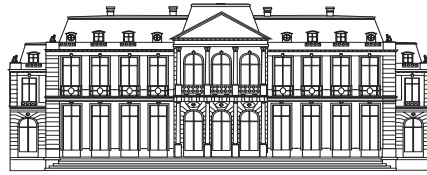


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REGULATION, COMPETITION AND PRIVATISATION

**EVIDENCE FROM UTILITY AND INFRASTRUCTURE
PRIVATISATION IN CHILE**

Pablo Serra

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Summary

In Chile most telecom and electricity companies were privatised between 1985 and 1989. Prior to privatisation, new legislation opened all services to competition and established tariff regulation based on marginal-cost pricing in simulated efficient enterprises for services that were provided under insufficiently competitive conditions. Privatised companies have substantially improved their efficiency, but problems inherent to incentive regulation have prevented efficiency gains from being fully passed on to consumers. This situation has led to high rates of return in firms providing regulated services, with significant price reductions occurring only where competition has emerged. The Chilean experience shows how hard it is to achieve competition when a privatised public monopoly retains a large share of the market, especially when competition regulations are few and lax.

Privatisation came to a halt at the beginning of the 90s. The first democratically elected government after the military regime, which took office in 1990, did not have the privatisation of utilities as one of its priorities, and it was left to the subsequent administration to restart the privatisation process. Between 1994 and 1998 the majority of state-owned transportation companies were transferred to the private sector and electricity privatisation was completed; water companies are now also starting to be privatised. Since 1994, several construction projects in airports, highways and tunnels have been put out to tender, and the franchising of public ports is expected to start soon. There is not yet sufficient evidence to make an assessment of this process; however, the initial projects have suffered from the “so-called” winner’s curse.

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II. Introduction

The military government (1973-1990) carried out three rounds of privatisation. Between 1974 and 1979 the government privatised all enterprises that had been nationalised or simply confiscated by the socialist government (1970-73), except for the utilities. However, many of the privatised firms fell back into government hands during the severe economic crisis of 1982, as either their owners were unable to continue servicing the debt they had acquired when buying these enterprises, or the government decided they were too important to go bankrupt. In the second wave of privatisation (1984-1985) these firms were re-privatised. The third round, which took place between 1985 and 1989, focused on the so-called traditional public enterprises, i.e. companies set up by the State itself along with utilities that had been nationalised by the previous government (Bitran and Saéz, 1994). According to government figures, total proceeds from the sale of shares in such enterprises between 1985 and 1989 amounted to US\$ 2,571 million, at December 1995 prices (see Table 1).

The first government elected after the military regime (1990-1994) virtually stopped the privatisation process. In 1990 it sold minority shareholdings worth US\$ 42.3 million in utilities that were already under private control¹, and between 1991 and 1993 it sold 48% of the *Zona Franca de Iquique* tax-free zone for US\$ 32.2 million, as well as its remaining 27% holding in the national airline. The second elected government, which took office in 1994, gave new impulse to the privatisation process. Between 1994 and 1998 transfers to the private sector included a shipping company, two railways in the northern part of the country, the freight railroad in the central zone and a mining company. In addition, privatisation of the electric sector was nearly completed. Total revenue from privatisation amounted to US\$ 1,073 million up to December 1995 (Table 2). The government is currently preparing privatisation of the water sector, which will start by the end of 1998. Since the authorities were not totally satisfied with the way the regulation of privatised utilities was working, they strengthened the regulatory framework for the sector before privatising, with legislation setting a lower limit of 35% on the State's participation in water companies once privatised. This limit will be phased out, however, as the government will not participate in capital expansions.

The Government has been looking at ways of expanding the role of the private sector in the economy. In 1992 a new concession law was passed allowing the private sector to finance, construct and operate highway and airport projects. Since 1994, several construction projects in airports, inter-urban highways and tunnels have been auctioned through build-operate-and-transfer concessions amounting to over US\$ 3.3 billion. In 1997, a law was passed permitting the franchising of public ports, and the bidding process is expected to start during the first half of 1999. At the same time, four private ports have been developed in the central-southern zone of the country for general freight (Ventanas, Lirquén, Coronel and Corral), in competition with state-owned ports and half a dozen privately owned specialised ports.

The main force behind privatisation during the military regime was its preference for a small State. There was widespread dissatisfaction with the performance of the economy before 1970, and the economic advisors to the military government attributed the low growth rates of previous decades to the State's involvement in all areas of the economy; most economists were critical of the entrepreneurial role of the State. The inefficient operation of state-owned enterprises had resulted in significant losses. Political meddling usually led to significant labour rigidities: it was almost impossible to dismiss low-performance workers, especially if they were political appointees. It was also difficult for state-owned utilities (SOUs) to suspend services to customers who did not pay their bills, or penalise the theft of services.

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Utility privatisation was conducted through three mechanisms. The first was the auctioning of whole companies or controlling shares packages to the highest bidder. The second mechanism was the sale of non-controlling shareholdings on the stock market, and the third involved the direct sale of stock to the workers of privatised companies, public employees, and small investors – so-called labour and popular capitalism. Workers and public employees were able to finance the purchase of shares with the advance payment of severance benefits and loans from public institutions at subsidised interest rates². Private pension funds, which started operating in 1981, actively participated in the privatisation process through the acquisition of share packages on the stock market. Privatisation was also carried out through a mechanism that involved giving shares in return for the financial deposits users had to make to connect to public utilities (Bitran and Sáez, 1994).

Why were public utilities privatised last, and why are water and sanitation companies still state-owned? There are three reasons for this. Firstly, the military government saw these industries as strategic – particularly telecommunications. Secondly, it was afraid that their privatisation would generate opposition from workers and the public in general³. Thirdly, the privatisation of utilities, which had traditionally been considered natural monopolies, raised certain economic and social issues, for which new regulatory legislation had to be introduced and regulatory institutional capacity developed prior to privatisation. The new legislation establishes total separation between the regulatory function and service operations. Previously, regulation, operations and to some extent policy-making were all in the hands of the SOUs. Accordingly, for each utility a regulatory body was created, which in general terms is responsible for granting licenses, calculating charges for services provided under insufficiently competitive conditions and monitoring service quality. More recently, the regulatory bodies and the anti-trust institutions have been working on the design and enforcement of competition regulations. The antitrust system had been modified in 1973, with the introduction of new legislation. Decree Law 211 (1973) classifies as an infraction any act tending to impede free competition. The Decree established three agencies in charge of defending and promoting free competition: the two Antitrust Commissions known as the Preventive Commission (*Comisión Preventiva*) and the Resolutive Commission (*Comisión Resolutiva*); and the National Economic Prosecutor's Office (*Fiscalía Nacional Económica*). The President of the Republic appoints the National Economic Prosecutor, or Fiscal. Each of the two antitrust commissions has five members, who hold unpaid office for a two-year term.

What have been the effects of privatisation? In the first place, privatised utilities have significantly expanded their services. Telephone density increased from 4.7 in 1987, the year before privatisation of the main local phone company, to 20 in 1997, with the waiting list for local phones being cut from 232,000 to 97,000 over the same period⁴. Outgoing international calls, which in 1987 amounted to approximately 21 million minutes, had grown to 300 million minutes by 1997, while the mobile telephone system, which began operations in 1988, could claim about 650,000 subscribers by mid-1998. Domestic electrical power generation increased from 7,420GWh in 1987 to 13,325 GWh by 1997.

This rapid expansion of privatised utilities can be explained by the relaxation of financial constraints faced by public enterprises; fast economic growth —a doubling of GDP between 1988 and 1997— to which privatisation itself has contributed; and a comparatively stable and impartial regime of contract law for privatised utilities (Levy and Spiller, 1994). Regulatory systems that grant too much discretion to regulators may not generate the high levels of investment and welfare expected from privatisation, as private utilities would invest less than the optimal amount in order to reduce their exposure to administrative expropriation. On the basis of the 1980 Constitution, decisions and rulemaking by

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regulators are subject to judicial review. Such arrangements are credible because the country has a long tradition of judicial independence in these matters⁵.

Another positive effect of privatisation has been a substantial increase in the productivity of privatised utilities. The largest electricity distribution company managed to cut energy losses from 19.8% to 8.3% and raised the number of clients per worker from 376 to 703 between 1987 and 1997, while in the largest generating company, GWh generated per worker went up from 2.2 in 1989 to 7.9 in 1997. The privatisation of telecom firms has also led to substantial improvements in their internal efficiency, as exemplified by the number of phone lines per worker in the largest telecom company which rose from 74 to 347 between 1987 and 1997. Thus, privatisation has led to a tremendous labour productivity increase, explained partly by the outsourcing of certain activities.

Private-sector managerial capacity and technological advances, especially in telecommunications, explain labour productivity gains. The isolation of public services from political pressures has also helped to improve performance indicators. Last, but not least important, is the setting up of a regulatory system that encourages efficiency (Levy and Spiller, 1994). The Chilean price-setting system attempts to correct the main problems of the rate-of-return approach, by explicitly separating prices from firms' actual costs. The legislation defines rate-setting schemes based on marginal-cost pricing in simulated efficient enterprises. The new legislation attempts to provide incentives to efficiency, by separating rates from firms' actual costs⁶.

After two rate reviews, the prices of regulated services do not reflect the huge productivity gains that have been achieved since privatisation, charges have fallen dramatically only in sectors where competition has emerged. Regulated local phone rates have risen by about 16% since privatisation, whereas prices on long-distance phone calls have fallen by over 50% since deregulation in 1994⁷. Moreover, the arrival of new mobile phone operators with the introduction of the PCS system in March 1998 cut charges by about a half. In the central zone the price of electrical energy, which is supplied by various generators, has fallen by 37.4% from US¢ 4.65 per kWh in April 1988 to US¢ 2.91 per kWh in April 1997 in constant April 1997 dollars. In the same period the regulated distribution price has come down by only 11.4%, from US¢ 14.73 per kWh US¢ 12.16 per kWh, despite the fact that the generation price accounts for about 50% of total cost.

Table 3: Rate Of Return On Equity In The Largest Firm Providing Each Service: 1987 And 1997

Industry \ Year	1987	1997
Electricity		
Distribution (regulated)	10.4%	35.0%
Generation (competitive)	5.2%	9.9%
Telephony		
Local fixed (regulated)	14.5	19.1%
Long distance (competitive)	35.8%	4.9%

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Source: Compiled by the author from companies' annual reports.

This situation has led to significant increases in the profits of firms in electricity distribution and local telephone services. Table 3 shows the rates of return on equity (ROR) of the largest firm providing each service in 1987 and 1997. The ROR of the biggest electricity distribution company goes up from 10.4% to 35% in this period, and that of local fixed telephony increases from 14.5% to 19.1%. Moreover, firms providing regulated services report much higher RORs than firms providing unregulated services in the same sector. This situation is striking when one considers that there are fewer risks in the regulated segments because they are monopolies. In 1997 the largest generating company achieved an ROR of 9.9%, while for the largest long-distance carrier the figure was 4.9%.

These results are no different from those reported for other countries resorting to incentive-based regulation, although most countries have opted for price capping rather than of efficient-firm pricing⁸. Kridel, Sappington and Weisman (1996) review recent empirical studies of the performance of incentive regulation in the U.S. telecommunications industry. They conclude that "studies provide evidence that productivity, infrastructure investment, profit levels, telephone penetration, and new service offerings have increased under incentive regulation. Service rates have generally remained stable or decreased slightly, and service quality does not appear to have been affected adversely." Helm (1994), referring to the UK, states that "returns to shareholders have greatly exceeded the cost of capital, and exceeded those in other countries' utility sectors. Shareholders have done much better than under rate-of-return regulation."

Rate setting based on simulated efficient enterprises requires considerable judgement, and the regulatory process is increasingly becoming a bargaining process (Bitran and Serra, 1994). The Chilean regulatory agencies do not seem to be well prepared to deal with this: they have technical and other disadvantages with respect to the regulated firms. Moreover, privatised utilities have acquired significant political and social leverage and exert enormous influence in defining the efficient firm. Recent rate-setting episodes have also made explicit the problem of information asymmetry: regulators have had serious difficulties in gathering precise cost data from utilities. Even efficient-firm regulation requires actual data from firms, as costs depend, among other things, on customer density and traffic per line. It is therefore difficult for regulators to build a credible efficient-firm, when they do not have full access to companies' data. However, the concept of the model firm has had the virtue of creating a framework around which to conduct negotiations.

The difficulties surrounding regulation ought to generate special concern for creating conditions that lead to competition, especially in Chile where competition is seen as the principal mechanism for disciplining privatised utilities. In fact, there are many legal provisions, which demonstrate the reliance of lawmakers on market forces. For instance, every five years the Resolutive Commission has to review which telecom prices need to be regulated. The regulated price of electrical energy for small customers has to be kept inside a band, centred on the average price of contracts freely negotiated with large customers. The legislation establishes objective and non-discriminatory guidelines for granting licenses and concessions, and licenses are non-exclusive even in price-regulated sectors (water distribution being the exception). The number of operators can be limited only for technical reasons (e.g. mobile telephony), in which case licenses have to be publicly auctioned.

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However, the Chilean experience shows how hard it is to achieve competition when a privatised public monopoly retains a large market share. Unfortunately, the privatisation of Chilean infrastructure that took place in the 1980s perpetuated market structures that have little economic justification. Although the electricity sector was restructured prior to privatisation, the dominant generating company in the central interconnected grid system kept ownership of the transmission grid and, most importantly, the majority of water rights for new hydroelectric projects. The telecom sector was not restructured before privatisation, and the local phone company was privatised owning about 95% of all phone lines, and an ambiguous regulatory framework gave the incumbent long-distance telephone company a legal monopoly for five years. This disregard for market-structure issues is probably explained by ^{a lack of experience in privatising public utilities in a country that pioneered privatisation in Latin America}, as well as the need to attract foreign investors, the small size of the domestic market, and excess confidence in market development.

Excess confidence in market development also led to few and lax competition regulations. As pointed out by Spiller and Cardilli (1998), probably the most important influence on competition in telecommunications is the enforcement of interconnection rights. Without them, the dominant firm can use the advantage resulting from network externalities to eliminate competitors. The 1982 Telecommunications Act required public service providers to interconnect their operations, but left it to them to decide the terms under which interconnection would take place. Small local phone companies encountered many difficulties in negotiating the interconnection charges with the incumbent monopoly which delayed reaching agreement for as long as possible. Furthermore, regulators frequently lacked the resources to enforce the technical conditions of connections. The incumbent telecom monopoly has also exerted market power through its commercial policy.

Creating efficient, competitive power markets in an electricity industry composed of a transmission system, interconnecting generators, distributors and large customers requires the existence of an agency with authority to define, impose and enforce rules for the operation of all companies so interconnected (Stalon, 1997). In Chile, the legislation defines a coordination committee (NEC) drawn from all major generating companies. However, constant disputes inside the committee paralyse the coordination process when it is most needed, such as during the severe drought that is currently affecting the country. Between 1994 and 1997 the Economics Ministry had to resolve 20 disputes arising within the NEC. Another aspect that hinders competition is the fact that the transmission firm is owned by the dominant generation company. The legislation establishes that the generation companies and the transmission firm have to negotiate transmission fees, with lack of agreement leading to a mandatory arbitration process. However, this tends to be lengthy, onerous, and have uncertain results. Other generating companies have complained that the transmission company favours its parent firm.

However, since 1994, the number and strength of competition regulations has increased due to the difficulties encountered by new entrants. Since 1994 all charges and tariffs for services provided between public-service telecom companies, through interconnections, have been regulated. A new by-law in the electric sector that will come in force in December 1998, gives both the government and the Economic Load Dispatch Centre (ELDC) a greater role in determining the transmission and distribution charges paid by generators in the electricity sector, and also sets guidelines for computing these rates. In order to

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reduce conflicts between generators, the by-law establishes that the coordinating committee should co-opt independent experts to give an opinion on the differences that frequently arise among its members.

Helm (1994) writes about the U.K., “a process of managed competition has emerged, necessitating significant regulatory intervention. In most utilities this has extended to the deliberate reduction in the market share of incumbents, as well as the determination by regulators of transmission prices, grid and network codes, and divestment undertakings.” The Chilean situation is not different. In fact, over the last five years Chile’s antitrust institutions, especially the National Economic Prosecutor, have also become more active in promoting competition and curbing major market power abuses by incumbent monopolies. However, lack of resources and disagreement about the scope of antitrust legislation has limited their role. The Chilean antitrust law (Decree-Law 211, 1973) is very vague. It only states that “anyone executing any act or convention tending to impede the free-competition within the country shall be punished with petty imprisonment in any of its degrees.”

Some constitutional lawyers claim that the law only authorises the antitrust institutions to penalise conducts, but not to establish market regulations such as forbidding mergers. Moreover, they argue that any vertical or horizontal restriction impinges on property rights. Studying the Chilean jurisprudence does not provide a definitive answer either. For instance, in this case the Resolutive Commission wrote that “Antitrust legislation does not sanction or prohibit the existence of firms which occupy a dominant position in a given market, but only punishes acts and conduct that constitute an abuse of such dominant position.” In other cases, it has taken the opposite stand. For instance, Telefónica de España had a relevant participation in the two largest telecom companies. The Resolutive Commission upheld a Preventive Commission’s decision asking Telefónica to sell its participation in one of the two companies. Great Britain has had similar experiences.

The rest of this paper is organised as follows. Section III analyses the electricity sector, and the next section deals with telecommunications. Section V relates to the transport sector. Finally, Section VI draws some lessons from the Chilean experience of infrastructure privatisation and regulation.

III. The Electrical Power Industry

III.1 The Privatisation Process

The two largest State-owned electricity companies (Endesa and Chilectra) were restructured prior to privatisation, with distribution being separated from generation. ENDESA, the largest company, was divided into 14 smaller units, eight of which are located in the central grid – five generators Endesa, Colbún, Pehuenche, Pilmaiquen (35MW) and Pullinque (49MW); and three distribution companies: Emelat (50,000 clients), Emec (143,000) and Emel (122,000). Four other companies are in the northern grid – a generator, Edelnor and three distribution companies (Emelari, Eliqsa and Elecda, totalling 180,000 clients)– and there are two isolated small companies combining generation and distribution in the southern part of the country (Edelaysen and Edelmag). Endesa was privatised jointly with the transmission system of the Central Interconnected System (SIC), the largest in the country. Chilectra was split into three companies – a generator company, Chilgener and two distribution companies, Chilmetro, which later become Chilectra, with 1,064,000 clients and Chilquinta with 322,000 clients.⁹

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Most of the privatisation process took place between 1986 and 1990¹⁰ – only four electricity companies were State-owned by 1990, three of which have been privatised since then (Colbún, Edelnor and Electroandina). Edelayesen is to be sold in November 1998 by public auction. Some of the smaller companies were sold through public auctions: Pilmaiquen, Emec and Emel in 1986, and Pullinque and Emelat in 1987. In the other cases, privatisation was done mainly through two mechanisms: the periodic auction of packages of shares on the stock market and the direct sale of shares to the company employees (labour capitalism), public employees and small investors (popular capitalism).

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Table 4: Privatisation Of Electricity Companies 1984-1989

(US\$ Millions 31/12/95)

COMPANY/YEAR	1985	1986	1987	1988	1989	TOTAL
Distribution						
Chilmetro	10	36	83.3	0	0	129.3
Chilquinta	2.4	11.1	18.7	0	0	32.2
Emec	0	6	7.5	0	0	13.5
Emel	0	7.9	0	0	0	7.9
Emelat	0	0	9.7	0.9	0	10.6
Emelari	0	0	0	0	3.1	3.1
Eliqsa	0	0	0	0	4.8	4.8
Eleccda	0	0	0	0	6.1	6.1
Generation						
Endesa	0	0	180.0	585.4	63.8	829.2
Pullinque	0	0	62	0	0	62
Chilgener	4	22.2	31.8	33.8	0	91.8
Pilmaiquen	0	41.1	0	0	0	41.1
Pehuenche	0	0	0	7.6	0	7.6
Integrated						
Edelmag	0	0	0	4.8	0.1	4.9
Total	16.4	124.3	393	632.5	77.9	1244.1

Source: CORFO Annual Reports.

The privatisation of Chilectra, Chilquinta and Chilgener began in the second half of 1985. By August 1987, Chilectra and Chilquinta were fully privatised, and the privatisation of Chilgener, was completed in January 1988. In July 1987 the privatisation of Endesa was initiated. Private ownership of Endesa rose gradually from 30% in December 1986 to 72% three years later. Private investors took control of Edelmag

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during 1988 and of Elecda, Emelari and Eliqsa in 1989, although privatisation was only completed in 1990. Edelnor was privatised between 1991 and 1994, and now Southern Electric owns a 67% share of the stock. In 1995 a consortium formed by Tractabel (Belgium), Iberdrola (Spain) and Enagas (Chile) made successful bid for the control of Tocopilla, later known as Electroandina, a thermal power plant located in the northern grid and owned by Codelco, the State-owned copper mining company. In 1996 a consortium formed by Tractabel and the Chilean Matte Group paid US\$ 341 million for a 37.5% stake in Colbún¹¹. The consortium has an option to buy a further 12.5% over the next three years. Prior to the sale, just over 15% of Colbún shares were being traded on the stock market. In December 1997 the government auctioned shares on the stock market corresponding to 4.65% of the equity of Colbún, collecting US\$ 27.8 million.

III.2 Public policy

III.2.1 The regulatory framework

In 1978 the National Energy Commission (NEC) was established. This is managed by a board of directors composed of six or seven Ministers, and has an executive secretariat, technical staff and funds, albeit limited, to recruit advisors. The NEC proposes policies to be implemented through laws and by-laws, computes the regulated rates, and develops medium- and long-term guidelines for the sector. The Minister of Economics signs the decree setting the regulated charges and grants licenses. The final government player in this sector is the Superintendence of Electricity and Fuels, which was set up in 1985 as an administrative branch of the Economics Ministry. It supervises compliance with the law and regulations, monitors service quality, grants temporary licenses, and deals with users' complaints.

Electricity sector legislation dates from 1982. It establishes that firms can operate without a license, although licenses provide rights of way and the right to install lines on public property. Licenses are granted for an indefinite period, but they can be withdrawn when service quality falls below the legal standard. The legislation distinguishes three separate segments in the electrical sector: power generation, transmission and distribution. Public-service distributors are obliged to provide the service within their license zones (although zones are non-exclusive), and licensed generators and transmission firms are required to interconnect their installations when the authority so requests.

All licensed generating and transmission companies operating an electricity system are obliged to coordinate their activities through an Economic Load Dispatch Centre (ELDC)¹². Decisions are taken unanimously inside the ELDC, and the Minister of Economics arbitrates disagreements, subject to a prior report from the NEC. The specific objectives of the ELDC are to achieve the minimum operating cost for the system as a whole, guarantee the right of generators to sell energy at any point in the system and ensure the safety of the service. Its responsibilities include planning the daily operation of the system (actual dispatch is handled by the transmission company), coordinating power-plant maintenance and computing instantaneous marginal costs. All power plants have to make themselves available, unless they are shut down for maintenance, and are programmed on a merit basis according to production costs. Programming daily

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production independently of existing supply contracts gives rise to energy transfers between generators, and these are priced at the marginal energy cost.

The regulatory system for the power industry makes a sharp distinction between large and small customers. Large customers, defined as those with a maximum power demand in excess of 2MW, negotiate their supply conditions directly with generators. Most resort to open bidding for long-term contracts. Such contracts represent about 40% of total consumption. In contrast, the rate for small customers is highly regulated, has two components: the node price –at which distribution companies buy energy from generators– and a value-added charge, which pays for the services provided by the distribution company.

This distribution charge is recalculated every four years for each typical area, in a procedure that consists of determining the operating costs of an efficient firm and setting rates so as to provide a 10% real rate return on investment. The distribution charge is obtained as a weighted average of estimates made by consultants hired by the industry and by the NEC, respectively, where the weight of the NEC estimate is two thirds. These rates are then applied to existing companies so as to ensure that the industry average return on the replacement value of assets (RVA) does not exceed 14% or fall below 6%. If the actual industry average rate of return falls outside this range, rates are adjusted to the nearest bound. This rate of return is computed using the operating costs and the RVA informed by the Superintendence. Disagreements on the RVA lead to a process of arbitration by three experts.

The most recent rate-setting process for electricity distribution was interrupted when three distribution companies filed suits in the Law Courts, and this delayed the new rates coming into force from October 1996 until mid-1997. To prevent consumers suffering from these delays, Congress passed a law in early 1997 requiring distributors to compensate consumers for the difference in rates during the period from the date on which the new rates should have come into force and the date when they in fact did so.

The node price, for its part, has two components: the energy rate (node price) and the peak power rate. In order to provide more stable energy prices for small consumers, rates are computed every six months as an average of expected short-run marginal costs for the following 48 months in the Central Interconnected System (SIC) and 24 months in the Northern Interconnected System (SING). Node prices are computed by the NEC taking into consideration forecast future demand, the price of oil and coal, the level at the Laja reservoir, and the indicative plan prepared by the NEC. The peak power price is calculated as the annual cost of increasing power levels during peak hours using the most economic power plants. This is then increased to take into account the reserve margin in the electricity system. A provision in the law states that the node price for regulated customers has to be kept within a band centred on the average of prices freely negotiated with large customers. The width of the band is 10% below and 10% above the average price of contracts negotiated between generators and large customers. However, the situation has evolved in an unexpected way: most freely negotiated contracts have been set around the regulated price. In fact, they have tended to specify a price equal to the regulated rate plus or minus a given percentage.

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Distributors need to have contracts just as large clients do. Thus every customer is covered by a contract. Members of the ELDC are entitled to make direct supply contracts with clients for amounts up to their available reliable capacity¹³. Any shortfall has to be purchased from other members at the marginal cost of peak power. The availability of thermoelectric plants is computed considering their average maintenance periods, while reliable capacity at hydroelectric plants is calculated by discarding the 10% driest years in the historical rainfall series and taking their generation in the worst remaining year. Power generation in the SIC is mainly hydroelectric,¹⁴ which makes hydrology a main source of uncertainty. Chilean law considers the possibility of an energy shortage and mandates equi-proportional cuts for all regulated clients. However, the utilities have to compensate their customers for each unit of energy that they reduce below normal consumption during an energy shortage. This compensation equals the net marginal outage cost, so when energy shortages occur, generators have incentives to mitigate it as far as possible. Moreover, when computing the node price for a state of nature in which an energy shortage is anticipated, the corresponding marginal cost equals the gross marginal outage cost.

It has been shown elsewhere (Serra, 1997) that Chile's energy pricing system is basically equivalent to spot pricing. However, this conclusion involves certain assumptions that need to be tested empirically, the first of which is that generators are risk-neutral. In contrast to spot pricing, the Chilean pricing system transfers all risks to generators. The second assumption is that the outage cost is correctly computed, and this depends, among other things, on the rationing strategy used. For instance, the current estimation of the outage cost assumes that customers themselves reduce their consumption, i.e. there are no energy cuts (Serra and Fierro, 1997). If the outage cost were underestimated, the reliability of the system (and the rate) would be less than optimal. The third assumption, and the most relevant, is that the probability distribution function for hydrology is known.

In computing the node price, it is assumed that the hydrologies from a 40-year series ending in 1981 have an equal probability of occurrence in the coming years. Clearly this is not the case: a particular year may be much drier than the driest year in the series considered for computing the node price, or much wetter than rainiest year. The implications of extremely dry years and of extremely wet years are not symmetric. In the first case, the marginal cost of generation may be many times higher than the node price (the outage cost in case of rationing), while in an extremely wet year the marginal price can only fall to zero. Probably for this reason, the regulatory framework establishes that generators have to respond to their clients in hydrology conditions similar to those of the driest year considered in computing the node price, although this seems to favour generators. Unfortunately, the legislation is not clear about the practical meaning of this provision.

Finally, we now discuss transmission charges. Generators pay the marginal transmission cost and a fixed basic charge. Given the existence of scale-economies in the construction of transmission lines, marginal costs do not fully cover total transmission costs. The difference between total costs and the revenue collected through marginal cost pricing, called the basic charge, is allocated among generators. Thus it has to be decided what lines each generator and how to assign the basic charge for a line among the generators using it. The legislation only states that the basic charge has to be negotiated between the owner of the transmission grid and the generator, and that absence of agreement leads to a compulsory arbitration process. Different arbitration processes have resulted in dissimilar criteria. However, normally the transmission lines assigned to a power plant are those whose flows change when generation in the plant is

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marginally increased. The allocation of the basic charge is usually a function of the maximum flow transported by generators either during the day or peak hours. Such criteria have no economic basis, particularly assigning the whole transmission cost to generators.

III.2.2 Subsidies

Electricity coverage is almost 100% in urban areas, so government support has targeted rural zones. Subsidies finance self-generation projects, together with projects to extend the distribution network, and the aim is to achieve 100% electrification coverage among rural homes by 2005. For this purpose, resources have been raised substantially as from 1995, when a new fund specifically earmarked for subsidising rural electrification projects was established. Previously, such projects were financed through the general regional development fund. In the last three years (1995-1997) 55,603 rural homes have been electrified, thereby increasing rural coverage from 57% to 67%. At the end of 1997 there were still 173,828 rural homes without electricity. This Program is administered by the Under-Secretariat for Regional Development in the Interior Ministry, with technical support from the NEC. It has had a yearly budget of approximately US\$ 24 million between 1995 and 1997.

Interested parties who have to fill out an application in the municipality where they live take the initial step in the subsidy process. The municipality in turn requests a technical project to be drawn up by the distribution company. In the light of this information the regional government computes both the private and the social net present value of the project. The government subsidy is up to a maximum equal to the negative private net present value of the project. However, both the beneficiaries and the distribution companies are expected to contribute to its financing. In fact, the regional government ranks projects according to the social return they generate per peso of subsidy requested. The central government allocates funds to regional governments taking into consideration aspects such as the regional electrification deficit and participation in the fund in previous years, thereby establishing a sort of competition between regions.

III.3 Market Structure and Entry Barriers

In 1997 the Central Interconnected System (SIC) generated 23,960 GWh, representing about 78,0% of total power generation in the public system, and the Northern Interconnected System (SING) generated 6,622 GWh, or 21.5% of the total. The remaining 0.5% was produced by two small integrated companies located in the southern part of the country. In each system there are a few generation and distribution companies plus the grid companies. Generator companies compete among each other, but distribution tends to involve local monopolies, as overlapping operations are almost non-existent.

Table 5: Central Interconnected System SIC)

Company	Power		Generation	
	MW	%	GWh	%
Chilgener	756	14.4	3382	14.1
Guacolda	304	5.8	1830.4	7.6
Santiago	379	7.2	41.8	0.2
Energía Verde	17	0.3	102.2	0.4
Endesa	1,832	34.8	7,792	32.5
Pangue	450	8.6	2080.6	8.7
Pehuenche	623	11.8	3366.6	14.0
Colbún	527	10.0	3351.9	14.0
Arauco Gen.	121.3	2.3	605.2	2.5
Otros	251	4.8	1405.4	5.9
Total	5,261	100	23,959.8	100

Note: Santiago started operations in December 1997

Source: CNE and ELDC reports.

The electricity sector in the SIC has become more concentrated than initially anticipated. In 1989 Endesa was allowed to buy another generator – Pehuenche – and by December 1997 Endesa and its affiliates (Pangue and Pehuenche) held 55.2% of installed capacity in the SIC, while Gener and its affiliates (Guacolda, Santiago, and Energía Verde) owned 27.7% of installed capacity. More importantly, the dominant generating company owns the water rights on the most attractive future projects, in a system that is essentially hydroelectric. In fact, only 13% of total non-consumption water rights that have already been appropriated are currently being used. Endesa holds 60% of allocated non-consumption water rights, of which it has developed 13%. This company also applied for additional non-consumption water rights that would have given it 80% of all water rights in the country, but recently the Antitrust Preventive Commission advised the agency in charge of the rights to refuse such requests unless they were requested for a specific project.

The importing of natural gas from Argentina, which began in August 1997, has already lowered entry barriers in the generating sector. According to the NEC (1997) the generating cost for combined-cycle gas turbines is US ¢2.08, which represents a sharp cost reduction compared to coal-fired thermoelectric generators, which have a cost of US¢ 3,60 per kWh. Although the generating cost at a hydroelectric plant is lower at US ¢1.87 per kWh, rainfall uncertainty together with more stringent environmental standards that will have to be met in the construction of dams is leading to more balanced generation pattern. Thermoelectric capacity, which by mid-1997 accounted for 25% of all installed capacity, a year later had

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risen to 38%. Each major generating company has introduced combined-cycle gas turbines. The joint power of these plants is 1,080 MW, representing 18% of total capacity of the system. The distinction between thermoelectric and hydroelectric companies will become less clear-cut. At the end of 1997 Endesa and Colbún were 89% and 100% hydroelectric, respectively, but these figures had decreased to 79% and 60% by mid 1998. Gener (formerly Chilgener) has maintained its character of an essentially thermoelectric generator, (only 14% of its capacity was hydroelectric at the end of 1997) .

Vertical integration in the SIC is another controversial issue. In 1992, Enersis, the holding that owns Chilectra and Río Maipo, which jointly supply about 44,4% of all clients in the SIC, gained control of Endesa.¹⁵ Endesa also owns the SIC transmission grid (which it manages through a subsidiary). There have been complaints from Colbún including petitions to the antitrust bodies that Chilectra favours Endesa in its purchases. Gener and Colbún have been involved in lengthy arbitration processes with the Endesa transmission subsidiary. The combined-cycle gas turbine electric power plants built close to demand centres, in conjunction with Colbún's decision to build a transmission line between its generating units and the main demand node, is diminishing the impact of the transmission monopoly.

In the SING there are four companies, Electroandina, Edelnor, Celta a subsidiary of Endesa, and Norgener a subsidiary of Gener. This system is almost as concentrated as the SIC, but has lower entry barriers. Firstly, it is 100% thermoelectric; secondly, distribution companies are not related to the generators; finally, in the SING all generators and the largest mining companies own transmission lines. Another relevant difference is that in the SING a few large clients account for 70% of total consumption, whereas in the Central Zone unregulated clients represent only 30% of consumption. As a result, in the SING a higher percentage of consumption has a market-determined price: large clients usually purchase their energy by public bidding.

During 1999 important structural changes are anticipated, which will significantly increase competition in the sector. At the present time two consortia are constructing a gas pipeline connecting the northern part of the Chile with Argentina, and this will reduce generating costs with combined-cycle gas power plants in the SING. Endesa is participating in one consortium and Electroandina in the other. Moreover, Gener is building a transmission line to join the SING with Salta, an Argentine province where a combined-cycle power plant has been built with a capacity of more than 1,000 MW. This situation will result in spare capacity in the SING, and to reduce this, it is hoped to interconnect the two grids, thereby making greater competition possible in the SIC, as concentration will be reduced by the incorporation of new operators.

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Table 6: Capacity in the Northern Interconnected System (SING)

Company	Power		Transmission	
	MW	%	Km	%
Electroandina	628	628	1047	28.9%
Norgener	274	274	267	8.1%
Edelnor	291	291	957	28.9%
Celta	98	98	116	3.5%
Mining companies			922	30.6%
Total	1,291	100	3,309	100%

In June 1997, the Antitrust Resolatory Commission issued a series of instructions in recognition of market imperfections in the electricity sector. Firstly, it asked the government to introduce legal amendments to clarify the mechanisms for determining transmission and distribution charges. Secondly, it instructed distributors in future to put their energy requirements out to tender among all generating firms, so as to pre-empt suspicions of distribution companies favouring related generators, and reduce costs to final consumers. Finally, it ruled that, within a "prudent" time, the Endesa transmission subsidiary should become a joint-stock company operating exclusively in the transmission segment, thereby opening the company up for parties other than Enersis to participate in ownership.

A new by-law that will come in force in December 1998 attempts to correct some of these problems¹⁶. Firstly, it gives greater responsibilities to the ELDC in the co-ordination of the system, and determines the minimum number of staff positions in the ELDC. In the future, energy dispatch will be done by the ELDC, whereas currently the transmission company does it. In order to reduce conflicts inside the ELDC, the by-law establishes that the ELDC should co-opt three independent experts to give their opinion on the frequent disputes that arise inside the ELDC. It also gives a greater role to the ELDC and the NEC in the computation of transmission charges. The part of the transmission system "used" by each generator will be determined by the ELDC. The replacement value of equipment, as well as operation and maintenance costs, will be reported to the ELDC by the owner of the transmission line, with this information being made available to all interested parties. The ELDC will use this information to compute indicative transmission charges. The by-law also forces transmission companies owning a line with a capacity of 23,000 volts and over, and longer than 100 km, to become a member of the ELDC, and it gives generators with capacity above 9MW the option of becoming members of the ELDC.

III.4 Industry performance

III.4.1 Sector development

Considering demand forecasts, existing installations and plants under construction, the NEC determines a ten-year investment plan for generation and transmission that minimises the present value costs of investment, operation and rationing the system. Although the indicative plan prepared by the NEC only represents a guideline for the sector, generators in the SIC usually invest ahead of the indicative plan, as they tend to compete for the same "slot" in the plan. Such anticipation has normally been moderate, as over-capacity could have a tremendous impact on firms' profitability. The arrival of natural gas from Argentina provoked a rush to build combined-cycle gas turbines. In 1998 two combined-cycle gas turbines came into operation instead of the single turbine indicated in the plan. However, this did not generate over-capacity as 1998 was the driest year in history, and technical problems delayed one plant's coming on line by a few months.

Chilean electricity companies have greatly increased their supply. Total capacity in the country grew from 4,016 MW in 1988 to 6,587 MW in 1997, and annual generation from 16,914 GWh to 32,549 GWh. In the SING generation increased from 3,009 to 6,612. The largest generator, Endesa, shows a similar situation, raising generation (including subsidiaries) from 7,420 GWh in 1988 to 13,248 in 1997. This increase is explained by the significant investments undertaken by the company. In the same period the number of workers in Endesa decreased from 2,980 to 1,674, and labour productivity jumped from 2.2 GWh in 1989 to 8.0 GWh in 1997 (Table 7).

Despite the rapid expansion of capacity in the SIC, there have been energy shortages during the last ten years. In the SIC hydrology is a major source of supply uncertainty, although this is diminishing as gas turbines are incorporated. As rates are fixed (remember that all demand is under contract), a prolonged drought may require reducing consumption. In fact, in 1989 and 1990 the electricity customers were asked to cut their consumption by 10% for approximately 45 days. In 1998, the driest year on record in the Central Zone, supply has been rationed in the SIC and cities have suffered blackouts. The drought was made worse by a delay in the start-up of one of the two combined-cycle gas turbines. As the plant was expected to be operating in early 1988, water stored in reservoirs was consumed.

Although, the regulation system has a price mechanism embedded in it for dealing with energy shortages, so far this has not worked. During the 1989-1990 droughts, in a misinterpretation of the law, the Supreme Court decided that generators did not have to compensate their clients for energy not supplied, and this led to a more precise rewriting of the legislation. In 1998, if generators had adequately coordinated their operations, blackouts could have been avoided. However, the legislation is not explicit on how to proceed when the rainfall is less than in the driest year considered when computing the node price. Reaching an agreement among generators is difficult as it involves significant monetary transfers between them, and regulators lack the authority to force an agreement¹⁷.

Table 7: ENDESA: Investment, Generation, Workers, and Labour Productivity

Year	Domestic Investment	Foreign Investment	Domestic Generation	Local Workers	Labour productivity
	MM US\$	MM US\$	(GWh)		GWh/worker
1988			7,420		
1989	110	-	6,649	2980	2.2
1990	n.d.	-	6,608	2883	2.3
1991	131	-	8,521	2445	3.5
1992	47	102	10,022	2347	4.3
1993	107	165	10,627	2088	5.1
1994	94	51	11,277	1970	5.7
1995	180	119	11,783	2255	5.2
1996	235	391	12,898	1692	7.6
1997	415	1,023	13,325	1674	8.0

Source: Companies' annual reports.

Chilean electrical companies now have become major players in other privatisations in the region. They currently have a presence in the electricity sectors of Argentina, Brazil, Colombia and Peru, as well as quite actively diversifying their activities into other sectors such as real estate, water and telecommunications. Currently both ENDESA and Gener generate more energy through their foreign affiliates than in their domestic companies. At the end of 1997 Endesa's installed capacity was distributed as follows: 3,001 MW in Chile, 2,998 MW in Colombia, 1,320 MW in Argentina, 809 MW in Peru and 658 MW in Brazil. In 1992 when the internalisation process started, 19% of all Endesa's generation took place outside the country. By 1997 this figure had risen to 54%. Apart from this, in 1997 Endesa-España acquired a 32% holding in Enersis.

Electricity distribution has also experienced rapid labour productivity growth since privatisation. For instance, Chilectra's energy sales more than doubled in ten years from 3,612 GWh in 1987 to 7,647 GWh in 1997, and the number of clients grew from 973,000 to 1.169 million. Over the same period its number of workers declined from 2,587 to 1,662, with the number of clients per worker rising from 376 in 1987 to 703 in 1997. As well as this, energy losses were reduced from 19.8% to 8.3% during the decade (see Table 8).

Table 8: Chilectra: Sales, Workers, Labour Productivity And Energy Losses

Year	Sales (GWh)	Clients (Thousands)	Workers	Clients/Worker	Sales/Worker (GWh)	Energy Losses (%)
1987	3612	973	2587	376	1.4	19.8
1988	3844	1008	2565	393	1.5	18.8
1989	4070	938	2144	437	1.9	16.1
1990	4230	935	2159	433	2.0	13.6
1991	4568	960	2125	452	2.1	13.3
1992	5338	988	2086	473	2.6	12.0
1993	6476	1018	1856	549	3.5	10.6
1994	6359	1064	1823	584	3.5	9.3
1995	6676	1100	1801	610	3.7	9.0
1996	7256	1133	1643	689	4.4	8.6
1997	7647	1169	1662	703	4.6	8.3

Source: Companies' annual reports

III.4.2 Price Trends and Profitability

Table 9 shows the evolution of the node price both in the SIC and in the SING, expressed in constant Chilean pesos and constant US dollars. Generally speaking, the trend since privatisation has been towards lower prices, especially when measured in dollars, as the local currency has appreciated. In constant dollar terms, the node price has fallen by about 50% in the SIC and by 60% in the SING, which is explained by the lower price of fuels used by thermoelectric plants, which are the plants that usually determine the marginal price, and also by the fact that generators have passed productivity gains on to consumers, especially in the SING. The price fall in the SIC has been particularly dramatic since 1997 due to the arrival of gas from Argentina being anticipated in the formula for calculating the node price.

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Table 9: Evolution of the Node and Distribution Price of Electricity					
Date	Ch\$ (April 1998) per Kwh		US¢ (April 1998) per Kwh		
	Node price				Distribution price
	SIC	SING	SIC	SING	SIC
April 1987	21.1	52.9	4.65	11.66	14.73
October 1987	22.9	51.6	5.05	11.38	15.01
April 1988	24.7	46.9	5.43	10.33	15.87
October 1988	26.0	47.8	5.72	10.52	16.31
April 1989	26.9	47.1	5.93	10.37	16.97
October 1989	26.4	49.1	5.83	10.82	17.91
April 1990	27.9	53.5	6.14	11.80	18.15
October 1990	22.7	55.3	5.00	12.19	17.01
April 1991	23.9	51.4	5.26	11.33	15.83
October 1991	20.0	45.4	4.42	10.02	15.11
April 1992	19.2	42.0	4.24	9.26	15.72
October 1992	19.4	36.1	4.26	7.95	14.85
April 1993	21.3	40.7	4.70	8.97	15.08
October 1993	21.0	36.6	4.63	8.07	14.72
April 1994	21.4	37.7	4.72	8.30	15.31
October 1994	21.8	34.4	4.80	7.58	15.25
April 1995	21.4	28.7	4.72	6.32	15.44
October 1995	19.1	24.0	4.22	5.28	14.92
April 1996	19.0	24.9	4.19	5.48	14.65
October 1996	16.6	24.0	3.65	5.30	14.99
April 1997	16.9	22.1	3.72	4.87	13.77
October 1997	14.1	19.7	3.11	4.35	12.69
April 1998	13.2	19.0	2.91	4.18	12.16

Source: National Statistical Institute and CNE.

The rate of return on equity (ROR) at Endesa has increased moderately since privatisation, to reach a maximum of 15.7% in 1995 (Table 10), although declining in subsequent years due to unfavourable

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hydrological conditions. Energy rates seem to reflect actual costs better than in other services. A possible explanation for this is that the regulated node price has very close market benchmarks, one of that is the spot price (marginal cost) computed by the ELDC. The ELDC has incentives to compute it correctly as it is only used to value transactions between generators. The other benchmark is provided by the prices freely negotiated with large customers. Despite relatively high concentration and the existence of entry barriers in the SIC, the results do not suggest the existence of market-power abuses. One factor that has contributed to this situation is the strong rivalry between the two largest generators: Endesa and Gener. In addition, the government used Colbún before its privatisation to challenge the might of Enersis.

The regulation of electricity distribution companies is more problematic. As shown in Table 9, between October 1988 and April 1997, the distribution price fell by only 25%. This fall is minimal considering that the price of its main component, the node price, went down by 50%, energy losses were reduced substantially, and labour productivity experienced significant increases during the decade. This situation has led to a significant rise in the ROR of distribution companies. For instance, the ROR of Chilectra, the largest distribution company, rose from 10.4% in 1988 to 35% in 1997, despite a 7.4% price reduction in the rate-setting process that culminated in November 1996 (Table 10). The profitability of other distribution companies shows similar behaviour. Such rates of profitability are way above those being earned by generating companies, yet these are subject to greater uncertainty as they do not have a secure market and they face periods of drought.

Table 10: Rate of Return on Equity Largest Electric Companies: 1987-1997

Year\ Company	Chilectra	Endesa
1987	10.4%	5.2%
1988	7.3%	13.7%
1989	22.1%	7.7%
1990	23.7%	6.4%
1991	21.4%	10.4%
1992	19.9%	13.5%
1993	16.1%	11.0%
1994	20.0%	15.7%
1995	30.6%	14.5%
1996	33.3%	12.7%
1997	35.0%	9.9%

Source: Author's computation from companies' annual reports

The rate setting process for value-added in distribution has many difficulties. One of them is the fact that the costs of the simulated efficient firm are calculated as a weighted average of studies carried out by the NEC and the firms themselves, giving rise to obvious incentives for each party to bias its estimates. In the 1992 price-setting process, discrepancies in estimating distribution costs and the replacement value of assets in some cases exceeded 50%. A better solution would be for an arbitrator to decide which study in his/her judgement best reflects the costs of a model firm.

IV. The Telecommunications Sector

IV.1 The privatisation process¹⁸

In the late 1970s, two SOUs dominated Chile's telecom sector: CTC, which provided local telephony throughout most of the country, and Entel, which provided all international long-distance services. The two companies shared domestic long-distance services. The State also owned two small regional phone companies: CNT and Telcoy. Apart from this, the State postal service, Correos y Telégrafos, operated a domestic and international telegram services, sharing the international market with two private companies: ITT and Transradio. Cross-subsidies between local and long-distance services were the norm.

Deregulation started in 1981 when the government awarded licenses to two small local phone companies, CMET and Manquehue, which were set up to exploit the shortage of lines that had arisen as a result of a lack of investment by CTC. That same year a concession was awarded to Cidcom, a company set up with Chilean and US capital to provide a mobile phone service in Santiago and surrounding areas. In 1982 the government sold Telcoy and CNT in a public auction, in which the purchaser was VTR, a traditional local telex operator. A third company, Telex Chile, a provider of telegram services that had been hived off from Correos and Telégrafos in 1982, was also sold to domestic investors in 1986. Although the process of privatising CTC and Entel started in 1985, control of these two companies only passed into private hands in 1988.

Table 11: Privatisation Of Chilean Telecom Companies 1984-1989

(US\$ Million 31/12/95)

COMPANY/YEAR	1985	1986	1987	1988	1989	TOTAL
ENTEL	0.2	36.7	8.4	81.8	105.0	232.2
CTC	0.7	4.7	27.1	262.2	87.1	381.7
TELEX	0.0	14.2	0.0	0.0	0.0	14.2
TOTAL	0.9	55.6	35.5	344	192.1	628.1

SOURCE: CORFO Annual Reports

In CTC private participation had never completely disappeared, and in 1984 8% of shares were privately owned. In 1985 and 1986 the government sold 0.04% and 2.66% of its shares on the stock exchange, respectively, and by the end of 1987 25% of the equity was in private hands. In that year pension funds and the company's employees acquired most of the shares. In August 1997 the government called an international tender for the sale of 151 million shares out of a total of 455 million, with a commitment on the part of the winning bidder to subscribe to a later capital expansion up to 45% of the ownership of the company. The reference value of the 151 million shares was US\$ 102 million, with a price of US\$ 0.68 per share in the future issue. The ground rules for the bidding process were very brief, with applicants

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only having to state the sum offered for the shares and the proposed form of payment. There was no clause at all relating to an increase in the number of lines or service quality.

This share package was awarded to the Bond Corporation in 1988, priced at Ch\$187.34 per share. Bond also bought 10.4 million series B shares, paying US \$0.76 for each. Apart from this, Bond took up 204.1 million shares out of a total of 403.8 million new shares issued in July 1988, paying US\$ 155.2 million, thus coming to own 50.1% of the company. Then in January 1990 the Bond Corporation sold 49.2 % of the company, corresponding to 365.6 million shares, for US\$ 392 million to Telefónica de España. In July 1990 CTC placed the equivalent of 110.5 million shares on the New York Stock Exchange via ADRs, for a total value of US\$ 89.3 million, whereby Telefónica's share of the ownership of CTC was reduced to 42.8%. This was the first ADR issue by a Chilean company. That same year the State sold off the remaining shares in its possession.

In the case of ENTEL, a controlling share package was never put up for sale. The sale mechanisms used were direct sale and auctions, as well as the sale of shares on the stock market. In 1985 the State owned 99.97% of Entel, and in 1986 and 1987 it sold 30% and 3%, respectively, of its shareholding, most of which was acquired by pension funds. In 1988, the State further reduced its stake in Entel to 37.7%, this time the main purchasers being the Chase Bank (9.3%) and the company workers (12.5%). The state-owned bank *Banco del Estado* financed employees' share purchases via a loan made to an investment company set up by them. In 1989 the State sold practically its entire stake in Entel, the main purchasers being Telefónica de España, Banco Santander and the Chilean Army, each of which acquired 10% of the ownership. In 1990 the Army sold its holding to Telefónica which thus ended up with a 20% stake.

IV.2 Public policy

IV.2.1 The regulatory framework

The legislation regulating the Chilean telecom sector was introduced in 1982. Since 1977 the regulatory body has been the Under-Secretariat for Telecommunications (SUBTEL) at the Ministry of Transportation and Telecommunications. SUBTEL shares its rate setting responsibilities with the Economics Ministry. Its other main duties are to present proposals for national policies in the area, develop and update technical standards, ensure compliance with regulation and legislation, administer and control the use of the radio-magnetic spectrum, and process concession applications.

Chile's telecoms sector is one of the most open in the world, with no discrimination at all against foreign investors. However, all telecom services are subject to some degree of regulation either via the granting of licenses used to regulate entry, or through technical standards, including those covering the obligation to interconnect. The law establishes that operators are free to set prices for telecommunication services, but local phone services (not including mobile telephony) and long-distance services should be subject to price-setting procedures established by law when the Resolutive Commission finds they are provided under insufficiently competitive conditions. The rate-setting procedure was established by legislation in

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1987, following a decision by the Resolatory Commission that neither local nor long-distance services were competitive.

The local telephony rate-setting scheme is based on the long-term marginal costs of a simulated efficient firm. Local phone rates are set so that the net present value of expansion projects equals zero, when discounted at a rate reflecting sector risk. Rates are adjusted every five years after a ruling by the Resolatory Commission that there is insufficient competition in the provision of the service. The phone companies in accordance with government-set guidelines prepare cost-studies. Once a study is completed, regulators have 120 days to object and draw up counter-proposals. Differences both in the guidelines and/or objections made by Subtel are brought before a panel of experts, one of whom is designated by Subtel, another by the regulated firm, and the third by common agreement. Although the final decision rests with the regulators, these are unlikely not to follow the panel's advice, in view of the fact that companies can take them to court. Moreover, since the law does not specify how to choose the third expert, the company can delay the process for as long as it likes¹⁹. In order to reduce the incentive companies have to delay rate-setting processes; a modification in the legislation establishes that once the rates are set, they become retroactive to the day when the new rates were originally meant to take effect.

In 1993 the legislation was amended to facilitate competition in different services. The 1982 law required public service providers to interconnect their operations, but left it to them to decide the terms under which this would be carried out. Given the difficulties encountered by small local phone companies in negotiating their interconnection charges with CTC, since 1994 all charges and tariffs for services provided between public service companies via interconnection have been regulated. In particular, the law obliges all local telephone concession-holders to give access to long-distance carriers on a non-discriminatory basis, and the regulator sets the cost of interconnection (the access charge) between the public network (fixed and mobile) and the carriers. This regulation, together with other changes introduced in the same law, enabled competition to be introduced in long-distance services.

Since the privatisation of the long-distance monopoly, regulatory ambiguities have generated legal entry barriers to the industry. The profitability of the long-distance firm provided a strong signal to potential competitors, and in 1989 CTC and other local exchange operators attempted to enter the long-distance market by applying for licenses from Subtel to build and operate long-distance facilities. In June 1989, Subtel asked the Antitrust Commissions to decide whether the entry of local telephone companies into the long-distance market was in the public interest. In November 1989 the Resolatory Commission, reversing an earlier ruling by the Preventive Commission, ruled that there should be no segmentation of local and long-distance services, and called on the government to introduce a multi-carrier system whereby customers could choose their long-distance providers.

Entel appealed to the Supreme Court, which, in 1990, asked the Resolatory Commission to make a more in-depth study of the technical conditions that would allow fair market conditions, including the supervision of interconnection quality. The Resolatory Commission took three years to study this issue anew, before upholding its prior decision in 1993, and calling on the Government to implement a multi-carrier system within eighteen months. The legislation introduced in 1994, which removed legal barriers

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to competition in long-distance services, paved the way for the multicarrier system that was launched in October 1994. It also facilitated competition by enabling long-distance carriers to gain access to final clients directly through private circuits. Finally, the new legislation allowed local phone companies to enter the long-distance market through subsidiaries, which have to be organised as joint-stock companies, but put limits on each operator's market share in the domestic and international long-distance market for the first five years. Carriers affiliated to local exchange companies (mostly CTC) were subject to more stringent restrictions.

Certain details in the new legislation had an impact on the degree of competition in the industry. Local phone companies in Chile are obliged to let their customers choose their carrier for each long-distance call they make. Local phone companies cannot disconnect the multicarrier system from clients who have a signed contract with a carrier, even if the client requests this. As two dialling digits identify each carrier, using the multicarrier system is just as easy as making the call through a contracted carrier. On the other hand, the regulations did not consider certain particular situations (for example cases of access for cellular phones, subscribers with private numbers, etc.). Long-distance providers had difficulties in adjusting their invoicing system, and this held back their revenues for several months. Carriers complain that a subscriber can avoid paying a carrier's invoice without this meaning anything apart from discontinuing access to that carrier. It might be thought that this is a risk common to any supplier in a competitive market where sales are normally made on credit. However, in this case the firm does not have advance access to the customer's creditworthiness. Recently Entel reported having had to write off US\$ 50 million in uncollectable bills.

In 1988 the government established the rules for mobile telephony, although one company had been operating since 1981. The regulation defined three concession zones for cellular zones, with two companies operating in each. In November 1996 Subtel auctioned three further nation-wide personal telephony concessions, with geographical coverage as the auction variable. Operators freely determine mobile service charges. Subscribers pay the mobile telephony rate for both incoming and outgoing calls. In 1997 SUBTEL introduced a new telephone regulation establishing a calling-party-pays system, and this system is expected to come into operation by the beginning of 1999 once the authorities have determined the access charge to the mobile network.. Mobile phone companies now have to charge per second, whereas previously they charged per minute or part thereof. Finally, in a move to facilitate competition, one and two year contracts were annulled.

IV.2.2 Subsidies

The relatively low telephone density in the country —18.3 lines per 100 inhabitants in 1997— is a clear indication that there are vast sectors of the population with no access to telecommunications services. Universality of service is for the moment a distant goal, although it is realistic to consider universal *access*, for which reason the government decided to create the Telecommunications Development Fund to subsidise public and community telephone services in remote and poor urban areas. SUBTEL prepares a needs list and draws up corresponding projects, which are put out to tender among interested firms and awarded to those seeking the lowest subsidy. Broadly speaking the government subsidises projects whose social rate of return is positive, but which are not profitable from a private point of view. The government subsidy is up to amount equal to the negative private net present value of the project.

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The fund provided subsidies amounting to US\$ 2.1 million in 1995, US\$ 0.9 million in 1996 and US\$ 8.1 million in 1997 —much lower than the amount budgeted for by the government. The main reason for this is that competitive bidding led to much lower subsidies than initially expected. These subsidies will pay for the installation of public phones in 4,504 rural localities, serving 1,774,113 inhabitants²⁰. Once the phones have been installed, about 80% of the rural population will have access to a public phone. With the projects approved in 1998, the government expects that 90% of the rural population would have access to public phones by year 2000. The Fund is also able to subsidise urban projects, but no urban project has been subsidised so far, as calculations suggest that public phones in urban areas are privately profitable. It should be noted that it is only investments that are subsidised and not consumption directly. The subsidies have helped to provide services in isolated areas, but not to extend the service in urban areas. However, there is a scarcity of public pay phones in poor areas, and the government is considering a review of its methodology for granting subsidies.

IV.3 Market Structure and entry barriers

The government did not restructure the two main telephone companies prior to their privatisation. However, the decision of the antitrust agencies in 1992, ordering Telefónica to divest its 20% share in Entel, avoided the complete monopolisation of the sector. The dominant company is still CTC, which owns about 91% of all telephone lines, controls the largest cellular phone company (approximately 61% of all clients as of mid-1998), has a long-distance subsidiary with the second largest market share, and has a controlling 40% stake in the company that provides cable TV to 43% of all subscribers. In 1997 CTC obtained 67.7% of all revenue accruing to the sector and owned 72.5% of all physical telecom assets. Entel —a distant second— still retains the largest market share in long-distance calls (about 40%), and as of mid-1998 had about 20% of mobile phone subscribers, as well as running a small fixed telephony operation. A few other companies provide telecom services, of which the most important are Telex Chile, Bell South, VTR, Manquehue and CMET.

Foreign investors have a participation in the ownership of most Chilean telecom companies: Telefónica de España has a controlling 43.6% stake in CTC with; the Italian company STET and Samsung respectively own 19.5% and 12.5% of ENTEL; Southwestern Bell owns 49% of VTR, Bell South has been in the country since 1991, when it acquired the mobile phone company Cidcom, and Qualcomm has a joint venture with Telex Chile in mobile telephony. Foreign companies have had a positive impact on the development of telecommunications through the technical and financial resources they have brought to the sector.

The parent companies of VTR and CTC considered merging the two firms. Given that the Antitrust Preventive Commission stated that any merger between CTC and VTR would have to obtain its prior approval, the two companies considered a more limited approach. In December 1997 VTR asked the Preventive Commission for authorisation to sell its long-distance operation to CTC. The Commission approved the sale on the condition that infrastructure that can be used in local services should be retained by VTR. However, the Resolutive Commission decided to uphold VTR's appeal, approving the sale of its long-distance operation without conditions. The merger between CTC and VTR's long-distance

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operations is challenging Entel's dominance in this segment. VTR retains participation in a cable TV company providing services to about 57% of all subscribers, as well as two regional fixed-telephony companies: CNT and Telcoy.

Deregulation of the long-distance market and the ensuing competition has had the expected results up to now²¹. Ten firms have entered the market, including CTC through its subsidiary CTC Mundo. However, only three carriers, Entel, CTC Mundo, and Chilesat, have nation-wide networks allowing them direct access to the 24 primary zones into which the country is divided. The remaining carriers have to rent services from these three companies. This situation explains why these three companies between them have 90% of the national long distance market and concentration is increasing (see Table 12). In the international long-distance calls segment, there has been a slight decrease in concentration, as Bell South has become a relevant player with 10% of the market. The traditional monopolist, Entel, currently has 41% of domestic long-distance calls and 34% of international calls, but its share of the international long-distance market is declining.

Table 12: Market Share in Domestic and International Long Distance Calls

Company/Year	Domestic Traffic		Outgoing International traffic	
	1997	1994	1998	1995
Entel	40.9%	37.4%	34.0%	40.5%
CTC-Mundo	34.4%	28.9%	19.6%	20.7%
Chilesat	14.6%	21.9%	18.5%	19.4%
BellSouth	1.4%	1.6%	10.7%	7.0%
VTR	3.7%	7.9%	10.1%	10.2%
Transam	5%		3.1%	
Manquehue			1.6%	
Iusatel			1.6%	
CNT			1.0%	

Source: SUBTEL

It is unclear how the structure of the long-distance market will end up. Medium-size and small companies have faced difficulties in competing with the largest carriers. VTR's long-distance operation was sold to CTC, after absorbing losses from the beginning of the multicarrier system. Other carriers have also faced difficulties. Iusatel, which was part, owned by IUSACEL of Mexico, lost money for three years and then changed ownership. Meanwhile, Chilesat is currently going through serious financial problems, as reflected in the quotation of its ADRs which have dropped from a peak of US\$ 11.75 in January 1995 to US\$ 2.06 in May 1998. On the other hand, Transam a small company that offers the lowest rates to residential clients has grown rapidly since deregulation of the service.

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In contrast to long-distance services, local telephony is still highly concentrated. In December 1997 CTC had 91% of all lines in service, followed by CMET with 2.5%, CNT with 2% and Entel with 1.5%. CNT was the dominant operator in the 10th Region, as CTC has only had a concession in that part of the country since 1996. In Santiago, the largest city, there have been overlapping franchises in local telephony since the early 1980s. However, the new entrants – Manquehue and CMET – have never represented real competition for CTC. Weaknesses in the legislation, especially as regards interconnection standards, have inhibited true competition. Indeed, these companies only obtained interconnection agreements after orders issued by the Antitrust Commissions.

The 1994 law regulating interconnection charges resolved this situation. Since then, two long-distance firms, Entel and Chilesat, have started providing local phone services through subsidiaries in areas overlapping with CTC, and VTR has a small-scale operation to jointly provide local phone and cable television services. These firms have realised that it is essential for them to have direct access to clients, but competition in fixed telephony is still a distant goal. For new entrants it is hard to compete with CTC's aggressive commercial policy. For instance, CMET has filed a complaint with the Preventive Commission alleging that CTC offers, through intermediaries, three months' free service to CMET subscribers who migrate to CTC.

In early 1989, after the government established the rules for mobile telephony, CTC started a cellular phone service in the Santiago-Valparaíso area, which in 1995 had about 70% of all subscribers, with Cidcom holding the other concession. Most of the other mobile phone service subscribers belong to the second concession area which was awarded to VTR and Telecom, 33% of which was owned by Entel and the rest by Motorola. In 1996, Entel gained control of Telecom and changed its name to Entel Telefonía Personal²². Concessions in the third zone, corresponding to the southern part of the country and with fewer clients, were awarded to CTC and VTR. At the beginning of 1996 VTR and CTC merged their cellular phone companies and set up a new enterprise – Startel — serving the whole country. CTC owned 55% of Startel, with the other 45% belonging to VTR. The Preventive Commission ordered Startel to sell one of the licenses it held in the third zone, and Entel acquired this in December 1997. In that same month CTC paid US\$ 425 million to VTR for its 45% share of Startel, which shows the strategic importance of mobile telephony for CTC.

Three PCS concessions were awarded in March 1997: two to Entel and the third to Telex Chile²³, service coverage being the auction variable. Entel began providing the service in March 1998 with Telex Chile following suit in August. By mid-1998 there were about 650,000 mobile phone subscribers, of whom 61% were clients of Startel, 20% were with Entel, 16.5 % were clients of Bell South, and the rest were with Telex Chile. Subtel ignored a recommendation by the Preventive Commission that no company should hold more than one mobile phone concession in the same geographical area²⁴, and Entel finally ended up with two PCS nation-wide franchises and a cellular phone concession covering regions that concentrate about 30% of all clients. Bell South, which holds a concession in those two regions but not in the rest of the country, is the only mobile telephony provider that does not have national coverage²⁵. Previously it had roaming arrangements with Entel, but the later lost interest in the arrangement when it was awarded the PCS concessions. Probably Subtel was happy to award two concessions to Entel as this would strengthen it in relation to the dominant company.

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The legislation allows firms to provide multiple services, and there are two good reasons for this: firstly the economies of scale that exist in telecommunications, and secondly because it is attractive for the consumer to have a single provider of all telecomm services. The problem lies in the fact that some services are monopolised while there are competition in others. For that reason, restrictions have been imposed: for instance basic phone companies can participate long-distance services through subsidiaries organised as joint-stock companies supervised by the Securities Commission. Recently the Resolatory Commission called on the government to introduce legislation requiring subsidiaries of basic phone companies providing other telecomm services to satisfy similar requirements. Although the legislation prohibits subsidies between the parent company and its subsidiaries, monitoring compliance with this prohibition is very hard.

It remains to be seen whether CTC's dominance of basic services will allow competition in other telecomm services, especially considering the expansion policy it has followed in recent years. CTC's aggressive commercial policy has also been questioned on many occasions. In December 1997 CTC-Startel offered a system known as "calling party pays plus" (CPPP), in which incoming calls to a cellular telephone were not charged to the recipient, while the person making a call to a cellular phone from a fixed telephone would only pay the fixed telephone rate. This change would have meant a significant fall in the company's revenues, because approximately 40% of all calls are incoming, a percentage which would have increased substantially due to call-back. The Resolatory Commission decided to suspend this offer indefinitely, on the grounds that it could represent predatory pricing. A final decision is still pending. Another example is that CTC has repeatedly refused to activate in its exchanges the numbering given to Entel by SUBTEL for value-added services. In April 1998, the Supreme Court decreed that CTC should interconnect such services. It is assumed that CTC in taking advantage of its dominant position has no problem in ignoring the regulatory framework, as it knows that legal processes are lengthy and compensations – if any – are very low in relation to the benefits associated with delaying interconnections, for example.

The authorities are worried about the lack of competition in local telephony and the implications of this situation for the other telecommunications services. In April 1998, in the framework of the rate setting process, the Antitrust Resolatory Commission (Resolution 515) decided to increase the number of interconnection services subject to regulation, including services provided to value-added service providers. It also defined the concept of the local loop which fixed telephony subscribers must pay for in communications to recipients in networks of other local companies of the same primary zone, to a long-distance company or a mobile phone company. It also makes subject to regulation switching services or national long-distance telephone transmission provided by Entel, CTC Mundo and Telex Chile. The Resolatory Commission recommends the government authorities to aim for the maximum technically feasible disaggregation of services subject to rate setting. Finally, it should be pointed out that in each process the Commission has been steadily increasing the number of basic telephone services subject to rate setting. Services subject to regulation in fixed telephony include, the phone line, the telephone connection, communications between users of the same company, operator assistance and transfer of a phone line.

IV.4 Sector performance

IV.4.1 Telecommunications development

The combination of the new regulatory environment and privatisation of SOUs, has led to a remarkable expansion in the quality and diversity of services provided. As from 1988 the sector has experienced rapid development, as shown by various indicators. The total number of telephone lines in service increased from 581,000 in 1987 to 2,693,000 in 1997; i.e. the number of lines grew fivefold over ten years. This increase expanded telephone density from 4.7 lines per 100 people in 1987 to 18.3 in 1997. Average installation time by CTC fell from 416 days in 1993 to 31 days in 1997, and the waiting list which in 1987 was 237,000 potential customers long, had been cut to 79,000 by 1997 after topping 314,000 in 1992. Long-distance traffic also grew significantly in the same period: the total of incoming and outgoing traffic, which in 1987 stood at 50.3 million minutes, by 1997 had grown to 476 million minutes through the CTC network alone (in 1993 international long-distance traffic through the CTC network accounted for 93% of the total). In other words, in a space of ten years total traffic practically multiplied tenfold. Growth has been particularly fast since 1994 when the sector was deregulated.

Table 13: Lines in Service, Density and Waiting List (1987-1995)

Year	Lines in Service (thousands)	Lines in Service CTC (thousands)	Density (lines/100 people)	Waiting List (thousands)*
1987	581	548	4.7	232
1988	631	591	4.9	236
1989	689	646	5.4	284
1990	864	812	6.5	308
1991	1,957	997	7.8	241
1992	1,283	1,213	9.6	314
1993	1,521	1,437	10.9	198
1994	1,634	1,545	11.6	117
1995	1,891	1,754	13.2	52
1996	2,264	2,056	15.6	72
1997	2,693	2,394	18.3	97
1998		2,537		97

figures. Source: Compiled by the author from companies' annual reports and SUBTEL

* CTC figures only.

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Table 14: Long-distance International Traffic				
(millions of minutes)				
Year	Outgoing	Incoming	Total	CTC
1987	21,2	29,1	50,3	
1988	27,5	37,3	64,8	
1989	36,3	51,8	88,1	
1990	46,3	60,3	106,6	99,6
1991	56,7	74,8	131,5	122,4
1992				140,6
1993	60,8	98,2		158,9
1994	69,6	114,7		184,4
1995	126,5	130,5		257,0
1996	163,9	157,8		321,7
1997	299,8	176,2		476,0

Source: Subtel and companies' annual reports.

Liberalisation of the sector has also made it possible to develop new services and activities. From 1981 onwards various new telecom services have started up, such as pagers, data transmission and private networks. However, the new service that has developed most strongly has been mobile telephony. By the end of 1997, 16 years after Cidcom started to operate a mobile phone service in Santiago, there were about 410,000 cellular phone subscribers. Today in mid-1998, after the start of the PCS system, the estimated number of subscribers is 650,000. We can expect that with the introduction of "calling-party-pays" in mobile telephony and the substantial price fall caused by the entry of PCS operators, the number of subscribers will increase substantially. Most countries in the region use a "calling-party-pays" system: Argentina, Brazil, Ecuador, Mexico, Nicaragua, Panama, Peru, Uruguay and Venezuela. Following the introduction of "calling-party-pays" in mobile telephony in Argentina, the number of subscribers has exploded, and it now has the highest density in the region with 7%, much higher than Chile's 3%.

Table 15: Mobile Telephony Subscribers

Year	Number of Subscribers	Density (subscribers/100 inhabitants)
1990	13,900	0.10
1991	34,782	0.26
1992	64,438	0.48
1992	85,186	0.61
1993	85,186	0.61
1994	115,691	0.82
1995	197,314	1.38
1996	319,314	2.19
1997	409,740	2.78
1998 June	650,000	3.94

Source: Subtel

III.4.2 Price trends and profitability

Despite big efficiency gains in the sector, local phone charges have not fallen since privatisation: on the contrary, they have gone up. According to the National Institute of Statistics (INE), in May 1987 an average family's bill was Ch\$ 9,853, rising to Ch\$ 11,395 by May 1998 expressed in constant May 1998 prices. In dollar terms the price rise is much higher due to the appreciation of the local currency. Some of the rise is explained by the partial abolition of the subsidy paid by long-distance carriers to local phone companies, and by the abolition of the surcharge for phone-line installation. In 1998, rate studies were completed for the period 1989-93, as provided for in the 1987 legislation. Rising telephone charges were established in that period at the same time as the telephone installation surcharge was about to be phased out²⁶. The fixed charge went up from Ch\$ 1,096 in 1989 to Ch\$ 2,109 in 1993 (measured in constant June 1989 prices). The charge for allocating a line, which stood at Ch\$ 65,174 in 1989, was abolished in 1993.

Currently, for a residential subscriber the fixed charge is Ch\$ 5,598 with a peak-hour variable rate of Ch\$ 17.1 per minute and an off-peak rate of Ch\$ 2.85 in September 1998 pesos. In January 1988, the fixed charge was Ch\$ 2,597 and the peak and off-peak variable charges were Ch\$14.7 and Ch\$ 0.42, measured in September 1998 prices before tax, respectively. Apart from this, for each call, a charge equivalent to a one-minute call was made for establishing the connection, but this was later abolished.

Table 16: Monthly Local Residential Bill of Average Family

(charge plus variable rate plus tax)

Date	Current US dollars	Constant Ch pesos May 1998
May-87	11.62	9,853
May-88	11.00	9,151
May-89	11.24	8,347
May-90	13.44	9,475
May-91	15.69	10,213
May-92	17.75	10,156
May-93	18.91	10,817
May-94	19.96	11,742
May-95	24.36	11,584
May-96	25.33	11,489
May-97	25.65	11,932
May-98	25.11	11,395

Source: National Statistical Institute

Tabja (1996) analyses the second rate-setting process that took place in 1994, and concludes that rates are more the result of bargaining between the authorities and the firm, than the outcome of rigorous technical analysis. Reaching agreement on what the costs of a model firm are is not easy, which, when combined with the difficulty the regulator faces in obtaining precise information and the antagonistic nature of the process, leads to a continuous bargaining game. Another aspect that obstructs regulatory action is the publicity campaigns launched by the regulated firms. During the 1994 rate-setting process, CTC launched fierce attacks against the regulatory agencies in the media, making apocalyptic announcements regarding the impact the new rates would have on its profits. This caused a sharp fall in its share price, obliging the Superintendence of Securities and Insurance to suspend trading in CTC shares for a short period. Of course the CTC predictions did not come about. The 1994 rate-setting process also made explicit the problem of information asymmetry in the telecomm sector (there is no specific sanction for denying information).

Long-distance services. The opening of the sector to competition eliminated the need to set rates, and these are now market-determined. However, the regulator sets the cost of interconnection between the public network and long-distance carriers. This access toll approximately reflects costs (2/3 of a local call, for each origin-destination end point). However, the access toll for incoming international calls clearly exceeds the cost of providing this service (it is fourteen times the local peak rate).

Deregulation of long-distance services has led to a significant drop in charges. Following a hectic advertising campaign by each of the long-distance operators, long-distance rates fell by more than half of Entel's prices before September 1994. This can be illustrated using the prices carriers charge on calls to the US, which account for 42% of all long-distance traffic. In May 1998 the publicised peak rates fluctuated between US¢ 117 and US¢ 45 per minute. Off-peak rates fluctuate between US¢ 78 and US¢ 34 per minute. Carriers charge their large customers much lower rates. For instance CTC charges US¢ 18 per minute on a call to the US by a large client. The cheapest carrier for residential clients (Transam) has captured less than 5% of the market, with no noticeable quality differences in service, but its market share

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is growing following an advertising campaign. These prices can be contrasted with the pre-multicarrier regulated rates: if the rate-setting scheme in force from 1988 onwards had been maintained, a call to the USA today would cost US\$ 2.40 per minute. The rate in September 1994, prior to the multicarrier coming into operation when there was already a minor degree of competition, was US\$ 2.15 per minute. As can be seen, the drop in the price of calls to the USA has been enormous.

The price fall has been less pronounced on other routes. International carriers settle their traffic imbalances at so-called accounting rates, which are a multiple of the actual cost of providing the service. A carrier handling more incoming than outgoing traffic receives significant net revenue from foreign carriers. In 1991 Chilean incoming traffic was 74.8 million minutes while outgoing traffic was 56.7 million minutes, which resulted in revenue of US\$ 22.7 million for ENTEL. With the sharp fall in domestic international phone-call rates the traffic imbalance has reversed on many routes. In 1997, incoming traffic through the CTC network was 176.2 million minutes while outgoing traffic was 299.8 million minutes (the corresponding figures for 1993 were 60.7 million and 56.7 million minutes, respectively). On routes where incoming traffic exceeds outgoing traffic, the marginal cost of the Chilean carriers includes the accountancy rate.

Mobile telephony. Firms freely determine prices. By the end of 1997 this was about Ch\$ 130 per minute for both incoming and outgoing calls, plus a fixed charge of about Ch\$ 15,000. The start of Entel's PCS system in March 1998, like the multicarrier system before it, has generated a publicity war between the different mobile phone companies, and rates have come down substantially. For example, CTC-Startel made an offer consisting of a monthly charge of Ch\$ 7,080 and up to 60 minutes of free calls at normal times; additional minutes are charged at a rate of \$ 124 at normal times and \$ 80 at off-peak times. In addition, people who sign a contract for 24 months receive the telephone as a gift. Another plan offers 200 free minutes for a fixed charge of Ch\$ 16,000. These rates represent sharp reductions on those existing before the entry of Entel-PCS.

CTC earns 63% of its revenues from local telephone services and another 6.8% from the sale and rental of equipment, which is closely related to local telephony. It is no surprise therefore that CTC's average rate of return on equity has increased since privatisation (Table 17). In the three years before privatisation its average rate of return was 16.0%, whereas during the following five years this figure climbed to 16.8%. Over the last five years (1993-1997) the average rate of return on equity has been 19.4%, despite the price war that has affected long-distance services. The main explanation for the rise in profitability is that CTC has not passed efficiency gains on to its clients, despite two rate-setting processes. The other two local phone monopolies (Telcoy and CNT) show similar RORs.

The picture in the long-distance market is quite different. Before 1994 Entel had a virtual legal monopoly in long-distance services, and this combined with inappropriate rate-setting schemes kept prices significantly above marginal costs for several years. In practice, the long-distance company achieved average rates of return on equity above 50%. Since deregulation, the drastic fall in prices has had an impact on the carriers' profits. For example, Table 17 shows that Entel's profitability has dropped from 37.4% in 1993 to 5.8% in 1997.

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**Table 17: Telecommunications Companies' Rates Of Return
On Equity**

Year	CTC	CNT	TELCOY	Entel
1987	14.5%			35.8%
1988	17.4%	21.1%		49.3%
1989	18.4%	15.7%	20.7%	73.8%
1990	13.0%	16.8%	13.5%	52.7%
1991	16.4%	22.7%	15.1%	50.5%
1992	19.0%	29.2%	21.4%	49.7%
1993	22.5%	30.2%	25.7%	37.4%
1994	18.3%	24.9%	27.1%	17.2%
1995	17.0%	13.7%	24.8%	5.1%
1996	20.4%	21.0%	30.1%	2.7%
1997	19.1%	17.9%	33.7%	5.8%

Source: Compiled by the author from Companies' and SVS Annual Reports.

V. The Transport Sector

Since 1991, a variety of reforms have been introduced in the transport sector, of which the most important are listed below. In that year, the *laissez-faire* policy in the urban bus sector was reversed and the use of streets by urban transport was auctioned, producing significant efficiency gains in the sector. Also that same year a legislative bill was sent to Congress to allow the tolling of urban highways in order to reduce vehicle congestion. This initiative is still under discussion in Congress today. In 1993 a privatisation process was initiated in rail freight transport involving sale to the private sector (FEPASA). In 1996, the northern railroad Ferrocarril del Norte (Ferronor) was privatised, as was the railway linking Arica and La Paz in 1997. The privatisation process in rail transport is set to culminate in the privatisation of passenger rail services in the central zone. The privatisation of the State-owned airline, Lan Chile, was completed in 1994, and the public-sector shipping company was sold in 1995.

In 1992 a new franchise law was passed allowing the private sector to finance and operate highway and airport projects. From 1994 to present, several projects in interurban highways and tunnels have been auctioned for an amount in excess of US\$ 3.1 billion. Also starting in 1996, concessions on the cargo and passenger terminals at five airports, including the country's major international terminal, were awarded by public bidding. Airport concession-holders will invest about US\$ 200 million, of which 180 million will be spent in Santiago. In 1997, a law was passed permitting the concessions on infrastructure and the operation of public-sector ports. The law stipulates that the Preventive Commission should approve the bidding ground rules in each case, which set a number of conditions restricting vertical and horizontal integration in order to ensure competition. For instance, a shipping company handling more than 25% of the cargo in a port cannot own or control more of 40% of the company holding the concession on that port. The main state-owned ports are expected to be handed over in concession in 1999. Meanwhile, four private ports have been developed in the central-southern zone of the country for general freight, competing with state-owned ports and half a dozen private specialised ports.

TABLE 18: Privatisation of Transport Companies 1994-1996

(US\$ Million at 31/12/95)

COMPANY\YEAR	1994	1995	1996	TOTAL	% SOLD	PURCHASERS	PROCEDURE
LANCHILE	10.7			10.7	24	COSTA VERDE S.A.	STOCK EXCHANGE
FEPASA (***)	30.1			30.1	51	CRUZ BLANCA	PUBLIC TENDER
FERRONOR S.A.			12.0	12.0	100	PIRAZZOLI Y CIA. LTDA.	PUBLIC TENDER
EMPREMAR S.A.		4.5		4.5	99	SALINAS PTA. DE LOBOS	PUBLIC TENDER

By the year 2000, about 2,000 km of interurban highways together with the main airports, all the railroads and the main seaports will be under private-sector operation, with the State retaining the role of regulator and promoter of competition. However, the challenge for the future is to ensure that private-sector participation also promotes efficiency in resource allocation. There are significant externalities in the transport sector that require an appropriate State role to promote efficient development of the sector. Below we analyse privatisation processes and regulation in the urban highway and transport sectors.

V.1 Highway franchising

The private sector is financing the construction of new highways and airports through build-operate-and-transfer (BOT) concessions, and is also going to finance port modernisation. Here our focus is on highways. In general the auctioning of highway concessions has operated as follows. The government specifies the technical conditions of the project and grants a concession for 20 or 30 years to the bidder offering to charge the lowest user price. In some cases a ceiling and floor price are imposed. If the ceiling is very low bidders may seek a subsidy, in which case the concession goes to the applicant that seeks the lowest subsidy. On the other hand, if the floor is very high the firm that offers the biggest payment to the State wins the concession.

The first project, a 20 million-dollar tunnel, was put out to tender at the end of 1992 and inaugurated in September 1995. The second project put out to tender is the highway known as the "lumber route" with a cost of around US\$ 25 million. The third concession project is the northern access to the city of Concepción with a cost of approximately US\$ 230 million. A consortium controlled by a Mexican company, which has the concession for 28 years, built the 75-km highway. The most important concessioned highway project is the Pan-American Highway (Route 5), with a total investment estimated *at US\$ 2.4 billion, and total highway length of 1,511 km*. The project was put out to tender divided in 8 sections, and it took two years for all the concessions to be awarded. The final stretch, adjudicated in May 1998, is the most expensive, with an estimated cost of US\$ 750 million. The auction ground rules

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involved a minimum highway user toll of Ch\$ 1,000 and a maximum of Ch\$ 1,200. All bidders sought the minimum toll, and the concession was awarded to the consortium offering the highest payment to the Government for the existing infrastructure. This concession will last 25 years.

The government is awarding highway projects in concession to take advantage of private-sector management capacity in running the highways, within an overall social welfare-maximising objective. In this context, concessions raise important regulatory issues. For example, concessions extend for periods ranging from 20 to 30 years, so explicit mechanisms need to be established to adapt the contract to changing conditions. Welfare maximisation may require the user fee, or toll, set in the contract to be changed. However, when contracts are renegotiated, the benefits of competitive bidding are largely lost and the door is left open for corruption. The most recent auctions give the Government an option to buy back the infrastructure concession before its termination if major infrastructure changes are needed. The purchase conditions are included in the auction ground rules, but there is still room for opportunistic behaviour by both parties. There were some worries that a majority of highway concessions might become concentrated in the hands of a single group. Although prices are determined in the auction, a powerful concession-holder might attempt to renegotiate conditions, for which reason the Preventive Commission suggested that no single group should hold more than 3 concessions on Route 5. There are also end-point problems, especially as regards maintenance close to the end of the concession period.

The first infrastructure concession, the Melón Tunnel, has not been successful and is unlikely to recoup the investment (the firm has been making annual losses of about US\$ 1.5 million). The auction considered different aspects, such as the toll and the annual payment to the State, using different weights. The weights determined that the annual transfer to the State became the decisive variable. Hence, in practice, the Government set the maximum toll and granted the concession to the bidder that offered to pay most. The winners of the concession overestimated demand (a significant percentage of drivers choose the old alternative road). They now claim that the lower-than-estimated demand is due to the construction of new alternative roads and are offering to reduce the toll if the government lowers the annual payment. Such an agreement would probably be socially beneficial in the short run, but the Government has refused to renegotiate, on the grounds that it would set a bad precedent.

The problems encountered in the first concession ought to diminish in the future, because the toll has replaced the payment to the government as the bidding variable. However, concession-holders are finding that drivers' willingness to pay is less than anticipated when an alternative untolled route is available. Another aspect that concerns them is the variability of demand, even on roads where alternatives do not exist. Rates of traffic growth show sharp fluctuations on existing toll-roads. Moreover, the traffic over a specific road depends on the other links in the highway network. Thus, the Government affects the demand on each particular route through the decisions it takes with regard to the rest of the network.

Traffic uncertainty sharply reduced private-sector interest in participating in future projects. In recent tenders, the Government dealt with this problem by introducing minimum traffic guarantees. Giving guarantees to concession-holders makes it easier to obtain loans in the financial system, which translates into a larger number of bidders and therefore greater competition. Another advantage of guarantees is that

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it reduces the likelihood of the franchise-holder going bankrupt, and hence the need to renegotiate the contract.

Against this, the major problem with State guarantees is that they increase the chances that projects which are neither privately nor socially profitable will be undertaken. Private investors could evaluate their participation in the auction considering the minimum guaranteed traffic, knowing that actual traffic would probably be much lower. Usually, the main stakeholder in any consortium participating in a bidding process is a construction company, and the construction sector has lobbied the government to provide significant guarantees. However, Engel, Fischer and Galetovic (1998) have pointed out that "guarantees create contingent liabilities for the Government. These are seldom valued and are typically not included in the year-to-year budget or counted as government debt." Moreover, it is not a good thing to eliminate all risks from the concession-holder during the highway operation period, because it would mean the benefits of private management are being lost.

Recently Engel, Fischer and Galetovic (1996) have proposed a new mechanism for auctioning infrastructure concessions. The regulator sets the maximum toll that the concession-holder can charge, and then awards the concession to the firm demanding the least present-value of revenue (LPVR) for building and then operating the highway, until the required revenue is collected through toll payments. Hence the duration of the concession is endogenous. This auction mechanism greatly reduces the risk, because the present value of the total income the concession-holder will receive is known in advance. There remains a lesser risk; associated with the time the franchise-holder takes to collect the required sum. The longer the time taken to collect the desired income, the greater will be the operating and maintenance costs incurred on the road. An additional advantage of the LPVR auctioning method is that the State could terminate the concession early by paying the operator that part of the income that still had to be collected. In this case, the operator would also benefit from termination of the concession via savings on maintenance and operation costs, so the concession-holder might lobby the authorities to effect the transfer. Accordingly, it is necessary to specify precisely under what conditions the operator can bring the contract to an early end, in order to preclude opportunistic behaviour.

The longer the period estimated for the concession, the greater is the incentive to solve construction problems in the best possible way. This points to a preference for lengthy concessions. On the other hand a problem of prolonged concessions is the rigidity associated with unchangeable tolls and a consequent welfare loss. However, if there is any flexibility for modifying tolls, this inconvenience is reduced. The authority sets a maximum toll in the auction; this ceiling price could be raised temporarily by the authority but not lowered. This is where we see one of the great advantages of LPVR auctions. If an increase in the maximum toll generates an increase in revenue, its main effect would be to reduce the duration of the franchise, which has advantages for the concession-holder, less so than in other forms of auction. If the socially optimal toll were below the ceiling price, the impossibility of lowering it would produce an efficiency loss.

The highway linking Santiago and Valparaíso was auctioned using the LPVR method. In February 1998 a Spanish consortium won the concession. It sought a present value revenue of UF 11,938,207

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(approximately US\$ 380 million), an amount it expects to collect in 15 years. The price-cap for the toll is Ch\$ 1,800 (about US\$ 4). Bidders seeking a minimum guaranteed income would have had to make an annual payment to the Government. Two out of four bidders, including the winner, did not seek the guarantee. Thus, in principle, the State did not assume any risk.

In the LVPR method, one risk that is faced by the concession-holder is that it may take longer than expected to recoup the pre-established income. A situation could also arise in which annual revenues were not sufficient to provide this income. As traffic and hence the duration of the concession can be affected by decisions subsequently taken by the authority, this possibility will cause the discount rate used by bidders in the auction to rise. One way of mitigating this problem is by establishing guarantees for the concession-holder. A simple alternative for a guarantee is to set a maximum duration for the concession. If the concession-holder has not collected the required revenue by the end of the period, it would receive a percentage of the difference between required and actual revenue. An additional advantage of this alternative is setting a maximum period for the duration of the franchise. However, what the guaranteed percentage should be is an open question. The greater the guarantee the lower the discount rate used by bidders, so the bids will be more attractive. On the other hand, one needs to consider that the lower the risks, the lower also are the incentives to operate efficiently. When the franchise-holder has incentives to recover the required income rapidly, he will be concerned to operate efficiently: for example, broken-down vehicles are likely to be quickly towed away.

Apart from toll revenues there may be additional incomes arising from fixed-point advertising and highway services. In the auction process the prices and quality of highway services need to be clearly defined (e.g. the towing of broken-down vehicles), otherwise charges might become abusive. It also needs to be decided whether or not these additional revenues are included as part of the concession-holder's income. If they are included, the challenge is to ensure they do not get under-reported, and this implies a cost for the State and a possible source of conflicts with the concession-holder. For this reason it would seem preferable not to include them; yet, non-inclusion could cause its own problems. If the incomes in addition to toll revenues exceed the cost of maintaining and operating the highway, the concession-holder would have incentives to remain operating the route for as long as possible. One solution to this problem is not to count additional revenues, but to set an annual payment from the concession-holder to the state, corresponding to an estimate of the revenue arising from the additional sources.

The auctioning of urban highways has proven much more difficult. Firstly, the authorities have more possibilities of influencing the results of urban highway concession-holders. In highway concessions, traffic, and hence the concession-holder's income, can be influenced by government decisions regarding the rest of the road network. Although this also occurs in inter-urban concessions, in the urban case the range of decisions influencing traffic on a given road is much broader. For example the construction of access roads, complementary or substitute routes, the expansion of the subway system, or the introduction of tolls on congested streets can affect traffic.

The construction of express highways generates urban problems. For example, the construction of a large-capacity urban highway can cause the deterioration of the surrounding area. In Santiago, people living in a

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well-to-do residential area adjacent to where a proposed highway is expected to run near have mounted a thus-far successful campaign against its construction. Ecologists have opposed the project because they believe the highway will encourage car use and so increase pollution; instead they favour investing in public transport. On the other hand, urban highways can serve to improve a run-down area, although the complexity of the real estate business makes it difficult to coordinate urban remodelling with the construction of a new highway. However, there should be a commitment regarding the forms and times of remodelling so as to ensure an appropriate result. In this way the opposition of residents in zones affected by the passage of the road will be diminished.

V.2 Urban public transportation

In 1991 the government decided to auction the right to use the main downtown streets in Santiago to the bus companies. Bidders had to compete on the basis of fares, frequency, age of buses and other quality measures. The decision was strongly resisted by bus owners, and in the first auction there were no bids. The government then took two measures to break the cartel. First, on the grounds of pollution, it banned older buses from circulating on downtown streets, and this produced cracks in a hitherto monolithic cartel. Secondly, it lodged a complaint with the Preventive Commission against the leaders of bus owner organisations for collusive behaviour, the main argument being that no one had participated in the first auction (to sweeten the deal the government bought buses that were 20 years or older at an above market price). While the Commission was conducting its inquiry a second auction was called in which the bus owners did participate.

The results of the bidding process were a 10% fall in prices, a 30% reduction in the number of buses operating in Santiago, better quality buses and a substantial reduction in journey time (the auction combined with other regulatory measures reduced the time a bus takes to cross the downtown area to less than one third). Other positive effects were less traffic congestion and a decrease in pollution. In 1996 the government extended the bidding process to other areas in the city, and in 1998 it called a new auction for bus routes for the whole of Santiago. Unfortunately, more than 90% of the routes were bid for by just a single company over 95% of buses offered the same fare rate, involving an 18% price hike. The results of this latest auction suggest that the sector has once again become cartelized. Unlike 1991, when the government fought the cartel actively, on this occasion the new administration chose to reach an agreement with the bus owners' association, allowing a stepped increase of 12% initially, to be followed by a further 6% as bus owners introduce automatic ticket dispensers.

VI. Conclusions

Regulation of public services in Chile considers competition as the principal mechanism for market discipline. Even in price-regulated sectors, licenses are non-exclusive (water distribution being the exception), and the regulations establish mandatory interconnection on previously specified terms. Equal-access rules are also embedded in many regulations. This approach is based in a correct premise: competition is the ideal regulator. The evidence in both Chile and other countries has corroborated this, as only in services where there is competition have productivity gains made by the privatised firms been passed on to consumers. Sappington and Weisman (1996) write, "vigorous competition is often the ideal regulator. It can compel firms to minimise production costs, keep prices close to operating costs, and deliver high quality and innovative services to customers."

However, Chilean regulation in the 1980s made a mistake in assuming that it was sufficient to open up services to new operators for competition to be generated. In fact, the Chilean experience illustrates how hard it is to achieve competition when the privatised public monopoly retains a large market share. As pointed out by Spiller and Cardilli (1998), without interconnection rights, the dominant firm can use the advantage resulting from network externalities to eliminate competitors. Although the legislation obliges the interconnection of telecom firms, the incumbent telecom monopoly has delayed this as long as possible in an attempt to preserve its position. In addition, when different activities need to be coordinated, as in the electricity sector, appropriate regulation is needed for competition to exist.

In Chile, regulations aimed at facilitating competition either "on the field of for it" has steadily increased over time. For instance, the by-law regulating gas transmission sets a variety of conditions for awarding concessions for gas transport, including (i) concessions can be awarded only to firms specialising exclusively in this activity, with no links to final customers, mainly electricity companies; (ii) concessions should not be exclusive; and (iii) gas transport should be subject to an open access requirement; i.e. the service should be provided under non-discriminatory conditions, and information on supply and conditions should be publicised. In telecoms, since 1994 rates have been regulated as well as the technical conditions for interconnections between telecom firms, and it remains to be seen in the future how the disaggregation of the local telephony network will be carried out. The new rules for setting electricity transmission charges is a step in the same direction.

Although initially the restructuring of the privatised sectors was insufficient, recent privatisation episodes have shown greater concern for this aspect. The new legislation for water and sanitation companies introduced at the beginning of 1998 puts limits on horizontal integration so as to permit competition by comparison. When the airport terminals in Santiago were auctioned, airlines were restricted to a 15% share in the concession companies. Finally, the port concession law sets limits on both horizontal and vertical integration.

A second characteristic of Chilean utility policy is the use of regulation by incentives in services where there is insufficient competition. This form of regulation has proved to have an important advantage in that it promotes efficiency in firms. However, its disadvantage has been the difficulty of passing on

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efficiency gains to users. This is partly explained by the difficulties inherent in regulation by incentives, but there are also aspects that can be and are being changed. One of these is the transparency of the regulatory process. Currently, regulators in the electricity and telecommunications sectors can only make the information used for rate-setting available to the regulated firms themselves, which prevents other interested institutions from counteracting pressure from regulated firms²⁷. The new regulation of the water and sanitation sector has taken the opposite course: all information has to be made available to the public. It also modifies the dispute settlement procedure so as to give incentives to truthfulness: in the event of discrepancies between the firm and the regulator, an arbitrator has to choose which, in his or her judgement, comes closest to the norms.

Another aspect of regulation that needs to be improved is access for the regulators to information on the regulated firms. Currently, when a firm refuses to hand over information, the regulator has to appeal to the ordinary courts of law, where processes are lengthy and sanctions low. SUBTEL has had to do this. In addition, both in electricity distribution and fixed telephony, firms seek to delay rate setting by using a variety of legal devices in order to continue enjoying the old rates. Today, in both sectors rates are applied retroactively from the date set by law for the new rates to come into effect.

Another of the failings of the regulatory system was the lack of resources available to both the regulatory bodies and the antitrust institutions, which together with the lack of prestige attached to this public function has prevented more suitable people from being retained. However, this situation is changing. For example, the new sanitation services law involves a significant increase in the salaries of officials. The other regulatory bodies have also found mechanisms for raising their employees' salaries. Apart from this, the Government is preparing a legislative bill to create a Superintendence of Telecommunications in order to separate policy-design in the sector from its regulation. Congress has just passed a law to increase the attributions and resources of the National Economic Prosecutor's Office, which will also improve the salaries of people working there. In addition, the creation of an economic tribunal is being considered with full-time members whose appointment would have to be approved by the Senate.

Although regulation will never be a good substitute for competition, the amendments made to the regulatory legislation, and in the institutions responsible for applying it, should have a positive impact and enable the pricing model based on hypothetical efficient firms to finally benefit consumers, while also creating competition in services where this is possible.

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Table 1: Privatisation Of Chilean Public Enterprises 1984 -1989

(US\$ Millions 31/12/95)

COMPANY/YEAR	1985	1986	1987	1988	1989	TOTAL
ELECTRIC FIRMS	16.4	124.3	393	632.5	77.9	1244.1
TELECOM FIRMS	0.9	55.6	35.5	344	192.1	628.1
SOQUIMICH	4.7	85.4	71.5	60.9	0.0	223.4
CAP	12.1	3.7	53.2	0.0	0.0	68.9
CAP (RET.CAPITAL)	0.0	135.8	0.0	0.0	0.0	135.8
COPEC	25.3	0.0	0.0	0.0	0.0	25.3
ECOM	3.2	0.2	0.0	0.0	2.8	6.2
IANSA	0.0	8.8	1.0	50.8	8.0	68.6
LABCHILE	0.0	2.8	3.8	18.1	3.1	27.8
SCHWAGER	0.0	0.0	6.1	2.2	7.0	15.3
ENAEX	0.0	13.4	0.0	0.0	0.0	13.4
ISEGEN	0.0	0.0	0.0	0.0	5.6	5.6
LANCHILE	0.0	0.0	0.0	7.0	75.9	82.9
CHILEFILMS	0.0	0.0	0.0	4.5	0.0	4.5
SOC.CHIL.LITO	0.0	0.0	0.0	0.0	13.0	13.0
ISEVIDA	0.0	0.0	0.0	0.0	8.8	8.8
TOTAL	62.5	430.0	564.1	1,119.9	394.3	2,571.7

SOURCE: CORFO ANNUAL REPORTS

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Table 2: Privatisation Of Chilean Enterprises 1994-1996 (US\$ Millions 31/12/95)

COMPANY\YEAR	1994	1995	1996	TOTAL	% SOLD	PURCHASERS	PROCEDURE
ELECTRIC COMPANIES							
COLBUN S.A.	65.1		340.0	405.1	46	IBERDROLA AND OTHERS	PUBLIC TENDER
EDELNOR S.A.	86.4			86.4	30	SOUTH ELECTRIC CHILE	PUBLIC TENDER
TOCOPILLA S.A. (**)			175.0	175.0	51	IBERDROLA AND OTHERS	PUBLIC TENDER
WATER COMPANIES							
ESSAL-VALDIVIA	10.5			10.51	100	AGUAS DECIMA S.A.	PUBLIC TENDER
TRANSPORTATION COMPANIES	40.8	4.5	12.0	57.3			
MINING COMPANIES							
MINSAL S.A.		7.4		7.4	18	SOQUIMICH	STOCK EXCHANGE
EL ABRA (**)	329.8			329.8	51	CYPRUS	PUBLIC TENDER
OTHER							
RADIO NACIONAL		1.8		1.8	99	SANTIAGO AGLIATI	PUBLIC TENDER
TOTAL	532.6	13.7	527.0	1,073.8			

NOTES:

SOURCE: CORFO COMPANY MANAGEMENT, CORFO ANNUAL REPORTS.

REFERENCES

BITRAN E. and R. E. Sáez (1994), "Privatisation and Regulation in Chile", in B. Bosworth, R. Dornbush, and R. Labán, eds., *The Chilean Economy: Policy Lessons and Challenges*, Brookings, Washington, D.C.

BITRAN, E. and P. Serra (1994), "Regulatory issues in the privatisation of public utilities: The Chilean experience. *Quarterly Review of Economics and Finance* 34 (Special Issue), 179-197.

BITRAN, E. and P. Serra (1998), "Regulation of Privatised Utilities: The Chilean Experience," *World Development* 26(6), 945-962.

ENGEL, E., Fischer, R. and A. Galetovic (1998), "Infrastructure Franchising and Government Guarantees," in T. Irwin, M. Klein, G. Perry and N. Thobani (eds.) *Dealing with Public Risks in Private Infrastructure*, Washington, D.C., Banco Mundial.

ENGEL, E., Fischer, R. and A. Galetovic (1998), "A New Mechanism to Auction Highway Franchises," Working Paper 13, Centro de Economía Aplicada, Universidad de Chile.

HACHETTE, D. and R. Luders (1993), *Privatisation in Chile*, International Centre for Economic Growth, San Francisco.

HELM, Dieter (1994), "British Utility Regulation: Theory, Practice, and Reform," *Oxford Review of Economic Policy* 10, 17-39.

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KRIDEL, D., Sappington, D. and Weisman, D. (1996) The effects on incentive regulation in the telecommunications industry: A survey. *Journal of Regulatory Economics* 9(3), 269-306.

LEVY, B. and Spiller, P. (1994) Regulation, institutions, and commitment in telecommunications: A comparative analysis of five countries studies. In *Proceedings of the World Bank Annual Conference on Development Economics 1993*, ed. M. Bruno and B. Pleskobic, pp. 215-266. The World Bank, Washington, DC.

SAPPINGTON, D. and Weisman, D. (1996) *Designing Incentive Regulations for the Telecommunications Industry*, The MIT Press and the AEI Press, Boston and Washington, DC.

SERRA, P. and G. Fierro (1997), "The outage cost in Chilean industry," *Energy Economics* 19(4), 1997, 417-434.

SERRA, P. (1997), "Energy pricing under uncertain supply," *Energy Economics* 19, 209-223.

SPILLER and Carlo G. Cardilli (1997), "The Frontier of Telecommunications Deregulation: Small Countries Leading the Pack," *Journal of Economic Perspectives* 11(4), 127-138.

STALON, Charles (1997) "Electric Industry Governance: Reconciling Competitive Power Markets and the Physics of Complex Transmission Interconnections," *Resource and Energy Economics*, 19(1-2), 47-83.

TABJA, R. (1997) "Análisis de la Tarificación para la Telefonía Pública Local en Chile," Master degree thesis, Facultad de Ciencias Físicas y Matemáticas, Universidad de Chile.

NOTES

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- ¹ Minority packages from Endesa, Entel, Eliqsa and Elecda were sold in 1990.
- ² The military government put forward three reasons for promoting labor and popular capitalism: (i) fostering the market economy by strengthening the domestic capital market; (ii) expanding capitalism to larger segments of the population; and (iii) in the case of labor capitalism, increasing productivity by aligning workers' and owners' interests. Other unstated reasons were the unpleasant experience with the highly leveraged and concentrated privatisation process of the 1970s, gaining public support for the ongoing privatisation process, reducing worker opposition to it, and making any policy reversal almost impossible.
- ³ The privatisation of public utilities, however, encountered little opposition. There are a number of reasons for this. First, there was a general presumption that SOUs were inefficient. Second, political opponents had concentrated their efforts in fighting for the prompt return of democracy to the country. Third, most of the restructuring of SOUs occurred before their privatisation, thus workers had little to fear from privatisation. Moreover, workers in enterprises being privatised and public employers could use their accumulated severance pay in order to buy shares.
- ⁴ Many potential subscribers did not apply for the service when they knew that their sector was not being served.
- ⁵ This situation, although positive in general, does raise certain problems in terms of its practical application: in general, legal processes are slow – especially litigation involving regulatory problems. In addition, due to lack of specific knowledge, the Judicial authority does not always have the capacity to solve such conflicts.
- ⁶ To the best of our knowledge, Chile was the first country to introduce incentive regulation.
- ⁷ The telephone bill of an average household increased from Ch\$ 9,853 in May 1987 to Ch\$ 11,395 in May 1997 in constant May 1997 Ch\$.
- ⁸ Price-capping consists of placing a cap on rate increases, where the cap moves according to price inflation minus a factor representing an ex-ante estimation of future efficiency increases. Price capping seems to have an advantage over efficient-firm pricing. It is easier for the regulator to identify future efficiency gains that would lead to lower costs, than to build a credible efficient firm case from scratch.
- ⁹ The client figures correspond to mid-1995.
- ¹⁰ Two distribution companies, Saesa and Frontel, subsidiaries of Endesa, were privatized in 1980.

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- ¹¹ A few days before the bidding date the authorities declared the process void as they realized that a short-list of six was going to produce only one offer. Negotiations produced a face saving agreement in which the consortium made a slight increase in the price it had originally offered in return for longer payment terms.
- ¹² Only generators with an installed capacity of less than 2% of total installed capacity within the system are excluded.
- ¹³ The reliable capacity of each producer is the maximum power that its generating units can contribute at the peak period of the system with a reliability exceeding 95%.
- ¹⁴ In 1992 97.2% of generation in the SIC was hydroelectric, while in 1990 the figure was 60%.
- ¹⁵ Chilectra serves 37% of all clients located in the SIC, and Río Maipo 7.4%. Other important distributors in the SIC are CGE with 16.8% of all clients, and Chilquinta with 11.1%.
- ¹⁶ The legality of this by-law is being challenged in court.
- ¹⁷ In 1997, following the driest year on record till then, similar disputes arose between generators. However, the specter of rationing disappeared following the copious rains of that year.
- ¹⁸ This section draws on Melo (1993).
- ¹⁹ For instance, since CTC wanted to delay the process for determining access charges between fixed and mobile telephony, it finally chose two of the three arbiters.
- ²⁰ Concession-holders have up to 24 months to install the phone. By the end of 1997 only 149 phones had been installed.
- ²¹ The Preventive Commission recommended changing Chile's signatory at ENTELSAT. Prior to the ruling, Entel was the only signatory of this convention, which gave privileged access to international connections, as ENTELSAT satellites have an absolute majority of international transmission.

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- ²² In 1996 Entel increased its participation in Telecom to 59%, and raised it further to 75% in 1997.
- ²³ Chilesat has a joint venture with Qualcomm, with each owning 50% of the PCS company.
- ²⁴ The Commission argued that competition among potential competitors is an important factor in market discipline.
- ²⁵ Bell South filed a complain against Entel with the Resolutory Commission. Entel's defense argued that it obtained all its licenses in public auctions and that it is not the dominant operator in mobile telephony.
- ²⁶ The scarcity of phone lines led to users being willing to pay an installation price way above its cost. This surcharge recognized this situation and was introduced with the intention of giving CTC incentives to reduce the waiting list quickly.
- ²⁷ However, consumer associations can be bought by large regulated firms. Recently the president of the largest consumer association resigned after acknowledging having received money from CTC.

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