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Lessons from the deregulation transition in Chile's local telephony market

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Abstract

There is no experience in the world where entry to local telephony has been as significant as in Chile. This paper addresses two related questions: (i) whether the local telephony segment in Chile is competitive enough so as to deregulate rates and (ii) whether competition thus far achieved could be at risk in the case where asymmetric regulation is ended. The paper suggests that the market is competitive enough, that the regulation mechanism is extremely costly, and that subsidizing entry in order to have infrastructure competition is not necessary. It concludes that deregulation of consumer's rates would be in their own consumers' interest.
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1. Introduction

Chile has played a pioneer role in the privatization and deregulation of the long distance and local telephony market (i.e., local exchange carriers, LEX) and has merited remarkable signals of approval.[1] The way in which deregulation in telecommunications was implemented, particularly

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[1]See, for instance, Sigmund (1990), Beca (1991), Galal (1992), Hachette and Luders (1993), Paredes (2000), Ramamurti (1996), Gutierrez and Berg (2000), Levy and Spiller (1996), and Fisher and Serra (2002).

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the long distance segment, where vertical integration was allowed and regulation was limited, was one of the most innovative policies ever adopted by regulatory agencies in the world. The different decisions and rulings of the Telecommunications Undersecretary (Subtel) and the Antitrust Commission have been equally important in facilitating interconnection between the different LEX and in encouraging the growth of mobile telephone services (cellular and PCS). Taken jointly they were decisive in eliminating the de facto monopoly CTC Chile (CTC) had enjoyed since its creation, back in 1930. Thus, it was in Chile where the possibility of competition for LEX really started, while globally legally protected de facto monopolies were still in place.[2]

The entry of new LEX and mobile operators in Chile has been, from the standpoint of world experience, to some extent exceptional. There is no experience in the world where entry has been as strong and significant. Furthermore, though the incumbent's share has not been drastically reduced, this has been due to its important investment efforts. The main reason for entry can be found in the law: concessions are not exclusive and incumbents must grant interconnection for new entrants at terms and rates fixed (regulated) beforehand.

For some analysts and for the Antitrust Commission (Ruling 686 and 709, 2003) the market is still far from being considered competitive (e.g. Newbery, 2000; Mancero & Saavedra, 2001; Coloma & Tarziján, 2004). Furthermore, Armstrong, Cowan, and Vickers (1994) and Vickers (1998) suggest that only through subsidies to the entrants, would entry be possible. The key questions addressed in this paper are whether the local telephony segment in Chile is competitive enough so as to deregulate rates and if the competition thus far achieved could be at risk in the case where asymmetric regulation is ended. Besides this highly controversial practical issue in Chile, the paper is also concerned with the transition process that Chile is undergoing towards a properly deregulated sector (excluding interconnections). The analysis suggests that the regulation scheme, initially conceived and implemented in a simple and direct manner, has become so complex and inefficient that complete deregulation of final rates must be considered. Furthermore, the paper suggests that the evidence is consistent with the idea that asymmetric regulation does not explain the important increase in entry and investment in Chile may well, in fact, be accounting for a decrease in competition.

The paper has three sections that follow this introduction. The second section describes and analyzes the basic conceptual elements of the regulatory model and practices in Chile. The third section describes the sector's performance, analyzes the extent of competition in the telephony market and, in particular, the market strength wielded by CTC. The fourth section concludes.

2. Regulatory theory and practice in Chile

2.1. Deregulation policy

In 1978, the National Telecommunications Policy—the groundwork of the current legal framework—eliminated discriminatory practices in favor of State-owned LEX, despite the existence of a virtual State-owned monopoly. Telecommunications public utilities and sound and

[2]White (2000) states that the local telephone service remains as "the last frontier" in terms of the deregulation progress.

television broadcasting were considered to be normally operated through third parties and concessions, authorizations, permits and licenses began to be granted by objective and clearly established criteria set in the law. Thus, telecommunications public utilities were organized to allow a broad participation of all sectors, both State-owned and private, avoiding LEX featuring monopolistic traits. The new policy also made a reference to rates, by establishing that, in principle, they would be freely agreed on between service providers and users. However, the regulatory authority reserved to itself the responsibility for setting rates both for public utilities as well as for services to be provided among the LEX that participate in the provision of the final service.

The General Telecommunications Law—enacted in 1982 and amended in 1987—is the basis of the regulation that governs the sector. Other legal and statutory bodies, such as decisions from the General Audit Office and rulings from the Antitrust Agencies, are also a part of the regulatory framework governing the sector. The key aspects of the regulation provided in the law are three: (i) freedom of entry; (ii) compulsory interconnection; and (iii) rate freedom, with regulation as an exception.

The law guarantees freedom of entry, as it states that concessions are to be awarded to whoever applies for them. Only in a case in which, due to technological limitations, there is no possibility of granting licenses to all applicants, they are to be awarded through a public bidding process. The law also determined that all concessions are granted for a 30 yr period (renewable for similar periods at the request of the interested party), which made Chile a pioneer in removing exclusive concessions and accepting infrastructure-based competition.[3]

To allow entry in practice, the law makes interconnection compulsory, and its rates, terms and procedures are regulated. Those entering the market must establish the necessary installations to reach the point of interconnection (defined by Subtel) with the networks of all incumbents. The law obliges each firm to accept applications for interconnection filed by others, and the terms and procedures to compute the interconnection costs are defined in the law and in a number of complementary rules.[4] Despite this, it was not possible for many years to establish interconnections by mutual consent of the parties involved and a number of lawsuits ensued. The implementation of the multi-carrier system in 1993, the Rate Decree approved for CTC in 1994 and some provisions enacted by Subtel with regard to the terms and conditions for interconnection basically solved the problems which, in actual practice, had been blocking entry or simply barring it.[5]

Finally, the law establishes that when the Antitrust Commission states that for specific services there is not enough competition to warrant a free rate system, these have to be set. The steps to be followed provide that the demand for each carrier, area and service is to be estimated. The costs associated with the provision of the service for that area are computed for a theoretically efficient LEX serving the geographic area determined by the concession.

[3]For an analysis of the effects of this option, see Van Damme (1999) and Woroch (2002).

[4]See Spiller and Cardelli (1997), Hausman and Tardiff (1995) and Cave (2003). See also Coloma and Herrera (1990)and Fontaine and Valdés (1989) for specific aspects of the regulation.

[5]Spiller and Cardelli (1997) perform a very good comparative analysis, focusing on the Chilean case and other small countries where experiences have been successful. Also see Cave, Majundar, and Vogelsang (2002), Brock (2002), Armstrong (2001), and Noam (2002).

2.2. Towards more complex regulation

Regulation in telecommunications focuses on the telephony segment because it is deemed to have the greatest characteristics of a natural monopoly.[6] In theory, by virtue of such a consideration, it should be understood that each operator would enjoy, on either a legal or a de facto basis, a regime of exclusivity in its service area. As a consequence, rates should be regulated.

However, the important conceptual debate that has taken place in the developed countries has had political consequences in Chile. On the one hand, it is argued that digitalization, the significant decreases in costs and the modular features of the LEX are making monopoly characteristics disappear. That is, technological progress would enable the industry to down-scale the efficient sizes of the LEX and, consequently, the existence of economies of scale are becoming less important. On the other hand, the use of multi-pair cables, channeling, posts and other assets whose use is shared, enables operators to reduce costs as a function of the number of subscribers or lines sharing the same infrastructure. This would suggest the existence of economies of density, proportional to the number of lines in a given area served by a given firm. These economies of density would enable some carriers to gear their strategies to very dense segments and thus, even though they do not have a great number of clients, compete unproblematically with others that are obliged to serve greater areas having heterogeneous densities. Furthermore, network economies, which arise because it is more attractive for users to adhere the possibility of interacting with greater numbers, create advantages for the carrier that has a greater number of clients, and may also create a barrier to entry (see, Liebowitz & Margolis, 2002).

To prevent network economies from limiting entry, regulation in Chile makes interconnection mandatory and sets its rate. In any event, the Antitrust Commission, as in the case of water and electricity distribution, has systematically determined that final service cannot be provided competitively and, consequently, rates are set for an efficient theoretical firm in the concession area of the real company.

In practice, though, the basic telephony segment—telecommunications—exhibits important differences with other sectors mentioned. As concessions are non-exclusive and each firm except the incumbent decides which area it serves, it is possible that more than one LEX serves the same area. In turn, defining two different efficient firms for the same area lacks economic sense. This is so because in the case where more than one firm serves an area, simultaneous price regulation would not be necessary, since regulating one would determine a cap on the whole market. Furthermore, if entry in a given regulated area were in place, that would reduce market rates and, therefore, it would be pointless to once again set rates for the new LEX.[7]

In April 1998, through Resolution 515, the Antitrust Commission determined a number of services and the firms that would be regulated. Thus, it changed the criteria stating that only some—dominant—firm, would be regulated. This change began to be applied in 1999, with the new rate decree.

[6]For a discussion of a more recent situation within the industry, see Laffont, Rey, and Tirole (1998a, b) and Armstrong (2001).

[7]For an analysis of different regulation aspects, see De Fraja (1997), Lyon and Huang (1995), Hausman and Sidak (1999), and Bourreau and Dogan (2001).

In reality, however, the asymmetric regulation approach has several drawbacks. On the theoretical side, there is a concern that asymmetric regulation always artificially helps new entrants, but at a social cost. Along this line of thinking, many analysts show concern for the effects of asymmetric regulation on efficiency (e.g., Baumol & Sidak, 1994; Sappington & Weisman, 1996). On the other hand, some analysts emphasize the advantages of this regulation. Green (2000) suggests that this regulation is especially convenient when the incumbent has monopoly power due to the cost of changing the provider. Coloma and Tarziján (2004) remark that asymmetric regulation has been the key to increase competition in Chile.

Even though there are many ways in which we can conceivably think of how asymmetric regulation helps entrants, in the Chilean case the effect is caused through partial overlapping and cream skimming. If a new entrant applies a lower rate than that set for the incumbent, the latter must lower the rate to compete.[8] This, however, is impracticable if regulation forces a uniform rate in all the areas served, as is the case in Chile. Cream skimming would be avoided with different rates explained by costs (e.g., associated with density), or having as many areas as cost differences can be identified. However, this was also ruled out in Chile since the Rates Decree ruling the sector stated that the dominant carrier could apply different rates only in four areas, and not in 33 as was suggested by the cost study carried out for that process.[9]

Leaving the entrant in a more favorable position than the one held by an incumbent is even more likely when regulation not only involves the level but also regulates its structure (i.e., composition of fixed and variable charges, hourly discounts, etc.). A new entrant, whose rate structure is free and competes with a regulated incumbent, is afforded evident advantages of flexibility regarding the structure. If we think that in the case of Chile, where the growth of the LEX critically depends on the market for second dwellings, summer or recreational housing, which are used sporadically and by new segments (e.g., young people, additional lines, or low-income households), the rate structure is critical. This problem for the incumbent may be simply illustrated considering the structure of a fixed charge and a variable charge (e.g., per minute). Such a structure may, for certain segments, be very inadequate. Intensive Internet users, for instance, would prefer unlimited broadband access for a flat rate that is commonly offered by non-regulated LEX. In the case of vacation homes, a combination of a lower fixed charge and a higher variable charge is convenient for users, who may, as an option, resort to either mobile phone services, non-fixed charges or to unregulated LEX, who have the capacity to offer such rate combinations. On the other hand, for low-income segments, a mobile telephone service prepayment card does not burden them with the fixed monthly charge that in the year 2003 was in the order of 12% the minimum wage, applied regardless of the use of the telephone. This scheme has the additional advantage that it enables users to exert control over their bill. Summing up, one critical aspect of the current regulation in Chile is that neither allows a regulated LEX to adapt to its clients' needs nor even replicate the plans offered by its competitors.

There are good reasons and some evidence showing how this problem negatively affects the regulated LEX. There are more than 300 varied plans offered by unregulated LEX and mobile companies, and which the regulated incumbent cannot replicate. Non-regulated LEX offer

[8]In order that this possibility may exist, it is not required that the entrant should have a better technology, it suffices only that it have a greater concentration of clients; as in network business, the economies of density are critical.

[9]For a theoretical analysis of this point, see Riordan (2002) and Sappington (2002).

multiple plans, including fixed charges higher than those set for regulated LEX, but combined with lower charges per minute. There are also minutes free of charge, flexible hourly structures, flat rates, discounts for frequent numbers and for the purchase of a package of services, different rates within the same rate area, and more expensive hourly charges for a few hours.

3. Competition and performance

3.1. Overall performance

The main indicator that shows the evolution of the sector is the number of fixed lines. Whilst the author is particularly interested in the most recent evolution of the sector, it is important to note that between 1980, 1985 and 1991 they went up from 550,124 to 718,659 and to 1,056,781 respectively. These figures represent an annual rate of growth of 5.5% in the period 1980–85 and 6.6% for the period 1985–91.

Since 1990, though, growth has been explosive (see Table 1 and Figs. 1 and 2). Between 1992 and 1998, the average rate of growth in fixed lines was 16.7%. This allowed for an increase in the penetration of LEX that practically tripled between 1990 and 2003. However, there was a remarkable decrease in the rate of growth of LEX since 1999.

Another important observation is that whilst CTC has the largest market participation, such figure a measured in terms of fixed lines in service went down from 95% at the end of the 1980s and early 1990s to 76% in 2003. This however occurred despite the important investment made by CTC.

A second important indicator for understanding the market is the number of mobile subscribers, a main substitute for LEX. The number of mobile subscribers went up from something less than 40,000 in 1991 to over 6.7 million in 2003. The impressive growth in mobile telephony more than offset the slowdown in its basic counterparts since the end of the 1990s. Thus, between 1996 and 2000 it increased by ten times, which explains why in 2003 mobile telephony subscribers almost doubled the number LEX of subscribers.

The important reduction in the CTC lines in service—reflected in a decrease of four points in CTC's participation between 1999 and 2003—is also clear. The major problem with this evolution is that it reflects the severe competitive constraints affecting the regulated company. Although CTC increased its lines in service by more than 300,000 yearly between 1995 and 1998, as from 1999 to 2003, when asymmetric regulation was imposed, this same company reduced the number of lines in service by almost 150,000. Since CTC was causing the major increase in lines, this change created a severe decrease in the dynamism of the industry.[10]

Regarding rates, indicators that more aptly summarize the net effect on welfare of different changes are unfortunately difficult to determine. They have different components (fixed and variable charge, for peak time, etc.), so the rate depends on the specific traffic. Likewise, as the service has been improving and the rates, which all but the dominant carrier applies, adopt the

[10]Part of this change is due to economic conditions and to the reduction in the rate level established for CTC in 1999 and which also made asymmetric regulation more effective (see, e.g., Harberger, 2001). However, as the whole industry increased lines in service by 300,000 in the period, part of the reduction in investment can be linked to asymmetric regulation.

Table 1
Evolution of the telecommunications sector

Indicator	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
No. of fix lines (000)[1]	1056.8	1283.9	1250.7	1634.4	1891.2	2264.3	2693.3	3046.7	3108.8	3387.5	3478.5	3467.0	3415.6
Rate of growth (%)[1]	22.3	21.5	18.4	7.5	15.7	19.7	18.9	13.1	2.0	9.0	2.6	−0.33	−1.48
Penetration local telephony[1]	7.9	9.4	11.0	11.6	13.2	15.6	18.3	20.4	20.6	22.1	22.4	22.1	21.7
Participation CTC (%)	94.30	94.50	94.50	94.60	92.80	90.80	88.90	89.90	83.40	80.30	76.10	76.00	76.00
No. of mobile telephones (000)[1]	36.2	64.4	85.2	115.7	197.3	319.5	409.7	964.3	2260.7	3401.5	5271.6	6445.7	6706.4
Rate of growth (%)[1]	159.6	78.3	32.2	35.8	70.6	61.9	28.3	135.3	134.5	50.5	54.9	22.3	4.0
Penetration Mobile Telephony [1]	0.3	0.5	0.6	0.8	1.4	2.2	2.8	6.5	15	22.2	34	41.1	42.6
No. of lines total (000)	1092.9	1348.3	1605.9	1750.1	2088.5	2583.8	3103.0	4010.9	5394.9	6789.1	8750.1	9912.7	10,122.0
Rate of growth (%)[1]	23.4	23.4	19.1	9.0	19.3	23.7	20.1	29.3	33.9	26.4	28.9	13.3	2.1
Penetration (local + mobile)	8.2	9.9	11.6	12.4	14.6	17.8	21.1	26.9	35.6	44.3	56.4	63.2	64.3
Rate of growth GDP (%)[2]	8.0	12.3	7	5.7	10.6	7.4	6.6	3.2	−1.0	4.4	3.1	2.1	3.6(ES)
Rate of growth GDP telecommunication (%)[2]	26.7	20	11.6	15.2	21.3	18.9	26.2	20.8	0.65	8.0	7.6	2.3	2.9(ES)

Sources: (1) Subtel, Informe de estadísticas básicas del sector de las telecomunicaciones en Chile, September 2000; (2) Banco Central de.

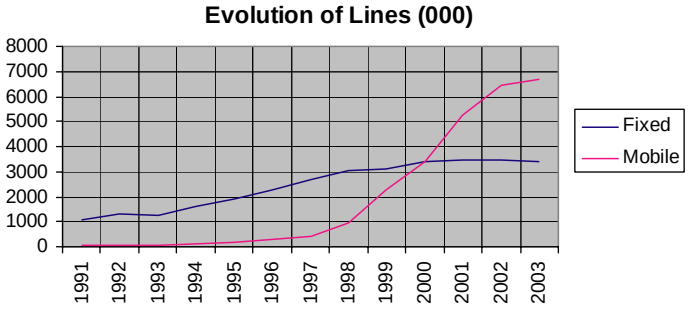

Fig. 1. Evolution of lines (000).

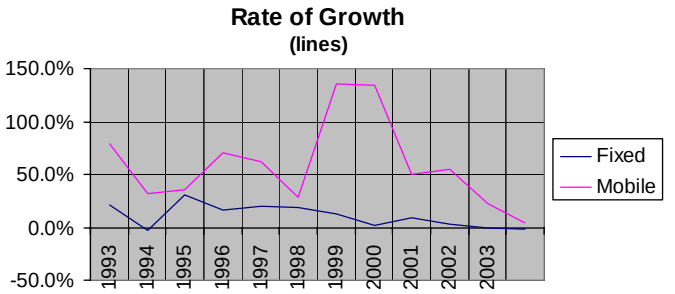

Fig. 2. Rate of growth.

form of a menu, makes the difficulty even greater. However, some casual evidence indicates that unregulated LEX launched offers to attract client segments involving rates that are below those published and far below those applied for CTC. By the same token, waiting lists fell from 241,000 in 1992 (20% of the subscribers) to practically zero in the year 2000. More importantly, though, a simple exercise suggests that the price paid by consumers has significantly fallen to equate demand and supply.

Thus, assuming an income elasticity of demand of 1.4, which is an upper bound by international estimates, the increase in lines of about 17% suggests that the supply increased over demand in about 5% per annum in the period 1990–98. Also considering a rather high own price elasticity of demand of −0.5, it can be concluded that rates should have fallen by at least 10% per year to match demand with supply.[11]

3.2. *Entry and competition in local telephony*

Regulatory advances and technological progress have significantly changed the competitive map not only in Santiago but also throughout the country. Until 1982, the local telephony segment was segmented; CTC was the only operator in all the regions, except for the Tenth and

[11]See Taylor (1994, 2002) and New Zealand Commerce Commission (2003) for surveys on elasticity estimates.

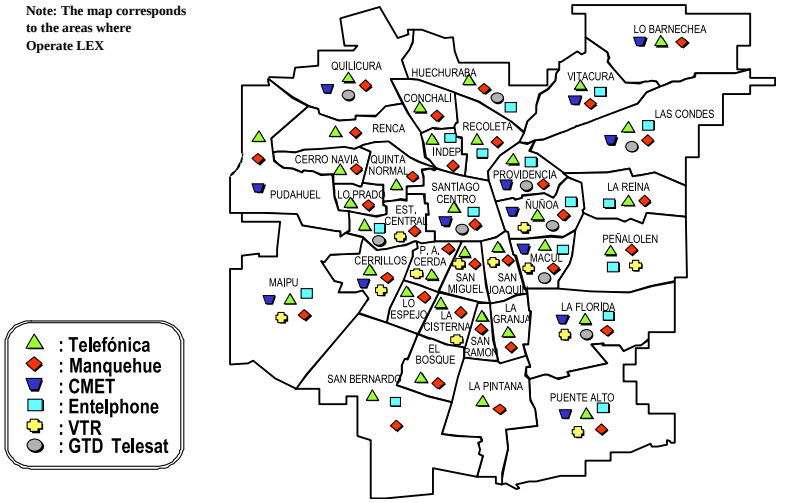

Fig. 3. Overlapping local exchange operators in Santiago.

Eleventh Regions, where the carrier Telefonica del Sur (CNT) and its subsidiary Telcoy were the sole LEX.

Even though the entry of new LEX was never forbidden, it was only at the beginning of the 1990s that the entry and expansion of new operators took place, first marginally and primarily in Santiago and the Fifth Region. Obviously, it was foreseeable that entry should occur initially in these areas, those with higher traffic. As from 1995, entry intensified and was no longer concentrated in sectors with higher traffic in Santiago and the Fifth Region, covering practically all the primary areas of the country and even the rural areas, including sectors with a low level of income. This entry meant that in Santiago and some other areas, virtually each family has the possibility of choosing at least among two LEX, since there is an almost complete overlapping of concessions. In the case of Santiago, this is illustrated in Fig. 3, which that shows a map of Santiago, with its counties very different in terms of wealth and home density. As this figure shows, six LEX displayed important overlapping in the year 2000. Although less intensive, such a situation also applies for the rest of the country (Table 2).[12] All these LEX had fully operational networks at the time and covered the entire concession area assigned to them. Consequently, these concessions allow them to provide service, in the event that it is requested. This, in practice, is an important source of market contestability or of potential competition.

The above-mentioned indicators suggest that competition among LEX is potentially strong, and hence it would limit an eventual use of monopoly power by the incumbent. However, it still could be argued that competition is limited exclusively to those areas where real overlap exists, and not to the rest.[13] This reasoning, however, is mistaken. When an entrant decides the area he

[12]In the case of the Tenth and Eleventh Regions, since 1998 CNT and Telcoy have faced CTC's competition. CNT, in turn, has expanded to Temuco and Concepción and will continue to do so in other Chilean cities.

[13]The Antitrust Commission in April 2003 used this argument in a ruling on the subject.

Table 2
Subscribers per zone and LEX (November 2000)

Primary zone	CTC	ENTEL phone	Telesat	Manquehue net	CMET	CNT	Telcoy	VTR	Rural comps
Arica	31,318								
Iquique	40,160	1466	2444					6487	
Antofagasta	86,015	2243	899					12,737	
Copiapó	32,752								
La Serena	61,567								407
Ovalle	17,184								
Quillota	32,975				11,040				
Valparaíso	225,446	523	615		19,377			2329	
Los Andes	31,387				4763				
San Antonio	26,866								
Santiago	1,557,698	107,606	36,695	74,141	35,002			85,792	1514
Rancagua	56,866				21,094				
Curicó	37,997				3065				
Talca	39,577				2271				1820
Linares	19,168				833				2439
Chillán	40,254				6588				3455
Concepción	173,036	1888				377		16,058	
Los Angeles	29,959								2427
Temuco	76,636		690			24,877			3731
Valdivia	5508					33,915			755
Osorno	6306					30,414			1034
Pto Montt	8133					54,839			815
Coyhaique	1412						14,680		
P. Arenas	39,014								
Total	2,677,234	113,726	41,343	74,141	104,033	144,422	14,680	123,403	18,397

Source: CTC.

will serve, he must compare the return associated with each area. Consequently, it cannot be true that those areas exclusively served by the incumbent are more profitable since otherwise entry would be more evenly distributed than it is in real practice.

Finally, and more relevantly, as mentioned above, the higher flexibility of new entrants allows them to offer lower prices and conditions than those of the regulated rate and it is in the lower rate (besides the service) where consumers perceive the benefits of entry. Fig. 4 shows three alternative plans offered by competitive LEX and compares them to the regulated rate for a high-consumption segment in the year 2000. As this figure shows in the case of those traffic levels, cheaper alternative plans than those that CTC was forced to apply were offered by one or more LEX.

3.3. Competition by telephony provided through cable networks and mobile telephony

Besides competition among LEX, other more relevant forms of competition exist. The rest of this section focuses on mobile telephony and fixed telephony provided through the Cable TV networks.

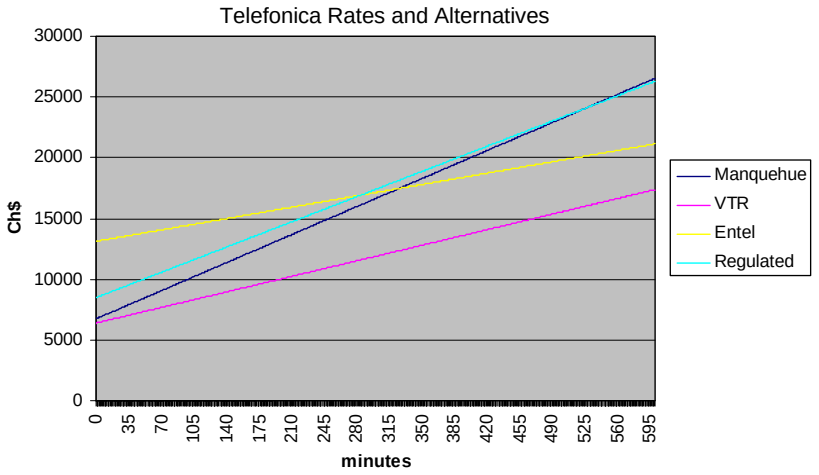

Fig. 4. Telefonica rates and alternatives.

3.3.1. *Cable networks*

The use of Cable TV networks to offer telephony, in a complementary and simultaneous manner to Cable TV services, has become an important source of real and potential competition for LEX. In the year 2001, the major Cable TV carriers, VTR and Metropolis Intercom, have deployed two networks that pass through approximately 1.6 and 1.1 million households (''home passed''), respectively. In all, approximately 25% of these homes passed were occupied by 2003 clients of Cable TV. Available estimates show that with an additional investment of approximately US$ 400 per line on average, the coaxial cable networks of Cable TV carriers are adapted to provide telephony, without affecting the television service which continues to be essentially uni-directional. In addition, a special terminal (*set-top box*) in the home of the subscriber, which at present has a cost of about US$ 350, is required. Consequently, with an estimated additional investment of US$ 750, it is possible to provide telephony to a Cable TV subscriber.

On the other hand, in the rate study submitted by the regulatory authority in 1999 to set rates for CTC, the estimated incremental cost of technical investment in a normal telephone network was US$ 767. As the cost per line in technical investment to implement telephony through the Cable TV network is lower, homes passed are potential clients and a clear source of competition, especially in residential sectors in all the cities in the country where Cable TV carriers have concentrated their presence.

VTR has one-third of its ''home passed'' equipped with bi-directional facilities, and in the year 2003 was covering approximately 1.6 million households. Thus, only at the level of VTR, 1.6 million households will have the possibility of giving up the CTC telephone service (or for that matter, of any other operator) while subscribing to the service offered by VTR. Moreover, in the first quarter of 2001, VTR already had over 175,000 subscribers to telephony through the cable, which stood for roughly 30% of total subscribers to Cable TV.

Furthermore, and resorting to the same bi-directional network, VTR and Metrópolis Intercomm, the two largest cable operators, offer a broad-band Internet service, for a flat rate

less than US$ 40. This is another strong threat to traditional telephone carriers who must bill a variable charge for access to the Internet. For high traffic clients, at least, it is becoming much more convenient to give up conventional telecommunication lines and connect to the broad-band Internet service provided by VTR or any other carrier offering a similar service for a flat rate.[14]

3.3.2. Mobile telephony

Mobile telephony is the clearest channel through which competition to LEX can be made effective. Cellular telephones and PCS are forms of communication that at present substitute for most services provided by the LEX.[15] Over recent years, Subtel granted several concessions to operate mobile telephony. CTC and Bellsouth obtained concessions in the Fifth and Metropolitan Regions, while Telcom (a related carrier to Entel) and VTR obtained concessions in the rest of the country. In November 1995, Subtel called for a public bid to award the three national concessions for mobile telephone services in the PCS system. Four PCS operators started operating through the entire country: CTC (through its subsidiary Telefónica Móvil), Entel (through its subsidiary Entel PCS), Bellsouth and Smartcom. A second substantial change occurred with the commencement of the Calling-Party-Pays System. Since 1995, when there were 200,000 mobile telephone subscribers, the number of subscribers has almost doubled (2003).

3.3.3. Technological evolution

Apart from the existing competition between LEX and mobile telephony and that provided through Cable TV and other networks, the Chilean sector follows global technological change in the medium.[16] Among recent regulatory and technological landmarks that offer a greater possibility of entry and competition to LEX is the unbundling of the "subscriber loop," ordered by the Antitrust Commission and effective as from the year 2000.[17] In the year 2000, the regulator enacted the technical provision that assigns a spectrum for Third Generation Mobile Telephone Services (3 G).

The potential competition picture followed different market definitions at the end of 1999, that is, in the period when asymmetric regulation started in Chile, and is shown in Table 3. Till beginning of the 1990s, on the basis of any market definition CTC's market share was close to 95% at the national level, and decreased by the end of 1999 to 83.4% when the market considers only LEX. CTC's participation in the market reaches 48.3% when mobile telephony is part of the market definition. Such a decrease in participation is even greater if the substitution potential afforded by telephony provided through Cable TV is considered. All in all, this occurred despite the important increase in CTC subscribers.

[14]These arguments fail to consider that it is perfectly possible to make voice communications through Internet, which represents a new threat to traditional telephone carriers.

[15]It is also true that a high percentage of mobile customers also own fixed telephones, which suggests some complementarities among fixed and mobile telephony.

[16]With WLL up to six new operators of local exchange telephone services will be able to operate in Chile and that will provide wireless services, that is, without any need for an external exchange based on cables.

[17]In the year 2001, there exist contracts through which CTC sells parts of its network to its competitors. This is a real means that facilitates entry and shows that CTC cannot limit entry.

Table 3
Telephony market in Chile (December 1999)

Region	Local exchange subscribers in Chile[1,2]		Mobile suscribers[1,2]		Cable TV suscribers[3]	Total suscribers	Home passed[4]	% Telefónica CTC Chile				% Telefónica (CTC + MÓVIL)		
	Total	CTC	Total (M)	CTC		F + M + CATV	(July 2000)	F (%)	F + M (%)	F + M + CATV (%)	F + M + H-P (%)	F + M (%)	F + M + CATV (%)	F + M + H-P (%)
I	73,585	73,299	66,290	27,709	32,744	172,619	121,443	99.6	52.4	42	28	72.2	58.5	38.7
II	98,329	87,571	78,010	32,491	40,250	216,589	150,527	89.1	49.7	40	27	68.1	55.4	36.7
III	31,217	31,216	19,932	10,001	8,555	59,704	32,048	100.0	61.0	52	38	80.6	69.0	49.5
IV	75,942	75,868	63,124	21,166	15,394	154,460	57,297	99.9	54.6	49	39	69.8	62.8	49.4
V	342,248	307,116	219,957	74,087	111,311	673,516	412,120	89.7	54.6	46	32	67.8	56.6	39.1
VI	89,925	70,366	66,229	28,036	24,586	180,740	90,997	78.2	45.1	39	28	63.0	54.4	39.8
VII	83,896	77,342	89,192	31,733	20,029	193,117	74,778	92.2	44.7	40	31	63.0	56.5	44.0
VIII	254,254	240,136	163,310	47,618	51,031	468,595	189,981	94.4	57.5	51	40	68.9	61.4	47.4
IX	95,662	76,054	78,534	36,612	18,355	192,551	67,979	79.5	43.7	39	31	64.7	58.5	46.5
X	137,990	17,335	76,926	29,033	31,878	246,794	118,075	12.6	8.1	7	5	21.6	18.8	13.9
XI	15,099	1396	7705	2706	4571	27,375	17,481	9.2	6.1	5	3	18.0	15.0	10.2
XII	36,245	36,230	15,176	8462	—	51,422	—	100.0	70.5	70	70	86.9	86.9	86.9
RM	1,774,407	1,498,468	1,316,302	405,934	290,628	3,381,337	1,376,256	84.4	48.5	44	34	61.6	56.3	42.6
Total	3,108,799	2,592,397	2,260,687	755,588	649,332	6,018,818	2,708,980	83.4	48.3	43	32	62.4	55.6	41.4

Sources: (1) http://www.subtel.cl; (2) Telefónica CTC Chile; (3) Consejo Nacional de Televisión; (4) Telefónica CTC Chile, for Metrópolis Intercom, and http://www.unitedglobal.com/laChile, for VTR.

3.3.4. Actual substitution between LEX and mobile telephony

Although Table 3 shows potential competition, the real degree of competition and the capacity of a dominant LEX to use its monopoly power depend on the quality of substitutes their competitors provide. Care should be exercised in estimating such substitution quality, since from the economic standpoint, the relevant substitution concept, in addition to the technical component, requires an estimation of cross elasticities at some relevant points (e.g., where rates are equal). In other words, if mobile telephony provides the same service as local telephony, the former is not an economic substitute for the latter if the rate is significantly higher.

To approach the economic concept of substitution without using cross elasticities, which are difficult to interpret since they are not computed to equivalent rates, for different levels of traffic, the paper compares the cheapest offer of mobile carriers effective on August 2000 and December 2003 (envelopment), with the CTC rate.[18] The difference represented the highest level for CTC to increase its rate, in the event that those rates became deregulated. This is so because the paper neither considers the limits imposed by other LEX, telephony provided through Cable TV networks nor potential entry for newcomers using these or other technologies.

In August 2000, the greatest difference between rates for high traffic levels reached roughly 65%. Though this difference is important, it was lower than the valuation that consumers attached to additional services associated with mobility (Valdés, 1994). In addition to mobility, this is due to the fact that mobile companies do not charge for long-distance services within the country and they offer rates that are significantly lower for calls between mobile telephones belonging to the same carrier.[19]The same exercise shows that the situation was more favorable in 2003 because (only) for an intermediate range of traffic, mobile rates are at best 40% more expensive than regulated ones. For an average customer, that is, one making calls of 360 min per month, the difference in the bills was estimated at 7% (Fig. 5).

4. Conclusions

Rate regulation has become extremely complex over the years in Chile. Asymmetric regulation faces serious methodological and practical problems that prevent regulated operators from competing. In fact, this regulation, which is aimed at setting rates for a dominant operator, loses its purpose when it leaves the regulated carrier with a rigid rate structure and a position that is hardly suitable to adequately compete. That is, the standing rate regulation adversely affects CTC because it allows very little flexibility to make offers to groups, which in terms of their essential traits are different and captured by its competitors.

Furthermore, the Chilean data suggest that asymmetric regulation has prevented the incumbent from investing, which not only runs counter to the purpose of regulation, but may also lead to compromising the investment and growth of the network. The merit of inducing entry and investment by new participants cannot be attributed to asymmetric regulation either. The most

[18]To compute the envelopment analysis the mix of calls from and to mobiles and fixed telephony, restrictions, and only two companies, Entel and Smartcom are considered. Other companies, within some restrictions, offer cheaper rates, but their significance is debatable.

[19]In addition to mobility, the additional services include a greater control of the account and the absence of a compulsory fixed charge.

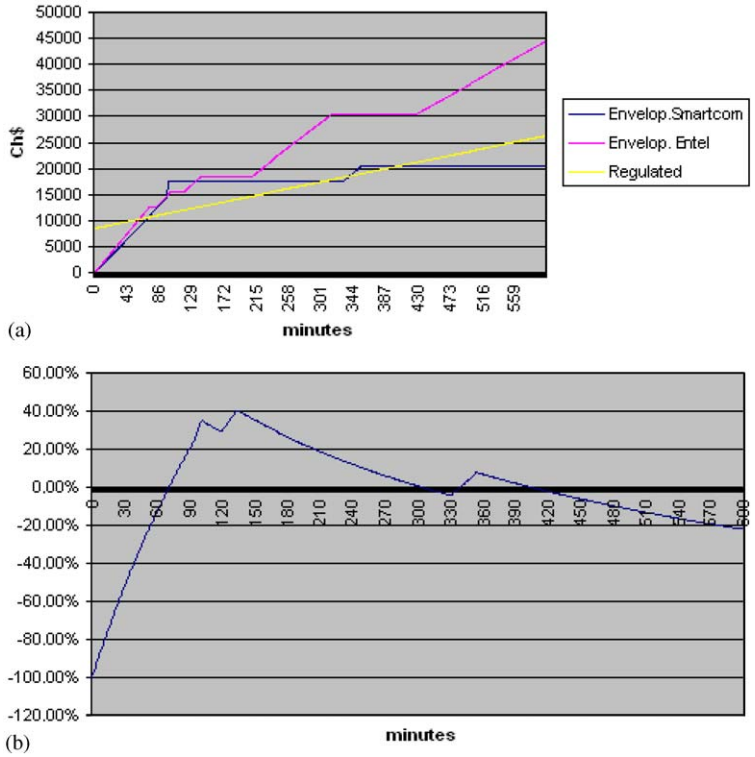

Fig. 5. (a) Mobile envelopes and regulated; (b) percentage of mobile rate over regulated.

important condition leading to the jump in entry was provided in 1995 by the clear definition of interconnection procedures and rates.

On the other hand, Chile's local telephony segment has become progressively more competitive and contestable. A number of suitable technologies exist to efficiently substitute LEX, interconnection changes are clearly defined and entry is possible with very small plants. The position which mobile telephone services hold is particularly important, as it not only has become the most dynamic segment, but in 2003, it also became twice as popular as fixed telephony. In particular, the existence of mobile firm plans, which for certain levels of consumption are more convenient than those set in the rate decree, shows that there is a very relevant economic substitution, which would prevent CTC from exerting monopoly power. Thus, while for traffic ranges between 75 and 300 min mobile rates are more expensive (for other ranges they are cheaper), for a typical client, if he had to resort to a mobile plan, the cost of that plan would be only 7% higher.

A policy implication of this analysis is that Chile should take new steps in its truncated deregulation process, this time by liberalizing final rates to consumers. This proposal faces two contradictory objections, but can be easily faced. The first is that once deregulated, CTC could make an abusive use of monopolistic power, increasing rates. The paper has argued that this possibility is severely limited not only by potential entry, but also by current competition. The

second suggests that after deregulating CTC, it may reduce rates and hence predate upon its rivals.

Even if the market were neither contestable nor competitive, or if there were a reasonable doubt as to which is the appropriate degree of competition and if it is a good decision to deregulate the rates to the public, deregulation still seems a sound policy. The risk of an incorrect decision is reduced by obliging the regulated carrier to have the offer established in the Rate Decree in its menu of offers. Specifically, the offer that originates from standing regulation should continue to be applied, regardless of whether the carrier may offer a flat rate or some other menu. In this way, consumers, if jeopardized by a menu that does not satisfy them, will simply not take it.

On the other hand, the risk associated with predatory behavior is debatable from a practical and theoretical standpoint. First, while the industry is subject to sunk investments, entry is already in place. Secondly, competitors in the mobile segment, and most of the fixed segment, are backed by important groups of world telecommunications players (Telefónica, Telecom Italy, Bellsouth and Endesa Spain). Still, the theoretical risk of predatory behavior could be solved in a manner that while retaining certain rigidity for the regulated LEX, reduces it and gives it more leeway to compete. This consists in allowing the regulated LEX to offer menus and discounts only to the extent that they are not better than those offered by its competitors.

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