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## Extending Telecommunications Service to Rural Areas—The Chilean Experience

Awarding subsidies through competitive bidding

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Private sector-led, competitive markets are replacing traditional public telecommunications monopolies in emerging and mature economies alike. As operators focus on the most profitable market segments, some policymakers worry that the government will be left to shoulder the burden of providing service to rural areas. But there is growing evidence that under liberal entry, investment, and pricing policies, rural telecommunications can be good business. New technologies are making it easier to reach low-density and remote localities. Still, pockets of population may remain without service because of the exceptionally high cost and low revenue potential of providing service to them. How large is this gap, how can it be bridged, and who pays? Recent experience in Chile suggests some answers.

### Chile's Telecommunications Development Fund

Chile's telecommunications market is one of the most open and competitive in the world. Following privatization of the main telecommunications companies in the late 1980s, the number of telephone lines quadrupled to more than 2 million today. Competition introduced in the late 1980s in data, value added, and cable TV services and private networks, and since 1994 in domestic and international long-distance telephony, has brought about rapid network modernization, new services, and prices that are among the world's lowest. Competition in local services is intensifying, mainly from long-distance carriers starting wireline and wireless local service and from combined voice and cable television offerings.

Nonetheless, about 1.5 million people—10 percent of all Chileans—live in localities that do not even have a public telephone. Some 500,000 households—a sixth of the total—will not be able to afford telephone connections in the foreseeable future. To increase access to public telephones in rural and low-income urban areas, the Chilean government set up a special fund in 1994. The fund, with a limited life and due to expire in 1998, is financed by the national budget and administered by a council chaired by the telecommunications minister. The council decides on the annual program of projects eligible for subsidy and awards the projects and subsidies through competitive bidding.

### Eligible projects

The council's secretariat, the sector regulator Subsecretaría de Telecomunicaciones (SUBTEL), compiled a first roster of about 2,300 rural localities needing public telephones based on a survey of provincial and local authorities, neighborhood associations, telephone companies, and the general public. SUBTEL then grouped these localities into projects according to geographical proximity and technical solutions likely to be cost-effective and did a cost-benefit analysis to estimate the subsidy needed, if any, to install one public telephone in each locality.<sup>1</sup> Projects that looked commercially viable without subsidy were brought to the attention of telecommunications operating companies and the business community; existing and new operators can apply for licenses to serve these localities. Projects that had a positive social net present value (NPV) but were not commercially viable were ranked by social





NPV per unit of subsidy needed to make them viable and by other factors.

The fund's first round, initiated in 1995, consisted of the forty-six highest-ranked projects, whose estimated subsidy requirements added up to the fund's 1995 budget of US\$4.3 million. These projects covered 1,285 localities throughout the country. The localities typically have fewer than 1,000 inhabitants—the average is 360—and are located within roughly 50 kilometers (30 miles) of existing telecommunications facilities. Once complete, these projects will provide access to basic telecommunications services for about 460,000 people, a third of the population now without access.

#### Terms

The bidding documents set the terms and conditions for all projects: the service obligations, tariffs, interconnection principles, requirements for bidders, bidding procedures, and rules for awarding bids. The documents also listed the projects, giving for each one the location, the number of public telephones required, and the maximum subsidy available.<sup>2</sup> The winning bidder for each project is granted a nonexclusive operating license within sixty days and must provide at least one public telephone in each locality for ten years, available to the public every day, twenty-four hours a day. Service must begin six to twenty months after the license has been granted.

The choice of technology, network structure, and location of the public telephones is left to the licensee. SUBTEL processes applications for any radio frequencies required concurrently with the operating license. The installations must comply with the technical and interconnection standards applicable to all telecommunications networks. The licensee is free to set the call charges subject to a maximum (specified in the bidding documents) equivalent to US\$0.07 per minute for a five-minute call to any telephone within the same primary service area.<sup>3</sup> This compares with about US\$0.05 per minute for five-minute local calls from urban coin-operated telephones. Higher charges are allowed for shorter calls, up to US\$0.13 per minute for one-

minute calls. The maximums are tied through a formula to published indices (wholesale prices, cost of labor, and foreign exchange) and the corporate tax rate for the full ten years of service. Licensees must post the call charges in each telephone and inform SUBTEL of any changes.

The maximum subsidy available from the fund for each project ranged from US\$300 to US\$26,000 per locality and averaged US\$3,340. The subsidy, in current pesos with no adjustment for inflation, is paid in a lump sum once the facilities have been built and have been inspected by SUBTEL. Thus, the licensee has both a contractual obligation and an incentive to initiate service quickly. Projects are not eligible for any further subsidies.

#### The bidding process and its results

Public invitations to bid for each of the forty-six projects were issued in October 1995. Each project would be awarded to the bidder asking for the lowest subsidy. Bids could propose additional services, in the project locations or elsewhere, but these proposals would not be taken into account in the evaluation. Existing telecommunications companies as well as prospective new providers meeting minimum legal requirements could bid. Thirty companies purchased the bidding documents. Bids were opened in public in December 1995, and the results announced in March 1996. Bidders made sixty-two offers for forty-two of the forty-six projects, covering most localities. The fund committed only 48 percent of its 1995 budget to achieve about 90 percent of its program, largely because bids for zero subsidy were made for sixteen projects (accounting for 51 percent of localities and 59 percent of the population). Most of the other projects were bid at or near the maximum available subsidy (table 1). About 75 percent of localities were in projects bid at US\$5,000 or less per locality (table 2).

Competitive entry was the main factor driving down the subsidy. Chilesat, a long-distance carrier seeking to develop local networks, bid zero subsidy for each of those sixteen projects. Chilesat outbid Compañía de Telecomunicaciones de Chile (CTC), the largest local telephone

**TABLE 1 LOWEST BIDS RECEIVED FOR THE 1995 RURAL PROGRAM**

Level of lowest bid	Projects		Localities		Inhabitants	
	Number	Percent	Number	Percent	Number	Percent
At maximum subsidy	18	39	406	32	127,800	28
Below maximum subsidy	8	17	43	3	9,300	2
No subsidy	16	35	656	51	275,900	59
No bid	4	9	180	14	49,000	11
<b>Total</b>	<b>46</b>	<b>100</b>	<b>1,285</b>	<b>100</b>	<b>462,000</b>	<b>100</b>

*Source:* SUBTEL.

operator, in eight of those projects. And it tied with CTC in the other eight. Because the bidding documents contained no provisions for resolving ties, these projects were not awarded. By mid-1996, CTC applied to extend its current license to include all eight unawarded projects.

Besides entry and defensive strategies, observers cite other factors that motivated CTC and Chilesat and that may explain why these companies had not already moved into markets for which they were prepared to bid zero subsidy. The bidding process documented the existence of demand and willingness to pay in many small, scattered localities that had not yet caught the operators' attention. Call charges exceeding those authorized in cities made the projects viable with limited subsidies. Once a public telephone in one locality is made viable by a subsidy, other services can be provided in that locality and others at low marginal cost and for significantly higher returns. And the sixty-day turnaround for processing new operating and radio licenses compared very favorably with one year or more for extending existing licenses.

Parts of the program, however, did not benefit much from competition. CTC bid at or near the maximum available subsidy for twenty-three projects in provinces where it faced no challengers. And it won three other projects by a slight margin against a small local operator, with both companies bidding close to the maximum. Some operators that were expected to bid did not participate. Compañía Nacional de Teléfonos (CNT), a regional operator, did not bid for any projects, even in its own region, which opened the way for CTC and Chilesat to gain a

**TABLE 2 AVERAGE SUBSIDY PER LOCALITY IN THE LOWEST BIDS FOR THE 1995 RURAL PROGRAM**

Average subsidy (US\$)	Projects	Localities
0	16	656
1–2,000	3	103
2,001–5,000	5	214
5,001–10,000	9	97
>10,000	9	35
No bid	4	180
<b>Total</b>	<b>46</b>	<b>1,285</b>

*Source:* SUBTEL.

foothold in CNT's territory. Empresa Nacional de Telecomunicaciones (ENTEL), the country's main long-distance carrier and already extensively involved in rural areas, also did not participate. And the program did not create new players. A small company established to enter the rural market bid for one project but lost to the incumbent operator.

## Lessons

The Chilean experience suggests a number of lessons that may be broadly applicable in other emerging economies:

- The key to accelerating rural telecommunications development is competition. An environment that encourages new entry and competition can go a long way toward meet-



ing basic telecommunications needs in rural areas on commercial terms.

- Given the right policy environment, limited government subsidies suffice to close gaps between the commercial and social objectives of rural telecommunications development. The fund's 1995 commitment was less than 0.5 percent of telecommunications revenues countrywide.
- Market forces can determine which projects really need subsidy and how much. Competitive bidding following established administrative procedures and subject to independent judicial review can keep political pressures largely at bay. The Chilean bidding process left little room for discretion in the awards. Cost-benefit analysis was used only for the initial screening of projects, to determine roughly how much subsidy the government should be prepared to pay and which projects should go first. But limited competition for the projects meant that in many cases the subsidy awarded was the maximum available—set by the study, not the market.
- In a competitive environment, small subsidies can give tremendous leverage. The fund's US\$2.1 million commitment of public money for the 1995 program triggered private telecommunications investments of about US\$40 million. These investments include additional facilities offered by the bidders, more than twice what was required by the projects. The US\$2.1 million will result in 1,285 rural public telephones, averaging US\$1,634 per telephone. By contrast, in the 1980s, the government paid the incumbent operators US\$6 million to install only 300 rural public telephones, averaging US\$20,000.
- Errors of analysis in the worst case lead only to errors of timing. The four projects that had no bidders, presumably because the maximum subsidy was too low, will be included again next year with higher subsidy limits. Projects deemed viable but that eventually fail to be undertaken on a commercial basis may be reconsidered for subsidy in following years.

### The next rounds—1996 and beyond

The fund's second round, begun in August 1996, covers almost 2,500 localities with about 500,000

inhabitants. The US\$2.2 million savings from 1995 have been rolled over, resulting in a total budget for 1996 of about US\$8.8 million. But the amount of subsidy for each location is likely to increase. The four projects for which no bids were received in 1995 need a higher subsidy to attract offers. Project locations are likely to be farther away from existing facilities, increasing the cost and possibly generating lower revenues. And while a one-time subsidy to offset part of the initial investment cost appeared to suffice in the first round, in the future some projects may need a subsidy for annual operating costs. In such cases, SUBTEL would probably prefer to lump the present value of all recurrent subsidies into a single initial payment.

With successful completion of the 1996 round, more than 97 percent of Chileans will likely have access to basic telecommunications by 1998, and the fund may well have a surplus. Given Chile's strong market orientation, it is unlikely that the government would use the fund to subsidize regular business or residential telephone connections or use. But the fund and its market-oriented approach could be used to stimulate the provision of lifeline telephone service to low-income households, improve telephone access for disabled people, and extend Internet connectivity to public schools, health centers, and libraries.

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<sup>1</sup> The planning ministry's standard method for social and private evaluation of projects was adapted for use with clusters of localities. Simple assumptions were made. For example, operating revenue was forecast as a percentage of average income. The results, while subject to error, are believed to be good enough for initial classification of projects and rough determination of maximum subsidies.

<sup>2</sup> In all cases, the maximum subsidy was less than the estimated initial cost.

<sup>3</sup> Chile is divided into twenty-four primary service areas. The call charge for the subsidized rural telephones allows users to call anywhere within their primary service area, including the provincial capital and several municipal centers. Calls beyond this area are charged as long distance.

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