Recent World Bank Discussion Papers

No. 271  Small Enterprises Adjusting to Liberalization in Five African Countries. Ron Parker, Randall Riopelle, and William F. Steel
No. 272  Adolescent Health: Reassessing the Passage to Adulthood. Judith Senderowitz
No. 274  Social Action Programs and Social Funds: A Review of Design and Implementation in Sub-Saharan Africa. Alexandre Marc, Carol Graham, Mark Schacter, and Mary Schmidt
No. 275  Investing in Young Children. Mary Eming Young
No. 276  Managing Primary Health Care: Implications of the Health Transition. Richard Heaver
No. 277  Energy Demand in Five Major Asian Developing Countries: Structure and Prospects. Masayasu Ishiguro and Takamasa Akiyama
No. 278  Preshipment Inspection Services. Patrick Low
No. 279  Restructuring Banks and Enterprises: Recent Lessons from Transition Countries. Michael S. Borish, Millard F. Long, and Michel Noël
No. 280  Agriculture, Poverty, and Policy Reform in Sub-Saharan Africa. Kevin M. Cleaver and W. Graeme Donovan
No. 281  The Diffusion of Information Technology: Experience of Industrial Countries and Lessons for Developing Countries. Nagy Hanna, Ken Guy, and Erik Arnold
No. 283  Meeting the Challenge of Chinese Enterprise Reform. Harry G. Broadman
No. 284  Desert Locust Management: A Time for Change. Steen R. Joffe
No. 285  Sharing the Wealth: Privatization through Broad-based Ownership Strategies. Stuart W. Bell
No. 286  Credit Policies and the Industrialization of Korea. Yoon Je Cho and Joon-Kyung Kim
No. 287  East Asia’s Environment: Principles and Priorities for Action. Jeffrey S. Hammer and Sudhir Shetty
No. 289  Rethinking Research on Land Degradation in Developing Countries. Yvan Biot, Piers Macleod Blaikie, Cecile Jackson, and Richard Palmer-Jones
No. 290  Decentralizing Infrastructure: Advantages and Limitations. Edited by Antonio Estache
No. 291  Transforming Payment Systems: Meeting the Needs of Emerging Market Economies. Setsuya Sato and David Burra Humphrey
No. 292  Regulated Deregulation of the Financial System in Korea. Ismail Dalla and Deena Khatkhate
No. 293  Design Issues in Rural Finance. Orlando J. Sacay and Bikki K. Randhawa
No. 294  Financing Health Services Through User Fees and Insurance: Case Studies from Sub-Saharan Africa. R. Paul Shaw and Martha Ainsworth
No. 295  The Participation of Nongovernmental Organizations in Poverty Alleviation: The Case Study of the Honduras Social Investment Fund Project. Anna Kathryn Vandever Webb, Kye Woo Lee, and Anna Maria Sant’Anna
No. 296  Reforming the Energy Sector in Transition Economies: Selected Experience and Lessons. Dale Gray
No. 297  Assessing Sector Institutions: Lessons of Experience from Zambia’s Education Sector. Rogerio F. Pinto and Angelous J. Mrope
No. 298  Uganda’s AIDS Crisis: Its Implications for Development. Jill Armstrong
No. 299  Towards a Payments System Law for Developing and Transition Economies. Raj Bhala
No. 300  Africa Can Compete! Export Opportunities and Challenges for Garments and Home Products in the European Market. Tyler Biggs, Margaret Miller, Caroline Otto, and Gerald Tyler
No. 301  Review and Outlook for the World Oil Market. Shane S. Streifel
No. 302  The Broad Sector Approach to Investment Lending: Sector Investment Programs. Peter Harrold and Associates
No. 303  Institutional Adjustment and Adjusting to Institutions. Robert Klitgaard
No. 304  Putting Institutional Economics to Work: From Participation to Governance. Robert Picciotto
No. 305  Pakistan’s Public Agricultural Enterprises: Inefficiencies, Market Distortions, and Proposals for Reform. Rashid Faruqee, Ridwan Ali, and Yusuf Choudhry
No. 307  The Uruguay Round and the Developing Economies. Edited by Will Martin and L. Alan Winters

(Continued on the inside back cover)
Beyond Privatization

The Second Wave
of Telecommunications
Reforms in Mexico

Björn Wellenius
Gregory Staple

The World Bank
Washington, D.C.
Beyond privatization: the second wave of telecommunications reforms in Mexico / Björn Wellenius, Gregory Staple.

Includes bibliographical references.
ISBN 0-8213-3823-4

HE7825.W25 1996
384'.041'0972—dc20 96-43972
CIP
Foreword

Mexico successfully completed in 1994 a first phase of telecommunications reforms, including privatizing its state-owned telephone company and establishing the basis for opening the market to competition.

Concurrently, global technological changes have dramatically modified the economies of telecommunications networks and the rationale of market structures. Reflecting these changes, and building on the strong foundation provided by initial reforms, since 1995 Mexico has been engaged in a second phase of reform that seeks to modify telecommunications policies strategically, combining open competition with adequate social coverage.

The second phase of reform is based on a new telecommunications law that establishes guidelines for an open and efficient competitive market. The new regulatory framework is aimed at promoting nationwide availability, diversity, and quality of services as well as more and better options for the users, at internationally competitive prices. This creates a win-win-win situation for investors, service providers, and customers.

Open competition, from Mexico’s standpoint, means participation in the market without restrictions on the number of competing telecommunications service providers and without segmenting the market with respect to technologies or types of services. To ensure effective competition, all public telecommunications network operators are required to allow interconnection of other operators to their networks in nondiscretionary, nondiscriminatory, equal-access terms. For that purpose, the regulatory framework will establish procedures and fundamental technical plans that encourage the emergence and growth of new operators and protect the interests of customers.

The study by Björn Wellenius and Gregory Staple provides a thorough analysis of the present situation in Mexico from their viewpoint, making reference to the past and present developments in the telecommunications environment. It also gives a good understanding of the direction taken and goals sought by the Mexican government. It is clear from this study that, in spite of the impressive accomplishments of the last years, there is yet much to be done.

Carlos Casasús López Hermosa
Subsecretario de Comunicaciones y Desarrollo Tecnológico
Secretaría de Comunicaciones y Transportes
México
Abstract

From 1989 to 1994 the government of Mexico carried out a major restructuring of the telecommunications sector. Teléfonos de México was privatized, and cellular, value-added, and private networks and services were liberalized. In late 1994 the government moved toward further opening up the market, this time liberalizing local, long-distance, and international voice and video, as well as privatizing the government's domestic satellites, auctioning the radio spectrum, and establishing a firm legal and regulatory basis for a fully private, competitive market structure. This paper gives a concise overview of the context, issues, and options for telecommunications policy and regulatory reform in Mexico as the second wave of sector reform unfolds. The paper tracks related key events until around May 1996.
Acknowledgments

This paper is based on a briefing report prepared in February 1995 by the authors and Françoise Clottes. Attachments 4 and 5 were written by David Townsend and William Malone, respectively. Peter Smith reviewed and commented on all drafts. Charles Jackson and Jorge Valerdi contributed background material on spectrum management and satellites, respectively. Attachments 1 to 3 are reproduced by kind permission of Pyramid Research, Inc., and TeleGeography, Inc. The main report was updated by the authors in May 1996.

The team benefited immensely from discussions with Carlos Casasús, Subsecretario de Telecomunicaciones y Desarrollo Tecnológico in the government of Mexico, and his senior staff and advisers.
## Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;T</td>
<td>American Telephone and Telegraph Corporation (U.S. carrier)</td>
</tr>
<tr>
<td>BOT</td>
<td>build-operate-transfer</td>
</tr>
<tr>
<td>BTO</td>
<td>build-transfer-operate</td>
</tr>
<tr>
<td>CAPs</td>
<td>competitive access providers</td>
</tr>
<tr>
<td>CATV</td>
<td>cable television</td>
</tr>
<tr>
<td>DBS</td>
<td>direct-broadcast satellites</td>
</tr>
<tr>
<td>DTH</td>
<td>direct-to-home (television satellite)</td>
</tr>
<tr>
<td>FCC</td>
<td>Federal Communications Commission (U.S.)</td>
</tr>
<tr>
<td>GTE</td>
<td>U.S. telecommunications carrier</td>
</tr>
<tr>
<td>LEO</td>
<td>low-earth orbit (mobile satellite systems)</td>
</tr>
<tr>
<td>MFS</td>
<td>Metropolitan Fiber Systems (U.S. carrier)</td>
</tr>
<tr>
<td>MMDS</td>
<td>multipoint multi-distribution service</td>
</tr>
<tr>
<td>MSO</td>
<td>multiple cable system operators</td>
</tr>
<tr>
<td>NAFTA</td>
<td>North American Free Trade Agreement</td>
</tr>
<tr>
<td>ONA</td>
<td>open network architecture</td>
</tr>
<tr>
<td>ONP</td>
<td>open network provisioning</td>
</tr>
<tr>
<td>Optus</td>
<td>Australian telecommunications carrier</td>
</tr>
<tr>
<td>PCS</td>
<td>personal communications services</td>
</tr>
<tr>
<td>SCT</td>
<td>Secretaría de Comunicaciones y Transportes</td>
</tr>
<tr>
<td>Telecomm</td>
<td>Telecomunicaciones de México</td>
</tr>
<tr>
<td>Teleglobe</td>
<td>Canadian international operating company</td>
</tr>
<tr>
<td>Telmex</td>
<td>Teléfonos de México</td>
</tr>
<tr>
<td>VAS</td>
<td>value-added service</td>
</tr>
<tr>
<td>VDT</td>
<td>video dial tone</td>
</tr>
<tr>
<td>VSAT</td>
<td>very small aperture terminal</td>
</tr>
</tbody>
</table>
I. Introduction

Mexico began in late 1994 a second critical phase of sector reform aimed at liberalizing the market for all telecommunications services. Liberalization will increase the quality and reliability of these services, extend access to many people currently not covered, accelerate innovation especially for business users, and overall increase efficiency and reduce prices. One way or another, some 10 million current customers and perhaps a further 8 to 10 million to be added by the year 2000 will benefit. Sector reform will also stimulate at least $4 billion* in new foreign investment, chiefly for competitive long-distance and local service concessions; further it will generate substantial government revenues from taxes on Teléfonos de México (Telmex) and new operators, proceeds from the privatization of Mexico's principal satellite carrier (still state-owned), and spectrum auctions. Since December 1994, the devaluation of the Mexican peso against the U.S. dollar and the ensuing economic contraction have given sector reform a new urgency. The economic stimulus likely from further market liberalization and additional privatization is now viewed as an integral part of Mexico's response to the currency crisis as well as a continuation of the government's prior commitment to creating a modern, competitive telecommunications infrastructure.

The scope and complexity of the sector reforms now under way—multiple new long-distance and local service operators employing a range of wireline and wireless technologies—is placing an unprecedented burden on Mexico's policy and regulatory body, the Secretaría de Comunicaciones y Transportes (SCT). A new communications law was enacted in 1995; regulatory codes are being drafted; and new administrative regimes are being established for deciding on interconnection terms between competing carriers, auctioning the radio spectrum, and managing telephone numbering in a multicarrier environment. The transition to a competitive market structure for basic telephone and video distribution services also is likely to severely test the ability of the government to arbitrate between powerful existing and would-be market participants and thus to maintain the timetable and competitive focus of sector reform.

This paper gives a concise overview of the context, issues, and options of telecommunications policy and regulatory reform in Mexico as the market is being opened to widespread new entry and competition. First we briefly review the initial phase of reform (1989–1994), which saw the privatization of Telmex, the liberalization of value-added services and private networks, as well as competition in cellular telephony. Then we outline the main elements of policy facing the sector from early 1995, progress in dealing with them so far, and next steps. Attachments 1 to 3 provide supporting data. Attachment 4 examines in more detail the strategic policy options that were available to the government in 1995 for opening the long-distance market to competition. And Attachment 5 discusses issues of cross-ownership between telephone and cable television companies.

*All dollar amounts are current U.S. dollars.

Sector reform was launched in 1989 at the outset of the Salinas administration. The program included a number of bold initiatives:

- Separating SCT’s operating activities from its policy and regulatory functions by (a) transferring administrative control of the 56-percent-state-owned telephone service monopoly, Telmex, to the Finance Ministry in preparation for privatization; and (b) creating a new state-owned company, Telecomunicaciones de México (Telecomm), to assume the telegraph, telex, packet-switched data, and microwave radio and satellite networks then operated by SCT and Telégrafos Nacionales (Telecomm later sold the microwave radio network to Telmex);

- Liberalizing the market for value-added, terminal equipment as well as private and mobile networks (for example, the country was divided into nine regions and a duopoly created for cellular telephony with concessions awarded to the highest bidder and up to 49 percent foreign ownership permitted);

- Adopting a new regulatory framework (Reglamento de Telecomunicaciones, October 1990) detailing SCT’s authority and providing for the grant of new concessions and licenses (*permisos*) in all areas except those reserved to the state (that is, services provided by Telecomm).

The centerpiece of the initial reforms was the privatization of Telmex which was designed, among other things, to provide additional investment funds for building out the network (line growth was only 5 to 6 percent throughout the 1980s) and resolving the large backlog of service applications (over 1.5 million). In December 1990, a minority (20.4 percent) but controlling interest was sold for $1.76 billion to a consortium of Grupo Carso (51 percent), Southwestern Bell, and France Cable et Radio, an affiliate of France Telecom (24.5 percent each). Further public offerings were made in 1991 and 1992, with total sales proceeds reaching $6.3 billion. The results of the privatization generally exceeded expectations. Telecommunications grew much faster than the economy as a whole, from 1.7 percent of GNP in 1990 to 2.5 percent in 1994. Since 1990 Telmex’s annual investment has been over $2 billion, with line growth above the target of 12 percent from 1991 to 1994, increasing the penetration from 6.5 to 9.6 lines per 100 people; the number of rural communities with telephone service more than doubled, to 21,300, so that, per the concession, all communities with more than five hundred people had some service by the end of 1994; and pay telephones increased from 83,000 in 1990 to 205,000 in 1994. (See Attachment 1.)

Yet, while the Telmex privatization has met (or exceeded) the government’s goals, the legacy of the overall reform program was mixed. The new telecommunications Reglamento, for example, contemplated the grant of additional licenses for a range of services. And although by 1994 the SCT had issued over forty licenses for value-added services, applications for local service concessions had been deferred; paging concessions were delayed, and cable TV had remained a local area monopoly. Likewise, despite an initial push to establish the ground rules for competitive long-distance service, a general policy on interconnection was delayed until July 1994, and the various technical and administrative issues (for example, numbering, tariffs) were still under review by the SCT.

In addition, Telmex’s service quality tended to lag behind network investment. The SCT also had difficulty in overseeing Telmex’s tariffs. Annual tariff changes were resolved more by negotiation
than by the rules stipulated in the concession and Reglamento. In addition, the timetable for rebalancing had not been met. Although some consumers may have benefited because total tariff increases by Telmex apparently had been below the applicable price cap ceiling, the comparatively high charge for new connections ($580 at mid-1994 exchange rates) probably discouraged demand. Likewise, Telmex had made only modest (30 percent) reductions in long-distance charges since 1990, so that its mid-1994 rates for calls over 150 kilometers were still approximately double those for calls of similar length in the U.S.\textsuperscript{1} One consequence is that large one-off tariff adjustments required to establish a level (cost-based) playing field for prospective new local and long-distance operators were still pending.

Beyond that, the SCT had been reluctant to take up the staffing and organizational programs recommended by SCT's consultants in 1991–92 to strengthen its capabilities. This shortfall appeared to stem, in part, from factors beyond its control (government-wide personnel freezes, salary constraints) and suggested that more regulatory autonomy was needed. The limitations on SCT's expertise and resources were likely to become more telling under the second phase of sector reform, which would require much more proactive market management. In these circumstances and especially given the political assets which many potential new market entrants possessed, sector changes demanded the creation of a more technically-oriented regulatory body, separated from SCT's policy and licensing role.
III. Telecommunications Sector Reform—

If privatization highlighted the initial reform phase, then market liberalization is at the center of the next. The currency crisis of 1994 only underscored its urgency. In the face of economic contraction and public budget constraints, further market liberalization and the sale of the state’s remaining telecommunications assets were expected to generate vital new foreign investment and debt reduction. It was estimated, for example, that privatization of Telecomm might raise at least $1 billion; even greater sums might be realized by auctioning the spectrum desired for new wireless telephone services.

Context of Reform

The urgency of market liberalization was also being brought home to the SCT by a growing lobby of prospective market entrants. Applications for competitive local service concessions were pending since 1993. In addition, since mid-1994, several North American companies joined by some of Mexico’s largest industrial groupings had announced their intentions to apply for long-distance concessions. (See Attachment 2.)

Mexico’s new reform agenda was also being spurred by external developments. Since the late 1980s, when the first phase of reform was birthed, technological innovation and competition in other countries, especially the United States, had accelerated the convergence between previously distinct markets and services. The barriers between the broadcasting, telecommunications, and computing industries were breaking down. Transmission platforms no longer needed to be service-specific; cable TV, telephone, and radio broadcast facilities may all be capable of delivering voice, data, and video services. Additionally, as the costs of wireless telephony fall, mobile telephone technologies may provide an alternative to the local loop; global satellite-based telephone services may also offer long-distance customers a wireless alternative within the next five years.

The boundaries between national service markets were also eroding. The implementation of the North American Free Trade Agreement (NAFTA) in 1993 had accelerated this process, increasing cross-border flows of goods and services as well as encouraging regional carriers to provide continent-wide service options. For example, NAFTA liberalized the trading of value-added services between Mexico, the United States, and Canada, and the treaty had already led Mexico to repeal statutory limits on foreign ownership of such networks.

These developments shifted the challenge for the private and public sectors alike. To compete for major customer accounts, U.S., Canadian, and European carriers had begun to provide a common multinational portfolio of basic and enhanced (data, video) telecommunications services. This led operators to seek wider service authority for their existing facilities; vertical and horizontal alliances and cross-industry investments were also proliferating. (See Attachment 3.) In response, national regulators were being forced to reconsider the effectiveness and the rationale for service- and facility-specific (telephone/video, fixed/mobile) licenses and regulations. For example, some regulators were considering awarding spectrum licenses which allow the operator to deliver voice, data, or video information. Dual-service (that is, cable TV/telephony) local concessions had become the norm in
the United Kingdom. And reciprocal recognition of various national service licenses (for example, for mobile satellite service) was under review in the European Union.

Mexico's market-opening measures in 1989–94 already reflected these global trends. During the second phase, further accommodations would be needed. For instance, technological convergence would affect the rules for media (telephone/cable) cross-ownership; the future options for Telecomm (as a carrier's carrier or direct-to-home television provider); and the policies for spectrum allocation and licensing. As such, reassessment of Mexico's reforms was a priority in early 1995 quite apart from the currency crisis and the end of Telmex's long-distance service exclusivity.

The Current Agenda

The first phase of sector reform in Mexico had proceeded in the absence of a statutory charter; carrier-by-carrier concessions and the 1990 Reglamento only partially filled the gap. During 1994 and 1995 much of this vacuum was filled. The cornerstone for a competitive market structure was established by the basic rules for interconnection issued in July 1994. In early 1995, the recently elected Zedillo government introduced a new basic law for telecommunications as part of a wider legislative reform program involving railroads, ports, and energy. The law was placed before the legislature in April 1995 and promulgated in June 1995.4 The law was quickly followed by procedures to apply for new long-distance concessions (September 1995), draft interconnection rules and procedures (October 1995 and January 1996), and procedures to apply for new local concessions (January 1996). New operators moved into the market aggressively.

Long-Distance Competition—First Steps

The government's commitment to long-distance competition dates from its initial sector reform program. The concession for Telmex, which set the terms for the company's privatization, expressly limits the company's exclusive right to provide long-distance and international public telephone service to the period prior to August 1996. Further, the concession requires Telmex to take various steps before the expiration of the exclusivity period to ensure that competition is viable. Chief among these are the obligation of Telmex (a) to establish more cost-based rates by lowering long-distance charges and increasing local rates, thereby reducing artificial incentives to enter the long-distance market; and (b) to prepare a network interconnection plan which would provide equivalent access to end users by all competitors.

Since 1993, the private sector's interests in securing competitive long-distance concessions grew steadily. Interest was boosted again in July 1994 when, following public comment, the SCT published a Resolution on interconnection.5 The Resolution directed Telmex to interconnect with competitors at central offices throughout the country, beginning with sixty cities on January 1, 1997, with the total number of interconnection points to rise to two hundred cities by January 1, 2000. Further, under the Resolution competitors would have the option of co-locating switching equipment on Telmex's premises.

The Resolution also stated that (a) Telmex's interconnection charges must be nondiscriminatory, cost-based ("using recognized international standards"), and publicly available; (b) a numbering plan will be established by the SCT to provide all long-distance service providers an equivalent two-digit access code; (c) from January 1, 1997, telephone users in sixty cities would preselect their preferred long-
distance carrier under new SCT regulations (users would still be able to select any carrier on a call-by-call basis); (d) beginning January 1, 1997, Telmex must establish separate accounts for basic local exchange and long-distance service; and (e) technical standards for interconnection of competing operators will be established by the SCT.

The progressive, pro-competitive terms of the Resolution were well received by prospective market applicants. (On the other hand, Telmex maintained that the plan would impose on them excessive interconnection costs). By the fall of 1994, additional groups announced plans to apply for long-distance concessions. Prospective applicants included several of Mexico’s largest banking and manufacturing groups, teamed with North American long-distance providers, for example, Grupo Alfa with AT&T, Banamex with MCI, and Bancomer with GTE. In turn, Telmex entered into a strategic alliance with US Sprint. (Again, see Attachments 2 and 3 for details.) Several proposed applicants announced that they were prepared to invest over $2 billion to build national transmission and switching networks to compete with Telmex.

The July 1994 Resolution on interconnection suggested that new regulations or directives would be required in the following areas: (a) carrier presubscription (that is, balloting), (b) numbering, (c) technical standards, and (d) interconnection charges. Each of these subjects raised complex, interrelated issues which significantly affected the position of any new operator in relation to Telmex. International experience suggested, however, that network interconnection issues were likely to be the most time-consuming and contentious.

A multicarrier regime cannot be effectively implemented unless new entrants are provided reasonable, cost-based access to Telmex’s existing network. At a minimum, this will require Telmex to offer various long-distance and local services on an unbundled (that is, separately tariffed) basis. Yet, as almost every country which has pursued this route (the United Kingdom, Australia, Canada, Chile) has found, achieving these minimum conditions invariably requires repeated regulatory intervention. This is proving to be particularly true in the case of Mexico for various reasons.

First, the cultural outlook and expectations of many new market entrants have been shaped by their experience in other markets (for example, the United States, Canada). Second, Telmex’s obligation to rebalance local and long-distance rates has only been partially met, and the current rate structure probably still involves large cross-subsidies. It appears, however, that neither SCT nor Telmex has an agreed methodology for determining the level of costs required for Telmex to meet the company’s basic local access requirements or the additional social service obligations (for example, rural and emergency services) flowing from its concession. Third, the currency devaluation and subsequent sharp rise in Mexican interest rates and likely inflation must also be taken into account. These factors make the determination of appropriate cost-based tariffs for local and long-distance service problematic; calculating the direct and indirect costs of interconnection will also be difficult for many of the same reasons. This does not mean that interconnection should be postponed until all of Telmex’s costs can be properly accounted. To the contrary; benchmarking as well as Telmex’s existing records may well permit a provisional set of tariffs to be established, and the prospect of new market entry is likely to stimulate further rebalancing by Telmex in the interim.

The sector reform programs in other countries also provide Mexico with substantial experience on which to draw for addressing the economics of establishing a workable pro-competitive set of interconnection charges. The key steps—properly defining the network service elements to be unbundled for competitors’ use; determining appropriate cost-based charges for said elements; and deciding how these charges will be levied on interconnecting carriers, including any social contribution element
(for example, for rural services)—are reviewed at greater length in Attachment 4. Again, however, it is important to keep in mind that, as in Canada and the United States, interconnection policy is unlikely to be completed in one neat step; it is likely to be iterative, and long-distance competition need not be postponed in the meantime.

Notably, in the United States, the February 1996 enactment of a new telecommunications law, opening the local exchange market to competition, has led to a further round of FCC rule-making proceedings to determine just and reasonable interconnection charges. A parallel proceeding has been initiated to determine the charges which wireless (cellular telephone, PCS) carriers should pay for connection with local wireline carriers and vice versa. Mexico is likely to benefit from both of these proceedings, as well as related FCC dockets which are reviewing the U.S. funding mechanisms for universal service (now largely underwritten by local access charges paid by long-distance carriers).

Of equal priority is agreement on the basic terms and conditions for new concessions and the standards under which they are issued. The interconnection Resolution suggests that, as in the United States, Chile and the United Kingdom, an unlimited number of concessions may be issued. In that case, the applicants themselves will largely decide the time frame and scope of their operations, beyond some basic minimum. Provided equal access dialing is widely available and that nondiscriminatory connection terms exist (as the Resolution mandates), most Mexican telephone users are likely to have a reasonable choice of long-distance service, even though new concessions do not impose any geographical obligations. Mandating that Telmex permit the unlimited resale of all basic services is also likely to ensure that the benefit of new concessions accrues to users throughout Mexico. Relaxation of the existing limits on resale of private network capacity should be considered as well.

International interconnection also requires attention. Telmex now hands off outbound traffic to other international carriers in proportion to the inbound traffic they deliver. Once competition starts, these market-sharing agreements may not be sustainable. Major new entrants have an incentive to route the majority of inbound traffic exclusively to their own networks, even though they initially have limited outbound traffic. This could provide them a large advantage (for example, net annual settlements from the United States currently provide a $1 billion surplus for Telmex).

In October 1995, Telmex and AT&T—now Telmex's principal U.S. correspondent but soon a competitor—agreed on a new cross-border settlement arrangement for a transitional period (to January 1998). The agreement reduces per-minute payments for terminating U.S. traffic but preserves the existing proportional return rules. It also commits both carriers to apply proportional return to new competitors on the cross-border routes. Other U.S. carriers, however, by May 1996 had not reached an agreement with Telmex, and the FCC had yet to approve the AT&T-Telmex deal. Thus, as in Chile, the SCT (and FCC) may ultimately need to intervene to ensure that international settlement arrangements do not undermine competition.

Despite the good start achieved with the interconnection resolution of July 1994, the government's liberalization plan slowed down soon. National elections and, from December 1994, the currency crisis, delayed SCT's implementation of the interconnect Resolution. Only in early 1995 did the government seek to put its program back on course. An interagency committee chaired by SCT, including the Finance Ministry and the competition authority, was established to provide more detailed guidance on interconnection and on the terms for the new concessions, using the July 1994 Resolution as a starting point and subject to public comment. Simultaneously, the new telecommunications law was prepared, sent to Congress in April 1995, and enacted in June 1995.
New Telecommunications Law

The 1995 law opens to competition all segments of the telecommunications market. Concessions are required to operate public telecommunications networks, use the radio spectrum, occupy satellite orbital slots assigned to Mexico, and provide services using other countries' satellites. No distinctions are made between fixed or mobile services, or between local and long-distance services. No limits are set on the number or geographical coverage of public network concessions using cable or wireline technologies, or in the nature of the services each operator may offer over these networks (for example, telephony, pay television). Concessions to use the radio spectrum and satellite orbital slots are awarded through competitive bidding. A simple permit is required for resale of public services, and none is needed to provide value-added services, receive-only satellite stations, or private networks. Rights and obligations of concessions and permits can be assigned subject to approval by SCT and the competition authority. Interconnection and unbundling of tariffs are mandatory. Tariffs are regulated only for operators with substantial market power and are otherwise set freely by each operator. Any subsidies required to meet social obligations are funded by the government, not cross-subsidies. Foreign investment is limited to 49 percent of voting stock, except for cellular service where more may be approved by the foreign investments authority. Higher foreign investment participation is allowed through nonvoting stock.

Although the law largely reflected existing government policy and rules, its passage enhanced the position of SCT in navigating the second phase of reform and strengthened the investment environment. Paralleling the 1990 Reglamento, the law confirms SCT’s authority and responsibilities for the telecommunications and broadcasting sectors, including cable television. The law also addresses SCT’s power: to manage the radio spectrum, including the use of spectrum auctions where appropriate; to issue new concessions and permits (and the rights conveyed thereby); to resolve on issues of interconnection; to regulate the tariffs of dominant operators; and to establish technical standards, including the administration of national numbering resources. Given the dynamic nature of telecommunications technology, it is important that the new law does not foreclose future options. Flexibility is likely to be essential with regard to the future structure of both SCT and the industry (scope of concessions, spectrum rights).

Long-Distance Competition Takes Off

The new telecommunications law firmed up the legal basis for competition and interconnection. Consistent with the interconnection Resolution of 1994, the law sets no limits to the number of concessions that would be granted. It also establishes that interconnection agreements are to be negotiated among the parties subject to SCT review and intervention in case of lack of agreement within sixty days.

Although SCT is expected to intervene on interconnection only to the extent that the parties fail to reach agreement, SCT recognized that negotiation left entirely to private parties may not yield results in the best public interest. Experience in other countries shows, for example, that an incumbent with sole access to the end customers has an incentive to delay interconnection of long-distance competitors or charge them excessively high interconnection rates. The new entrants, once they have made substantial investments in long-distance networks, may be inclined to divide up the market with the incumbent and restrict competition from later entrants. In either case, the resulting end-user prices will be too high and competition will be limited.

Seeking to mitigate some of these risks, in October 1995 SCT issued draft regulations governing the process and principles to be followed by the new operators and Telmex in negotiating interconnec-
tion agreements. This draft provided a framework for interconnection negotiations and for possible SCT adjudication in cases of conflict among parties. In line with the principles set by the telecommunications law, the draft regulations elaborated on the right of any new operators to interconnect with Telmex on nondiscriminatory terms, prohibited cross-subsidies and other anticompetitive practices, and established that interconnection should be based on incremental costs including a markup for common network costs. After receiving comments from the operators, SCT issued a revised draft in January 1996.

In March 1996, Telmex and the seven new long-distance concessionaires (see below) asked SCT to determine appropriate interconnection charges, the parties having failed to reach agreement. In May, SCT ruled that in 1997 Telmex would receive about US$2.5 per minute for domestic traffic carried by other operators to or from Telmex customers and about US$23 per minute for incoming international calls. These charges would drop by about 10 and 20 percent respectively in 1998. New interconnection charges will be negotiated among the operators for 1999, not to exceed a tariff-weighted average of US$3.15 per minute, compared with US$5.32 in 1997.

Concurrently, in July 1995, SCT invited expressions of interest in obtaining new concessions for public telecommunications networks in general. In September 1995, SCT issued rules for the submission of applications for long-distance concessions. By early 1996 twelve applications had been submitted to SCT, of which seven had been granted and the rest were being considered. New applications may be submitted and processed at any time.

By April 1996, it looked like Mexico’s long-distance market would be initially dominated by three major players. Avantel (Banamex and MCI) had a large optical-fiber network under construction. Alestra (Alfa and AT&T) had announced a merger with Unicom (Bancomer, GTE, and Telefonica). And, of course, Telmex (with US Sprint).

**Competition for the Local Loop**

The 1990 Reglamento and the Telmex concession permitted local competition subject to SCT’s authorization. Yet, the SCT had deferred action on competing applications and by early 1995 had no formal policy on competitive local exchange carriers. The SCT’s inaction had delayed two major fixed cellular services and also probably dampened investment in cable TV facilities, which might provide alternative local access as well.

Some of the SCT’s concerns regarding local exchange competition were related to those involved in opening the long-distance market; in both cases, the SCT wished to ensure that the entry of new operators promotes rather than impairs the development of the basic network—a network which, despite the addition of 3.5 million lines since 1990, still by end 1994 provided barely 10 lines for every 100 people. Thus, it might be argued that a key objective for SCT during the next period was to devise the necessary mechanisms—through interconnection charges, the terms and conditions of new concessions, tax policy, or otherwise—to ensure that new service operators move the country closer to its long-term development goals. In any event, as with long-distance competition, new local service concessions required SCT first to establish a workable cost-based interconnection policy; with limited exceptions, stand-alone local networks, without interconnection, are unlikely to be viable.

Full competition for the local loop also will require SCT to devote attention to the administration of numbering resources. Competitors should not be dependent on Telmex for the choice or assignment of numbering blocks; the costs and benefits of local number portability must also be explored. This may
Telecommunications Sector Reform—Phase II

be especially important now that new portable “500” number codes are available in North America for mobile services. Otherwise, Mexico’s future mobile services (there already are relatively more wireless than wireline telephone subscribers in Mexico as compared to the United States) may not be adequately taken into account in regional numbering decisions.

Competition and interconnection at the local level were covered, as well as long-distance competition, by the telecommunications law of June 1995, the invitation of July 1995 for expressions of interest in new concessions, and the draft interconnection agreements of October 1995 and January 1996. In January 1996, the SCT published procedures to apply for new concessions for local networks. Local networks may be used to provide switched voice, cable television, or any other service. One month later it had received over fifty applications.

**Competition for Video Distribution Services**

As technology makes distributing voice, data, and video services over the same transmission facilities (copper wires, coaxial cables, optical fiber cables) increasingly practicable, market entry decisions for one set of facilities cannot be made in isolation from decisions on another. Potential local video distribution facilities now include the telephone network, cable TV, multipoint multi-distribution service (MMDS), and direct-to-home (DTH) satellite broadcasting. During the next phase of reform, the SCT must come to grips with these realities as it seeks to further liberalize video distribution services which also may indirectly provide additional competition for telecommunications services.

To date, cable TV is relatively limited in Mexico, and the systems are often technologically outdated. As of December 1994, there were only approximately 1.2 million subscribers with over 50 percent of the subscribers reportedly concentrated in Mexico City and Monterrey. Two DTH concessions had been awarded but were not yet active. Thus, most Mexicans still received television service from the two major over-the-air broadcasters, Televisa and Grupo Azteca.

Competition policy is likely to be best served by precluding common ownership of cable TV and local telephone distribution facilities in the same area, at least initially. (See Attachment 5.) The telecommunications law, however, makes no distinction among the services that can be offered by the concessionaires of public local networks. Thus, cable television networks may offer telephone service provided they apply for and obtain a public telecommunications network concession. A number of cable television companies are in fact among those applying for local concessions.11

Conversely, telephone companies, which have a public telecommunications concession, may offer cable television without further authorization. In early 1995, Telmex proposed to acquire a 49 percent interest in Mexico’s largest CATV operator, Cablevision, owned by Televisa. In May 1995, the competition authority approved the purchase. Decisions in this area are also likely to affect the future value of Telecomm, which currently has the exclusive authority to provide Mexican satellite facilities for DTH services.

**Privatizing Telecomm’s Satellite Business**

The government has debated the privatization of Telecomm, in whole or in part, since the state-owned company was created during the first phase of reform. Telecomm now operates Mexico’s federal satellite network and provides domestic telex, telegraph, and money transfer services; it also operates
coastal marine and radio services. Telecomm is Mexico's representative in Intelsat and Inmarsat, and provides exclusive access to these international satellite systems for Telmex. Telecomm's three domestic satellites (one Morelos and two Solidaridad) provide a range of broadcast and long-distance telecommunications services. The latest Solidaridad satellite also can provide various mobile and fixed L-band communication services to Mexico and the southwestern United States.

Telecomm's revenues have grown significantly, from $185 million in 1990 to $272 million in 1994. Approximately 34 percent of the revenues are generated by satellite services; 7 percent by telegraph and telegram services; and 25 percent by commissions from wire transfers. In 1994, an additional 30 percent of revenues apparently were generated from interest on funds in transit for payment of wire transfers.

In March 1995, the Mexican legislature approved an amendment to the Mexican Constitution to permit the state to transfer ownership of satellite facilities to the private sector. The terms by which Telecomm will be privatized and the scope of its future services concessions (as a carrier's carrier, as a DTH provider, as a mobile services operator) are currently under review by both the SCT and Telecomm.

Telecomm's satellite business is likely to be highly valued by the market. The Constitution (article 28), however, requires that telegraph services, also currently under Telecomm, be provided by the state. As of early 1996, work was under way to separate out Telecomm's satellite business and prepare it for privatization. Investments of about $400 million would be required to develop these facilities. Financial advisers had been retained to help design a privatization strategy. A new concession and new regulations are also likely to be required. The government may want to examine the experience of other satellite privatizations, including Optus (Australia), Telesat (Canada), and Nahuelsat (Argentina). The latter case demonstrates the strong interest of the private sector in regional satellite services; the Argentine government managed to attract a well-capitalized consortium for a carrier's carrier business that required the entrant to construct and launch its own satellites and provided only a modest exclusivity period.

Spectrum Management

The progressive liberalization of Mexico's telecommunications markets will require the SCT to enhance its capability with respect to spectrum management. The granting of additional long-distance concessions will lead to new and competing demands for radio authorizations (microwave radio links, satellite uplinks) by new entrants seeking to build out their networks. New local service concessions will create further demands for spectrum; indeed, the SCT has already deferred action on two major wireless-based local telephone concessions, in part because of the impact on other spectrum users. The SCT also faces competing demands for the provision of satellite mobile services following the licensing of several low-earth-orbit (LEO) mobile satellite systems in the United States. Mexican affiliates of these companies may require rights for local uplinks and for operating mobile terminals.

The 1990 Reglamento codified SCT's spectrum management authority, and a master list of spectrum users is already maintained and routinely updated. The experience of other countries, however, suggests that as new transmission techniques and service options become available, significant efficiency gains may be realized by revisiting previous allocational decisions and license terms. Moreover, as wireless services play a greater and greater role in providing national telecommunications services, the value of key portions of the spectrum is likely to rise. This has made market-linked schemes for allocating...
Telecommunications Sector Reform—Phase II

and licensing certain frequency blocks, especially for new services, more and more attractive. For example, spectrum auctions are now being used in New Zealand and the United States. Successive U.S. spectrum auctions between 1994 and early 1996 raised about $20 billion. On the other hand, the increased cost of spectrum can discourage prospective new entrants using wireless solutions as an alternative to conventional wireline access.\textsuperscript{13}

The foregoing suggests that the private and public sectors may benefit from a review of Mexico's spectrum management practices during the second phase of reform. Near-term attention to a PCS auction plan in Mexico may be particularly productive, given that new U.S. licensees may wish to offer their customers cross-border services. By mid-1996 SCT expects to have in place a program to auction concessions for radio-based services, including PCS, paging, narrowband PCS, wireless local access, trunking, voice and data services, digital radio, and MMDS. During 1996, SCT plans to carry out the first of these auctions, probably starting with relatively small segments (such as for paging) and moving on quickly to the main market segments (especially PCS and wireless local access) as experience builds up.

\textit{Regulatory Organization and Process}

The second phase of sector reform is likely to benefit by the divestiture of SCT's regulatory functions to an independent commission. Market liberalization almost always increases the workload and issues faced by the sector's regulator; liberalization also inevitably raises new conflicts between the interests of existing and prospective applicants, many of whom may have powerful political connections. This can lead to tension between sector-wide policy goals (regarding tariff levels, service availability, market liberalization) on the one hand, and the day-to-day implementation of that policy (oversight of existing players) on the other.

Since 1990, the SCT has tried to straddle these dual roles; it is at once the chief architect of sector reform and licensing authority, while at the same time it functions as the exclusive regulator of its own concessions and licenses. The current phase of reform is already taxing SCT's ability to balance these roles. Greater transparency has helped it approach the most controversial decision now before it—the grant of competing long-distance concessions. (Extensive public comment and informal consultations were held prior to adoption of the interconnection Resolution in 1994.) Such transparency should be encouraged, as it is likely to smooth the liberalization process.

The telecommunications law of 1995 requires the government to establish, by August 1996, an autonomous telecommunications regulatory agency under the authority of SCT.\textsuperscript{14} Again, experience in other countries suggests that a multimember commission, separate from the licensing agency, and with a clear legal mandate, secure funding (from license fees, for example), and a professional, competent staff may be the most effective long-term regulator.\textsuperscript{15}
IV. The Road Ahead

The privatization of Telmex offered a model for many other emerging economies. The second phase of market liberalization currently under way in Mexico could do the same. If the country successfully completes the aperture of its long-distance and local markets to competition, it will become one of only a handful of emerging economies, and by far the largest market, to take such a course (others include Chile and the Philippines).

Tremendous progress has been made already, yet much still lies ahead. Rebalancing Telmex tariffs, awarding concessions for local networks, starting spectrum auctions, establishing a revised numbering plan, privatizing Telecomm's satellite business, and creating a new regulatory agency, are but the major milestones. SCT intends to meet these objectives mostly in 1996. Judging by achievements so far, by both the government and the private sector, there is a good chance that the second wave of telecommunications reform in Mexico will come to successful completion.
## Mexico: Telecommunications Services Growth, 1990–1999

*(Customers in 000s)*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Paging</td>
<td>36.7</td>
<td>44.9</td>
<td>84.0</td>
<td>120.0</td>
<td>202.8</td>
<td>247.0</td>
<td>308.8</td>
<td>392.1</td>
<td>470.5</td>
<td>564.6</td>
</tr>
<tr>
<td>Cellular</td>
<td>62.1</td>
<td>154.1</td>
<td>304.0</td>
<td>386.5</td>
<td>577.9</td>
<td>696.1</td>
<td>835.3</td>
<td>1,044.1</td>
<td>1,305.2</td>
<td>1,566.2</td>
</tr>
<tr>
<td>Main Telephone Lines</td>
<td>5,335.0</td>
<td>6,024.8</td>
<td>6,753.7</td>
<td>7,621.1</td>
<td>8,766.9</td>
<td>9,085.4</td>
<td>9,415.4</td>
<td>10,418.6</td>
<td>11,935.4</td>
<td>13,012.3</td>
</tr>
</tbody>
</table>

Source: Pyramid Research Inc.
## Attachment 2

### Mexico: Concessions Granted for Long Distance Telephone Services (as of January 1996)

<table>
<thead>
<tr>
<th>Company</th>
<th>Investors</th>
<th>Date Granted</th>
<th>Proposed Investment 1995-2000 ($US millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avantel S.A.</td>
<td>Promotora Banamex de Sistemas de Teleinformática y Telecomunicaciones, MCI International Telecommunications Corporation</td>
<td>15 Sep 95</td>
<td>1,802.0</td>
</tr>
<tr>
<td>Iusatel S.A. de C.V.</td>
<td>Grupo Industrial IUSA, Bell Atlantic Latin America Holdings, Inc.</td>
<td>16 Oct 95</td>
<td>808.7</td>
</tr>
<tr>
<td>Investcom S.A. de C.V.</td>
<td>Grupo Comunicaciones de San Luis S.A. de C.V., MobilCom S.A. de C.V., Nextel Communications, LCC, ACC, The Carlyle Group</td>
<td>26 Oct 95</td>
<td>433.6</td>
</tr>
<tr>
<td>Marcatel S.A. de C.V.</td>
<td>Radio Beep S.A., Gustavo M. de la Garza</td>
<td>26 Oct 95</td>
<td>485.0</td>
</tr>
<tr>
<td>Sistemas Telefónicos de la República S. de R.L. de C.V. (ALESTRA)*</td>
<td>Alfa Telecom S.A. de C.V., AT&amp;T Telecom México Inc.</td>
<td>6 Dec 95</td>
<td>1,043.5</td>
</tr>
<tr>
<td>Cableados y Sistemas S.A. de C.V.</td>
<td>Grupo Varo</td>
<td>8 Jan 96</td>
<td>155.6</td>
</tr>
</tbody>
</table>

*In 1996 Unicom and Alestra announced that they would combine their operations

Source: SCT
Attachment 3

Telecommunications Industry Convergence in North America
(excluding U.S. RBOCs)

Source: Telegraphy, Inc., 1996
Prepared February 1996
Opening Mexican Long-Distance Telecommunications
to Competition: Strategic Policy Options

When the Salinas government embarked upon the path of fundamentally restructuring the
Mexican telecommunications sector in the late 1980s, its vision of the sector's development included not
only the privatization of Telmex—which was successfully accomplished—but also the movement of the
telecommunications industry away from a monopoly structure altogether, toward a competitive, market-
driven framework. In this respect, privatization was only a first step, and the fulfillment of the vision of
restructuring required that the government follow through with the process of opening Mexican
telecommunications to meaningful market competition. In particular, the Reglamento de Telecomunica-
ciones (1990) as well as the Telmex concession explicitly provided for the introduction of competition
in long-distance markets by 1996, although the specific details of the competitive market structure were
not spelled out. It was therefore necessary to establish a precise plan of action for achieving the initial
goal of a competitive long-distance market, and to further the process of opening up the Mexican
telecommunications industry as a whole. This Attachment discusses the policy issues and options
available in late 1994. Some options were discarded early in the process of formulating the government's
competition policy. The main text of the report explains the outcomes.

Objectives of Competition as Public Policy

In examining the options for opening the long-distance market, briefly reviewing the principles
and objectives of competition policy should prove useful. In general, competitive provision of telecommu-
nications services, and any policy that leads operational and planning decisions to be driven primarily
by market-based forces, can be expected to yield a more efficient overall result than will a monopolistic,
centralized market structure. Competition in the long-distance market is intended ultimately to yield
all of the following benefits:

- **Faster development** of network resources, as competitors race to establish a market presence,
  particularly where current service levels may be inadequate;

- **Higher service quality**, as competitors deploy newer technologies to create advantages over the
  incumbent monopoly, and as the monopolist upgrades to avoid losing customers;

- **Reduced costs** of operations, as all market participants seek advantages through streamlining
  their activities and pursuing productivity-improving initiatives;

- **Technical innovation**, resulting from the impulse to win customers by offering new and differ-
  ent types of services;

- **Lower prices** for all services subject to competition—the textbook economic impact of com-
  petitive forces; and
Beyond Privatization: The Second Wave of Telecommunications Reforms in Mexico

- Lower regulatory costs in the long run, as the market takes the primary role of regulating itself, and the regulator is able to revert to a monitoring role.

Market Structure Options for Long-Distance Competition

The government faces two main options for developing competition in long-distance telecommunications: full service duopoly or oligopoly, and open entry. Each of these options has distinct advantages and disadvantages, depending on the specific policy priorities of the government.

Full Service Duopoly or Oligopoly

This option would involve the authorization of a single large concession to provide the full range of long-distance services, in competition with Telmex, throughout the country. A variation on this idea would be to authorize perhaps two or three such full-service competitors, creating an oligopoly. In establishing a new concession for a long-distance carrier, SCT would create criteria for operations and details of responsibilities that would likely be comparable to those that Telmex faces, and would assure that the authorized competitor has sufficient resources and capabilities to build a nationwide network and establish a widespread competitive presence. The resulting market should, if all of the forces operate properly, gravitate toward a fairly even split of long-distance revenues and customers, with prices also fairly similar but substantially lower than they would be under a continued Telmex monopoly, and with increased attention paid to service and marketing innovations by both carriers. The success of competition could easily be monitored by observing the degree of market penetration by each carrier as well as the movement of prices over time.

The appeal of a duopoly strategy is that it appears to offer a relatively simple structure, with the effects open to ready examination based upon market performance. SCT would have to undertake only a single (albeit highly in-depth) concession-authorizing process and would be able to reduce its monitoring and intervention role once the second carrier was operating at a sufficient scale to assure its long-term viability.

This option, however, also carries significant risks that many of the expected benefits of competition could be diminished or lost if the market structure does not conform precisely to the original vision. The new competitor must, in the first place, successfully establish a broad market presence, rather than concentrating upon small niches where profits can be achieved swiftly without requiring the investment to cover the entire country and range of services. More important, the competition between Telmex and the alternative carrier must be truly market-driven and should not involve any degree of collusion or unrestrained duopolistic market sharing (for example, umbrella pricing). Unfortunately, these types of practices are very difficult to detect and prevent in the real world, and SCT would not, in fact, be able to measure the efficiency gains (or lack thereof) that the duopoly produced. Improvements in efficiency, technical innovation, and cost savings could all be reduced once the alternative carrier established its own market position, and many of the problems of (unregulated) monopoly could simply be expanded to the duopoly.
Open Entry

An open entry policy can actually encompass a fairly broad range of market structures in terms of the number of carriers, the types of services they provide, the regions they serve, and many other factors. The primary factors that determine these characteristics, however, are the strategies and choices of the companies that enter the market, as opposed to the designs of SCT. SCT's role in an open entry scenario would be to define minimum requirements for competitive entry and to allow applicants to test the market according to their best evaluation of the opportunities. Open entry thus encompasses, potentially, all options for more limited competition, as competing providers could pursue resale or private network options, could construct regional competitive networks, or could seek to establish full-service national networks. The regulator would not necessarily have to define these choices for the competitors, although it could set certain basic parameters and requirements for competitors, if only to ensure that a meaningful array of competitive choices becomes available.

Open entry theoretically offers all of the advantages and benefits anticipated from competition in telecommunications. As entrepreneurs evaluate the markets based upon prospective costs and revenues, they will establish operations in precisely those areas where the present level of services is inadequate or inefficient, that is, where they can successfully compete. Telmex must either respond by improving its own operations or lose existing or new business to the competitor, which by definition will be offering a superior and/or less costly alternative to customers. By opening all aspects of the market to competition, SCT would also create the flexibility for new entrants to test alternative technical, marketing, and integration strategies, and would thus allow the industry to evolve in accordance with user needs and economic conditions.

An open competition policy can also be risky, especially if the policy framework is not suitably prepared. In particular, Telmex's tariffs and interconnection responsibilities must remain under close regulatory scrutiny as the market is being opened up, to ensure that competition is not prematurely stifled by anticompetitive practices. Excessive imbalances in Telmex tariffs could also lead to inefficient "cream skimming" by competitors, without bringing true market-based disciplines to the industry as a whole. In addition, SCT will want to ensure that competitors contribute in one way or another to national development of the telecommunications infrastructure. In the long run, however, SCT's role would probably be less central under an open entry scenario than under more limited competition.

Regulatory Framework and Responsibilities

Although competition policy is intended to reduce the role of government regulation in the day-to-day control of the telecommunications industry, competition does not imply the end of regulation. Each market structure option implies varying degrees of effort and responsibility on the part of the SCT. Under any competition policy, however, SCT must take the lead to create the basic framework within which competition may evolve. SCT also must maintain a key ongoing role to ensure that the participants adhere to the requirements of their concessions and that the dominant carrier, Telmex, does not unfairly inhibit newer competitors.

The key areas where SCT must assert the most leadership in the establishment of competition include the following:
Beyond Privatization: The Second Wave of Telecommunications Reforms in Mexico

**Tariff Policy**

The structure and levels of Telmex tariffs for long-distance as well as local services will almost certainly undergo significant changes as a consequence of competition, and to a great extent it will be important to introduce key tariff changes prior to authorizing competition. This trend has already begun in a limited way under the Telmex concession, which prescribes a degree of tariff rebalancing as well as a price cap mechanism for general tariff adjustments. In establishing a competition policy, SCT will need to review these requirements and determine an appropriate tariff foundation upon which competition will be able to build. There are also important concerns about revenue contributions—which are also affected by tariff policy—to basic network development (see next section).

Moreover, for competition to be successful, Telmex must not be permitted to engage in anticompetitive practices such as predatory pricing or price discrimination, especially during the early stages when competitors are beginning to establish operations. Thus, SCT must maintain a capability to examine complaints about such practices as well as to review Telmex's tariffs as part of its ongoing monitoring and compliance responsibilities.

**Interconnection Policy**

Any competition scenario involving public network services (as opposed to dedicated networks) requires as a prerequisite to entry the creation of a clear and strict policy for the interconnection of networks. Specifically, competing long-distance carriers must be able to obtain access to end users (and vice versa), typically through the local exchange network of Telmex. In addition, other levels of interconnection will inevitably be required at many points between networks to ensure that national and international communication is seamless, regardless of the source and destination of traffic.

Interconnection policy entails several important components, each requiring affirmative decisions by the regulator prior to the widespread introduction of facilities-based long-distance competition. Among the main priorities for action are:

- **Service element definitions (unbundling).** It will be necessary to define which components of Telmex's current services, and of its basic network, can be separately purchased by interconnecting carriers. In general, the more the network is disaggregated, the greater the opportunity for competitors to maximize efficiency by interconnecting at the most appropriate point in the network and paying only for service elements critical to their operations.

- **Interconnection tariffs (access charges).** In addition to defining isolated service elements, it will be important to establish tariffs for interconnection that charge appropriately for the service elements purchased. These tariffs, or access charges, should typically be cost-based to the extent possible, although explicit contribution elements may be considered for network development support.

- **Technical standards.** SCT will also need to ensure that network interconnection conforms to optimal quality standards, so that signals traveling across networks do not encounter problems. These standards should be worked out within the industry, but SCT should play an active role in requiring coordination and preventing unwarranted delays or costs.
Licensing and Concession Granting

SCT's role in defining and granting competitive concessions will depend largely upon the general market structure strategy that is taken. In the case of a duopoly, for example, the concession-granting process must be nearly as detailed and meticulous as it was for Telmex at the time of privatization, since the second carrier is intended to serve nearly all of the same functions and to carry many similar responsibilities as Telmex itself. Under a more open entry policy, SCT may limit the process of defining terms of concessions to relatively standard requirements and procedures, for example, to ensure that applicants are financially viable and technically capable of providing competing services, and to prevent wasteful or collusive activities.

Each concession should contain certain basic definitions of the role and responsibilities of the new entrant. This includes geographic definition of service areas, the nature and scope of services to be provided, responsibilities for contribution to infrastructure development (see below), and general information (at least) about tariffs and customer service. The degree of detail in these requirements will also depend upon the nature of the market structure. Applicants must also adhere to certain timetables for establishing service, pay appropriate franchising fees, and be able to provide SCT with regular reports on their progress and activities.

Compliance Monitoring

The long-term responsibility of SCT under any competitive scenario will be to monitor the activities of the carriers, particularly Telmex and any others that establish large market shares, to ensure that they continue to operate in accordance with the terms of their concessions and the objectives of the government for the industry as a whole. This function will involve reviewing reports on industry development, responding to complaints of anticompetitive activities, reviewing tariffs and interconnection practices, as well as maintaining an active dialogue with both service providers and users concerning technical developments, the evolution of user needs, and long-term strategic goals.

Strategic Options for Linking Competition and Development

Perhaps the most fundamental policy problem any regulator must confront in opening up to competition markets that were previously monopolies is how to maintain and enhance basic telephone network development while at the same time allowing competitive entry. The objective for SCT is, in fact, to devise mechanisms whereby these two elements, development and competition, can be directly linked, so that competitive entry, into the long-distance market in particular, helps promote network development.

This challenge is important because without an affirmative linkage policy the opposite effect can readily result. In a monopoly network such as Telmex's, the fixed costs of providing basic customer access to the network are recovered through the general revenues of the carrier, derived from a combination of connection charges, monthly rent, local usage, and long-distance rates. Typically, long-distance charges are set higher than the direct costs of maintaining and operating the long-distance network, and the extra revenue contributes to the recovery of basic network access costs. This contribution is sometimes characterized as a cross-subsidy from long-distance to local access service, which allows other charges, such as monthly rent, to be set lower than direct local network costs. Although the exact magnitude of
such contribution or cross-subsidy within Telmex's operations is unclear, there is little doubt that Telmex could support substantially lower long-distance charges (which competition would certainly promote), and could also devote greater resources to local network development, if each market were treated independently.

This cross-subsidy arrangement can be maintained indefinitely as long as Telmex remains in a monopoly environment, but any competitor allowed to enter the long-distance market will seek to win customers by charging long-distance prices lower than those of Telmex (and closer to underlying costs). To compete effectively, Telmex will be forced to reduce its own prices for long-distance and, commensurately, to devote fewer resources to local network development. It is important to note that interconnection of competitors will also impose direct new access costs on the local network; these must be recovered in addition to any lost contribution revenue if network development is not to be hurt by competition.

The options described below attempt to provide a framework for overcoming, through regulatory initiatives, the inherent risk that introducing competition in long-distance service will lead to a diminishing pace of development. And beyond that, these options provide a strategic foundation to promote increased development through linking the opportunity for competitive entry with the obligation to support network investment.

It is important to emphasize, as the following sections discuss, that the options below are not independent nor mutually exclusive. Each option is available to SCT to employ, in varying degrees and in differing circumstances, simultaneously or sequentially, as the competitive environment evolves. SCT can actively support the expansion of basic (and enhanced) telecommunications services through the process of opening up certain markets to competition, by carefully implementing a strategic combination of these options over time, as resources and conditions warrant.

Option A: Competition as Leverage to Telmex

This option essentially recognizes that Telmex is already in a position to undertake more aggressive network development than it has, or than it is required to provide under its present concession, and that the threat of competition may be a powerful means of negotiating a greater commitment from Telmex. SCT can establish a competition policy that is more or less ambitious in the short run, depending upon the degree to which Telmex is willing to be responsive to SCT's objectives of higher quality and faster development. This option does not require extensive resources on SCT's part but does require the willingness to move toward a more active competition policy (including more rapidly applying some of the ideas in Options B and C), if Telmex is not responsive. This is fundamentally a short-run strategy, however, to be complemented by additional policies as competition and the market evolve.

Specifically, SCT could in effect negotiate with Telmex over the pace and scope of competitive entry. If Telmex is willing to commit to a more rapid and reliable improvement in its basic telephone network services, including greater availability, higher quality, and more efficient pricing, then SCT can commit to a more limited degree of competition, for example, simple resale only, for a longer time. To the extent Telmex may be reluctant to offer more ambitious development, SCT can respond by speeding up and expanding competitive entry. Of course, the threat of competition in response to unsatisfactory network investment must be accompanied by the means to implement that competition, including additional policies for promoting alternative investment, such as described in Options B and C. But in
general, SCT should recognize that Telmex benefits tremendously from its monopoly position and is likely to perceive the threat of losing some of its most profitable markets and customers to competition as considerable pressure. Such pressure can form the basis of a strong negotiating position for SCT in pursuing its development objectives.

**Option B: Contribution through Access Charges**

Ultimately, this is the direction that must be pursued to some degree if meaningful competition is to be introduced in long-distance markets. Some form of access charge must be implemented, requiring competing carriers to pay Telmex for interconnection, and potentially to provide some degree of contribution toward Telmex’s local network investment. Creating a viable access charge system depends upon cooperation from Telmex in providing necessary cost-and-demand data, and also in negotiating in good faith with interconnecting carriers.

SCT should take many objectives into account in the design of a switched-access-charge system. The most prominent include the following:

- To recover direct interconnection access costs from the competing carrier. At a minimum, competing carriers should pay Telmex the full cost of interconnecting their networks, since these are costs Telmex would not bear at all in the absence of competition.

- To balance the goal of providing adequate contribution levels with that of ensuring competitive pricing for long-distance service. If access charges are too low, there will be lost contribution, and Telmex will have fewer funds available to support network investment. On the other hand, if access charges are too high, competing carriers will find it difficult to charge competitive prices to the public, and the goal of competition will be defeated.

- To maintain the desired level of contribution to Telmex without creating excess profits that do not support development. Ideally, contribution derived from switched access charges will be used entirely to maintain and increase network investment, rather than retained as profit by Telmex. The goal should at least be to avoid any decrease in network investment by setting access charges high enough to recover any lost contribution. It may be, however, that increased overall traffic demand would produce access charge revenues far greater than the amount of lost contribution. In this event, either the access charge itself should be reduced, or some mechanism or procedure should ensure that the additional funds be used for development.

- To maximize incentives for carriers to interconnect to the network in the most economically efficient manner, whether through Telmex or alternative, dedicated access facilities. Relatively high access charges are likely to compel competing carriers to obtain direct, dedicated access connections to their largest customers. In many cases, this may be beneficial and desirable, even though it would theoretically mean lost contribution to Telmex. If such connections help relieve local network congestion, total traffic and revenues to Telmex might not diminish at all; any demand increase from lower prices and improved service would also benefit Telmex as well as competitors. There may, however, be instances where, if access charges were set too high, the incentives would lead to excess construction of expensive access facilities, which would be uneconomical.
The basic challenge underlying each of these objectives is to design an access charge system that most accurately reflects the related costs, demand conditions, and SCT policy objectives. This task is difficult under conditions of perfect information; it will be especially onerous in the absence of detailed cost-and-market information from Telmex. Nevertheless, it should be possible for SCT to introduce some form of access charge system relatively quickly, and this will be necessary as soon as any meaningful degree of facilities-based long-distance competition is authorized.

**Option C: Integrated Network Competition and Development**

This option actually represents a wide spectrum of alternative policy choices for SCT. Their defining characteristic is that they require or permit new carriers entering the long-distance market to invest directly in the construction, and potentially the operation, of the local network as well. This could occur through BOT (build-operate-transfer)-type construction contracts; simple access network construction with interconnection; and SCT concessions for full competitive provision of local service, potentially integrated with enhanced services such as cable TV, cellular telephony, and personal communications services. In practice, SCT can implement this option by degrees, in accordance with its available resources and the demonstrated progress of the industry.

Whereas the access charge mechanism represents a means for obtaining indirect support from competitive long-distance carriers, this option explores the potential for SCT to promote direct involvement of competitors in developing the basic telephone network, including local and long-distance service, as well as, potentially, other service options and technological choices. The fundamental premise of this option is that SCT could pursue policies that would either encourage, or even require, carriers seeking concessions to enter long-distance markets (or, potentially, other markets such as cable TV), to combine their competitive activity in their chosen markets with specific basic infrastructure investment and construction activities as well.

In one sense, this option could be viewed as a more direct and explicit version of the quid pro quo implied by access charges: the cost of obtaining the right to compete for fruitful long-distance market benefits is the requirement to contribute to local telephone access development, in this case by building local network facilities, rather than simply by subsidizing their development by Telmex through access charge payments. There might be several rationales for pursuing this option from this perspective, such as the possibility that new carriers might be better positioned or equipped to construct certain components of the access network infrastructure, and might be more efficient than Telmex in some respects. This option would also avoid the transaction costs of transferring funds between carriers through the access charge mechanism, and would theoretically ensure that funding be applied directly to the objective of development, and not diverted to other purposes or profits.

A more ambitious vision of the potential for this option, however, would embrace the possibility that, under the right circumstances, new carriers interested in entering the long-distance market would have a positive incentive to pursue local network development, that such development could contribute to competitive activity, rather than impede it. Under this view, a requirement or encouragement to link long-distance entry with local access investment would not represent a quid pro quo, but could actually increase the attractiveness of the competitor's concession. If this condition were to be achieved, then SCT might be in a position to promote full-scale, integrated competition for the entire range of telecommunications services, with the resulting benefit being both more efficient markets and more rapid network development (on the part of both competitors and Telmex).
It is apparent that a wide spectrum of possible arrangements could be pursued under this option. The following describes several distinct variations on the basic theme of promoting direct local network investment by new competitors as part of an integrated strategy of competitive opening and infrastructure development:

**Limited Construction Requirements for Long-Distance Competitors**

Under this scenario, the obligations of new competitors allowed to enter certain segments of the long-distance market would essentially be limited to providing direct construction assistance to Telmex in the acceleration of local infrastructure investment. A concession permitting entry into the long-distance market, for example, could require the concession holder to undertake a construction program of a fixed number of access lines and, potentially, central switching offices in specific locations.

The locations to be built would typically be somewhat correlated with areas in which the competitor intends to concentrate on seeking long-distance customers, which would permit certain economies of scale in the construction effort, and would also potentially increase the base of competitive revenues available. The definition of the local network construction obligation, however, would not be left solely to the strategic judgment of the competitor, but would have to include relatively higher-cost locations, including residential and rural areas.

This plan is similar to the build-operate-transfer (BOT) and build-transfer-operate (BTO) schemes prominent in some countries, especially in Asia. In essence, this option pursues a specific commitment from concession bidders to actually construct network access facilities while the long-term ownership of the facilities would ultimately still belong to Telmex. A typical BOT/BTO arrangement also provides for the builder of the network facilities to operate that portion of the network for some period of time, either before (BOT) or after (BTO) the transfer of assets to the national carrier. This aspect of the scenario is not essential, however, as the construction activity could take place independent of any operational responsibility. The other variations on this option, discussed below, incorporate some degree of competitive operation and ownership of new network access facilities. In this example, however, the idea is for a minimal level of responsibility on the part of the competitor, with Telmex maintaining ultimate ownership and control of the entire local network while the competitor merely provides (and finances) facility construction for a portion of the network, in return for the right to compete for long-distance traffic.

**Local Access Network Concessions, Integrated with Long-Distance Concessions**

This scenario goes beyond the previous options by providing for a more direct form of involvement by the competitor in the local access network, specifically by integrating that network with the new carrier's long-distance network. Under this arrangement, the obligation of the competitor would still be to construct certain specified local access facilities in designated locations, and to link those facilities to Telmex's basic local exchange network. The competitor would have the right, however, also to link the new access facilities directly into its own long-distance network. This would permit the competitor to provide all long-distance service for the new network subscribers, yielding a guaranteed revenue stream that could partially offset construction costs. In this case, the competitor would not provide local usage service; this responsibility would remain with
Beyond Privatization: The Second Wave of Telecommunications Reforms in Mexico

Telmex, and the competitor would be obligated to interconnect each new subscriber directly to Telmex's network.

In theory, under this scenario Telmex could also compete for the long-distance traffic of the new customers, and the extent of such head-to-head competition could be an element of negotiation in the design of the concession. For example, the new competitor could be given an exclusive right to the long-distance traffic of those access lines that it builds for a five-year period. But this right would be given only in exchange for a commitment to build, say, 100,000 access lines during that time. A commitment for a lesser level of development might bring a shorter exclusivity period, or none at all. Even with direct competition by Telmex, however, the competitor might be in a better position to retain the customers that it has built, if for example, the quality of the interconnection is superior, and other relationships with those customers are fostered as a result of the construction program.

**Integrated Full-Service Local and Long-Distance Concessions**

This scenario contemplates more complete competition for integrated local and long-distance telephone service concessions, within and between designated geographic markets. Under this option, the competitor would act as a complete telephone carrier, providing both local and long-distance access and usage services across some subsegment of territory. Again, the extent of competition authorized could cover a fairly wide spectrum, depending, for example, upon the definition of the regions subject to competitive concession bidding.

One possible extreme would be to define exclusive local concession areas, which could range from the size of a city neighborhood to an entire state, in which the new carrier would be given not only the right, but the obligation to provide all local network telephone service, including both access and usage, as well as long-distance connectivity. Such an arrangement would require that existing network facilities now owned and operated by Telmex be transferred to the new carrier, at some fair market value, and the competitor would then be obligated both to maintain and operate this network as well as to construct new facilities according to terms defined in its concession. If the local service concessions are relatively small in scope, for example, including only a portion of a city, or several adjoining towns, then it may be possible to create concessions that involve a limited amount of facility transfer from Telmex to the competitor.

Rather than going to this extreme, it may instead be possible to authorize more limited concessions for integrated service competition in which the new network could coexist with Telmex's in-place network, thus not requiring a large immediate transfer of assets. This alternative would require that the new local service concessions be narrowly defined according to the specific locations to be served, for example, city blocks, office buildings, or housing developments, or even entire villages that have no service at present. The definition would need to fit logically with the network planning of the competitor, so that local switching offices could be efficiently placed and strategically integrated with the carrier's long-distance facilities. Also, network interconnection policy would have to be especially aggressive under this scenario, as both local and long-distance access customers would have to be fully connected to each other, regardless of which carrier provided their service.
Under this option, the new carrier could again potentially have the exclusive right to carry all long-distance traffic generated by the local access lines within its territory. A different question would be the extent to which the new concession holder would be permitted to compete for long-distance traffic from customers located outside its local service region. Instead of exclusivity, there could also be varying degrees of authorized direct competition between Telmex and the competitor for the long-distance traffic of the new entrant's local service customers. Such a position would require essentially reciprocal policies on interconnection, access charges (if any), billing and collection, revenue distribution, and all the other issues raised by long-distance competition. If more than one competing local service concession were authorized, it would be possible for several competitive long-distance providers to be seeking to offer long-distance service to subscribers within their own and their competitors' local service territories.

Integrated Mega-Concessions for Telephone and Other Services

The final variation on the basic theme of linking competition and network development is to expand the scope of communications services provided under competitively awarded concessions, to include nonbasic and nontelephone services. Specifically, the provision of cable television service, cellular telephone service, personal communications services (PCS), and enhanced/information services can be combined with local and long-distance voice and data telephone services in mega-concessions. Such concessions could offer competitors the opportunity to establish potentially immense new markets and could bring to the public new levels of technology, quality, and service choices across the full range of their communications needs.

Under this scenario, concessions could be designed precisely by SCT in a variety of combinations, or their terms could be left to the bidding process. For example, SCT could define a concession that would permit a carrier to offer cable TV, local telephone service, wireless/mobile services, and long-distance service on a combined basis within a designated service area. The boundaries of the concession areas could, as in the previous scenario, be limited to portions of cities, entire metropolitan areas, or large regions. The concession holder could be given exclusive rights to operate the various services, or there could be differing degrees of direct competition for each.

To design a concession in this manner would require in-depth attention to many economic and market details, including the scope of services, geographic boundaries, tariff and financial investment factors, probable demand, and certainly access charges. Technical elements requiring close attention would include interconnection arrangements, frequency allocations, and many technological standards associated with the new services that might be introduced under these concessions.

As an alternative to defining all terms of a concession in advance, it may be preferable for SCT to identify only the broad outlines of a concession tender, such as the geographic region, minimum basic telephone network obligations, and the range of competitive services that could be offered, but to leave the details of the ultimate concession to the bidding process itself. This strategy would require potential competitors to do the work of assessing the various market opportunities as well as the technical and economic requirements, and to define the complete, integrated concession that would be most advantageous from a business point of view. In a fully open competitive bidding process, to maximize their chance of winning the concession the aspiring new entrants would also have to assess the strengths and weaknesses of other potential bidders and to offer a package...
that would best meet SCT's objectives as well as their own. Concession proposals would thus compete with each other in offering the most extensive and rapid pace of development, the most favorable customer tariffs, the broadest scope of service capabilities, and the most realistic and viable network plan.

In such an open bidding process, SCT could maximize the range of options proposed by permitting existing service providers to enter the bidding, either separately or in teams. Cellular carriers, for example, could be allowed to propose a concession for a new radio-based service package that would include both fixed and mobile local service, PCS, and long-distance service. To construct this bid, they might join with a private network owner such as Banamex, which could furnish the long-distance component of the proposed system. If it seemed advantageous to incorporate cable TV as part of the integrated service, the consortium could be expanded to include an existing cable operator. The business relationship could be either a loose partnership or a full merger of operations, depending upon the strategic interests of the bidders and the perceived strengths of the combination in winning one or more concessions.

Finally, it might even be possible to allow Telmex itself to join with other providers in bidding for these new mega-concessions, or to bid separately to offer a similar integrated service under the general terms of the new concession. Any such new concession involving Telmex would, of course, supersede the existing Telmex concession for the service area in question, but Telmex might well have an incentive to enter the bidding if it perceived the competitive threat, or new market opportunity, to be great enough.

These four scenarios should not be thought of as distinct, mutually exclusive options among which only one can be chosen; rather, these examples represent points along the spectrum of different choices that may be possible for SCT to define to achieve a direct link between the process of competitive opening and network and service development. Indeed, none of these scenarios precludes or supplants the concept of access charges as a mechanism to accomplish the same linkage indirectly: these are alternative paths toward the same end, and different variations may be appropriate for different markets, and at different points in time.

In general, a decision to promote more direct investment in the access infrastructure as a condition of entering competitive markets would shift responsibility for such investment away from Telmex, and imply a considerable degree of faith in the strength of competitive forces as a supplement to direct SCT regulatory authority. But since no single option needs to be chosen for the entire industry, SCT could experiment with a small number of new concessions, employing new mechanisms for promoting network investment, while leaving most of Telmex's operations unaffected in the short run until the full, long-term market picture is clearer.
Attachment 5

Telephone Company–Cable Television Cross-Ownership: Implications for Future Competitiveness in Mexico

Telephone service and cable service in Mexico, as in most of the rest of the world, are distinct and not substitutable for one another. The conventional wisdom, however, holds that the two are converging and that in the near future both the telephone companies and the cable companies will be able to deliver telephony and video programming to end users using competing technologies. This Attachment examines the question of how ownership of cable television service by the telephone company, or vice versa, may affect overall sector performance. The main text of the report explains the policies actually adopted by the government.

Three propositions drawn from the experience of advanced economies are also believed to apply to Mexico as it opens its telecommunications market to competition:

• In an environment with only one telephone company and one cable company, cross-ownership between both reduces two potentially competitive providers of either service to a single monopoly. This is likely to reduce the incentive for introducing new technology, reduce the incentive to create and distribute new video programming, forestall competitive entry into the communications business by potential new facilities providers (such as the power utilities), and prolong reliance on government regulation of prices as a substitute for market discipline.

• Even in increasingly competitive environments, cable television companies are likely to pose the greatest competitive challenge to telephone companies, and vice versa. Thus, cross-ownership is likely to have an adverse effect on overall market performance.

• The full benefits of competition between cable television and telephone companies are unlikely to materialize without effective regulation.

Sources of Competition

In mature telecommunications environments, telephony faces landline competition from cable and the so-called competitive access providers (CAPs). The CAPs originated as suppliers of leased lines interconnecting business premises and long-distance carriers. They have competed on the basis of circuit quality, faster response to customers' needs, diverse routing (for reliability), price, and customized services. More recently they have entered the switched voice market in several countries. Examples are Mercury in the United Kingdom and Teleport, Metropolitan Fiber Systems (MFS), and MCI's Diginet in the United States. Electric power companies and other utilities with large private networks are potential entrants into the terrestrial communications transmission market.

In addition, some cable systems have offered competitive private-line, that is, nonswitched, data transmission services. When in 1991 the British government opened exchange service to
Beyond Privatization: The Second Wave of Telecommunications Reforms in Mexico

competition, ten cable television operators immediately obtained licenses to offer telephone service. By the middle of 1993 a quarter of a million homes were reported to have cable-based telephone service. Cable operators were adding 15,000 telephone subscribers a month, to the point where 70 percent of cable homes had cable-based telephone service. Some anecdotal evidence suggests that cable operators have priced telephony attractively so as to avoid cable subscriber churn. In the United States, numerous multiple cable system operators (MSOs) are planning system rebuilds accommodating switched services.

Telephony also faces radio-based competition from cellular, PCS, and VSATs (very small aperture terminals) with respect to both voice and data.

Cable systems face incipient competition from telephony, where compressed video signals are now being delivered over twisted-copper-pair plant in the United States. More recently, the U.S. Federal Communications Commission (FCC) has begun granting telephone companies authority to build and operate optical fiber-based switched video services, so-called video dial tone (VDT). VDT at present is an admixture of point-to-multipoint video transmission equivalent to conventional cable and point-to-point switched video transmission. VDT has the capability of delivering signals from multiple sources (program providers). The telephony companies operating such VDT systems are now challenging FCC restrictions on VDT delivery of video signals originated by the telephony companies themselves and sold to their VDT subscribers.

Cable faces radio-based competition from direct-broadcast satellites (DBS) and terrestrially based wireless cable, that is, closed-circuit distribution of video programs via broadcasts to subscribers at microwave frequencies.

Cable–Telephony Competition Is Pivotal

Despite all of these sources of competition to local telephony and to cable, cable-telephony competition between themselves is seen as pivotal at this time. Each is the likeliest source of comprehensive competition to the other. Each of the other competitors or potential competitors has limitations that appear to stand in the way of full-fledged competition with telephony or cable, as the case may be. Thus, if there is to be full-fledged competition to telephony and to cable, it appears at present that such competition is more likely between the telephone carriers and the cable operators than from any other source.

The CAPs are not comprehensive competitors. Their business plans call for cherry picking business subscribers in the limited geographic areas served by their fiber plant. Mercury was never perceived as a full-fledged competitor to British Telecom's (BT) local exchange service, and it is said that Mercury's failure in this regard led to the British government's authorizing cable operators to offer telephone service. The regulator in Britain has adopted open network provisioning (ONP) and those in the United States have adopted open network architecture (ONA) and co-location, as a means of allowing facilities-based competitors to extend their geographic reach and scope of service offering on a resale basis.

The radio-based competitors to the telephone companies suffer under significant technical and economic limitations. Spectrum limitations are likely to preclude total substitution of radio-based service for landline service, and landline service appears to still have a significantly lower cost basis than radio-based service over a range of subscriber densities and numbers.
Similarly, wireless technologies cannot totally duplicate or replace terrestrially based cable systems because of finite channel capacity, lack of local programming, and propagation limitations such as fading during rainstorms. Wireless cable similarly suffers from technical limitations due to finite channel capacity and propagation deficiencies.

Competition between cable operators and telephone companies seems a natural outcome of present technology and projected public needs. The telephone companies are saddled with an outside plant that is becoming progressively less adequate to handle modern communications needs—both business and residential. The principal limitation is bandwidth—despite technological improvements, the existing twisted copper pairs are inadequate or inefficient in carrying high-capacity information streams. To replace this embedded plant with optical fiber, however, the telephone companies require revenue streams above those already being generated by the copper plant. Video programming services are a natural bridge until the switched-wideband-circuit market begins generating substantial revenues.

Similarly, the cable companies are saddled with an obsolescent outside plant—it is largely one-way, noisy and ghosty, far too narrow in bandwidth, and has only awkwardly addressable delivery ports as well as a constraining trunk-branch architecture. The operator faces the problem of paying for the complete rebuild that will ultimately be required without new revenue streams. Cable-based telephony is seen not only as an additional revenue stream but also, as mentioned above, a means of reducing cable subscriber churn.

Obviously, there would be no economic incentive for effective cable-telephone competition in a given geographic area to the extent that a single incumbent cable system and the single telephone system were under common ownership or that ownership between the two overlapped substantially.

In the United States there have been administrative, legislative, and judicial restrictions against cable—telephone company cross-ownership over the past quarter century. The administrative and legislative restrictions were cast in terms of prohibiting telephone companies from distributing video programming directly to subscribers in their telephone service areas. Thus, these restrictions did not preclude telephone companies from distributing the video programming of independent programmers or of cable systems (so-called channel service) or from providing cable service outside their telephone service areas. The courts have recently struck down these restrictions as inconsistent with the constitutional right to free speech. The judicial restriction originated in the Bell consent decree's prohibition against the local Bell companies' domestic provision of competitive information services. Several years ago the appellate courts found that prohibition no longer necessary. In the aftermath of these court decisions, a legislative proposal has been introduced in Congress that would prohibit telephone companies from acquiring co-located cable systems. Since the United States is largely cabled, the effect of its enactment would be to force the telephone companies wishing to become cable operators to overbuild the incumbent cable operator, thus ensuring competitive cable service. A dissymmetrical prohibition against British Telecom's entry into cable television in Britain has apparently existed since the late 1980s, based on BT's dominance in local telephone exchanges. The British prohibition has been the subject of recent criticism.

**Level Playing Field Required**

Competition between operators of cable and local telephone systems producing the competitive benefits desired is not likely to occur in the absence of regulatory intervention. In both cable-telephony and telephony-cable competition the issue of cost allocations must be faced; otherwise, the cable company's
cable customers may involuntarily subsidize the cable company's telephone customers and vice versa. With respect to jointly used plant, there is, of course, no uniquely correct apportionment of costs. It may be appropriate for the regulator to prescribe an acceptable range of apportionment between average cost and marginal cost, and that range may vary as the two systems develop over time in size and technology.

A number of questions must be faced if cable companies are to successfully offer telephone service. The most critical questions center on the terms of interconnection between the cable operator's telephone system and the telephone company's telephone system, for example, call completion—what does each company pay the other for terminating on its system the calls that originate on the other system? This question can seldom be satisfactorily resolved by negotiation between initially unequal competitors. Other questions that may be faced by the regulator are universal service subsidies, number portability, network restoral, points or levels of interconnection, and the right of competitive telephone providers to succeed to premises wiring installed by the incumbent telephone company.

Likewise, a number of questions must be faced if telephone companies are to successfully offer video programming. The foremost of these is programming availability, because cable subscribers sign up for programs, not for a transmission system. To the extent that the incumbent cable operator has monopolized all the programming to make a cable system commercially viable, the legislature or regulator must ensure, by legal compulsion if necessary, the availability of such programming to the competitor, at least until programming supply contracts are renegotiated at a time when bargaining power is more nearly equal.

Access to public and private rights-of-way is another problem that telephone companies and cable operators seeking to expand the scope of their traditional operations may encounter. In the United States the FCC and Congress have adopted measures to assist the cable companies in attaching their lines to existing utility poles, renting utility ducts, and occupying existing rights-of-way (public and private) dedicated to utility services. The issue that remains in parts of the United States is whether telephone companies seeking to offer cable service must obtain additional governmental authorizations to use public rights-of-way. In Mexico, rights-of-way may not be assigned on an exclusive basis.

To the extent that the provision of stipulation in Telmex's concession barring it from providing public television services is an obstacle to Telmex's providing video distribution services at all, that stipulation stands in the way of telephony-cable competition. If, on the other hand, it is read only as barring Telmex from providing video programming directly to the public, that would not be an obstacle to Telmex's providing video dial-tone service to unaffiliated programmers and other services. Only if an additional economic incentive were deemed to be required or desirable would any bar against self-programming by Telmex need to be waived or modified.

The focus of the regulatory efforts to maintain a level playing field should not be confined to cable-telephony competition. Given the rapid and unsteady evolution of technology and competition in broadband services, Mexico should foster competition from other providers—for example, CAPs and wireless cable. This collateral competition will mitigate the enervating effects of what might otherwise be a cable-telephony duopoly.

As becomes apparent from the foregoing, an adequate governmental regulatory structure must be in place to bring about effective competition. The regulatory burden of a competitive environment may be as great as that of a rate-regulated environment, but the competitive environment not only protects the subscribers' pocketbooks but goes a long way toward ensuring efficiency and the timely introduction of new technology.
Endnotes


2. *The Journal of Commerce* (January 31, 1995) reported that the government hopes to raise “$1.5 billion . . . from opening [Mexico’s] satellite systems to private investors.” Telecomm reportedly has approximately $400 million of debt.

3. As of February 1995, applications reportedly were pending before the SCT for new local service licenses (Pulsar, Iusacell), for cable television, and for various paging services. In November 1994, SCT’s inaction allegedly prompted Grupo Iusacell to petition the federal courts to expedite its June 1994 application to provide wireless local telephony under its preexisting nationwide concession for radio-telephone services in the 440–450 MHz and 485–405 MHz bands. At issue is whether Iusacell’s existing license, originally intended for rural radio-telephony, is broad enough to include the provision of fixed local wireless services based on a cellular radio technology.


6. If this option is followed, however, the concessions must grant new entrants access to public rights-of-way. Otherwise their networks may well be stillborn. Currently, it appears that only various state-owned companies—electricity (CFE), petroleum (PEMEX), railroads (FNMs)—have national rights-of-way at all equivalent to those of Telmex. These concerns already operate major private telecommunications networks, but competition policy would not be well served if they are the only companies having national rights-of-way.

7. The large payment imbalance in Mexico’s favor for cross-border telephone traffic reflects two main factors. The United States originates twice as many calls as Mexico. More important, U.S. carriers pay Telmex a distance-sensitive termination fee (similar to a long-distance tariff) which averaged over US$55 per minute in 1994; the termination fee paid to U.S. carriers in the same period averaged US$25. Almost all other settlement arrangements for international traffic are based on flat per-minute accounting rates and typically divided 50/50 between the sending and receiving carriers. In contrast, the U.S.-Mexico route was historically based on end-on-end long-distance tariffs from each country’s border. For example, on the U.S.-Canada route, where traditional accounting rate arrangements apply, in 1994 U.S. and Canadian carriers were each paid US$11 to US$13 per minute (depending on time of day) for terminating traffic anywhere in their respective countries. Thus, although Canada also enjoys a traffic surplus with the United States roughly the same as that of Mexico, in 1994 net payments to Canadian carriers totaled only $130 million, as compared to $800 million to Telmex.


11. For example, in 1995 the Mexican cable TV operator Megacable, together with the U.S. business communications provider MFS Communications Company Inc., applied to SCT for a concession to build a fiber-optic network and offer data and local telephone service in Mexico City.


13. For example, the consortium of Grupo Pulsar with U.K.-based Ionica announced in 1995 that it would not go ahead with investments initially expected to reach $1.7 billion over five years to install a fixed wireless network. Expected high bid prices of spectrum slots, which were essentially free under government practice prior to the 1995 telecommunications law, reportedly was a factor in this decision.


16. Ley Federal de Telecomunicaciones, article 45.
References


Recent World Bank Discussion Papers (continued)

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Authors/Editors</th>
</tr>
</thead>
<tbody>
<tr>
<td>308</td>
<td>Bank Governance Contracts: Establishing Goals and Accountability in Bank Restructuring</td>
<td>Richard P. Roulier</td>
</tr>
<tr>
<td>309</td>
<td>Public and Private Secondary Education in Developing Countries: A Comparative Study</td>
<td>Emmanuel Jimenez and Marlaine E. Lockheed with contributions by Donald Cox, Eduardo Luna, Vicente Paqueo, M. L. de Vera, and Nongnuch Wattanawaha</td>
</tr>
<tr>
<td>310</td>
<td>Practical Lessons for Africa from East Asia in Industrial and Trade Policies</td>
<td>Peter Harrold, Malathi Jayawickrama, and Deepak Bhattachali</td>
</tr>
<tr>
<td>311</td>
<td>The Impact of the Uruguay Round on Africa</td>
<td>Peter Harrold</td>
</tr>
<tr>
<td>312</td>
<td>Procurement and Disbursement Manual for Projects with Community Participation</td>
<td>Gita Gopal</td>
</tr>
<tr>
<td>313</td>
<td>Harnessing Information for Development: A Proposal for a World Bank Group Strategy</td>
<td>Eduardo Talero and Philip Gaudette</td>
</tr>
<tr>
<td>314</td>
<td>Colombia's Pension Reform: Fiscal and Macroeconomic Effects</td>
<td>Klaus Schmidt-Hebbel</td>
</tr>
<tr>
<td>315</td>
<td>Land Quality Indicators</td>
<td>Christian Pieri, Julian Dumanski, Ann Hamblin, and Anthony Young</td>
</tr>
<tr>
<td>316</td>
<td>Sustainability of a Government Targeted Credit Program: Evidence from Bangladesh</td>
<td>Shahidur R. Khandker, Zahed Khan, and Baqui Khalily</td>
</tr>
<tr>
<td>318</td>
<td>Private Sector Development During Transition: The Visegrad Countries</td>
<td>Michael S. Borish and Michel Noël</td>
</tr>
<tr>
<td>319</td>
<td>Education Achievements and School Efficiency in Rural Bangladesh</td>
<td>Shahidur R. Khandker</td>
</tr>
<tr>
<td>320</td>
<td>Household and Intrahousehold Impacts of the Grameen Bank and Similar Targeted Credit Programs in Bangladesh.</td>
<td>Mark M. Pitt and Shahidur R. Khandker</td>
</tr>
<tr>
<td>322</td>
<td>Selecting Development Projects for the World Bank. Jean Baneth</td>
<td></td>
</tr>
<tr>
<td>323</td>
<td>Evaluating Public Spending: A Framework for Public Expenditure Reviews</td>
<td>Sanjay Pradhan</td>
</tr>
<tr>
<td>324</td>
<td>The Bangladesh Rural Advancement Committee's Credit Programs: Performance and Sustainability.</td>
<td>Shahidur R. Khandker and Baqui Khalily</td>
</tr>
<tr>
<td>325</td>
<td>Institutional and Entrepreneurial Leadership in the Brazilian Science and Technology Sector: Setting a New Agenda</td>
<td>Edited by Lauritz Holm-Nielsen, Michael Crawford, and Alycione Saliba</td>
</tr>
<tr>
<td>326</td>
<td>The East Asian Miracle and Information Technology: Strategic Management of Technological Learning.</td>
<td>Nagy Hanna, Sandor Boyson, and Shakuntala Gunaratne</td>
</tr>
<tr>
<td>327</td>
<td>Agricultural Reform in Russia: A View from the Farm Level</td>
<td>Karen Brooks, Elmira Krylatykh, Zvi Lerman, Aleksandr Petrikov, and Vasili Uzun</td>
</tr>
<tr>
<td>328</td>
<td>Insuring Sovereign Debt Against Default</td>
<td>David F. Babbel</td>
</tr>
<tr>
<td>329</td>
<td>Managing Transboundary Stocks of Small Pelagic Fish: Problems and Options</td>
<td>Max Agüero and Exequiel Gonzalez</td>
</tr>
<tr>
<td>331</td>
<td>Case Studies in War-to-Peace Transition: The Demobilization and Reintegration of Ex-Combatants in Ethiopia, Namibia, and Uganda.</td>
<td>Nat J. Colletta, Markus Kostner, Ingo Wiederhofer, with the assistance of Emilio Mondo, Taimi Stari, and Tadesse A. Woldu</td>
</tr>
<tr>
<td>332</td>
<td>Power Supply in Developing Countries: Will Reform Work? Edited by John E. Besant-Jones</td>
<td></td>
</tr>
<tr>
<td>333</td>
<td>Participation in Practice: The Experience of the World Bank and Other Stakeholders</td>
<td>Edited by Jennifer Rietbergen-McCracken</td>
</tr>
<tr>
<td>334</td>
<td>Managing Price Risk in the Pakistan Wheat Market.</td>
<td>Rashid Faruquee and Jonathan R. Coleman</td>
</tr>
<tr>
<td>335</td>
<td>Policy Options for Reform of Chinese State-Owned Enterprises.</td>
<td>Edited by Harry G. Broadman</td>
</tr>
<tr>
<td>336</td>
<td>Targeted Credit Programs and Rural Poverty in Bangladesh.</td>
<td>Shahidur Khankder and Osman H. Chowdhury</td>
</tr>
<tr>
<td>337</td>
<td>The Role of Family Planning and Targeted Credit Programs in Demographic Change in Bangladesh.</td>
<td>Shahidur R. Khandker and M. Abdul Latif</td>
</tr>
<tr>
<td>338</td>
<td>Cost Sharing in the Social Sectors of Sub-Saharan Africa: Impact on the Poor.</td>
<td>Arvil Van Adams and Teresa Hartnett</td>
</tr>
<tr>
<td>339</td>
<td>Public and Private Roles in Health: Theory and Financing Patterns.</td>
<td>Philip Musgrove</td>
</tr>
<tr>
<td>340</td>
<td>Developing the Nonfarm Sector in Bangladesh: Lessons from Other Asian Countries.</td>
<td>Shahid Yusuf and Praveen Kumar</td>
</tr>
</tbody>
</table>