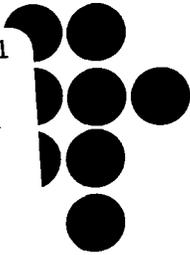


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"Privatizing Communication in the Third World: Miracle or Mirage?"

April 23, 1992

MIT COMMUNICATIONS FORUM
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**MASSACHUSETTS INSTITUTE OF TECHNOLOGY
COMMUNICATIONS FORUM**

"Privatizing Communication in the Third World: Miracle or Mirage?"

April 23, 1992

Seminar Notes

Mr. Antonio Botelho, Program in Science, Technology, and Society, MIT

**Prof. William Drake, Department of Communication,
University of California, San Diego**

**Dr. Richard Beard, International Communication and Information Policy
Bureau, Department of State**

**Dr. Lee McKnight, Center for Technology, Policy and Industrial
Development, MIT**

Elizabeth H. Prodromou, MIT, Rapporteur

Dr. Lee McKnight introduced the seminar, which dealt with the privatization wave in the telecommunications sectors of many developing, decommunizing, and newly industrialized nations. These developing countries, including nations in Africa, Asia, Central and Eastern Europe, and Latin America, are focusing on privatizing telecommunications as a means to develop their information infrastructure and to encourage faster economic growth.

The first speaker was Mr. Antonio Botelho, Doctoral Candidate in the MIT Department of Political Science and participant in the MIT Program in Science, Technology, and Society. Botelho's talk dealt with the economics and politics of telecommunications privatization in Latin America and, particularly, in Brazil.

Botelho cited several reasons generally used to explain the need to privatize telecommunications in Latin America: (1) telecommunications has become too important for business and economic development to be left to management by governments, many of which are characterized by incompetent bureaucracies; (2) government is too slow in terms of response time and too short of capital to take advantage of the rapid advances in telecommunications technology, much less what looks to be an equally rapid diffusion of technology to developing countries in the near future; (3) privatization is necessary for making available the capital to acquire costly telecommunications technology; (4) there is a current trend towards neo-liberal economic philosophies in Latin America, interestingly enough, at a time when industrialized nations are pushing for industrial policy in high tech areas such as telecommunications. Botelho noted that, while some of the above arguments may be true in certain cases in Latin America, the empirical realities don't always support all of the arguments all of the time.

The talk was structured in three parts: (1) a brief overview of telecommunications and privatization in a number of Latin American countries, excluding Brazil, with an assessment of the results of privatization in those countries where it has occurred; (2) a discussion of the evolution of telecommunications in Brazil, particularly during the last decade, with an evaluation of the strengths and weaknesses of the state enterprise regime currently in place; in addition, a review of the proposals for privatization of telecommunications in Brazil and a summary of recent steps taken in this direction; and (3) some suggestions about the possible future direction of privatization in Brazil, with respect to the impact of privatization on Brazilian economic development as a whole.

Using overheads to illustrate his points, Botelho reviewed telecommunications privatization in several Latin American countries and suggested that Latin America is an attractive market for telecommunications, in terms of economic and demographic factors. The oldest case of telecommunications privatization in Latin America is Chile. The telecommunications regime is regulated by the 1987 Telecommunications Law, which provided for deregulation of the market, privatization of the state telecom monopoly, and non-exclusive concessions; the law also provided for continued government regulation of public local phones, as well as national and international long distance calls. The main privatized telecom company is the CTC (Compania de Telefonos de Chile), privatized in 1988. In Argentina, telecommunications privatization occurred in 1990 with the sale of the state company, Entel, to two different foreign groups. But this sale has been marred by disputes between the new private owners and the government, concerning the issue of tariff rates. The private companies maintain that the tariff should be set according to the formula established in the privatization negotiations (with a trigger mechanism to account for inflation and devaluation swings), while the government argues that the Argentine Congress's 1991 economic reforms banned such indexing of prices to inflation. Critics charge that the private companies are taking advantage of the market without doing the necessary investment in telecommunications, in order to gain government financing when the economic situation becomes untenable. Another important Latin American telecommunications market is Mexico which, with a population of 88 million, currently has 5.5 million telephone lines and a telephone density of 6.6 phones per 100 inhabitants. The Mexican telecom company Telmex (Telefonos de Mexico S.A.) was privatized in 1991, and its main shareholders include Southwest Bell, France Telecom, and Grupo Carso. The current regime provides for a Telmex long distance service monopoly until 1997, gives Telmex a

three-year basic service concession, restricts foreign ownership to 49%, and aims at increased competition and lowered import barriers over the medium term.

Botelho concluded the review by noting the integration trend that is occurring in the Southern Cone of Latin America. The three countries of the Southern Cone, Brazil, Uruguay, and Argentina, have agreed to build a \$92 million fiber optic submarine cable to link the three countries by 1994, in an effort to support the rapid economic integration of the region.

In terms of the Brazilian case, Botelho observed that the country's growth rates fit the regional pattern that has led many economists to call the 1980s a lost decade for Latin American economic development. Further, while other Latin American countries have begun to experience economic improvements, Brazil remains saddled by economic problems that undermine growth. But in the area of telecommunications, Brazil has experienced significant expansion despite the inflationary environment and the crisis in investment. Botelho noted that the telecommunications expansion, however, has had problems with system quality.

The structure of the Brazilian telecommunications industry rests on the telecom holding company, Telebras, which has almost half of its capital in the hands of the public and the remainder traded on the stock market. Telebras controls almost all 33 local state telephone companies. In contrast, another state-owned enterprise, Embratel, operates long distance and international services.

According to Botelho, the main factor explaining the deterioration in the quality of the Brazilian telecommunications system is the lag in tariff rates and the persistent economic crisis and inflationary spiral of the last decade. During the 1980s, telecommunications declined by an inflation-adjusted 80%. Both Telebras and Embratel have been hard hit by the inflationary spiral and, as a result, system investment capacity has declined precipitously. When the brief recovery of the mid-1980s increased telephone traffic by 30%, the system quickly became saturated.

Notwithstanding the problems in the telecommunications system, both EBT and Embratel have been repeatedly ranked amongst the country's top firms, both public and private, in performance terms. However, Embratel recently has been under government pressure to help reduce the public sector deficit, and the company's telex revenues have taken hits from both the economic crisis and the appearance of alternative telecommunications media (e.g. facsimile, low speed data communications, public data packet network, etc.).

The center of telecommunications research in Brazil is Telebras' R & D Center, CPqD. Established in Campinas in 1979, the CPqD today employs about 1,300 people (70% of these are employed by Telebras and university-based foundations involved in projects, and 30% are employed by firms working in joint development projects with CPqD). Telebras currently invests 2.5% of its telephone operational revenues in R&D, with CPqD getting approximately 2% of that total and the remainder distributed amongst the R & D centers of the "pole enterprises." Telebras R & D efforts have helped national firms to acquire a significant share in the local telecommunications market, although the Brazilian telecommunications equipment market remains relatively open in comparison to those of developed nations like Japan, France, and Italy.

Botelho suggested that there are several signs that the Brazilian economy is beginning a recovery, which will spur the development of the telecommunications market. First, foreign direct investment in Brazil continued to recover in early 1992, registering \$1.2 billion in the first two months versus a total of \$1.4 billion for the whole of 1991. Furthermore, GDP grew by 1.2% in 1991. Third, changes in profit and capital repatriation rules may facilitate capital repatriation, as may changes in exchange application on reinvestment. Fourth, the February 1992 economic package of the government will help the Brazilian economy by encouraging exports.

In terms of prospects for the future of the Brazilian telecommunications market, Botelho observed that constitutional reforms slated for 1993 may strengthen the telecom market. He also cited the recent remarks of Brazil's National Secretary of Communications, who claimed that the highly protectionist model of the last twenty years has exhausted its effectiveness and that the country's priorities include regionalization of Telebras management, tariff reform, and fostering competition in the provision of limited services and value-added services. Administrative measures

towards achieving these objectives included the recently issued "Regulation of Limited Services," which opens the long distance, cellular, paging, cable t.v., and private data services markets to competition and foreign investment.

In summary, Botelho concluded that the Latin American cases suggest that privatization of the telecommunications industry may be a short-term expedient towards helping a broader reorganization of public sector finances. However, once the sales are completed and the state continues to confront ongoing social and economic challenges, the lack of investment capacity and the reluctance of private firms to invest in basic services may present serious challenges to strengthening the quality and capacity of the countries' telecommunications industry.

The next speaker was Dr. Richard Beaird, from the State Department's International Communication and Information Policy Bureau. Beaird noted two topics of interest to him regarding the seminar's subject: (1) the existence of global economic interdependence simultaneous with a growing awareness concerning new possibilities for regional arrangements for economic, political and social development; and, (2) the internationalization of telecommunications capital and investment.

Beaird opened with a discussion of the Asia Pacific Economic Cooperation Initiative (APEC). The Asia-Pacific region has become America's largest trading partner, and U.S. firms have invested over \$61 billion in the region. James Baker recently compared the development of the Asia-Pacific region in the 21st century to the development of America in the 19th century, and he stressed the importance of telecommunications to the Asia-Pacific development enterprise. APEC was established to address the effects of the growing interdependence amongst the region's economies. The initiative began in 1989 with meetings between the six ASEAN countries and six other countries including the United States. Since its inception, APEC has emphasized market-oriented growth and economic liberalization. Beaird noted that it is likely that China, Hong Kong, and Taiwan will join APEC, which would heighten the likelihood of APEC becoming a major force in the Asia-Pacific region.

Two of the main purposes of APEC are the maintenance of growth and development in the Asia-Pacific region, and the strengthening of multilateral trade amongst all APEC members. According to Beaird, telecommunications has acquired increasing importance in the political, economic, and social aspects of APEC's agenda, particularly since telecommunications is seen as a vital means of improving the economic efficiency and of expanding the economic markets of the APEC members. Further, the increasing globalization of all markets will continue to make telecommunications a key factor in the economic development of the APEC members.

The United States is promoting an APEC Working Group on Telecommunications. This Working Group represents the first time that a broad regional organization is bringing together public and private sector interests for the specific purpose of discussing telecommunications issues. The Working Group is meant to identify common interests and policy concerns of the APEC members with regard to telecommunications, and to promote the role of the private sector in addressing these concerns. Beaird mentioned several projects underway by the Working Group, including a feasibility study of teleports in the Asia-Pacific region, the use of EDI to support capital investment in telecommunications in the Asia-Pacific region, and human resource development in telecommunications.

Beaird pointed out that capital investment in telecommunications is expected to increase steadily in the next century, in all parts of the globe. The trend is towards a global market in telecommunications investment, as with other types of investment. We have moved from a world economy that trades in goods, to one that is financial-services based, to one that will be driven by investment and technology flows. The internationalization of investment in technology has been occurring at an unprecedented rate since the 1920s. Whereas until that point the basis for international competitiveness rested on natural endowments, today competitive advantages are derived from manmade and structural factors, both of which rely on telecommunications.

In Beaird's view, privatization has been part of the process of adaptation to new global economic conditions, and the privatization of government telecommunications companies has been

part of a broader process linking economic development and telecommunications. The links between economic development and telecommunications have become increasingly clear since 1985 based on several factors: the increasing globalization of competition disallows the possibility for limiting one's market strategies and remaining competitive; the developing countries themselves are changing rapidly; and, the changes in Central and Eastern Europe have renewed our interest in the process of economic development and the role of telecommunications in shaping that process.

The privatization of telecommunications can be seen as an adaptive response to the changing telecommunications environment, based on the above factors. The need for privatization of telecommunications is most acute in the Eastern and Central European contexts, where the formulation of economic development and investment strategies and the development of the telecommunications industry are increasingly seen as two sides of the same coin. Overall, the question of the privatization of telecommunications must be seen within the context of developing countries' needs to adapt themselves to the changing conditions of the global marketplace and as part of the links between investment strategies and economic development policy as a whole.

The final speaker was Prof. William Drake, from the Department of Communication at University of California, San Diego. Drake outlined two themes that would form the basis for his talk: (1) the ways in which some of the international frameworks on telecommunications have been problematic for certain developing countries; and, (2) the mixed success of developing countries in bringing about international telecommunications frameworks that support their national interests.

Drake discussed the ITU and technical assistance. Historically, the ITU was a European organization in terms of its development; developing countries were marginal in the ITU's development. But in the post-WWII era, developing countries have exerted more influence than in the past in the ITU, mainly through sovereign memberships. Since 1952, the ITU put technical assistance into the operational side of their activities, in order to address the needs of developing countries, and the ITU has supported the progressive creation of new frameworks for allocating investment assistance to developing countries. Nonetheless, developing countries have claimed that technical assistance has come through voluntary monies and, therefore, has been insufficient by virtue of not being part of the formal ITU budget. This circumstance may change with the current ITU legislation under consideration. In Drake's view, then, the ITU has been trying to adapt itself to meet the financial and technical needs of developing countries.

In terms of the international telecommunications regime, developing countries have had little impact in its development. This fact stands in contrast to the active role and impact of developing countries in constructing other types of international regimes. The lack of developing country impact in the telecommunications regime, in Drake's view, has to do with the nature of the regime itself. The regime is not about allocation of scarce resources, but about allowing national carriers to interconnect their networks and to share services. The only way to make it a resource distribution question would be to make major changes in the revenue splits between the providers of services. The developing countries have not been able to accomplish this. They have never managed to get formal recognition that there should be redistributive arrangements in the telecommunications regime.

The evolution of the regime has been dominated by the PTTs, with marginalized input from other actors. During the late 1970s and early 1980s, there was a revolt amongst the international business community against the domination of the PTTs. The result, in the late 1980s, was a rearrangement of the international telecommunications order, based on liberalization and competition on a global scale. However, developed countries remain dominant in this new order.

Drake used some examples to illustrate the above points. On the regulatory side, the big event has been the WATTC in 1988. This represented an effort by some European PTTs and some developing countries to reinforce national rights within the international telecommunications order. However, it led to controversy. The business community in the United States did not support the treaty, and the result is that the treaty did not provide legal or other legitimation for the expansion of monopoly control. In fact, the treaty provided for the exact opposite, namely, liberalization.

Most developing countries, however, are against such liberalization because they perceive it as working against their interests.

Another case is that of the changes in regulatory recommendations on the CCITT. Certain recommendations were made that restricted lease circuits. The U.S. government wanted to relax these restrictions, and in the 1980s, the European business community agreed. After 1988, a new initiative was undertaken in Study Group 3. The result was that in 1990, the recommendations were changed to favor liberalization; these results will have a big impact on how transnational corporations can access circuits. The results also have left the developing countries out of the picture, in terms of the influence they will be able to exert on these accessing issues.

Finally, in terms of accounting and settlements, or the allocation of revenues from calls in the ITU, we have to go back to the origins of this arrangement. The origins lie in the previous century, in fact, although the current system was established in 1968. There is a mechanism by which two correspondents allocate revenues from the traffic flow of calls; this mechanism is meant to ensure equitable allocation. However, because the U.S. deregulated so rapidly, we had a \$2 billion trade deficit in international phone service, so the FCC pressured foreign countries to change their accounting rates. Meanwhile, developing countries wanted asymmetric accounting rates. The result was that, in 1991, a draft package on new accounting rates was presented and is currently under consideration. Accounting rates remain a very divisive issue in the ITU, and the developing countries feel that they are being pressured by the developed countries to lower their rates.

Drake mentioned issues of network interconnection and technical standardization. The pattern is that the Third World countries have become standards takers and not standards makers. This pattern is changing as some of the upper income developing countries (e.g. Brazil) become more active in telecommunications, but the change is slow and is also dependent on their producing greater amounts of customer premise equipment.

In his concluding comments, Drake remarked on the GATS (General Agreement on Trades and Services) negotiations, which are part of the overall GATT negotiations. The GAT includes trade and telecommunications services. Developing countries have had input on the GAT discussions. The package that is likely to come out of the discussions has three parts: a framework agreement, sectoral annexes, and a series of individual, national offers. There will also be a telecommunications annex, and the developing countries have played a part in shaping this. The U.S. wants to take basic telecommunications services out of MFN status, in order to support a liberal arrangement for inter-corporate communications. The developing countries have contested this suggestion, and they want tighter control on cross-border provisioning of telecommunications services.

Question & Answer

The Question & Answer session was abbreviated, given the lengthiness of the presentations.

McKnight remarked on the fact that Botelho seemed cautious about the potential benefits of telecommunications privatization to the Latin American countries. And yet, the data on Chile seem to suggest that privatization has had a positive impact. Perhaps it is too soon to evaluate the wider effects of privatization of telecommunications in Latin America.

Botelho noted that it is a question of which sectors of the market are most positively affected by the privatization of telecommunications. In Chile, the telecommunications industry was quite developed prior to privatization. This is not the case in other Latin American countries, and private sector capital may not be adequate or willing to do the necessary telecommunications development done by the Chilean government. The question is whether the investment will be forthcoming in basic services. Otherwise, privatization will help only limited sectors of society.

McKnight asked Beaird to elaborate on the Central and East European situations with regard to telecommunications privatization.

Beaird commented that he had been part of the Maitland Commission. He suggested that the events in Eastern Europe and the Soviet Union, with regard to the light they shed on the links between telecommunications and economic development, may have created a new attitude with respect to telecommunications privatization in those regions. There are extraordinary opportunities available in those countries from the telecommunications viewpoint where, for the most part, there has been industrialization in the absence of the a concomitant development of the services sector. There is virtually no telecommunications infrastructure in those countries. From a government perspective, the only way to create that infrastructure is by attracting private investment.

EXHIBIT I

CHILE - TELECOMMUNICATIONS VITAL STATISTICS

TELEPHONE LINES: 625 THOUSAND

DIGITAL SWITCHES: 71 % (ESTIMATED 1992)

TELEPHONE DENSITY: 9.36 LINES/100 INHABITANTS (1990)

AVERAGE MONTHLY CALLS: 3.9 MILLION

TELEPHONE DEFICIT: 239,000 (1988)

LINE WAITING PERIOD: 8 MONTHS

EXHIBIT II

CHILE - REGULATORY REGIME

FEATURES: BASIC LAW - TELECOMMUNICATIONS LAW (1987)

DEREGULAMENTATION OF MARKET

PRIVATIZATION OF STATE TELECOM MONOPOLY

NON-EXCLUSIVE CONCESSIONS

NON-SERVICE SPECIFIC CONCESSIONS

OBLIGATORY SERVICE PROVISION TIME CAP (3 YEARS UP TO 1999)

CONTINUED GOVERNMENT REGULATION OF:

PUBLIC LOCAL PHONES

NATIONAL & INTERNATIONAL LONG DISTANCE

TARIFFS ADJUSTED EVERY FIVE YEARS + INDEXATION MECHANISM

FLEXIBLE FINANCE RULES (1988)

TRENDS: SLOW INCREASE IN AVERAGE TARIFF(\$8 IN 1978 TO \$11.10 IN 1989)

PROBLEMS: EXTENSION OF BASIC SERVICE

INVESTMENT CAPACITY

PRIVATIZED COMPANY: COMPANIA DE TELEFONOS DE CHILE - CTC (1988)

MAIN SHAREHOLDERS:

BOND CORPORATION	- 50.13 %
CHILEAN INVESTORS	- 49.87 %
EMPLOYEES	- 4.73 %
PENSION FUNDS	- 7.72 %
OTHER	- 37.81 %

INVESTMENT TARGETS: \$ 1.2 BILLION (1989-1992)

Source: Botelho, Ferro, Manfredini and McKnight, 1992.

EXHIBIT III

ARGENTINA - TELECOMMUNICATIONS VITAL STATISTICS

MAIN URBAN AREA:	BUENOS AIRES
TELEPHONE LINES:	3.4 MILLION
DIGITAL SWITCHES:	10 %
TELEPHONE DENSITY:	10.7 / 100 INHABITANTS
TELEPHONE DEFICIT:	790,000
LINE WAITING PERIOD:	4 YEARS

Source: Botelho, Ferro, Manfredini and McKnight, 1992.

EXHIBIT IV

ARGENTINA - SERVICE COMPANIES

PRIVATIZED COMPANY: ENTEL (NOVEMBER 1990):

TELECOM ARGENTINA (NORTHERN PART)

TELEFONICA ARGENTINA (SOUTHERN PART)

MAIN SHAREHOLDERS: TELECOM ARGENTINA - STET (ITALY) AND FRANCE CABLE RADIO
(FRANCE) (40 %)

TELEFONICA - TELEFONICA DE ESPANA (SPAIN) (40 %)

NATIONAL TELECOMMUNICATIONS COMMISSION - 40 % IN EACH

ACCUMULATED DEBTS: \$ 1.2 BILLION

CELLULAR PHONE: MOVICOM, CONTROLLED BY CRM GROUP, LED BY BELL SOUTH;
10,000 SUBSCRIBERS AT END OF 1990

DATA TRANSMISSION: 2 PRIVATE FIRMS: IMPSAT AND SATELNET; 2 REGIONAL PHONE
COMPANIES

Source: Botelho, Ferro, Manfredini and McKnight, 1992.

EXHIBIT V

ARGENTINA - REGULATORY FRAMEWORK

CURRENT REGIME: 1987 LAW DEREGULATED SATELLITE TRANSMISSION AND CELLULAR
PHONE
PRIVATISATION OF ENTEL FURTHER CREATED COMPETITION IN
TELEX, DATA TRANSMISSION AND PACKET SWITCHING NETWORKS
TEN YEARS EXCLUSIVE RIGHTS TO DOMESTIC AND INTERNATIONAL
PHONE SERVICE
FIRST TIME SHARP INCREASE IN TARIFFS (BASIC 2 MINUTE CALL
UP ????)
SUBSEQUENT TARIFF SETTING BASED ON INFLATION-INDEXED
FORMULA
IMMEDIATE PLANS TO PRIVATIZE 40 % GOVERNMENT SHARE

TRENDS: FOREIGN FIRMS ESTABLISHING SATELLITE FACILITIES
FIVE COMPANIES OPERATE DATA TRANSMISSION SERVICES
TWO TELEPORTS HAVE BEEN ESTABLISHED PROVIDING SERVICES
TO NEEDY USERS
CELLULAR PHONE POPULAR AS A BACK-UP TO UNRELIABLE PHONE
LINES
LAUNCHING OF FIRST DEDICATED, PRIVATE, SATELLITE 'NAHUEL'
BY 1993 AT COST OF \$ 200 MILLION

PROBLEMS: BASIC SERVICE REMAINS INADEQUATE

Source: Botelho, Ferro, Manfredini and McKnight, 1992.

EXHIBIT VI

MEXICO - TELECOMMUNICATIONS VITAL STATISTICS:

POPULATION: 88 MILLION

MAIN URBAN AREA: MEXICO CITY - 18 MILLION

TELEPHONE LINES: 5.5 MILLION

DIGITAL SWITCHES: 14 %

TELEPHONE DENSITY: 6.6/100 INHABITANTS (19/100 IN MEXICO CITY)

TELEPHONE DEFICIT: 1.1 MILLION LINES

POTENTIAL EQUIPMENT MARKET: \$ 750 MILLION (1994)

TARIFFS: FELL 40 % IN REAL TERMS LAST TWO YEARS
GOVERNMENT MANDATED REDUCTION OF 20 %

CELLULAR SUBSCRIBERS: 200,000 (100,000 MEXICO CITY)

CELLULAR PHONE FEE: \$ 800 - 2,000

PRIVATE NETWORKS: 100,000 (37,000 TERMINALS) (1989)

ISDN (RDI): 105,000 PRIVATE LINES
6,000 PRIVATE CIRCUITS

Source: Botelho, Ferro, Manfredini and Mcknight, 1992.

EXHIBIT VIII

MEXICO - REGULATORY REGIME

CURRENT REGIME: TELMEX LONG DISTANCE SERVICE MONOPOLY UNTIL 1997
TELMEX 3-YEAR BASIC SERVICE CONCESSION
FOREIGN OWNERSHIP RESTRICTED TO 49 %
INCREASED COMPETITION
LOW IMPORT BARRIERS
DEREGULATION OF TELECOMMUNICATION EQUIPMENT (1989)
TELMEX SERVICE QUALITY MONITORING
CAP PRICE TARIFF SYSTEM (1991)

PERFORMANCE TARGETS: 5 PUBLIC PHONES / 1,000 INHABITANTS (1995)
12 % / YEAR TELEPHONE LINE EXPANSION (1990-1994)
AT LEAST (1) PUBLIC PHONE WITH LONG DISTANCE IN TOWNS
WITH MORE THAN 500 INHABITANTS
ONE MONTH TELEPHONE LINE WAITING TIME (YEAR 2,000)

TRENDS: MARKET EXPANSION (15-18 % / YEAR)
400,000 CELLULAR SUBSCRIBERS BY 1995
RISING DEMAND ON PART OF PRIVATIZED BANKS
13,500 KMS FIBER OPTIC LONG-DISTANCE NETWORK

PROBLEMS: STAGNANT BASIC SERVICE

Source: Botelho, Ferro, Manfredini and McKnight, 1992.

EXHIBIT IX-A

MEXICO - FOREIGN FIRMS IN TELECOM EQUIPMENT MARKET

FIRMS	PRODUCTS	REVENUES	MAIN CLIENTS
Ericsson	Switches	\$ 240 million	Telmex
Indetel (Alcatel)	Switches		Telmex
Northern Telecom	Cellular Switches	\$ 80 million	Regional cellular
Motorola	Cellular		Regional cellular
AT&T	Fiber Optics Switches	\$ 90 million contract	Telmex
Alcatel	Fiber Optics		Telmex
Marubeni	Fiber Optics		Telmex

Source: Botelho, Ferro, Manfredini and McKnight, 1992.

EXHIBIT IX-B

COLOMBIA - TELECOMMUNICATIONS VITAL STATISTICS

TELEPHONE LINES: 2.9 MILLION

TELEPHONE DENSITY: 8.2 / 100 INHABITANTS

TELEPHONE DEFICIT: 660.000

MAIN URBAN AREA: BOGOTA

CELLULAR PHONE SERVICE: 120,000 SUBSCRIBERS; 4 COMPANIES (PLANNED)

INVESTMENT TARGETS: \$ 5 BILLION - BASIC SERVICE (1992-1998)

\$ 500 MILLION - CELLULAR

MAIN COMPANY: TELEFONOS DE COLOMBIA - TELECOM

TRENDS: TELECOM TO BE PRIVATIZED

OPPOSITION FROM UNIONS

TELECOM 5 YEAR LONG-DISTANCE MONOPOLY

Source: Botelho, Ferro, Manfredini and McKnight, 1992.

EXHIBIT IX-C

VENEZUELA - TELECOMMUNICATIONS VITAL STATISTICS

POPULATION: 20 MILLION
TELEPHONE LINES: 1.9 MILLION
DIGITAL SWITCHES: 19 %
MAIN URBAN AREA: CARACAS - 800,000 LINES

TOTAL TELECOM MARKET: \$ 1 BILLION

TELEPHONE DENSITY: 7.8 / 100 INHABITANTS
TELEPHONE DEFICIT: 1.5 MILLION
LINE WAITING PERIOD: 8 YEARS

INTERNATIONAL CALLS

COMPLETION RATE: 30 %

LONG-DISTANCE CALLS

COMPLETION RATE: 35 %

LOCAL CALLS

COMPLETION RATE: 50 %

Source: Botelho, Ferro, Manfredini and McKnight, 1992.

EXHIBIT IX-D

VENEZUELA - REGULATORY FRAMEWORK

PRIVATIZED COMPANY: COMPANIA ANONIMA NACIONAL TELEFONOS VENEZUELA - CANTV

REVENUES: \$ 800 MILLION (1990)

BUDGET: \$ 400 MILLION (1990)

NUMBER OF EMPLOYEES: 23,000

MAIN SHAREHOLDERS: GTE CORP./ AT&T / TELEFONICA DE ESPANA/ BANCO MERCANTIL/
ELECTRICIDAD DE CARACAS (40 %) (\$ 1.89 BILLIONS)

 VENEZUELAN GOVERNMENT (49 %)

 CANTV EMPLOYEES (11 %)

REGULATORY REGIME: CANTV CONCESSION TO YEAR 2,000

INVESTMENT TARGETS: 300,000 LINES / YEAR

 \$ 1.2 BILLION / YEAR

 700 MILLION IN BASIC SERVICE TO YEAR 2,000

 50 MILLION IN CELLULAR SERVICE

CELLULAR PHONE: CANTV, BELL SOUTH, TELCEL

Source: Botelho, Ferro, Manfredini and McKnight, 1992.

EXHIBIT X-A

BRAZILIAN TELECOMMUNICATIONS IN A SNAPSHOT (1988)

Observations

Population	144,427,586	
GDP	\$ 358 billions (1990)	# 11
Total Number of Telephones (1987)	13.5 million	
Total Exchange Access Lines	8.3 million	(9.3 million in 1990)
Percentage connected to automatic exchange (1987)	99.6 %	
Percentage with access to direct international service	90 %	
Digital switches	7 %	(25 % in 1991)
Total Business Lines	2,547,356	(2X Mexico)
Percentage of Total	30.5 %	(Equal US)
Total Residential Lines	5,806,478	
Percentage of Total	69.5 %	(Equal US)
Telephone Density	5.8	
(lines per 100 population)	6.4 (1989)	(Sweden: 64)

EXHIBIT X-B

Total Number of Households	25.2 million	
Share with telephone (1987)	23 %	
Share of businesses with		
telephone (1987)	43 %	
Localities covered (1987)	12,300	
Coin Box Telephones	211,500	(2X Mexico)
(incl. public telephone stations)		
Telex (1987)		(1989:
Subscribers	98,300	135,400)
Total Traffic (million mins.)	500	
National Traffic	480	
International Traffic	20	
Data Communication		
Leased Equipment	16,177	
Connections to Public Network	332	
Investment Levels		
1984-1986 (average)	\$ 800 million	
1988	\$ 1.4 billion	
1986-1989 (average)	\$ 1.9 billion	

EXHIBIT X-C

Deficit of Lines		
1987	6 million	
1988	8 million	
1990	6.5 million	
Labor Force (1987)	105.5 thousand	
Operation	92.1 thousand	
Technical	13.4 thousand	
Fiber optics market (1990)	150,000 Kms.	(Telecom 60,000 Kms)
Line Waiting Period (1990)	2 years	
Telecommunications production	\$ 1.6 billion	
Telecommunications export	\$ 100 million	
Microwave network	23,000 kms	
	425 repeater stations	
Investment targets	13.5 lines (1995)	
	\$ 3.5 billion (1992-1995)	
	Embratel - \$ 650 million (1991)	
Cellular phone fee	\$ 3,500	\$ 40 in US
International Links:		
Satellite System	2 satellites (Brasilsat 1 and 2)	
	64 domestic satellite stations	
	3 Atlantic Ocean INTELSAT earth stations	
Submarine cables	3	
Radio system:	1,223 AM stations	
TV system	112 stations	

Source: AT&T (1990), Lerner (1988), and authors' own research.