

Incidental Paper

**The State of Brazilian
Telecommunications
Services**

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Program on Information Resources Policy

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The State of Brazilian Telecommunications Services

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The State of Brazilian Telecommunications Services

Amit Dutta-Roy

Executive Summary

- Brazilian telephone services, nationalized in 1966 by the military government, have deteriorated to a critical low, and public protests have occurred against bad services and for new telephone lines.
- Telecommunications services are a state monopoly, and until mid-1990 the market for equipment for exchanges was divided into regions and sales of equipment permitted only by vendors assigned to each region.
- The deterioration in Brazil's telephone services has many causes. Primarily, the insufficient investment by the private company that serviced the important Rio de Janeiro-Sao Paulo region permitted over time inadequate maintenance and repair of existing circuits and little or no replacement of failing switches. Secondarily, until recently telephone communication was not an important socio-cultural ingredient of Brazilian life and therefore did not receive proper attention.
- In 1976 – that is, during the economic boom of the mid-1970s – the military government invested \$3.44 billion (U.S. dollars) in improvements to telecommunications services for Brazil's business community over the following decade. Since the early 1980s, however, very little has been invested in this sector, in spite of demand due to growth in urban population and rapidly increasing business activities. Revenue of the telephone company that was to have been earmarked for improvement of services was diverted to other politically opportune projects.
- The present democratically elected government, which took office in March 1990, declared its intention to privatize most state-owned and state-operated services, including telephone service. Numerous proposals and presidential decrees resulted for streamlining telephone services by reducing the number of regional operating companies, thereby reducing bureaucracy. In theory, this would prevent diversion of revenues for investment and other subsidies to other sectors and finally lead to privatization of telecommunications, but full privatization can be achieved only by amendment of Brazil's constitution: Article 21 unequivocally gives the state the right to run telecommunication services. Such a constitutional amendment is unlikely in the near future.
- Many vested interests run counter to privatization. Because jobs in the telephone companies are life-tenured, the unions have resisted it; politicians whose family and friends have been beneficiaries of the state monopoly have opposed it. Yet the global trend, which

Latin America, is toward privatization of telecommunications services.

- Until total privatization of telecommunications services arrives in Brazil, perhaps in seven to ten years, private operators and resellers of access lines and equipment may have to be content to offer only limited point-to-point value-added communications. In the interim, U.S. companies considering investment in this uncertain market would be well advised to do some serious homework before plunging into Brazilian telecommunications.

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Introduction

Brazilian telecommunications services are currently going through a period of uncertainty. The latest version of the Brazilian constitution, in effect since 1990, accorded the government the monopolistic right to run the telecommunications services, both domestic and overseas. For years the investment in this sector has not been adequate. There are two reasons for this situation: First, rates for domestic calls, especially local calls (two U.S. cents for a three-minute call), have been kept unrealistically low. Second, revenues generated by even these low rates and by "Own Your Telephone" programs were diverted to finance other politically opportune projects, mainly in northeast Brazil, such as construction of hydropower dams and major highways, instead of being used to maintain a decent standard of telecommunications services. As a result, telecommunications, especially the domestic services, have reached a crisis that has left both residential and business customers frustrated and angry. The demand for more telephones and better services is growing. Protests by consumer groups against bad services and for more telephone instruments are visible in the big cities.

This paper offers some explanations for the deterioration in Brazilian telecommunications services and includes my own observations and conclusions about the complex issue of privatization which might not be apparent to others, for example, an investment analyst without experience either of Brazilian politics or the tremendous pressure of favoritism to which business in this country is subject.

Brief History

Until nationalization in 1966, the most profitable regions for the Brazilian telecommunications covering the cities of Rio de Janeiro and Sao Paulo were served by a Canadian company, Companhia Telefonica Brasileira (CTB),¹ whose corporate policy in the 1950s and early 60s was to maintain a threadbare level of operations with a minimum percentage

of the revenue rolled back into the system. The rest of Brazil was served by small local companies, and, in the absence of an overall standard, chaos reigned. Even when the military government nationalized telephone service for most of the country, services to the customer, both individuals and businesses, continued to be poor. By 1976, forced by a demand for more telephones caused by the sudden economic boom, the government decided to invest \$3.44 billion,² a substantial amount by Brazilian standards, to improve the system. The result was a reasonable expansion of the telephone network and the installation of earth stations. The demand for telephones still had not risen to a critical level, and until the mid-1980s services were not too unsatisfactory and did not reach their present chaotic state until 1989-90.

Two Companies

Since nationalization in 1966, telecommunications in Brazil has been the responsibility of the Ministry of Communications (now known as the National Secretariat of Communications, under the Ministry of Infrastructure), which offers services through two separate companies: Telebras is responsible for all domestic communications and acts through several regional operating companies (ROCs); Embratel is in charge of all interstate and overseas land-, undersea-, and satellite-based communications.³

In virtually all developing countries nationalized monopolies have been created with the intention, sometimes honest but mostly misguided, of providing some services to the common people of the country. With the passage of time, however, the monopolies become entrenched in nepotism, politics, and bureaucracy, perhaps in that order, and these breed inefficiency, to the detriment of the end user. Telebras has been no exception to this general rule. Shortly after the act of nationalization, every state in the country, regardless of the number of telephones installed in it, wanted its own ROC, no doubt to support the "the sons of the soil." As a result of returned political favors, as many as 28 ROCs sprouted.

In 1990, the government's annual investment in the telecommunications service industry plummeted to 0.64 percent of the GNP, compared with 1.27 percent in 1976.⁴ In 1990 the country offered only slightly more than six telephone lines per 100 people, a low figure even in Latin America. During peak business hours the exchanges in Sao Paulo and Rio de Janeiro are so congested that often one must wait up to 10 seconds for a dial tone. Some heavily used trunk lines, for instance between Sao Paulo and Rio de Janeiro, are so busy that in November 1991 the average first-attempt success rate for long-distance call completion was only 90.6 percent, which, though up slightly from the 1990 figure, is still 8 percentage points below that of 1980.⁵

In the hope of generating new investments, in the early 1970s the ROCs began offering "Own Your Telephone" programs through which the subscriber (individual user or business) gains ownership of an access line to the local exchange, that is, the line becomes part of the purchaser's estate and may be transferred to a third party, although the owner pays the monthly service charge⁶ for the line. (If the owner moves, ownership of access can be retained and the existing line rented or even sold privately to another user.) Demand far exceeds the number of lines the ROCs have either the financial or technical capacity to provide. The heavily populated city of Sao Paulo (circa. 15 million inhabitants) badly needs more than one million new connections. But as of mid-1990 the backlog of requests was so great that 400,000 "Own Your Telephone" subscribers who had paid for their lines two years earlier had not yet been connected. In 1991, potential subscribers, however, were still willing to pay almost \$1,800-2,300 (U.S. dollars) up front or in installments for a telephone line they hope will be connected in two years.⁷ Consequently, private sales or rentals flourish, often at absurd prices: a single business telephone line in a select commercial area of Sao Paulo can cost as much as \$10,000,⁸ or 4.25 times the mean per capita income (1990) of \$2,350⁹; the average price of a telephone line in December 1991 was roughly \$3,400. Leading newspapers regularly quote the average prices of the week of the "Own Your Own Telephone"

programs and carry advertizing for prospective private rentals of telephone lines.

The ROCs were not alone in enjoying the benefits of a monopoly. Switch manufacturing companies too had their market shares conveniently staked out by strong lobbies. The market was regionally delineated and distributed among three foreign companies - Ericsson, NEC, and Siemens (through a local company, Equitel) - and some Brazilian vendors. The ROCs were permitted to purchase their equipment only from the vendors assigned to the particular region, and neither they nor the foreign vendors would cross these informal borders.

Although Embratel's charges for interstate communications are relatively low, overseas calls are absurdly expensive. A call to the U.S. during business hours costs about \$4.50 a minute,¹⁰ more than double the cost of a call in the reverse direction (AT&T, MCI). Embratel's explanation for their high charges is that import duties make equipment for the microwave repeaters and earth stations expensive and that it has somehow to recover these expenses.

Some Explanations for the Chaos

The deterioration of the Brazilian telecommunications services has several causes:

- Before the present government took office in March 1990, government policy-makers, invariably nominated by the military, had neither sufficient experience in telecommunications nor a clear enough vision of the infrastructure needed to modernize Brazil. In a country where eye contact has always been a customary ingredient of doing business, until the mid-1980s remote communications using telephones had never been taken very seriously. For this reason, the business community did not quite realize that an efficient telecommunications system is necessary for a modern society. Moreover, because most big

business was transacted between the cities of Rio de Janeiro and Sao Paulo, which are only 250 miles apart, and because travel between them was easy, time was not considered a scarce commodity.

- Because Brazil has historically been and continues to be run by an elite class, the return of favors plays an important role in the administration of any state-run monopoly. Because the federal government is the major shareholder of Telebras, its administrators, most of them political appointees, are not responsible to shareholders in the traditional sense, regarding profit, loss, or customer satisfaction.
- Most government jobs are tenured for life, so laying off workers, however incompetent or inefficient they might be, was not possible.¹¹ Life tenure pushed the bureaucracy to a low level of competence.
- Brazilian industries protected by the law prohibiting importation of goods from abroad have not yet suffered from the tremendous competitive pressures to which industries in the developed world are subject. High technology is supposed to save time and increase productivity, but Brazilian society is lackadaisical about time, in spite of endless complaints of how short it is. Further, the wage of a blue-collar worker is still very low relative to the salary and perks of even a middle-management executive. This situation, somewhat comfortable for the industries, does not force them to search hard for high-tech devices to save time and labor. Telecommunications services, too, unfortunately, follow this pattern.
- Brazil has shown little respect for innovators in high technology. Often flagrant imitations of high-tech products developed abroad are hailed by Brazilian bureaucrats and politicians as the fruits of "national" technology. I myself have witnessed numerous examples of such so-called national

technology: within the past five years, for example, Scopus, a computer company based in Sao Paulo, installed the "Cisne" operating system which was an exact copy of Microsoft's MS-DOS; and UNITRON 512, introduced with great fanfare by Unitron of Sao Paulo, was found by Apple Computer to have the same architecture and design of the Macintosh 512. Bill Gates of Microsoft protested about Cisne, both in Washington and Brasilia, and his complaints prompted Carla Hills, the U.S. Trade Representative to threaten Brazil with trade sanctions. Political pressure, including that from noncomputer industries, forced the Brazilian government to amend the laws relating to intellectual property.

- Until early 1991, by strong lobbying, privileged equipment suppliers succeeded in maintaining the status quo, which was to the advantage of the elite class owning these vendor companies.
- Until the present government took office in 1990, a major part of the revenue generated¹² by the ROCs was, in most cases, not ploughed back into the system to improve the service but diverted to other unrelated projects,¹³ such as the hydropower dams and roadways, favored by the high echelons of the government usually to keep unsophisticated voters happy, who are glad to see visible change and largely unaware of real needs, or to increase the value of real estate in their constituencies.

New Promises

In March 1990, 41-year-old Fernando Collor, the first Brazilian president democratically elected after twenty years of military rule, took charge of the country's administration, promising radical reforms in the economy and essential services, including telecommunications. Collor also promised privatization of state-run companies, most of which had been losing money.

As part of his house-cleaning immediately after taking office, the new president eliminated the separate Ministry of Communications and created the National Secretary of Communications (which includes the postal system) under a new Ministry of Infrastructure, which was also to oversee the departments of Energy and Transport. The National Secretary was to be responsible for overseeing the operations of both Telebras and Embratel. Initially, this move looked good, because those nominated to head the secretariat and both companies were professionals¹⁴ with experience in the telecommunications industry. At a meeting I attended in December 1990,¹⁵ the Minister of Infrastructure, the National Secretary of Communications, and the President of Telebras publicly talked of improving productivity and privatizing the services in the not-too-distant future. To contain costs, Ministerial Order (Provisional) 151 (1990) proclaimed a gradual planned reduction of the ROCs from 28 to 8¹⁶ and gave Telebras and Embratel freedom to purchase the best possible equipment from any source, foreign or domestic, thereby eliminating the monopolies of the privileged vendors. In other words, positive steps were taken towards decentralization.

At the same time - late in 1990 - a token but concrete step toward gradual privatization was also taken with regard to cellular telephones in the city of Sao Paulo,¹⁷ when the government decided to allow a private operator of cellular telephone services to compete with the state-owned ROC, with the intention of bringing the best services to the end user, who could then choose between the two companies. The government invited bids for the sale of both network operation and equipment (manufacture and installation). Several foreign companies, some from the U.S., are now vying for this market, either to supply the equipment or to operate the service.

Prospects for Privatization

The clamor for privatization of Brazilian telecommunication services has been growing since 1990, inspired perhaps by similar action in

neighboring Argentina. In Brazil, full privatization can be effected only by amendment of the 1988 constitution, due to be revised in 1993, according to which the amendment must be ratified by a two-thirds majority in the congress. What, then, are the chances of improving or privatizing the telecommunications services, or both? Although a quick decision on a bidder for cellular telephone service will be a sort of litmus test of the government's intention to privatize the industry, the basic question of privatization raises several complex issues:

- Resistance of the labor unions in Telebras and Embratel to any move toward privatization will be very strong, and the unions are powerful. A recent unsuccessful attempt by Brasilia to replace the head of Embratel was foiled by union action.

- Opposition will also come from politicians whose friends and families have been beneficiaries of the state monopoly.

- The search for and then negotiation with a prospective buyer group will be difficult and drawn out. Even if a private group shows interest in investing in telecommunications, I feel that this interest will be confined to serving urban areas, which are most profitable. In this case, what happens to subscribers in remote areas becomes an important political question.

Private Brazilian banks would probably be the first to show interest in buying the ROCs. These banks operate nationally, with branches throughout the country, so that those that acquire telecommunications service companies will have a competitive edge over other banks. However, the banks will be subject to the decisions of the Ministry of Infrastructure, the regulatory body on operations and tariffs. This is a complex issue which, I feel, will take much time to resolve. The concept of sophisticated telecommunications services is so new in Brazil that both the government and the people who will run the services are not yet experienced enough in this area to address such issues.

■ Will the government have sufficient moral and political authority to privatize telecommunications? When the president and his ministers took office on 15 March 1990 they made dozens of big promises, most of them not kept by the end of 1991. To achieve their lofty goals, the government, at the very beginning of its mandate, acted through a series of arbitrary presidential decrees, such as the one enacted on 16 March 1990, at the insistence of the Minister of Economy, freezing the savings accounts of innocent, law-abiding citizens, ostensibly to reduce inflation. In the spring of 1991, some decrees, like that one, were declared illegal or unconstitutional by the Supreme Court. Early in 1991 the president of Telebras resigned because of disagreements with the government, mainly with the Minister of Economy. Next, the Minister of Infrastructure, a person of impeccable reputation, resigned, and, although no explicit reason was given, it was easy to guess that he did not get on well with the younger and rather inexperienced Ms. Zelia Cardoso de Mello, the Minister of Economy. Her brash authoritarian attitude irritated both Brazilians and foreigners, especially Brazil's creditors, and, finally, she too had to leave. (Her successor is reputed to be much more businesslike and diplomatic.) As a result of such mismanagement, internal friction, and rising inflation (almost 30 percent in December 1991), the government has lost much of its initial credibility and mass appeal.

The popularity of the government was so low by late 1991 that the president will have to reorient his priorities if he wishes to be elected to a second term. I doubt whether telecommunications stands high on the list of priorities. (Until the spring of 1991, in Argentina, where telecommunications is privatized, the situation was worse than in Brazil: the system had virtually reached the point of breakdown. The Brazilian system, not yet privatized and still government supported, is not so bad yet.)

One of the promises of the Collor administration was to privatize most of the 500 or so huge state-run money-losing companies not protected by the 1988 constitution, such as Petrobras (a major mining company), but so far not even a respectable fraction of this goal has been achieved - only one industry has been privatized, Usiminas (a

mining company), and that with great difficulty. If this is the case for the unprotected companies, to privatize the protected telecommunications system will require a superhuman effort and tact.

■ Improvement or privatization of Brazil's telecommunications will largely depend on an infusion of money from abroad and on the general recovery of the economy. Confidence in Brazil's future is rising, albeit slowly. For example, Burton Biggs, chairman of Morgan Stanley Asset Management, is offering his clients a stake in a \$40-million fund investing in Brazilian stocks.¹⁸ Many projects have high priority, particularly some connected to urgent environmental issues under tremendous international pressure, and whether telecommunications will receive comparable attention is doubtful.

■ Foreign companies wishing to get into Brazilian telecommunications will also face a legal obstacle to their control of a joint venture, because according to the 1988 constitution no foreign company can own more than 49 percent of a company. Since mid-1991, however, Citibank¹⁹ has been buying stock in Telebras on the Sao Paulo stock exchange. At the same time, AT&T, through its local partner SID Telecon of the Machline Group, a holding company with a powerful lobby in Brasilia, has been aggressively marketing its services and technology. And in December 1990 US Sprint entered into a contract with Telesp (the ROC of Sao Paulo state) to provide some services, although the contract was cancelled in February 1991 under pressure from competitors on the grounds that it did not fulfill the requirements of a public bid. MCI has kept a low profile so far. Whether in the Brazilian political climate any of the foreign banks or telecommunications companies will be allowed to own a controlling interest in Telebras is very doubtful.

Time marches on, and developments occur. With time, Brazilian telecommunications will surely improve, but the time-frame for the process of improvement to gather momentum will be longer than either critics or optimists would like to see. Privatization will also take time and will certainly not be completed by 1993, when constitutional revision may permit an amendment to remove telecommunications services

from government monopoly. Many important socio-economic-cultural issues will need to be addressed before any definitive step is taken toward privatization of telecommunications services.

The following observations are pertinent particularly to the telephone services:

■ Niches of investment opportunities for the private sector in Brazilian telecommunications will be confined to specialized applications of high technology, e.g., cellular telephony, high-speed data communications, and value-added networks (VANs),²⁰ which as of 1991 are beyond the technical and financial capabilities of Brazilian companies. Depending on the interpretation of Article XXI of the constitution which states that telecommunications are state-owned, these high-tech areas, unforeseen by those who drafted the constitution, may escape the current rigorous constitutional protection of voice and data (i.e., Telebras) monopolies. Even in the case of a VAN, the private enterprise offering the added value will most likely be expected to use the existing networks of Telebras and Embratel rather than implement a separate one. Private networks will still be based on leased slow-speed analog lines supporting only 2.4 KBPS (in some cases up to a maximum of 9.6 KBPS), and Embratel promises to deliver international digital service Digisat (at speeds of 64 to 2,048 KBPS) by the first quarter of 1992.²¹ So far (December 1991), the minimum percentage of the added value in a VAN has not been fixed (unlike in France, where the minimum value added is 85 percent of the aggregate value to the end user²²).

These markets should open up substantially in 1992-94. According to Presidential Decree 177 of 18 July 1991, private companies will be allowed to offer "limited" telecommunications services to clients as long as access is not extended to the public at large. Depending on the executive interpretation of the word "limited,"²³ innovative services will definitely emerge in the marketplace.

■ The situation in the manufacturing industry is somewhat different. Though subject to bureaucratic (and political) authorization by the government, this sector does not enjoy constitutional protection as a monopoly but is in the hands of private companies, many of them subsidiaries of multinational corporations. For the first few months after the present government took office in the spring of 1990, it seemed that the scope of the R&D, manufacturing, or marketing efforts by new entrants into the industry might avoid entanglement in some of the complex issues mentioned here. Act No. 7232 of 1991 modified by the Congress stipulates that as of 29 October 1992 protection of the informatics market will end, i.e., all existing prohibitions on the importation of goods will be lifted. Those goods, hardware and software, will be subject initially to high import taxes, which are expected to decrease gradually through 1995. Given the lead time in any high-tech industry, unless this go-slow policy is modified in the near future, it will be detrimental to anticipated efforts to modernize the electronics industry by stimulating competition and increasing efficiency. The law also states that the share of the Brazilian partner in any joint venture with a foreign firm in electronics and computers must be 51 percent.²⁴ Although the present government advocates production of quality goods at reasonable prices, I do not foresee much change until market protection is removed.

■ At the time of this writing (December 1991), the government headed by President Collor de Mello is eager to get a consensus of all political parties and introduce constitutional amendments that would allow gradual privatization of Brazilian telecommunications and other state-controlled industries.

■ In conclusion, with the exception of the "limited" market niches mentioned above, from the perspective of a *heavyweight corporate* investor, a significant change in the Brazilian telecommunications and electronics industry and services may not come for several years, and not during the mandate of the president's current term, which ends in 1995. What happens now to the dozens of the U.S. companies lined up to offer varied products and services such as very small aperture terminals

(VSATs), high-speed networks and information databanks, voice and e-mail, etc.? The Brazilian market will not be large enough to support all these services through the end of the 1990s, but some companies may not yet have realized this. At present these companies are paying a high price to maintain their Brazilian representatives in the hope of receiving a dividend on this investment in the not too distant future. They are likely to face the same situation that creditor banks face today - in other words, they may be forced to write off the expenses.

Indeed, Brazilian interpersonal and business relationships are very complex, and a long time is needed to understand them. U.S. companies desirous of getting into business in Brazil would be well advised to do some serious home work before getting trapped in long-range promises by local partners. Despite the optimism of politicians, government bureaucrats, and business speculators, the Brazilian market, given the country's large social and economic problems, is likely to remain small, perhaps through the 1990s, yielding a less than desirable ratio of profit to investment. The only survivors of the chaos in Brazil may be medium-sized companies with low overheads and prudent local partners that maintain low profiles.

Notes

1. Companhia Telefonica Brasileira (CTB) operated the telephone services in the states of Sao Paulo, Rio de Janeiro, and Guanabara (in the mid-1970s combined into one state of Rio de Janeiro), Espirito Santo, and most of Minas Gerais. Brazilian Traction, Light and Power Company (incorporated in Canada), which held the controlling interest in CTB, defined its operating policies.
2. Telebras Annual Report, 1976.
3. Telephone service in some small regions, although regulated by the government, continues to be operated by a private Brazilian company, Cia. de Telefones do Brasil Central (CTBC), which serves 51 municipalities in the state of Minas Gerais, 22 in Sao Paulo, five in Goiás, and two in Mato Grosso do Sul. The population of these municipalities is approximately 2.4 million, and 11 percent of the area is rural (RNT, May 1991, 22; see also note 13).
4. Telebras (annual reports) and Fundacao Getulio Vargas (FGV), a private foundation that supports economic research and the two leading business schools in Brazil, one in Sao Paulo, the other in Rio de Janeiro. FGV's monthly, *Conjuntura Econômica*, publishes Brazil's important economic indicators, and these statistics often differ slightly from those published in either *Fundacao Instituto de Pesquisas Econômicas* (FIPE) of the University of Sao Paulo or in the *Instituto Brasileiro de Geografia e Estatística* (IBGE), the official organ for national and state statistics. The figures given by FGV are generally considered the most reliable and are used by the International Monetary Fund (IMF) for monthly publications on international economic indicators.
5. Interview of Senator José Ignacio Ferreira, then president of Telebras (by Ethevaldo Siqueira and Miguel Nitolo), *Revista Nacional de Telemática*, RNT, 147 (November 1991), 12-20.
6. To make domestic telephone charges more realistic, Telesp, the ROC in the state of Sao Paulo, has been gradually raising rates. In December 1991, the basic monthly charge for a residential line was \$1.40 (U.S.), up from 85 cents in August 1991; in the same period the charge for a business line was \$3.70, up from \$2.45.
7. Quoted by Telesp.
8. Independent research in September 1991 by the author, who called prospective vendors advertizing private sales in the Sao Paulo newspapers. The concept of renting or selling telephone lines, while alien to the U.S., is familiar in Brazil, where subscribers own an access line to the local exchange which they can rent or transfer to a third party. The prices of private sales of telephone lines vary depending on both the public offering and the technical availability of lines in different areas of a city. This situation leads to speculation, and often ownership of telephone lines is used as an investment. Newspaper

regularly carry quotations of private sale prices (see, for example, Celso Horta, "Confira se vale a pena investir em telefone," *Folha de S. Paulo*, 7 April 1991, Sec. 3, 11).

9. *Conjuntura Economica* of Fundação Getulio Vargas.

10. Embratel's charge includes a 17 percent federal tax. International calls are charged at a flat per minute rate, not, as in the U.S., at one rate for the first minute and another for each subsequent minute. Between 8 p.m. and 8 a.m. on weekdays, after 2 p.m. on Saturdays, and all day Sundays, prices go down 20 percent.

The charges (in Brazilian cruzeiros) usually hold constant for approximately a month, but the exchange rate goes up daily in favor of the U.S. dollar by a percentage determined by the Banco Central. Because the customer is billed monthly, calls made toward the beginning of the billing cycle cost more in dollars than those toward the end. The enormous difficulty in keeping track of both domestic and international long-distance charges aggravates financial planning for any organization dependent on heavy telephone use.

11. Government workers, including those who work for Telebras, acquire life tenure after completing five years of service.

12. In 1967, the ruling military government instituted a special fund, *Fundo Nacional de Telecomunicações* (FNT), which was supported by a special 30 percent tax added to all telephone bills.

13. Ethevaldo Siqueira, private communication. Siqueira, a widely respected journalist and editor, is the publisher of the monthly *Revista Nacional de Telemática* (RNT), founded in 1980, which publishes articles on technology and public policy related to Brazilian telecommunications. Siqueira interviewed all ministers of communication in the past 15 years. According to figures in those interviews, FNT collected approximately \$15 billion (U.S. dollars) between 1967 and 1984, when the fund was abolished, of which only roughly \$4.5 billion was contributed to long distance communication (Embratel), rural telephony, and the Telebras center for R&D. Siqueira estimates that between 1975 and 1984 (the era of the Brazilian economic miracle) at least \$3.5 billion were diverted to projected unrelated to telecommunications.

14. The first (March 1990) cabinet of President Collor de Mello included: Ozires Silva, Minister of Infrastructure; Joel Mauricio Rauber, National Secretary of Communications; Joost van Damme, President of Telebras; and Carlos de Paiva Lopes, President of Embratel. As of December 1991, Joao Santana succeeded Silva as Minister of Infrastructure, and early in the year van Damme was replaced as president of Telebras by Senator José Ignacio Ferreira.

15. The Second National Meeting for Communications, organized by RNT, Sao Paulo, 14 December 1990. See also "The Future Telecommunications Environment in Brazil" (Official Translation), address by Joel Rauber before the U.S. Chamber of Commerce, Washington, D.C. (24 July 1991).

16. Although the ministerial order was approved by Congress, as of December 1991 the reduction of ROCs has yet to be implemented.

17. The private operator in the city of Sao Paulo will operate in B-band. BellSouth, Bell Atlantic, Bell Canada, and US West, among others, have submitted bids for the operating license. Companies that have submitted bids for manufacture of equipment, switches, transmitters, and telephones include AT&T, Motorola, Ericsson, NEC, and Northern Telecom. As of December 1991, no official decision has been made on either operator or manufacturer. In the initial stages, the government will allow importation of most of the equipment.

18. Roger Lowenstein, "Morgan Stanley's Guru Bets on Battered Latin Giant, Heard on the Street," *Wall Street Journal* (14 May 1991), C1-C2.

19. As of December 1991, Citibank was reportedly continuing to buy shares of Telebras, mostly preferential stock without voting privileges.

20. In the third quarter of 1991, Infonet, of the Computer Sciences Corporation, based in California, signed an agreement with Embratel to form a new company, Infopac, which will offer Brazilian customers an international network that supports X.25, BSC, and SNA protocols. (MCI owns 50 percent of Infonet in the U.S.) At almost the same time, two subsidiaries of AT&T, Easylink and International Communications Services, joined Moddata, a firm based in Sao Paulo, in offering their customers International Private Line Service at 9.6 KBPS. *O Estado de S.Paulo*, "Economia" (1 October 1991), 13.

21. Monthly charges for digital lines leased from Embratel are high. In December 1991, the projected charge quoted by Embratel (in U.S. dollars) for a leased 64 KBPS line (from the satellite to their central office in Sao Paulo, through a shared earth station) was \$7,700, plus a value-added tax of 26 percent, for a total charge per month of \$9,702. The one-time installation fee was \$6,000. If the customer is more than three-quarters of a mile away from Embratel's central office, no local digital access line over copper may be available, and local access will be by digital radio, raising the cost by about \$100,000 per pair of transceivers. On the other hand, a 64 KBPS line leased from New York, for example, up to the Intelesat satellite costs approximately only \$2,350 per month. Clearly, the Brazilian half of the line is 4.12 times more expensive.

22. Ministère des Postes, des Télécommunications, et de L'Espace, Direction de la Réglementation Générale, No. 2, Août 1990, Fiche d'Information, II, Le Régime Juridique des Services à Valeur Ajoutée, 2-Le régime actuel, La finalité du service: apporter une réelle valeur ajoutée.

23. Here, "limited" means that the communication will be limited strictly to between predetermined pairs of customers, not to the public at large. On 27 November 1991 the Senate Commission of Constitution, Justice, and Citizenship accepted a petition presented by Senator Mansueto de Lavor (PMDB party, Pernambuco) and supported by Senator Mauricio Correa (PDT party, Brasília, D.F.) to revoke Decree 177 as

unconstitutional. After hearing arguments from both the government and the opposition, the Supreme Federal Tribunal will decide on the merit of the decree. Telebras has convened Investcom, inviting international investors in telecommunications, but no date for the meeting has been set (see note 5). Both the decree and the petition for its revocation highlight political complexities that currently prevent Brazil from following the global trend toward privatization.

24. The salient points of this act were published in *RNT*, 147 (November 1991), 58.