experience, Chile provides a good case study. This paper analyzes a series of post-privatization disputes and renegotiations that have taken place in the electricity sector since the late 1980s. The paper also assesses how that experience was internalized in the design of the regulatory framework for highway concessions.

The analysis covers different aspects like the source of the dispute or renegotiation, the area in which the original setting was challenged, who benefits from the renegotiation, and the outcome of the process with regard to economic efficiency. The paper also looks at the role of Chilean institutions in providing rules and solving the disputes. We hope that this paper will shed light on how to improve the design of the privatization process and how to approach the challenges for countries facing the consolidation of initial reforms.

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# I. Introduction

During the last decade, Latin American countries have accumulated extensive experience in the privatization of infrastructure services and in the institutional and regulatory reforms essential to foster a suitable environment for private investment. Chile, for example, has undertaken remarkable reforms and transferred publicly-owned utilities to the private sector either by selling the assets or through concession agreements. Because of the reforms, the country has been able to attract private participation to the provision of public services like energy, transportation, telecommunications, and potable water and sewerage. This has resulted in significant efficiency improvements as well as increased coverage.

The sectors involved in the reforms have usually had natural monopoly characteristics which, in turn, has required direct regulation of the private firms and the use of specific instruments (laws, contracts) to establish the way in which tariffs, quality, investment, exclusivity, etc., would be determined and evolve over time. Although the Chilean legal system is specifically designed to limit discretion in the public sector, some degree of discretion was permitted to allow the regulatory bodies to adjust to unforeseen developments such as changes in technology or demand. Also, some ambiguities or unspecified areas in the design of the new sector structure and the newly created regulatory framework remain.

Renegotiations and disputes arise frequently when complete long-term contracts cannot be written at the moment of contracting and in the absence of institutions which can credibly enforce those contracts. The consequences of these problems are exacerbated when market design is inadequate or regulation is incomplete. These problems are characteristic of in developing countries, as a result disputes have been a part of the Chilean privatization experience.

More than a decade after the start of the reform process, unforeseen events have provided evidence to the loopholes in the design of the reform. This has called for the use of discretion by regulatory agencies and, in some cases, has led to renegotiations and disputes beyond the authority of the regulatory agencies, causing the intervention of public officials.

In this paper we analyze a series of post-privatization disputes and renegotiations that have taken place in Chile since the late 1980s in the electricity sector. This sector was chosen because the privatization process was, to a large extent, completed a decade ago, providing enough time to properly evaluate renegotiations and disputes. The paper also assesses how the lessons learned in the reform of electricity were internalized in the design of the regulatory framework for highway concessions.

A number of issues which might have played a crucial role in inducing or inhibiting disputes in the two sectors are presented and analyzed. This is followed by an examination of renegotiations and disputes between regulators and firms, among firms (when they are the result of the privatization process), and between consumers (represented for example by the Antitrust Commission) and firms currently working in the industry or potentially interested in participating. The focus is two fold, encompassing the nature of the dispute as well as the role different agents play in it (firms, consumers, the government, and other institutions such as the judiciary system).

The analysis of disputes covers different aspects. First, the paper presents an analysis of the sources of the dispute or the renegotiating process. Second, it describes the areas in which the original setting is challenged (e.g., prices and tariffs, quality of service, performance requirement, investment plan, competition rules). Third, it discusses who benefits (and how) from renegotiation. Fourth, the study

determines whether the outcome of the renegotiation can potentially improve efficiency, enhance competition or induce competitive outcomes in noncompetitive markets. Finally, the paper looks at how the dispute was settled, in particular, at the role of Chilean institutions such as the Judiciary System, the Antitrust Commission, and the regulator, in providing rules for achieving efficient outcomes. This includes an assessment of how disputes were settled in terms of whether there was a regulatory ruling or whether the case was taken to court or solved through third party mediation.

The second section of the paper briefly describes the electricity sector in Chile. The third section analyzes how the structure and regulation of the sector might have inhibited or caused disputes. Section four presents eight cases of disputes in the electricity sector in Chile. Section five describes the role of institutions in the resolution of conflicts. The sixth section of the paper discusses highway concessions and the extent to which lessons from the electricity sector have been adopted in these programs. The last section presents the conclusions.

## II. The Electricity Sector in Chile

Until the 1930s, there was little State intervention in the electricity sector in Chile; service was provided by the private sector through domestic and foreign investment in public utility companies and independent generation. The 1930s, however, marked a period of stagnation as a result of the adverse effects of the Great Depression and increasing political intervention in utility tariffs. Empresa Nacional de Electricidad (Endesa), a public corporation, was created in 1944. From the beginning, Endesa was a vertically integrated firm, comprising power generation, transmission, and distribution with responsibility for strategic planning in the industry, expanding the capacity for generation and transmission and meeting the needs of isolated areas. Endesa became the dominant firm in the industry by the mid-1950s, with access to important and concentrating most of the country's generation capacity and transmission lines financial resources.

During the 1950s and 1960s, the industry's main problem was the government's tendency to keep tariff rates too low (for political reasons) which, in turn, did not provide adequate incentives to investment. In the early 1970s, the government nationalized Chilectra (the largest distribution company) and took control of the 51 largest electric companies in the country, virtually nationalizing the entire industry. Between 1970 and 1973, the government entered in a period of massive economic mismanagement which deteriorated the profitability of the sector and halted investment.

The structure of the industry changed markedly after the *coup d'etat* of 1973. First, the government relinquished its role as a producer and distributor, and committed itself only to regulation and strategic planning activities. To that end, two institutions were created in 1978: the Superintendency of Electricity and Fuels (SEC), a supervisory agency for electric activities and the National Energy Commission (CNE) that replaced Endesa in its role as strategic planner. Nevertheless, Endesa retained operational

regulatory responsibility until 1982, when CNE's role was enhanced to include regulatory activities. At the same time, a new legal framework was enacted that established norms applicable to all the companies in the sector regardless of ownership. This provided an opportunity for private companies to enter the sector on equal legal ground as state-owned companies. These norms included regulation of production, transportation, distribution, concessions, easements, prices, quality and safety conditions of facilities, machinery and instruments, and relations of the companies with the State and the private sector.

Separation of the different productive stages was started in 1981 in preparation for privatization. Divestiture of Chilectra resulted in the creation of one generation company (Chilgener) and two distribution companies (Chilquinta in Valparaiso and Chilectra in Santiago). Endesa was broken into five independent distribution companies, three generating complexes (Endesa, Pullinque and Pilmaiquén), and three independent integrated systems Edelnor (in the north) and Edelaysen and Edelmag (in the extreme south).

Privatization was carried out according to the notion that electric generation was a potentially competitive market, while distribution and transmission were considered local and natural monopolies and, therefore, needed to be regulated. Four privatization mechanisms were used: (a) sale of small distribution and generation subsidiaries of Endesa through public bidding (Saesa and Frontel); (b) privatization of large scale distribution and generation companies by auctioning blocks of shares on the stock exchange;<sup>1</sup>

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<sup>1</sup> In 1986 and 1987, the government auctioned three small hydroelectric generators that belonged to Chilgener and two medium size hydroelectric generators belonging to Endesa. In 1987, distributors Chilectra and

(c) sale of shares to the public in small quantities (a mechanism called "popular capitalism");<sup>2</sup> and (d) ownership in two distributors (Chilectra and Chilquinta) was divested through the repayment in shares of the reimbursable financial contribution clients make in order to access the network (start-up investment).

The electricity sector in Chile is currently made up of two large independent private systems (SIC and SING) and two small isolated state-owned systems. SIC, with an installed capacity of 5,300MW, serves most of the country's central and southern regions where commercial, industrial and residential consumption are concentrated. SING, with an installed capacity of 1,300MW, serves the north where most mining activities are concentrated. The two publicly-owned systems are Edelayesen (23MW) and Edelmag (48MW) which serve the southernmost part of the country.

Regulation is designed to support a specific market structure that assumes that some segments of the market (generation and large consumers) can operate competitively and others (distribution and transmission) cannot. This implies that standard antitrust legislation could deal with potential noncompetitive behavior in generation and direct sales to large consumers but that supervision and regulation is needed for distribution and transmission activities.

Currently, five institutions govern the activities in the electric industry (excluding the Judiciary System):

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Chilquinta and generator Chilgener were completely privatized. In 1988 and 1989, small distribution subsidiaries of Endesa were privatized.

<sup>2</sup> Popular capitalism consisted in selling a limited quota of shares to public employees, at a price lower than the value of the shares on the stock exchange. The purchase of shares could be financed with a portion of the employee's retirement funds. Between 1988 and 1990, Endesa and its transmission system was privatized to a large extent using this system.

- C The *Antitrust Commission* is devoted to preventing noncompetitive behavior in all markets, including the electric sector. The commission has an investigative branch (the Prosecutor's Office) and two independent commissions. The Preventive Commission is a regional, first-instance judiciary body allowed to punish noncompetitive practices. The national Resolutive Commission is a second-instance court, also allowed to punish wrongdoing. The Supreme Court is the only instance of appeal for sanctions applied by the Antitrust Commissions.
- C The *Ministry of the Economy* has the right to set tariffs (as proposed by the CNE) and promote the efficient development of the generation, transmission and distribution subsectors.
- C The *Superintendency of Electricity and Fuels (SEC)* is an independent supervisory agency (related to the Ministry of the Economy) in charge of monitoring compliance with the law and regulations. It also controls the quality of service and safety of facilities, processes applications for concessions and prepares the information required to set tariff rates.
- C The *National Energy Commission (CNE)* is an advisory government agency on all matters related to energy (including, electricity, fuels, nuclear power, etc.). Its duties include establishing sector policies and development strategies, studying and proposing economic and technical norms, and calculating tariffs and prices. The CNE is made up of an Executive Council and an Executive Secretariat. The Council is presided over by a representative of the President of the Republic and composed of a committee of six ministers. The Executive Secretariat is in charge of the administration of the Commission, and the Council delegates compliance with all the tasks for which the agency is responsible to the Secretariat. Most of the proposals for the restructuring of the electric sector have been prepared by the CNE.
- C The *Economic Load Dispatching Center*

(CDEC) is a coordination entity designed to optimize the operation of the generation system. In the short run, the CDEC acts as a clearinghouse in the energy market, while in the long run it is in charge of planning the operation of the combined generation-transmission system. Its main objectives are to preserve the security of service; to guarantee the most efficient operation of the electric system's facilities as a whole, and to ensure the right of way on transmission systems, as established by concessioning agreements.<sup>3</sup> There are limitations to participation in the CDEC directory, though all of them can use the system. Only companies with a minimum generating capacity of 60 MW are allowed to participate in the Board of Directors. Its one-year presidency term rotates among its members and decisions are binding. *Dissensions* (raised by one or more members) are resolved by the Ministry of the Economy within 120 days of issue.

Consumers whose demand for power is less than 2MW face *regulated prices*, as it is deemed that their negotiating capacity is limited with regards to the distribution company which operates as a monopoly in its concession area. The regulated price is determined by the regulator as a combination of the *node price* (described below) and a regulated margin, which corresponds to the imputed *value added of distribution*.

Consumers demanding more than 2MW in power are free to negotiate prices, power and energy directly with generators or distribution companies. Market conditions, and in particular long-term contracts, determine the price. It is also noteworthy that the

regulatory design of the market assigns a prominent role to this “free market” final consumer segment. If the free market operates as expected, the free market price provides an easy and nondisputable reference with which regulated prices can be determined. In fact, the law establishes that in the setting the node price, calculations made by the regulators must be compared with free market prices and if the calculated node price is above or below a range of 10 percent it should be adjusted to coincide with the limits of the range.

Distributors pay the node price to generators, unless they have signed a contract specifying otherwise. Node prices correspond to the sum of the *basic energy and power cost* and a *penalty factor*. The basic energy cost is calculated by weighing medium-term marginal costs at a specific point in the network forecast for the next four years of SIC operation. Costs are obtained using an optimization model that incorporates water supply restrictions and a projection of demand for the next 10 years. The basic price of power is calculated considering a gas-fueled plant, according to a formula that includes the cost of investment in diesel turbines; the cost of investment in transmission lines; fixed operating and maintenance costs; capital recovery factors; a theoretical power reserve margin of the electric system; and losses on the transmission line. Penalty factors, on the other hand, correspond to marginal losses of transmission in the system, and they are determined by considering the distances from every node to the network, as well as the level of tension of the conductors.

Current electricity law defines only the conceptual aspects of determining basic energy costs. In practice, the CDEC estimates short-term marginal costs on the basis of the marginal production of power and energy to supply in the most important loading center of the system (Santiago). In turn, this implies that producers located in different points in the system should bear all the costs of transportation required to reach the consumption center.

Chilean law assumes that high-voltage transmission is a natural monopoly and posits that tariffs should

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<sup>3</sup> Specific tasks performed by CDEC are to inform electric companies of current demand and supply conditions; calculate the spot marginal costs; coordinate major preventive maintenance of the generation facilities; verify compliance with operating and preventive maintenance programs; determine and value transfers of electricity among members of the CDEC; and coordinate the operation of transmission systems



equal marginal costs, while long-term financing gaps should be covered through tolls charged to users. As a result, the law guarantees the right of passage (easement) for all generators as a way to allow competition on an equal footing between generators. The transmission firm cannot refuse the use of the lines even if the tariff has not been agreed to in advance. Transmission firms earn income from two sources: the generating companies, which pay a *toll*

*fee* for the use of the system, and penalty factors. Toll fees, which are a two-part tariff, were established by law as a form of "protection" provided to the transmission company so it will not incur losses, since its average operating costs are higher than its marginal costs.

**Table 1**  
**Participation of Firms in the Main Integrated Systems in 1998 (percent)**

<i>Firms</i>	<i>Generation</i>		<i>Transmission Lines</i>		<i>Distribution</i>	
	<i>SIC</i>	<i>SING</i>	<i>SIC</i>	<i>SING</i>	<i>SIC</i>	<i>SING</i>
<i>Endesa (controlled by Enersis)</i>	54.8	4.7	12.3	3.6	-	-
<i>Gener Group</i>	26.3	17.5	7.7	8.0	-	-
<i>Colbún</i>	14.7	-	-	-	-	-
<i>Tocopilla</i>	-	40.2	-	31.6	-	-
<i>Edelnor</i>	-	26.3	-	28.9	-	-
<i>Other Generators</i>	4.2	11.3	0.5	-	-	-
<i>Transelec (owned by Endesa)</i>	-	-	69.5	-	-	-
<i>Transnet</i>	-	-	6.5	-	-	-
<i>Private Transmission Lines (mining co.)</i>	-	-	-	27.9	-	-
<i>Chilectra (controlled by Enersis)</i>	-	-	-	-	37.0	-
<i>Chilquinta</i>	-	-	-	-	11.1	-
<i>CGE</i>	-	-	-	-	16.8	-
<i>Other private distribution companies</i>	-	-	-	-	35.1	-
<i>State Companies</i>	-	-	-	-	-	100.0
<i>Total</i>	100.0	100.0	100.0	100.0	100.0	100.0

Source: National Energy Commission (CNE).

### III. Potential Sources of Conflict in the Electricity Sector

This section analyzes how the structure and regulation of the electricity sector might have inhibited or led to disputes. Renegotiation and conflict arise for a large number of reasons, all of which are present with varying intensity in Chile. In some cases, open conflict in the form of arbitration or lawsuits have already occurred, while in others the analysis suggests that renegotiation will likely take place in the future. The most significant cases of open conflict are discussed in detail in the next section of this paper.

#### MARKET STRUCTURE AND OWNERSHIP

Chile's geography poses peculiar challenges to the industry and suggests areas of potential conflict. The Andes Mountains favor hydroelectric power generation in the south where dams are relatively easy to build and rain is abundant. However, in the desert north, thermoelectric generation is the only viable alternative. In addition, while thermoelectric supply is a determining factor, hydroelectric supply is random as a result of hydrological risks. Since thermoelectric and hydroelectric generating companies compete under very different operating cost conditions, profitability depends heavily on strategic actions that give rise to several areas of potential conflict. In particular, conflict may arise with regard to the management of water reserves by hydroelectric companies, the allocation of technical risk among firms, the calculation of marginal and operating costs, the order in which each firm's supply is dispatched to consumers, and the terms and structure of contracts among firms. These issues usually arise from the existence of information asymmetries as discussed in detail in two examples of open conflict described in the next chapter.

The Andes Mountains also make importing lower-priced electricity from Argentina economically nonviable, since the cost of building transmission

lines and transportation losses are extremely high.<sup>4</sup> However, the same is not true of natural gas for which there are alternative uses (heating, cooking and industrial). The development of Chile's natural gas industry, while still in its infancy, has contributed to changing the structure of the country's electric industry. Natural gas affects both thermal and hydroelectric generating companies by altering the optimal mix of technologies in the industry. This explains why when the government announced that it would grant concessions for the construction and operation of gas pipelines, both thermal and hydroelectric companies rushed to position themselves in this new market.

As expected, conflicts and intense lobbying arose with regards to the location of gas pipelines, the auctioning of long-term contracts, and the regulation of the new market. As discussed in detail further below, this led the government to take a strong position on the subject, signaling that it dislikes the idea of integration among energy markets and that it would monitor very closely any contract along those lines.

The main criticism to the reform process in Chile arises from the structure of ownership that emerged from privatization, which is characterized by an important degree of vertical integration. Although the state monopoly was broken up prior to divestiture, the Law allowed Endesa to maintain a dominant position when privatized. It currently produces almost 60 percent of power generation (see Table 1). Lack of due restrictions to ownership across segments of the industry, in addition, permitted Endesa to keep its virtual monopoly in high-voltage transmission, despite the generally accepted opinion

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<sup>4</sup> Although this is true for most of the country, lines are being built in the north to supply the independent SING (Greater North Integrated System).

that a unique high-voltage transmission line was the only economically viable structure in a country as narrow as Chile. In fact, the reform of the electricity sector was based on the notion that there is a “natural” monopoly in transmission, but it presumed that it could be duly regulated. In addition, as a result of the privatization of distribution companies, Enersis, which controls Endesa, holds 74 percent of the shares in the main distribution company, Chilectra.

This vertically integrated structure has been the source of a large number of disputes and conflicts. Democratic administrations have claimed repeatedly that Endesa’s dominant role in generation and transmission does not allow for fair competition in the sector. A large-scale lawsuit (described in detail in chapter 4) was initiated in 1990 when the *Fiscal Económico* (National Economic Prosecutor) complained to the Antitrust Commission charging that Chilectra, Endesa and Transelec engaged in noncompetitive behavior (discriminating against the small producer, Pullinque). The accusation was rejected as was an appeal to the Supreme Court. The prosecutor initiated a second procedure against Enersis immediately after the first trial ended. The second trial lasted until June, 1997 and again favored Enersis.

A second line of criticism arises from the fact that divestiture led to the creation of several classes of shares with different decision-making power. For example, few preferential shares allow control of Endesa and its affiliates. During most of the 1990s, Enersis controlled Endesa with only 25 percent of the shares.<sup>5</sup>

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<sup>5</sup> Preferential shares were created to increase incentives for efficient management. Transaction prices for these shares have been considered by critics of privatization as being too low since book values were used (as opposed to market values). A correlated problem is that privatization did not consider clear procedures and a thorough revision of the financial stance of bidders, thus allowing practices that do not lend themselves to the required transparency of the process (for a detailed description, see Saez, 1993).

A third line of criticism arises from the “first-move advantage” that Endesa held at the time of the reform. As the former sole agency responsible for investment plans, it had access to privileged information on new commercial areas, water rights, reserves management, etc. This information could have been used to discriminate or block entry of potential competitors.

After privatization, it is clear that the government could have imposed tighter ownership controls to prevent one group from holding interests in distribution, transmission and generation simultaneously. Ownership, however, is not the main issue when regulation is correctly enacted and informational asymmetries are not significant. This is, unfortunately, not the case in Chile.

## **REGULATION OF THE ELECTRICITY SECTOR**

Regulation in the electric sector is usually complex both from a technical and an economic point of view. The process is further complicated in Chile where some important aspects of the regulatory framework have not been specified in sufficient detail. Both elements suggest the existence of several areas which are potential sources of contract renegotiation and disputes.

### **Energy Dispatch**

Since only companies with a minimum generating capacity of 60 MW are allowed to participate in the Board of Directors of CDEC, and given the concentration of property in generation, Endesa and its affiliates have had majority participation in this institution. Due to the largely technical nature of CDEC’s mandate, conflict was practically absent until the 1998-99 drought.

### **Distribution**

Prices for distribution are reviewed every four years. As such, this constitutes a pre-announced negotiation, in which strategic behavior is likely. Operators have suggested, for example, that the

government had engaged in lawsuits at precisely the time that tariffs were to be revised in an attempt to curtail the bargaining power of large players in the industry. The regulator, on the other hand, has claimed that distributors engage in lobbying through private sector entities during tariff revisions.

The mechanism requires the government and firms in the industry to agree on a range of inflation-adjusted prices to be charged to consumers for a prespecified number of years. Prices are established such that an efficient firm obtains a targeted rate of return on assets. Since such firm does not exist, a simulation model is used as a benchmark. In principle and under symmetric information, the mechanism should provide adequate incentives to firms to reduce costs by forcing them to compete against the simulated optimal firm (this could be considered a form of yardstick competition). Under asymmetric information, however, this mechanism has important shortcomings. One unsolved problem is how the regulator obtains the cost structure of the efficient firm. Experience shows that when information is based on actual market data costs are strongly influenced by those of the existing monopoly so that, in practice, the mechanism tends to converge to the standard rate of return model.

Furthermore, the way in which tariffs are set could also distort prices. Both the regulator and the monopoly make their own costs estimates. If discrepancies remain after negotiation, the final estimated cost of the efficient firm is the weighted average of the estimates provided by the firm and the regulator. In this case, opportunistic behavior clearly arises during renegotiation.

### **Node Prices**

The current electric law defines only the conceptual aspects of determining basic energy costs. In practice, CDEC estimates short-term marginal costs on the basis of the marginal production of energy to supply the most important loading center of the system (Santiago). In turn, this implies that producers located at different points in the system should bear all the costs of transportation required to

reach the consumption center.

The determination of node prices allows for several areas in which disputes could arise. First, prices are determined on the basis of forecasts of water availability and a safety margin. Since Endesa holds most water rights and manages water reserves, small hydroelectric producers have claimed it has an informational advantage which hampers competition in generation. Safety margins and other technical issues, on the other hand, are increasingly being disputed by operators (in particular, thermoelectric firms) as being too beneficial for hydroelectric companies. Although these disputes do not necessarily reflect on the workings of the industry, they point to the potential damaging role that information asymmetry could play in the sector.

A side issue, but a crucial one, affecting the work of the industry is that distributors have the “legal right” to buy at node prices to serve the regulated market. It is clear that economic quasi-rents could be obtained by a distributor since it can allocate purchases at will. Since short-run marginal costs differ between thermoelectric and hydroelectric producers during the year (because of changing levels of water reserves and weather conditions), a distributor could potentially benefit a particular company by signing contracts for only part of the year. In the long run, this will produce high profits and low profits generators, and could eventually drive the latter out of the market.

### **Transmission Tolls**

Chilean regulation guarantees open access to transmission lines. This means that, as long as it has excess capacity, a transmission company cannot refuse to serve any producer interested in dispatching energy to a consumer or to be sold in the spot market. Regulation, however, is incomplete in two important areas: new investments required to expand the network and transmission tolls.

The Electricity Law enacted in 1982 did not establish clear procedures for setting transmission charges. The legal framework was modified in 1990

to establish the price system for the transmission sector. Although the law was passed and it covered the basic lines along which prices are to be set, its corresponding statute (which determines prices in practice) was drafted only in 1998 and is not operative to date. This has been one of the main sources of disputes among private firms.

When capacity is limited or new transmission lines are necessary, the law presumes that interested firms and the transmission company can negotiate an agreement to undertake the required investments. To a large extent, the law does not consider the possible

asymmetric bargaining power of firms, in particular, when the additional demand is not substantial.

Large mining operations have been able to deal efficiently with this problem through public auctions of their demand for energy. In these cases, the negotiation involves generation and transmission companies. As is usually the case, when a satisfactory offer is not possible, the generating company offers to build its own (dedicated) transmission line. This option, however, is limited to customers with a large demand.

## IV. Cases of Open Conflict and Renegotiations

In this section, we present eight cases of open conflict, which either went through the Judiciary System (Antitrust Commissions, the Court of Appeals, and the Supreme Court) or through private arbitration processes. These are not only the most representative cases but also cover most of disputes through 1999. Although most of these cases have to do with market structure, regulation and enforcing ability, it is necessary to bear in mind that each of them is, to some extent, unique. Accordingly, they are grouped in cases of conflict arising from inadequate market structure and regulatory failure.

### MARKET STRUCTURE ISSUES

#### Case 1. Vertical Integration Disputes

Two major trials were initiated, and subsequently lost by the *Fiscal Económico*, in order to divest vertical integration between Endesa and Transelec.

The first trial (1990-1992) followed a complaint at the Antitrust Commission by the small producer Pullinque against Enersis for noncompetitive behavior due to vertical integration. The prosecutor started the process, conducted the investigation, and based the claim on three elements: a) that participation of Enersis in generation (Endesa), transmission (Endesa) and distribution (Chilectra) hampered competition; b) a set of allegations by Pullinque of wrongdoing by Endesa; and c) the fact that a representative of Enersis was elected CEO of Endesa.

The Resolution Committee of the Antitrust Commission voted in favor of Enersis. An appeal to the Supreme Court was also favorable to Enersis, although by a split decision. The Supreme Court declared that no evidence of abuse of power or misconduct accompanied the prosecutor's claim and that imposing sanctions would amount to limiting Enersis' constitutional rights. The only part of the

claim with which the Supreme Court agreed was the third element, election of an Enersis director as CEO of Endesa, which could negatively affect the transparency necessary for the competitive functioning of this sector. Consequently, the court's decision required that "the authorities ... in due time ought to adopt the necessary measures to ensure and reestablish transparency in the electricity market." To date, no measure has been enacted.

Investigations to support a second claim of vertical integration were initiated in 1992, immediately after the first trial denied the prosecutor's claim. The *Fiscal Económico* sued Endesa and Transelec on the grounds that vertical integration could potentially hamper economic efficiency ("risk" of noncompetitive behavior). The prosecutor's goal was to divest the vertically integrated consortium of Endesa and its transmission subsidiary Transelec. The original claim did not name Enersis as a defendant, focusing only on Endesa, Transelec and Chilectra to avoid dismissal of the suit on the basis of double jeopardy. However, Enersis became part of the proceedings when it took control of Endesa in 1994.

The accusation considered the following five elements:

- C Market imperfections characterize the electricity sector and vertical integration creates entry barriers to generation.
- C When electricity distribution and generation are integrated, a central feature of effective competition is destroyed, i.e., the independence of both activities.
- C Although regulation can set appropriate transfer prices, discriminatory practices cannot be ruled out. This is exacerbated when distribution is highly concentrated because it creates

monopsony power in a vertical integration context.

- C Monopoly characteristics in transmission makes its independence from generation necessary.
- C In activities with market imperfections, vertical integration must be avoided to maintain competition in other markets.

The defense based its arguments on two considerations:

- C The matter had already been taken up by the Court and renewed action constituted double jeopardy. The only difference between 1990 and 1994 was an increase in the ownership of Endesa by Enersis within the limits of concentration regulation, which per se is not illegal.
- C The *Fiscal Económico's* perceived "additional risk" of noncompetitive behavior had no legal or economic basis, since there was no evidence of wrongdoing.

Although the judges verdict in favor of Enersis in the second trial was unanimous, rumors abounded that opinions among the judges were heavily divided. The prosecutor characterized the verdict as "abusive," but refrained from pursuing the issue to the Supreme Court. In addition to the June 1997 verdict, the Antitrust Commission issued a set of "recommendations" for improving performance of the electricity sector (recommendations are considered mandatory in spirit, that is, the issues raised should be addressed but they do not necessarily need to be solved by the authorities in the way proposed by the Antitrust Commission):

- C The pertinent authorities must issue a statute for the sector (which had been pending since 1990), as soon as possible. To resolve existing ambiguities regarding the use of transmission lines and establishment of toll charges, the authorities must promote the enactment of all necessary changes to existing legislation.

- C Because of the existence of information asymmetries, Transelec must become the owner of the assets it now manages. This should be undertaken in a manner determined by Transelec shareholders but within a relatively near time horizon.
- C Given the lack of adequate procedures to ensure the expansion of the transmission network when that becomes necessary, Transelec should open itself up to participation by other interested firms, whether or not they are involved in generation.
- C In order to increase transparency, distribution companies should purchase energy and power by means of a public auction. The rules and regulations governing the auctions should be established freely by the distribution companies. These should apply generally to all and be nondiscriminatory, and public information should be readily available (contrary to current practice). The latter is necessary in order to eliminate any possibility of arbitrary or illicit discrimination, and to transfer any potential cost reduction to users.

The analysis of the case shows several points: First, the prosecutor had a very weak case. In fact, the claim was presented in terms of "fears that Chilectra would grant preferential contracts to other Enersis firms" and "fears that there could be conflicts of interest within the CDEC as a result of the fact that the firms were part of the Enersis holding company." The prosecution did not explain how these practices could be implemented or what types of behavior would be consistent with these fears. Second, the prosecution relied on legal arguments, disregarding economic facts, and failed to convince the judges of the need to consider the conditions which could allow for noncompetitive behavior instead of looking for documented proof of such behavior (as required by the Supreme Court in its 1992 decision). Third, potential beneficiaries of Enersis' divestiture were surprisingly absent from the process.



## Case 2. Discrimination against a Generator

This case illustrates how the existence of a vertically integrated conglomerate may discriminate and predate a potentially competitive segment of the industry.

In 1992, Colbún sued Chilectra, Endesa and Pehuenche for discrimination and predatory practices. The suit started as a technical divergence in the CDEC with the Minister of the Economy acting as judge in the case. When the Minister decided in favor of Colbún, Enersis took the case to the Antitrust Commission on the grounds that the Minister of the Economy was not competent to decide in the matter. During 1992, the Resolution Commission studied the dispute without reaching a decision. In September, 1992 the parties settled the dispute. Enersis signed an agreement to compensate Colbún for losses and accepted to modify its contracts. Chilectra and Colbún signed a long-term contract (1992-2001) with characteristics similar to those signed by other suppliers (Endesa and Gener).

The sources of the conflict were a 1989 agreement signed by all members of CDEC regarding prorating sales to distributors, a poorly designed contract between Chilectra and Colbún, and the disturbing role played by the arrival of new producers into the generation market. According to this agreement, at each point in time Chilectra had to buy energy at node prices from Endesa and Gener in an amount proportional to the annual supply of energy contracted by Chilectra with each of them. This clause was imposed by CDEC to avoid noncompetitive practices by Chilectra in favor of other members of the vertically integrated firm, Enersis. On the other hand, Colbún had signed a contract to become Chilectra's residual supplier in the market; that is, when its other suppliers (Endesa and Gener) could not meet demand.

In 1991, Pehuenche (an Endesa subsidiary) started operations and began to sell energy to Chilectra without complying with the 1989 agreement. Enersis interpreted the 1989 agreement as binding only for CDEC members at the time (that is, Endesa, Gener

and Colbún) but not for new members, such as Pehuenche. Accordingly, a contract was signed allowing Pehuenche to sell variable quantities of energy to Chilectra, i.e., without respecting the proportionality limits. In fact, at times Pehuenche was dispatched at almost 80 percent of its capacity to Chilectra while on other occasions it was not dispatched at all.

Colbún claimed that noncompliance with the 1989 agreement by Pehuenche was detrimental to its interests because, as a residual supplier, Colbún was required to provide vast amounts of energy only when marginal costs were above node prices, and very little during the rest of the year. This situation left Pehuenche better off (selling at node prices above marginal costs) to the detriment of Colbún (selling below marginal costs), while Endesa and Chilectra were unaffected. As mentioned by Blanlot (1993), the long-run condition that marginal costs should equate node prices (which is at the basis of the price mechanisms) was not met.

Colbún based its allegations on the fact that market discrimination was raising its long-run marginal costs. According to Colbún this was evidence of predatory behavior on the part of Enersis. The following elements contributed to this dispute:

- C The contract signed by Colbún and Chilectra was clearly incomplete and disadvantageous to Colbún, particularly when compared to those signed by Endesa and Gener with Chilectra. The fact that Colbún was Chilectra's residual supplier was not a problem under the 1989 agreement, but an unforeseen contingency made it detrimental to Colbún. Colbún's strategy was clearly short-sighted given that Pehuenche's facilities were under construction and it could be fully anticipated that it was going to become a major supplier.
- C The relationship of Chilectra, Endesa and Pehuenche as members of the same holding company facilitates coordination for discrimination.

C With Chilectra's approval, Endesa gave Pehuenche the right to sell to Chilectra 190MW out of almost 500MW of energy contracted between Endesa and Chilectra at that time. Chilectra and Pehuenche made a private contract with a flexible supply of energy. Pehuenche could thus use this strategy to profit during periods of melting snow, to the detriment of Colbún. In fact, between April and June 1991, when marginal costs were above node prices, Pehuenche did not sell any energy to Chilectra, so that Colbún had to supply Chilectra at a loss. During the second semester of 1991, when the marginal cost was below node prices, Pehuenche supplied large amounts of energy to Chilectra forcing Colbún sales to drop to zero.

Several authors favored Colbún's position (e.g., Bitrán and Saavedra, 1993; Blanlot, 1993; and Morandé and Sánchez, 1992) and remarked that the crucial factors facilitating discriminatory practices were the existence of a conglomerate in the industry and an ambiguous regulatory framework in the electricity sector in Chile. Although Chilectra buys energy at node prices and in this regard it did not favor Enersis affiliates, cost arbitration made discrimination profitable for Enersis. Pehuenche's profits from its sales to Chilectra were larger than Endesa's reduction in profits (due to its voluntary reduction in sales). Enersis' control over Chilectra was also necessary for discrimination to occur because Chilectra stockholders were indifferent between accepting or not Endesa's decision. Clearly, the discriminatory strategy was profitable only to those Chilectra's stockholders belonging to Enersis.

### **Case 3. Exclusivity of Concession Areas**

This case highlights the role of timely decisions by the authority to enhance competition between two distributors.

Distributors in Chile have been granted concession areas which are, most of the time, exclusive and based on historical (pre-privatization) precedents. In fact, concessions are granted immediately upon request, except when the regulator considers it

technically unfeasible. Areas of concession can be urban or suburban, facing different legal and regulatory treatment (e.g., they face different regulated prices). The regulators can grant concessions without limitations but have traditionally expressed doubts about allowing overlapping distribution networks. In fact, the head of CNE declared in 1996 that "concentration of distribution activities is determined by technical, not economic, factors" and that two distribution networks would be inefficient.

Since its inception, concession areas in electricity have never been questioned. They have become, in fact, the private property of the firms. Conflict, nevertheless, arose in Santiago when a large distribution firm (Chilectra) was accused of predatory practices by a rival (Sinel) in an area where concessions de facto overlapped. Chilectra, the main distributor in the Santiago area, usually covers the urban sector. Sinel, on the other hand, is a small rural distributor. The electricity law states that tariff rates must be set for customers, not for geographical areas. Hence, when Chilectra began to sell in Sinel's territory, the latter feared that it could be eliminated from the market if cross-subsidies from urban to semi-urban consumers were allowed (semi-urban distribution costs are 15 percent higher than urban costs, Paredes et al., 1995). In 1991, Sinel complained to the Antitrust Commission.

The Prevention Commission of the Antitrust Commission ruled that overlapping should not be allowed. The decision reversed in the Resolution Commission whose opinion was that concession areas were not exclusive (thus allowing overlaps) but selling prices to regulated consumers among firms could not differ. Then, in practice, the higher court favored competition.

## **REGULATORY FAILURE ISSUES**

### **Case 4. Lack of Definition of Transmission Tolls**

This case illustrates how incomplete regulation (absence of pricing mechanism for transmission tolls), and the resulting uncertainty can lead to

socially inefficient outcomes.

Lack of a proper definition of transmission tolls and cost-sharing in expansion investments have been the most important area of conflict and renegotiation in the electricity industry in Chile. As mentioned, the law guarantees open access to the transmission network as long as capacity allows it. When capacity does not permit an additional user, investment in the network and its associated costs should be established freely through negotiations between the user and the owner of the network. The potential user, therefore, has the choice of connecting with the network of the transmission company (and avoid undertaking the investments) or, alternately, building the lines to satisfy its own requirements and connecting with the network at the points it deems most suitable. An intermediate solution would be to build the lines it needs and connect with the network only for the use of sections that have surplus capacity. The law also establishes that the company that owns the facilities should calculate the value of the toll, the areas of influence, the new replacement value (NRV) and how it should be prorated among firms. Nevertheless, the transmission company should make the replacement values and operating costs for all the sections of the system available to all members of the SIC. A user who does not agree with the toll calculated by the company has recourse to arbitration.

In 1990, Colbún, then a stated-owned firm began supplying energy to Chilectra. From the beginning, Colbún and Endesa disagreed on transmission tolls and connection fees. By the end of that year, both firms agreed to call on an Arbitrage Commission to settle matters. However, the Commission was unable to determine what the transmission costs should be and the proportion that Colbún should pay. Between 1992 and 1997, Colbún and Endesa-Transec disagreed on the amount of those tolls, so that Colbún made annual provisions (tentative payments) for US\$12 to US\$13 million, until the dispute was solved.

During 1994, disagreement between Transec and Colbún regarding transmission tolls widened.

According to a study of transmission costs by Transec, an annual payment of US\$21 million was consistent with the proportion of energy sent by Colbún to Santiago (prorated). Colbún rejected this proposal on the grounds that it was arbitrary and monopolistic, and was aimed at increasing pressure on the Arbitrage Commission to resolve the dispute concerning unpaid transmission fees. Fearing it could lose at the arbitration table and face further litigation costs, Colbún began studying alternative solutions to its transmission problem; namely, building its own transmission line to Santiago. The study concluded that the line would cost US\$70 million to build, which represented US\$7.5 million a year in terms of Colbún's cost of capital. Taking into consideration yearly operation costs of US\$ 4 million, the cost of owning its own transmission lines would be, at most, US\$11.5 million a year.

Once Colbún decided to build a private transmission line, Enersis (which owned Transec through Endesa) followed two different strategies. The first one was to convince Colbún (and the government) that an independent line was an inefficient solution, not only from a social point of view, but also from a strictly private perspective. Hence, in June 1995, Transec offered a transmission fee of only US\$10.5 million a year; by the end of 1995 the fee was reduced to US\$10.3 millions a year. The second strategy consisted of starting conversations with the government in order to reduce or eliminate vertical integration in generation and transmission markets. Endesa planned to divest Transec and retain only 30 percent of the shares, while the rest would be allocated in the stock market to be purchased by pension funds (AFPs) and other generating companies. Conversations between Enersis and Colbún lasted until January, 1996. Endesa requested that Colbún build only one 500 KVh line (and use existing Transec facilities as backup), and later to transfer the line to Transec as a capital participation. Colbún did not agree to this scheme, however, and in January 1996 started to build two 220 KVh transmission lines. According to Colbún's top executives, their decision was strictly commercial. Despite indications that two transmission firms would be socially inefficient given

important scale economies in this segment of the market, the government did not intervene.

At first glance, Colbún's decision may appear to be politically motivated in an effort by the government to curtail Enersis' political and economic power. A closer evaluation of the project, however, shows that this is not the case. In spite of scale economies in transporting electricity, Colbún's annual costs for using its own lines are only US\$1 million more than under Transelec's final proposal. In addition, building its own line meant that Colbún would be able to avoid litigation costs. Considering the history of conflicts between Enersis' firms and Colbún, it does not seem a high price to pay for independence. Moreover, building only one transmission line and hiring backup service from Transelec, whose fees are not regulated, did not assure Colbún that Transelec would not use its monopoly power in the future to extract rents. This argument was of strategic importance in 1995 when the government was looking to privatize Colbún. The firm's independence was considered crucial in finding a majority partner.

Disputes related to this case, however, did not end after Colbún started building its own lines. The first problem arose as a result of a new Endesa hydroelectric plant, Pangue, which was scheduled to enter into service in March, 1997. When Transelec requested permission to expand the capacity of its transmission lines to accommodate Pangue's production, the CNE responded that an expansion was unnecessary because Colbún withdrawal as a Transelec client meant that, Pangue's needs could be met and delays could be easily avoided. Colbún's new transmission lines were expected to be in service in June of that year. Since the existing lines were insufficient to transport Pangue's energy without considerable losses, Enersis initiated a strong debate in order to obtain compensation from Colbún for delays in the construction of its lines. Firms decided to resolve these problems through a mediator who worked successfully beyond the standard role as arbitrator to devise a technical solution and ease the conflict. Colbún's transmission lines finally entered into operation in August 1997.

### **Case 5. Tariff Setting in the Regulated Distribution Market**

This case shows how legal ambiguities provide scope for opportunistic behavior.

After the tariff setting process was concluded in November 1996, the National Energy Commission announced the new regulated distribution prices (tariffs) in the electricity sector which would be applicable for the next four years. Tariffs were between 5.8 and 6.4 percent lower than the prevailing values. Immediately after the announcement, three major companies (two of them, Chilectra and Río Maipo, controlled by Enersis) argued that the new tariff scheme was arbitrary and appealed to the Court for protection. The third firm involved was Eléctrica Puente Alto.

The main effect of this appeal (or demand for protection) was to prevent the price change until the Court determined whether the CNE had the authority to make the price adjustment and proceeded according to regulations. As a result, until the Court has come to a conclusion distribution companies were able to charge the prevailing tariffs.

In order to signal their agreement with the fact that electricity distribution was cheaper than it was four years before, the three distribution companies reduced fixed charges between 26 and 42 percent (Chilectra reduced charges by 30 percent). These changes were implemented between November 6 and 11. A similar reduction was implemented by another five minor distribution companies during the first week of December. However, reductions in fixed charges were negligible when compared with tariff reductions imposed by the CNE.

The regulator realized that distribution companies were able to profit by delaying the tariff reduction announced by the CNE. This arose from the absence of legislation forcing monopolies to return to consumers any extra payments when the courts determine the need for tariff reductions. Accordingly, on December 4, the government enacted legislation to close this loophole. The legislation went into effect

on December 28, 1996.

On January 31, 1997, the Court of Appeals accepted the companies' demand. Immediately, both the regulator (CNE) and the State Defense Council (which joined the conflict as a consumer representative) appealed to the Supreme Court. The Supreme Court overturned the Court of Appeals and the new regulatory tariffs went into effect on April 28. Extra payments made in the December 28, 1996 to April 28, 1997 period were later returned to consumers. Nevertheless, extra income obtained in the November 4 to December 27, 1996 period was not returned to consumers and distribution companies realized additional profits of around US\$7 million as a result of the lawsuit.

#### **Case 6. Regulation of Related Industries**

This case illustrates how an inadequate design for the natural gas sector could potentially hamper electricity market performance.

In July 1990, Chile and Argentina signed an initial agreement to allow the construction of a gas pipeline between the two countries. In August 1991, a protocol was signed to specify detailed conditions for export, including a daily limit of 5 million cubic meter. In early 1992, ENAP (the Chilean state-owned monopoly oil refinery) signed an agreement to buy gas from YPF (its counterpart in Argentina). In Chile, ENAP entered into a partnership with Chilectra (allegedly after several other operators in the electricity sector declined to do so). In March 1993, the Transgas holding company was formed which included Enap, Chilectra and four European investors (Spain's Enagas and Catalana, and Italy's Snam and Italgas). The project considered bringing the gas into Chile by way of a mountain pass located 800 km south of the Santiago main consumption center. The four European companies left the holding company in October following allegations of corruption in their own countries. They were replaced by British Gas, Tenneco and Enersis. In Argentina, YPF and other smaller companies were granted the right to export gas to Chile. The estimated cost of the project is US\$1 billion.

In November 1993, a Chilean gas distributor (GASCO) began a study of an alternative pipeline through a nearby mountain pass (200 km). GASCO invited Enersis main rival, GENER, to become its partner in Gas Andes. In August 1994, Gas Andes obtained permission from the Argentine government to purchase gas. This measure was proposed by Argentina's Finance Minister as a mechanism to reduce the power of the recently privatized oil company, YPF. In June 1995 the governments of Argentina and Chile signed a new protocol eliminating limits to gas exports, allowing Gas Andes to compete with TransGas.

In mid 1994, TransGas and Gas Andes agreed to naming an arbiter to determine the feasibility of merging the two projects. Disagreements started over the person chosen as arbiter the issue and spread to questions over control of the joint venture. Since the latter question could not be solved, the proposal was abandoned. At the same time, the government hired a consulting firm to evaluate the projects and determine the feasibility of each. The arbiter concluded that the projects were incompatible with each other, while the consulting firm favored Gas Andes.

As a result of the failure of the joint venture, the companies entered a brief but fierce price war to sign long-term contracts with clients during May and June 1995 and ensure the economic viability of the projects. Final offers were as much as 24 percent lower than initial tariffs and the expected reduction in electricity prices was estimated at 10 percent. In July 1995, GasAndes won the open-season process by offering a tariff that was one percent below that of TransGas. Even Endesa, a subsidiary of Enersis, contracted to buy gas from the rival venture. In August 1995 and after Enersis abandoned the project, TransGas withdrew.

As usual, competition of this sort produces an important amount of lobbying and pressure for special treatment. Both holdings pressured the CNE through the media (as well as by lobbying politicians and ministers) to gain to get the concession on exclusivity an exclusive concession grounds and

indirectly through politicians and ministers) to gain. Nevertheless, the CNE assumed a neutral role regarding key issues and, in fact, moved quickly when changes in market design were necessary. Likewise, the Minister of Finance played a neutral role despite the fact that he had been the one in charge of evaluating the TransGas project long before becoming minister.

The CNE, in addition, played an important role in fostering transparency. First, when the Argentine authorities announced their interest in redesigning the gas protocol to foster competition, the CNE seized the opportunity to inhibit Enersis from becoming a "mega-monopoly" in gas and electricity and quickly formed a team to design the market and sign a new protocol. Second, the government did not play a crucial role in determining the outcome of the confrontation by using its power through Colbún (which was state-owned at the time), letting technical considerations be the major force behind contractual arrangements. Third, the authorities controlled lobbying within the government by contracting with a private firm to decide which project was socially preferable maintaining the discussion within technical limits.

### **Case 7. Allocation of Water Rights**

This case highlights how the inadequate allocation of water property rights may deter entry in the generation market.

Water property rights are an important source of disputes for three reasons. First, watersheds run from east to west and are not interconnected (thus making arbitration unfeasible). Second, since the country is so narrow water descends from an altitude of 4,000 meters to sea level in less than one hundred miles; as a result, the possibilities for locating hydroelectric generating units are limited. Third, the weather tends to be erratic creating large hydrological risks. Consequently, water rights become crucial for the development of hydroelectric companies.

Shortly before privatizing the electricity sector, the

government reformed water rights which were at the time the sole property of the State. New regulations retained the property in the hands of the State, but established the right of private parties to request concessions to use water for consumption and other purposes. Rights could be claimed by any individual or firm at no cost (except in the case of disputes, wherein the government could auction the rights). In addition, rights do not expire and there is no penalty for holding rights without effective use.

Water rights held by Endesa at the time it was privatized were transferred to the new proprietor. These water rights largely exceed Endesa's investment plan; in fact, Endesa's water rights are such that if generating plants were built, production could increase by 3,100MW, that is 75 percent of the SIC's current capacity. In addition, it holds water rights for another 2,000MW in the south which could potentially be linked to the SIC at a moderate cost. After privatization, Endesa claimed another 79 water rights out of some 280 claims filed by different electric and industrial companies.

Operators in the market have expressed fears that Endesa could use water rights as an entry deterrence mechanism. The extent to which these water rights can be effectively used as a barrier to market entry depends on the availability of alternative sources for generating electricity. In this sense, imports of natural gas from Argentina have reduced the value of water rights as a source of monopoly power in generation. Nevertheless, in 1996 the Antitrust Commission recommended not to give additional water rights to Endesa to avoid "noncompetitive behavior." This led to the canceling of Endesa's Neltume project, a US\$300 million generating plant that was to have been constructed in 1996-1998.

Moreover, extensive allocation of water rights to Endesa has also had entry deterrence effects in other industries. In Aysen, a scarcely populated area in the south, Endesa holds 30 percent of available water rights but does not have facilities in operation, while the local state-owned generating plant supplies the entire current demand with less than one percent of the area's water rights. This has inhibited the

development of an aluminum plant project which requires a large amount of electricity for its operation. Needing access to water rights, the Canadian company Noranda invited Endesa to be a (minor) partner in the US\$3.000 million project. The project stalled when Endesa declined the offer.

### Case 8. Regulatory Reaction to an External Shock (the 1998-99 Crisis)

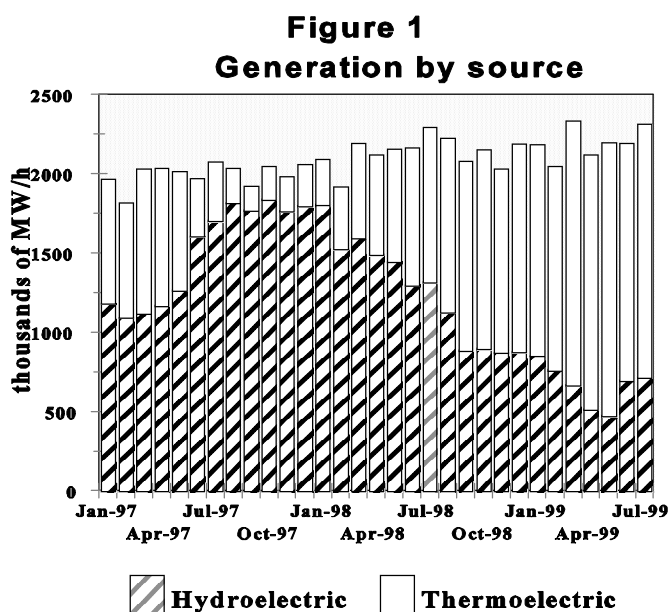
This case illustrates how pitfalls in the regulatory framework and lack of technical know-how in regulatory institutions can impose high costs on consumers and create room for further litigation and disputes in the sector. In addition, it illustrates the damaging role politicians can play when they act to satisfy their constituencies without regard for superior but "unpopular" technical solutions.

In 1998-99 Chile suffered its worst electricity crisis since the privatization of the industry. A severe drought caused marked declines in hydroelectric generation forcing the government to impose rationing. The deficit was initially estimated at 9

percent of demand but it peaked at 12 percent in April 1999. Between March and June rationing affected consumers two hours a day on average; however, plant failures produced blackouts that lasted as much as six hours (CNE, 1999). The length and depth of the crisis led politicians to blame the private sector, question the performance of the authorities, and call for a revision of the regulation to tighten supervision and increase penalties.

The crisis began in early 1998 when the severe effects of a drought led to a significant reduction in hydroelectric power generation in July and September (see figure 1).

The government refrained from imposing rationing at the last minute as a result of both heavy lobbying by hydroelectric plant managers and a mistaken technical assessment of the magnitude of the crisis. Despite the fact that water reserves were at very low levels, the government allowed Endesa's hydroelectric power plants to utilize a substantial amount of water from the country's main reservoir, Lake Laja, that was targeted for agricultural



irrigation. It is estimated that, had this water been saved for the dry season, it would have been enough to avoid rationing (Díaz, et al., 1999). It seems that, at the time, the CNE was confident that it would either rain or/and that a 350MW combined gas-water cycle power plant under construction would start producing in November. Unfortunately, it did not rain and the plant was still inoperative in July 1999.

This decision was a major mistake for two reasons. First, it signaled that the authorities were hesitant to impose rationing and face the political cost of doing so, leaving them vulnerable to lobbying. Second, it created space for opportunism because prices for the water transferred to Endesa were set at extremely low levels, well below the system's marginal cost and, of course, outage costs.<sup>6</sup>

On October 28, despite the fact that the country was suffering the worst drought since 1968, the CNE announced that power was guaranteed until March 1999 and lowered regulated nodal prices (tariffs) by 10 percent. Tariffs would have been further reduced had not the free-market price limited its reduction (as mentioned, nodal prices cannot be set outside a 10 percent band around free market prices). By November 11, rationing was imposed.

The 1982 Electricity Law stated that when conditions required rationing, consumers should be compensated at outage costs for unserved energy by the firms unable to fulfill contracts. Outage costs were estimated by the CNE at around US\$0.146 per kw/h (as a reference, marginal costs in thermoelectric production were around US\$0.064 at the time). The need to compensate consumers would have prompted firms to undertake three types of measures to cope with the shortage: (a) install emergency equipments (gas-based turbines); (b) purchase existing capacity from generators with surplus or self-producers with sufficient reserve equipments; and (c) pay a voluntary compensations

to non regulated consumers to be disconnected.

The responsibility of firms was, nevertheless, limited. According to the law, compensations were to be paid only to the equivalent of the 1968-69 drought or if there is a case of *force majeure* (such as an earthquake). The rationale for this limitation is that tariffs are calculated using a probabilistic model that excludes droughts more severe than that of 1968-69 and, hence, consumption is only insured to that extent.

When implementing rationing and emergency measures, the authorities faced considerable opposition from hydroelectric generators. Three issues were at the heart of disputes. First, hydroelectric firms tried to convince the authorities that the drought was so severe that it represented a case of *force majeure* and they should be exempted from responsibility and compensations. Second, hydroelectric generators claimed that transfer prices from surplus generators should be valued at marginal costs, instead of outage prices. It should be remembered that dispatch is made without regard to commercial contracts, so that energy was actually transferred from surplus to deficit producers but transfer prices had to be settled afterwards. Third, hydroelectric generators disputed the amount of energy to be compensated and claimed that, according to the law, they were exempted from responsibility because, had the drought been as severe as that of 1968, they would have had a surplus of energy.

The response of the government was slow and irresolute. As a result, opportunistic incentives worsened the crisis. Without the guidance of the authorities, generators did not coordinate properly to reduce the extent of blackouts (e.g., periodic maintenance was rescheduled very late) and, at some point, there was excess demand and unused capacity in the system. It should be acknowledged that the authorities did not have the means to force firms to cooperate (for example, fines were too low to be effective). In addition, blackouts were initially massive and unpredictable, instead of being selective and programmed, irritating consumers. Finally, the

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<sup>6</sup> Outage costs (*costo de falla*, as it is called in the regulation) are transfer prices for energy in cases of system failure.



reluctance of the government to set outage costs to value energy transfers encouraged firms to speculate that transfer prices were to be set at marginal costs. In turn, this led producers to continue supplying unregulated clients (worsening the shortage faced by households) in order to avoid paying disconnection fines that were above marginal costs but below outage costs. On April 30, six months after rationing was first imposed, the authorities finally declared that outage costs were to be used.

The situation quickly went beyond the control of the technical authorities and moved into the political arena. At the instance of politicians and lobbyists, Congress passed a law determining: (a) that rationing should be implemented without distinction between regulated and unregulated consumers, and (b) that compensations had to be paid in every case (no *force majeure*) and for the entire amount of the deficit (no exemptions to compensations). In addition, the new legislation significantly increased fines.

The first measure destroys the incentives for an economically efficient response to a crisis. Under administrative rationing, firms will have no opportunity to allocate the available energy among users with higher valuation and, consequently, shortages will be worsened. In addition, since rationing is imposed on free clients in the same amount as regulated consumers, the former will face the cost of energy shortages but not the benefits of

the price insurance. In turn, this will hamper the efficient working of the unregulated segment of the industry. Finally, administrative rationing impedes voluntary reductions in demand by consumers with low valuation for energy. For example, most households would be better-off by having its energy disconnected during the time they are at work and receiving a compensation at outage costs.

The second measure is a change in industry rules that will undoubtedly have long-run effects. Firms will have a more conservative approach to hedging contracts and, consequently, energy prices will increase as well as unused capacity. In a country subject to major earthquakes, the possibility of energy failures as a result of true *force majeure* events cannot be discounted, yet the law makes no exemptions. This creates the basis for future disputes.

This Law is being disputed by firms at the Supreme Court as unconstitutional. Its structure is so poorly designed that (a) it is inconsistent with current regulation to the extent that the authorities cannot apply it without violating the Law, and (b) according to some interpretations, it may force firms with a surplus of energy during system failures to pay compensations.

## V. The Role of Chilean Institutions in the Resolution of Conflicts

Although, the five institutions in charge of regulating and monitoring the sector (CNE, CDEC, SEC, the Antitrust Commission and the Ministry of the Economy) convey a sense of acting in isolation of interest groups and political parties, their limitations in terms of human capital and resources create inefficiencies in performance, resulting in high litigation costs and a certain randomness in their decisions. In this section, we assess conflicts related to the Antitrust Commission, CDEC and CNE.

### THE ANTITRUST COMMISSION

Several conclusions can be drawn from the Commission's participation in the energy sector.

During the past eight years, few suits were filed and, except for three large-scale trials, most had little economic impact. Tables 2 and 3 present a summary of the trials and their corresponding judgements. In total, 16 suits with significant economic effects were filed at both the Prevention and Resolution Commissions. One episode led to a large number of disputes: conflicts between Rio Maipo (a small generating company near Santiago) and Puente Alto (a distributor serving areas close to Santiago) total 25 percent of all cases. In addition, several disputes are of no consequence to the electricity sector since they involve cases of commercial wrongdoing (e.g., accusations of collusion to elect directors). In addition, there were nine other cases (unreported) in which individuals sued the electric companies for minor issues (such as delays in connection or repair services).

Trials tend to be quite long, on average they lasted 12 months in the Prevention Commission and 20 months in the Resolution Commission. Since most disputes go through both commissions, a dispute may take around three years to be resolved. Once the

Resolution Commission issues a judgement, appeals must go to the Supreme Court, an endeavor that could last a couple of years more. As previously described, the Antitrust Commission has filed two large lawsuits against Enersis on the grounds of abuse of monopoly power. These were extremely long trials (2 to 4 years) and involved a large number of witnesses and technical reports. Since the *Fiscal Económico* is an officer appointed by the President of the Republic, the trial had some touches of political confrontation but remained largely technical.

To a large extent the inefficiency of the Antitrust Commission results from its lack of resources. Judges work *ad-honorem*, which may guarantee independence, but also implies they have little time for these matters which, in turn, lengthens the processes. The Commission's technical staff is poorly paid and ill suited for the job because most are lawyers with little training in economics.

The Resolution Commission (highest ranking) is comprised by five members who are not necessarily trained to resolve technically complex and economically difficult disputes. The five members are a Supreme Court judge,<sup>7</sup> two public officers (usually lawyers) appointed ex-officio, and two university deans (one from a law school, one from an economics school), who are randomly selected from all universities.<sup>8</sup> As is apparent given its structure,

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<sup>7</sup> Judges in Chile have no formal training in economics.

<sup>8</sup> When the Antitrust Commission was formed in the mid-1970s there were 7 to 10 high quality schools of law and departments of economics in the country, usually with highly trained staff and very independent of political or lobbying pressures. This makes the "academic" part of the Commission trustworthy. However, later the

the Commission must rely on expert witnesses to weigh arguments, facts and opinions. But given its limited financial resources, good advice is not guaranteed. In an effort to help resolve these problems the government substantially increased the Commission's budget for 1998.

The legal system in Chile is very antiquated, based largely on tangible proof of illegal activity and not amiable to acting on the grounds of reasonable presumptions. In fact, illegal practices must be specified in advance (typified). Moreover, the Commission (a unit bound by public law) is only allowed to do things (instead of limited to do things, as is the case of the private sector). This limits the range of actions of the Commission, both in areas of interests and in the type of proofs that are required to punish noncompetitive practices. To some extent, this legal structure reproduces the spirit of the Chilean legal system which was designed in such a way such that discretion in the public sector is rare.

An early paper by Paredes (1995) analyzes the decisions made by the Antitrust Commission since its inception in 1974. He found that although the behavior of the Commission regarding punishment for monopoly practices seems adequate, the relatively higher prosecution and punishment of vertical integration practices (which are largely justified in the literature as welfare improving in oligopolistic markets) seems inadequate. The reasons for this behavior is to be found, according to Paredes, in two elements: the lack of a clear definition of the purposes of antitrust regulation (which blurs the judgment) and the fact that practices that can be easily specified mostly correspond to vertical integration. Also, fines are very low when compared to the potential benefits of wrongdoing, eroding the credibility of regulators. Fines levied by

the Antitrust Commission between 1975 and 1987 averaged US\$29,000, and the maximum fine was US\$147,000. For example, on May 1st, 1997 a system failure left 80 percent of the country without electric power for 55 minutes. The largest five generating companies and Transelec were fined after an investigation proved that their response to the emergency was excessively slow due to cost considerations (the expected delay is around 3 minutes). The investigation concluded that the main reason was that "since support units have a higher operating cost than a failing unit, the CDEC did not respond as fast as expected." Although maximum fines were levied, they were minimal in comparison to the average sales or assets of these six companies: each company was fined less than US\$35,000.

Fines were increased substantially during the 1998-99 electricity crisis. It is estimated that they would reach several million U.S. dollars at their maximum. Certainly, this measure was in the right direction. However, the new Law also extended the power of the authorities to impose such fines in a very discretionary manner and located this new faculties in the technically less apt regulatory body, the SEC.

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government deregulated higher education markets. To date, there are over 70 schools of law and economics, whose quality is very varied. The Commission has been very lucky that the last appointees have been, by pure chance, highly trained, but the situation could certainly change.

**Table 2**  
**Antitrust Commission:**  
**Proceedings of the Prevention Commission**  
(Selected Cases from 1989 to 1997)

Date of Proceeding	Date of Judgement	Parties Involved	Reason	Judgement
Nov-10-89	Feb-05-90	SINEL(d) vs. CHILECTRA(d)	CHILECTRA <u>abuses its monopoly power</u> delaying power supply increases required by SINEL Overlap of geographic zone allows predatory practices.	Overlap of geographic zones is not allowed
Jun-07-90	Jan-29-92	CMET (telephones) vs. ENERSIS	ENERSIS <u>abuses monopoly power</u> because CHILECTRA uses posts installed in public access areas.	CMET withdraws accusations
Jun-27-90	Jan-27-92	Puente Alto(d) vs. Rio Maipo (g)	Rio Maipo <u>abuses monopoly power</u> in the devolution of payments for an eventual increment in the power supply	Rio Maipo is fined according to Antitrust Law
Dec-07-90	Nov-25-91	Rio Maipo(g) vs. Puente Alto (d)	<u>Anticompetitive practices.</u> Puente Alto does not publicly announce both tariffs and financial charges	Vacated (the information was publicly announced)
Jun-12-91	Aug-07-92	Puente Alto(d) vs. Rio Maipo (g)	Rio Maipo <u>abuses monopoly power</u> when requiring excessive (illegal) guarantees	Guarantees are monopoly practices. Rio Maipo is fined.
Dec-13-91	May-13-93	Pedro de Valdivia vs. Litoral (g)	Litoral <u>abuses monopoly power</u> on installation and power supply	Dismissed
Jul-29-93	Sep-16-93	CORFO (asks advice)	CORFO asks whether procedures for auctioning EDELNOR shares in stock markets is legal	Auctioning adjusts to law
Oct-26-94	Oct-05-95	PULLINQUE(d) vs. ENDESA(g) & Gener(g)	ENDESA and Gener abuse monopoly power by fixing tariffs	Vacated
Jul-04-96	Nov-25-96	CNE (asks advice)	New water right given to ENDESA may affect competition in generation	The court recommends that new water rights should not be granted until legal ambiguities are resolved.
	Dec-23-96	ENDESA	ENDESA appeals previous sentence concerning water rights	Vacated

Note: (d) distribution company; (g) generating company; (t) transmission company.

**Table 3**  
**Antitrust Commission:**  
**Proceedings of the Resolution Commission**  
(selected cases from 1989 to 1997)

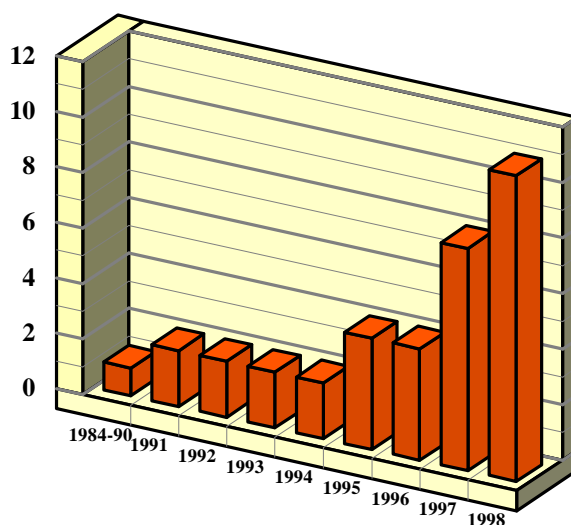
Date of Proceeding	Date of Judgement	Parties Involved	Reason	Judgement
Nov-04-88	Mar-13-90	VTR (telecom) vs. ENDESA(g)	ENDESA asks VTR to conduct a study but awards its to a rival firm.	Vacated.
Feb-14-90	Mar-27-90	CHILECTRA	CHILECTRA appeals sentence of prevention commission	Overlap of geographic zones is allowed but firms must charge the same tariffs
Jun-05-90	Jun-02-92	Briones (particular) vs. ENERSIS & several AFP	<u>Collusion</u> to elect directors	Vacated.
Jun-05-90	Jun-07-92	PULLINQUE (g) vs. ENDESA (g)	<u>ENDESA abuses market power</u> . Excessive tariffs and tolls when using ENDESA's transmission facilities	Endesa won the case (3-2)
Mar-20-92	Sep-15-92	Colbún(g) vs. PEHUENCHE(g), ENDESA(g) and CHILECTRA (d)	Firms discriminate against Colbún	Withdrawn by Colbún
	Sep-26-93	Briones	Appeals sentence of resolute commission	Vacated.
	Mar-22-94	Rio Maipo(g)	Rio Maipo appealed sentence of Jan-27-92	Vacated. Rio Maipo is fined for abuse of power market against Puente Alto
Oct-02-92	Jun-11-97	National Economic Attorney vs. CHILECTRA, ENDESA, and TRANSELEC	National Economic Attorney asks for divestiture to encourage competition and eliminate abuse of market power	Rejected in both the Resolution Commission and the Supreme Court
Oct-10-95		PULLINQUE (g) vs. ENDESA (g)	Appeals previous Prevention Commission's judgement regarding abuse of monopoly power.	Vacated.
	Jan-07-97	ENDESA	ENDESA appeals a previous sentence by the Prevention Commission	Vacated

## THE DISPATCH CENTER (CDEC)

Disputes in the CDEC have been very limited. An indirect way of assessing the number of disputes in determining the short-run marginal cost and allocating demand among different producers is

role. Second, dissensions have been used as a negotiating tool in disputes in other areas not necessarily linked to the electric sector. Third, the 1996-1997 hydrological year was characterized by a severe drought and, for the first time in years, some rationing was considered (it was not adopted, though voltage was reduced by 5 percent). In these conditions, the CDEC was operating close to the point of “technical failure,” a condition at which generators could be fined, thus exacerbating disputes.

**Figure 2**  
***Dissensions in the CDEC***



through discrepancies, i.e., dissent by one or more members of the CDEC from the majority decision. Since CDEC's inception, the number of dissensions has remained rather low, as shown in figure 2.

Although the number is very small, the trend is somewhat alarming. It may reflect several aspects of the evolution of the industry. First, as more operators enter the market (for example, through changes in ownership)<sup>9</sup> they are challenging Enersis' dominant

The case of Gener accusing Endesa of abuse of power in the dispatch of generating plants during the last months of 1997 exemplifies a conflict within CDEC that went beyond standard procedures. Instead of taking its complaint to the Minister of the Economy, Gener went directly to the Antitrust Commission. This may reflect the fact that Gener considered the issue to go beyond the boundaries of a standard CDEC conflict because the accusation dealt with intentional wrongdoing not a simple

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<sup>9</sup> Pension funds have come to play an important role in the sector since they were allowed to invest in the stock

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market. Foreign investors also participate in the sector.

technical discrepancy. Alternatively, it may reflect doubts regarding the ability or diligence of the Minister of the Economy to solve the issue. In any case, this lawsuit shows clearly that conflict within the CDEC has not only increased in frequency but also in virulence.

Gener's allegation was that, invoking security reasons, Endesa had forced the CDEC to allocate less energy than its capacity would allow to a crucial segment of the northern SIC. In this segment Endesa has no operations, so that Gener's subsidiary Guacolda had to supply energy to cover the gap. Since Guacolda is a thermoelectric producer, at that particular time it would have been to its advantage to purchase energy in the spot market at marginal cost instead of producing it. Gener estimated the losses in the four months at US\$17 million.

The initial response of Endesa was to renounce its role as coordinator of energy dispatch in the CDEC, in retaliation to the lawsuit. However, the parties reached an out of court settlement and the lawsuit was dropped. The terms of the agreement are not public but it takes into consideration that Endesa may assume the economic cost incurred by Guacolda.

### **THE NATIONAL ENERGY COMMISSION (CNE)**

The CNE, the agency in charge of defining the sector's policies and calculating tariffs and prices, has played a crucial role in disputes in the electricity sector in Chile. For over seven years, the CNE was unable to issue the Electricity Sector Statute despite the fact that an advanced draft was ready in 1992. The Statute was necessary to provide detailed specifications to the general regulatory framework envisioned in the 1982 Electricity Law. Its absence was the source of several disputes (as discussed in section IV). In particular, the statute should have

specified the methodology to determine transmission tolls and investment charges. When it was finally enacted in December 1998, however, not only did it lack detailed specification on these issues, but it actually introduced more ambiguities to the regulation by reinterpreting some of the original provisions of the Law. Major generating companies have sued the CNE before the Court of Appeals as a result of which the statute has yet to become operative.

The magnitude of the CNE's technical and political limitations were clearly evident during the 1998-99 drought. As discussed in section IV, this agency was in charge of determining if it was necessary to impose rationing, ensure that energy transactions were held at outage costs, and establish the amount of compensations that producers had to pay to consumers for unserved energy. In retrospect, the CNE failed in each of these areas. First, the authorities were vulnerable to lobbying and political interference and hesitated at the moment of imposing rationing. Second, the CNE remained hesitant with regards to applying outage costs to value energy transactions for over six months during the crisis, thus encouraging opportunistic behavior by firms and deepening the crisis. Third, to date the CNE has been unable to determine the magnitude of compensation, let alone force firms to pay consumers for unserved energy. Fourth, the CNE was technically incapable of providing a solution to the crisis and, consequently, had to yield to political pressures and support the poorly designed law passed by Congress in June 1999 (allowing for generalized rationing and eliminating exemptions to compensations).

The CNE, however, played an important role in promoting competition between energy markets when designing the natural gas market, as discussed in Case 6 above.

## VI. Applying the Regulatory Experience in the Electricity Sector to Highway Franchising

### HIGHWAY FRANCHISING IN CHILE

Highway franchising in Chile is a recent phenomenon. Contrary to the case of the electricity sector, highway franchising benefit from the rich regulatory experience the Chilean authorities have accumulated since the privatization program of the late 1980s. Highway franchising has relied on variations of the “build, operate, and transfer” (BOT) scheme, in which the State transfers the legal right to invest and operate highways, but retains ownership of the public works. This right lasts only a limited number of years, a period usually determined a priori by the government on the basis of the physical duration of the investment.<sup>10</sup> Upon expiration, the government regains control of the operation and can, in principle, award it again to the private sector.

The allocation of the concession to the private sector is done through a transparent public auction that proceeds in two stages. In the first stage, firms interested in participating must qualify to bid on the basis of technical requirements and financial solvency. In the second stage, the short list of prequalified bidders present their offers in a single-round, first-price, sealed-bid type of auction.

A specific contract is designed for each concession based upon the project’s technical requirements and applicable legislation and regulations. Regulation and auctioning of highway franchises is performed

by the same entity, the Ministry of Public Works (MOP). Regulation comprises inspection of the construction and operation of concessions (including quality standards, safety provisions, compliance of the concessionaire with toll prices and user fees as stipulated in the contract, technical specifications for different aspects of the highway, etc), penalties for wrongdoing during construction and operation of the highways (to the point of stopping the work) and allowing minor changes in contract stipulations regarding changes in schedules, new investments and extensions of the original contract.

Since the magnitude of investments in highways was deemed by the authorities to be too high for the capacities of the local financial sector, market design assigned an important role to foreign investment. However, in addition to the technical complexities of forecasting demand, costs and exchange rate movements, highway franchising coincided with the transition to democracy adding political uncertainty to the problem. To address these problems and the fear of having few bidders in initial auctions, the Chilean concessions law provides the government the ability to offer “guarantees” to concessionaires. For instance, among other things, the government insured the concessionaire against low demand by guaranteeing a transfer of resources if flows fall below 75 percent of forecast demand. In addition, the government guarantees the expropriation of land to build the concession.

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<sup>10</sup> Recently, the government proposed a new breed of franchise in which the total earnings of the concessionaire is fixed, but the length of the contract varies with demand. The private sector has been reluctant to accept this new mechanism on the basis of excessive risk.



**Table 4**  
**Highway Concessions Program in Chile**

Project	Total Investment (US\$ million)	Auction Date	Status	Start of Operations	Length of Concession (years)	Payments to Government	Subsidies and State Guarantees
El Melon Tunnel	42	1993	In Operation	3/1996	23	yes	minimum flows
Camino de la Madera	29	1994	In Operation	5/1997	25	yes	subsidies and min. flows
Access to Concepcion	210	1994	In Operation	4/1998	28	no	minimum flows
Santiago-San Antonio	146	1995	In Operation	1/1997	23	yes	minimum flows
Acc. to Santiago Airport	10	1995	In Operation	2/1998	12	no	minimum flows
Puchuncavi-Nogales	12	1995	In Operation	11/1997	22	no	minimum flows
Talca-Chillan	172	1995	In Operation	9/1998	10	yes	minimum flows
Santiago-Los Vilos	255	1996	Construction	1999	23	no	n.a.
Santiago-Los Andes	137	1997	Construction	2000	28	yes	minimum flows
La Serena-Los Vilos	245	1996	Construction	2001	25	no	subsidies and min. flows
Chillan-Collipulli	210	1997	Construction	2001	22	no	subsidies and min. flows
Temuco-Rio Bueno	190	1997	Construction	2002	28	no	subsidies and min. flows
Rio Bueno-Pto. Montt	200	1997	Construction	2000	25	no	subsidies
Collipulli-Temuco	226	1998	Construction	2002	25	no	subsidies and min. flows
Santiago-Talca	650	1998	Construction	2002	25	n.a.	n.a.
Santiago-Valparaíso	383	1998	Construction	2002	variable	no	n.a.
Quintay-Cartagena	100	e1999	To be auctioned	--	--	--	--
Camino de la Fruta	100	e2000	Under study	--	--	--	--
Chacao Channel Bridge	300	e2001	Under study	--	--	--	--
Acc. Santiago North	150	e1999	Under study	--	--	--	--
Valparaíso-Los Andes	200	--	Under study	--	--	--	--
Interport Route	12	e1999	Under study	--	--	--	--

Source: Authors' tabulation, based on Ministry of Public Works information.

Notes: n.a. = not available; e=expected.

Table 4 presents a summary of highways and ongoing investment projects for which concessions have been awarded. As of November 1998, seven

projects were in operation for a total investment of US\$620 million. The government had also auctioned another nine investment projects totaling US\$2.5

billions and six other projects were being studied.<sup>11</sup>

In general, the Ministry of Public Works has internalized several lessons learned from the experience of other areas of the economy regarding concessions of public works to the private sector. In particular, the experience in the electricity share, with which public works shares monopoly characteristics, has had a favorable impact on the institutional and regulatory design.<sup>12</sup> First, authorities have reacted quickly in response to perceived misconducts or regulation weaknesses. Second, the government has been careful to avoid repeating the mistakes it made when privatizing the electricity sector, which led to the creation of a very large and politically powerful holding. Third, the government incorporated mechanisms to reduce contract renegotiations and the cost of litigation.

### **Reaction to Possible Conflicts**

The MOP has made an important effort to gain credibility regarding the cases with which it will engage in renegotiations and disputes. Its tough stance with regards to claims by the concessionaire of El Melón Tunnel (the first concession awarded) that contract conditions are too detrimental sent a strong signal to the private sector. According to the concessionaire, its initial demand estimates proved to be too optimistic, so that the annual transfer it has to make to the government makes the business

unprofitable. The government has refused to change toll prices and transfers beyond the contract stipulations on the grounds that conditions have not changed, that a bidder in a concession must accept the demand risk, and that renegotiation is costly and hampers its reputation. In particular, it is difficult for the government to determine whether the firm was low-balling when it submitted its bid.

### **Limiting Concentration**

The aggressive entry of a large foreign company with a bad record of renegotiating highway concessions led the government to promptly modify regulations in order to limit concessionaires to three of the 12 segments of Chile's main highway (the Pan American Highway). It should be recalled that, given Chile's geography, a single highway is likely to be the only profitable alternative (as discussed in the case of electricity transmission).

Although there may have been an underlying political motivation to limiting the size of highway concessionaires, there are important economic reasons which support it. First, the government correctly gave priority to setting up a competitive market, rather than just attracting private investment. Considering the difficulties in regulating the electricity sector, it may be socially desirable to widen the entrepreneurial basis so as to promote the active participation of the private sector in a competitive environment. The existence of important sunk costs when bidding for highway concessions (estimated to be approximately US\$2 million for each bid) could lead firms to withdraw if one of the bidders already holds a large share of the market and the other firms think the probabilities of winning the auction is thus reduced.

Second, limiting the number of highway segments to be managed by a single firm provides the government more information to engage in regulation based on yardstick competition. In principle, operating costs should not differ markedly among concessionaires and could potentially serve as benchmark for the government if renegotiation or contract adjustments are required. In addition, collusion among a larger

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<sup>11</sup> According to the government, expected highway franchising amounts to nearly 80% of total expected concessions in public infrastructure in this decade. Nevertheless, it only covers around 50% of estimated public roads needs. The remaining roads correspond to projects with low private profitability and, consequently, will be very likely undertaken directly by the government (e.g., low-demand inter-urban roads).

<sup>12</sup> Since the country is narrow, there are important economies of scale in having a single highway serving as the backbone of the highway network. In this regard, highway concessions share the same advantages and drawbacks of the electricity transmission system, described in the previous sections.

number of concessionaires becomes increasingly costly, thus reducing a potential source of conflict.

Third, the government is concerned with the potential for political power of a large concessionaire of highways. Limiting the number of highway segments could reduce this power if firms can effectively be deterred from using third parties to disguise their participation. The Chilean Concessions Law includes several mechanisms to reduce this problem. These provisions arise largely from experience in the electricity sector where concentration by Enersis has become a major political problem for the government.

### **Designing Conflict Resolution Mechanisms**

The government has made an attempt to overcome the limitations of the Judiciary System by designing and implementing entities that can, in principle, deal more efficiently with contract renegotiation. Due to design complexities and uncertainty, contracts in this area are likely to be incomplete and prone to disputes. Taking into account the limitations of the Judiciary System when dealing with disputes in the electricity sector, the government created specific entities to deal with contract disputes between concessionaires and the MOP. For each concession a Conciliation Commission is formed by three members (one for each party to the contract and an agreed upon third member) which must resolve matters within 30 days of receiving a complaint. Complaints can be brought by either party, but the government is more limited than the concessionaire regarding the use of its right. If an agreement is not reached, the private party has two options: either bringing the case before an Arbitration Commission (whose decisions are binding) or to the Court of Appeals.

This is a novel approach to this problem which inhibits incentives to renegotiate stemming from the weaknesses of Courts to adjudicate complicated technical problems. However, to a certain extent, the current structure limits the impact of the Conciliation Commissions. Although conflict resolution mechanisms are an interesting component of the

Chilean regulatory design, they present some shortcomings. First and foremost, the roles of the Conciliation and Arbitration Commissions are distorted. In principle, their functioning should be diametrically different. The former should concentrate on easing disputes between the concessionaire and the government, but maintaining a neutral position with regards to both parties. The latter should focus only on providing solutions to the conflict in the form of legal judgements.

Consequently, the staff of both commissions should not overlap. A conciliation commission that, at the request of one party, transforms itself into an arbitration commission induces perverse behavior on both parties. In fact, the abilities required of members in each commission are markedly different. In the Conciliation Commission both parties ask mainly for neutrality, in exchange for which they are willing to reveal information to a third party regarding the extent to which they would yield to reach an agreement. In contrast, an arbitration commission is efficient if it gains a reputation for its fairness. Since, under arbitration one party will be penalized any information divulged is of strategic value. Hence, parties will not release information to the Conciliation Commission if they believe that it can be used against them in the event arbitration is called for. In addition, a practical limitation of the scheme is that it is difficult to find candidates well suited for both commissions.

Finally, there are a number of minor issues which show that conciliation and arbitration in this market could benefit from being redesigned. For example, conciliation and/or arbitration could be called for independently of the amount of resources involved in the dispute. Likewise, there are no criteria that justify calling third parties. A simple solution to this problem is to separate both commissions and redesign the rules by which they operate. In particular, the presence of representatives of the parties to the disputes in the Arbitration Commission does not play any useful role. Indeed, they would probably hamper the efficiency of the independent member to assess the situation and propose solutions or penalties.

## VII. Conclusions

Chile's experience with private sector participation in the electricity sector provides ample evidence of the importance of adequately designing the structure of the post-privatization market, implementing the appropriate regulatory framework, and developing the institutional capabilities to enforce the regulation. In general terms, the Chilean case is characterized by a low level of conflict between the authorities and the regulated firms. However, Chile's experience shows that incomplete regulation and institutional weakness can become crucial limitations.

The lack of conflict in this case results from fairly well-conceived design of the post-privatization market, which includes a clear separation of the different stages of production, sound regulatory principles in each stage, properly designed conflict resolution mechanisms and no political interference. Notwithstanding some limitations, regulations ensure monitoring and control, guarantee access to the information necessary to regulate, and provide for appropriate interaction among private agents and between them and the regulators.

Disputes are concentrated in those areas in which regulation is incomplete, mostly where information asymmetry is high and regulatory institutions are less able to monitor private sector activities. The cases reviewed in this report suggest that conflict has stemmed from three main sources: (a) the existence of vertical integration, (b) the lack of definition of certain areas in regulation (e.g., shortcomings in the procedures to set transmission tolls and investment cost-sharing); and (c) the institutional weaknesses of regulatory bodies. One of the main problems resulting from Chile's privatization of the electricity sector is that it allowed the creation of a large vertically-integrated conglomerate that could use its

market power in the regulated segment of the market to reduce competition and raise its profits in the competitive segment. This dominant position would not be of capital importance if information problems were irrelevant and the authorities could properly regulate the market. Moreover, in such case vertical integration could be consistent with efficiency gains derived from scale economies and management. However, the analysis of the Chilean experience suggests that these efficiency gains are eclipsed when information asymmetry is important and the regulator cannot enforce regulation adequately.

The main source of conflict has been the perception that Enersis could engage in noncompetitive behavior in at least three areas. First, Enersis' distributor (Chilectra) could benefit its affiliated generators (Endesa, Pehuenche and others) by issuing preferential contracts, in particular to reduce risk at a higher cost for other producers. Second, since two of the four directors of the dispatch center (CDEC) come from Endesa, and its affiliate Transelec is a virtual monopoly in high-voltage transmission, the integrated firm could manipulate dispatch to its benefit. Third, since Transelec is a subsidiary of Endesa, the latter can obtain inside information from it and receive special treatment regarding transmission tolls and other contract specifications. It is apparent that in all cases, the advantage of the integrated firm is based on the information asymmetry derived from the fact that the regulator has limited access to private contracts. To properly regulate the integrated firm, the authorities would require more information than is currently available. In this sense, requiring transmission contracts to be submitted to the CNE (as is mandatory in several other countries) could be a useful reform to the regulatory mechanism.

The Chilean case also shows that once property rights have been allocated to firms in the privatization process, they become very difficult to modify. In addition, when regulation is not optimal, property rights can sometimes be used as legal entry barriers, as is the case of water rights. All these problems (which could have been anticipated at the moment of designing the privatization process), have caused much of the litigation that took place between 1990 and 1998.

A second group of disputes and conflicts are those arising from ambiguities in the regulatory framework. An ambiguous regulatory framework makes contracts incomplete and promotes opportunistic behavior in the market, which is exacerbated when institutions are weak or unable to enforce contracts. Chile's experience illustrates the perils of privatizing an industry characterized by natural monopoly segments and substantial informational asymmetries without implementing a full regulatory body. The Chilean electricity sector was divested in the absence of the operational statute envisioned by the privatization law to determine key aspects of regulation, including transmission tolls and prorating of investment. Although the operational statute should have been enacted in the early 1990s, it has not been implemented to date. The lack of definition and ambiguities of important aspects of regulation have led to a large number of renegotiations and disputes (some of which were legitimate business conflicts), but it has also allowed firms to behave opportunistically and extract rents from consumers and other firms.

The third source of conflicts are those arising from the limitations of regulatory agencies in terms of human capital, legal frameworks and financial resources. An endemic problem is the lack of a trained staff to deal with their private sector counterparts. It affects, for instance, the relative power of the government at the moment of renegotiating regulated tariffs. It also had a damaging effect in weakening the prosecutor's position in the vertical integration cases, where the latter lacked a consistent set of arguments to convince judges that presumptions in cases of

regulation can be as important as tangible evidence. In addition, lack of resources and low wages have also created a fragile human capital pool for Chile's public sector. Individuals obtain experience by working in the regulatory agency and then move on to better paid private sector employment in the regulated industry, leaving less qualified and dynamic personnel in the public sector.

Disputes in the electricity sector are often of an extremely technical nature, requiring not only an independent judiciary system, but also well-trained personnel to resolve disputes at reasonable costs. This is not always true in the Chilean system. In addition, Chile's legal apparatus is quite inefficient in terms of the speed at which cases are processed, and has a high tendency to rely on "tangible" proof of illegal activity. In cases of noncompetitive behavior, physical evidence is very difficult to obtain.

When the Judiciary System is unable to provide quick and fair treatment to disputes, it is to the advantage of both parties to use the services of an independent arbitrator. The main drawback of arbitration is the lack of enforceable power of their decisions or penalties. Arbitrators have played an important role in Chile, but their inability to issue mandatory opinions limit their impact and have led the government to propose the creation of arbitration commissions with punitive power.

Several of the lessons stemming from the regulation of the electricity sector have been learned and implemented in the highway franchising program. In particular, the institutional and regulatory design has been positively influenced by the experience gathered in the electricity sector which share similar natural monopoly characteristics.

First, authorities have reacted quickly in response to perceived wrongdoing or regulatory weaknesses. The government has refused to change franchise conditions on the grounds that a bidder in a concession must accept the risks of the concession and that an eventual renegotiation is costly and hampers its reputation. Second, the government has

been careful to avoid the creation of a very large and politically powerful holding. By imposing restrictions on the number of franchises a firm can hold, the government signaled its commitment to setting up a competitive industry and to limit the potential for political power of a large concessionaire. Third, the government has made an attempt to overcome the limitations of the Judiciary by designing and implementing entities that can, in

principle, deal more efficiently with contract renegotiation. Due to design complexities and uncertainty, contracts in this area are likely to be incomplete and prone to disputes. Taking into account the limitations of the Judiciary System when dealing with disputes in the electricity sector, the government created specific entities to deal with contract disputes between highway concessionaires and the authorities.

## References

- Aghion, P., M. Dewatripont, and P. Rey. 1994. Renegotiation Design with Unverifiable Information. *Econometrica* 62: 257 - 282.
- Akerloff, 1970. The Market for Lemons: Quality Uncertainty and the Market Mechanism. *Quarterly Journal of Economics*, 89: 488-500.
- Allen, F. and D. Gale. 1992. Measurement Distortion and Missing Contingencies in Optimal Contracts. *Economic Theory* 2: 1 - 26
- Anderlini, L. and L. Felli. 1994. Incomplete Written Contracts: Underscribable States of Nature. *Quarterly Journal of Economics* 109: 1085 - 1124.
- Baumol, W., J. Panzar, and R. Willig. 1982. *Contestable Markets and the Theory of Industry Structure*. City: Harcourt Brace Jovanovich.
- Bernheim, B. D. and M. Whinston. 1996. *Incomplete Contracts and Strategic Ambiguity*. Discussion Papers Series, Harvard Institute of Economic Research, Harvard University, Cambridge, Mass.
- Bitran E. and E. Saavedra. 1993. Algunas reflexiones en torno al rol regulador y empresarial del estado. In *Después de las privatizaciones: Hacia un estado regulador*, ed. O. Munoz. City: CIEPLAN.
- Blanlot, V. 1993. La regulación del sector eléctrico: La experiencia chilena. In ed. O. Munoz, op. cit.
- Bolton, P. 1990. Renegotiation and the Dynamics of Contract Design. *European Economic Review* 34: 303 - 310.
- Chadwick, E. 1959. Result of Different Principles of Legislation in Europe: of Competition for the Field as Compared with Competition within the Field of Service. *Journal of the Royal Statistical Society*, Series A22.
- Demsetz, H. 1968. Why Regulate Utilities? *Journal of Law and Economics* 11: 55 - 66.
- Díaz, C.A., A. Galetovic and R. Soto. 1999. Anatomy of an Electricity Crisis I and II, mimeo, Washington, D.C.: ILADES/Georgetown University.
- Engel, E., R. Fischer, and A. Galetovic. 1997. Highway Franchising: Pitfalls and Opportunities. *American Economic Review* papers and proceedings 87: 68 - 72.
- Grossman, S. and O. Hart. 1980. Takeover Bids, the Free-Rider Problem, and the Theory of the Corporation. *Bell Journal of Economics* 11: 42 - 64.

- Holmstrom, B. and P. Milgrom. 1991. Multi-Task Principal Agent Problems: Incentive Contracts, Asset Ownership, and Job Design. *Journal of Law, Economics and Organization* 7: 24 - 52.
- Maskin, E. and J. Tirole. 1997. Unforeseen Contingencies, Property Rights, and Incomplete Contracts. Mimeo, Harvard University, Cambridge, Mass.
- Morande, F. and J.M. Sánchez. 1992. Incentivos y formas de discriminación en oferta de electricidad. Mimeo. Graduate Program in Economics ILADES / Georgetown University.
- Paredes, R. 1995. Jurisprudencia de las Comisiones Antimonopolios en Chile. *Revista de Estudios Públicos*, 58: 227-317.
- Paredes, R., J. M. Sanchez, and A. Fernandez. 1995. Privatización y regulación en Latinoamérica. *Revista de Análisis Económico*, Vol. 10, 2.
- Saavedra, E. 1998a. Renegotiating Incomplete Contracts: Over and Under Investment of Concessioned Public Infrastructure. *Revista de Análisis Económico*, Vol. 13, No 1.
- Saavedra, E. 1998b. The Pros and Cons of Privatizing Integrated Natural Monopolies. Mimeo, ILADES / Georgetown University, Washington, D.C.
- Saez, R. 1993. Las privatizaciones de empresas en Chile. In *Después de las privatizaciones: Hacia un estado regulador*, ed. O. Munoz, op. cit.
- Schwartz, M. 1989. The Nature and Scope of Contestability Theory. *Oxford Economic Papers* 38 (Supplement) 37 - 57.
- Shapiro, C. and R. Willig. 1990. Economic Rationales for the Scope of Privatization. In *The Political Economy of Public Sector Reform and Privatization*, eds. E.N. Suleiman and J. Waterbury. City: Westview Press.
- Soto, R. 1998. Institutional Reforms in the Electricity Sector, mimeo, ILADES/Georgetown University. Washington, D.C.
- Spier, K. 1992. Incomplete Contracts and Signalling. *RAND Journal of Economics* 23: 432-443.
- Zupan, M. 1989. The Efficiency of Franchise Bidding Schemes in the Case of Cable Television: Some Systematic Evidence. *Journal of Law and Economics*, Vol. 32.