This is to certify that the

thesis entitled

TELMEX PERFORMANCE AFTER RESTRUCTURING

presented by

JENNIFER A. ESPINOZA-DIAZ

has been accepted towards fulfillment
of the requirements for

MASTER OF ARTS degree in TELECOMMUNICATION

Bella Mody

Major professor

Date 2 May 96

TELMEX PERFORMANCE AFTER RESTRUCTURING

By

Jennifer A. Espinoza-Diaz

A THESIS

Submitted to

Michigan State University

in partial fulfillment of the requirements

for the degree of

MASTER OF ARTS

Department of Telecommunication

1996

ABSTRACT

TELMEX PERFORMANCE AFTER RESTRUCTURING

By

Jennifer A. Espinoza-Diaz

The present work deals with the performance of Telefonos de Mexico S.A. (Telmex) since its restructuring in 1990. Hudsons' "Telecommunications Development Report Card" is used to evaluate the performance in the expansion and affordability of basic residential and rural telephone service in Mexico. The case study concludes with suggestions on further assessment of the distribution and affordability of service.

ACKNOWLEDGMENTS

I begin by thanking my three professors in the thesis committee, Dr. Bella Mody, Dr. Johannes Bauer, and Dr. Steve McDowell who guided me through this study.

Special acknowledgment goes to Dr. Mody, who read all my drafts and made excellent suggestions. I thank her for her support and insight throughout my studies at Michigan State University.

I would like to thank Dr. Lucinda Davenport and Dr. Howard Bossen, in the Department of Journalism, for allowing me to research topics on NAFTA.

In addition, I would like to thank Dr. Manuel Chavez, Dr. Sergio Quesada, and Dr. Scott Whiteford at the Center of Latin American and Caribbean Studies for allowing me to use their resources and pursue summer course work in Latin American studies.

I would like to thank my parents, Susan C. Reagen and Micheal V. Reagen, for their encouragement while I pursued my studies both in Mexico and the United States. Without their support, my education would not have been possible.

In Mexico, I am thankful to Alvaro Espinosa Uribe, María del Carmen Díaz Payán, and Romina Espinosa Díaz for their patience and assistance in understanding the subtleties in Mexican culture, politics, and the Spanish language. I am especially thankful for all their encouragement and emotional support.

Finally, I would like to thank my husband Adrián Espinoza Díaz whose friendship allowed me to experience a culture and language foreign to me, opening a world of wonderful opportunities to learn and grow. I will always be grateful for his perspective and incredible patience as I continue through my journey of intellectual and personal development.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

The purpose of this study is to evaluate the performance of Telmex in the expansion of basic residential and rural telephone service since the restructuring of Mexican telephony. Heather Hudson's telecommunications indicators, as outlined in her "Telecommunications Development Report Card," will be used to provide structure for the evaluation.

Problem setting

Telecommunications is becoming more important in both developed and developing nations. Corporations, in particular, are increasingly dependent on their telecommunications systems to streamline production and communication around the globe (Irwin and Merenda, 1989 p.329-335). In particular, telephony development is touted as an important tool in the economic development of Mexico (Romo Garza, 1995 p. M2). Basic telephone service is considered a public utility to be monitored just as power, piped water supply and sanitation and sewerage are monitored and labeled as economic infrastructure in a nation (World Development Report, 1994 p. 2).

Scholars have also found basic telephone service to enrich a user's life. The telephone allows people from different geographical locations to communicate. In this sense, basic telephony can save time. Users may not have to mail letters, nor travel distances to communicate. Moreover, a telephone can be used to send for help in emergency situations (LaRose and Mettler, 1990 p.3).

Telephone use is believed to be a learned social behavior and socially, the telephone can relieve "feelings of loneliness, isolation, anxiety and security" (LaRose and Mettler, 1990 p.2). While this study was conducted in the United States, it is possible that people in other cultures may experience the same feelings under different circumstances. For example, Mexicans that immigrate may experience these feelings whether they are in the urban center away from home or in the rural community left behind. A telephone call may relieve the same feelings for Mexicans as well as Americans.

Significant immigration within Mexico from rural communities to urban centers has occurred. In 1950 only 40 percent of the population lived in urban areas and in 1990 about 72 percent did (Barry, 1992, p. xix). An estimated one to two million Mexicans also immigrate to the United States a year (Barry, 1992, p.225). Some of these migrants send money back to their communities to finance community improvements and services. In fact, $2 billion dollars a year may be sent to small villages in remittance (Barry, 1992 p.229).

With people away from their rural small villages for months at a time, many may try to contact their relatives back in the villages. This is where telephony may become an important communication link for rural Mexicans. In 1992, 91 percent of Mexico's international telephone traffic went to the United States and Canada (Americas Telecommunications Indicators, 1994, p.3). In 1992, Americans spent 1.277 billions of minutes on the phone to Mexicans and Mexicans spent 610 million minutes on calls to Americans. While these statistics do not discriminate between residential and commercial traffic, the traffic is noteworthy. Aside from the telephone traffic between Canada and the United States, this Mexican - US traffic is greater than telephone traffic between any other nations in the Americas (Americas Telecommunications Indicators, 1992).

The positive benefits of telephony, mentioned earlier, are not shared by all in Mexico. In fact, in 1989 just 16 percent of households in Mexico had telephones (Petrazzini, 1995 p.111). Since then, the expansion of basic residential telephone service in Mexico has grown, but there is a concern that the accessability and affordability of service is not distributed equally among urban and rural residents.

Because the provision of basic residential telephone service is no longer a state function, due to the privatization, the expansion of service into rural and poor communities is in doubt. This case study will investigate the accessability of basic residential telephone service expansion in Mexico and the affordability of this service since the privatization of Telefonos de Mexico S.A. in 1990.

Organization of Thesis

This thesis is organized as follows. This first chapter provides a contextual background in which to examine the privatization of Telmex. A discussion of the distribution of basic services and wealth in Mexico is presented. Additional material on telephony development is given and the current political and economic situation of Mexico are mentioned.

Chapter two defines the research questions and describes the methodology used.

Chapter three summarizes academic literature on the privatization of Telmex.

Chapter four discusses the availability of basic residential telephone service since the privatization of Telefonos de Mexico, S.A. It also examines the affordability of basic residential service in Mexico based on the minimum wage earned by Mexican workers.

Chapter five summarizes the data presented and recommendation for further research on the development of basic residential telephone service in Mexico are given.

CHAPTER I

OVERVIEW

This chapter provides an overview of the distribution of wealth and services in Mexico, the privatization, and details of the sale.

1. Distribution of Wealth and Services

Basic telecommunications infrastructure is now considered important in developing a nation economically. As stated earlier, the basic telephone service is useful to many users whether it be residential or business. Because basic telephone service was distributed and administered by many governments throughout the world, it is important to examine to whom and how this service was distributed. Other resources like electricity, water and sanitation supply are considered basic resources and the distribution of these services, as well as income distribution within a nation, give a broader picture of what that society values and provides its citizenry.

This author will first examine the historical distribution of these types of services in Mexico to put in a broader context the actual distribution of basic residential telephone service. Data from the World Development Report of 1994 as well as the Human Development Report of 1995 will show how the distribution of wealth and services in Mexico is concentrated. In addition, material from interviews and journal articles will describe the conditions in Mexico.

The top 20 percent of Mexico's population is twenty seven times wealthier than the bottom 20 percent (Landau, 1995 p.20). This inequitable distribution of income suggests sharp differences in lifestyles and perspectives. For example, the sale of Telmex itself has been viewed as an attempt to enrich the former President's friends, a number of whom did purchase stock in the company. In fact, in 1990, there was one billionaire in Mexico and in 1994 there were twenty-four. A number of these new billionaires were reported to have attended a meeting with President Salinas prior to the privatization and gave money to the P.R.I.'s campaign fund (Rodriguez, 1995 p. 18-21). Certainly then, it would be interesting to examine the distribution of telephony since privatization in such a nation of income inequity.

Evidence suggests that there has been a traditional imbalance in the distribution of wealth and services in Mexico. For example, in the city Ciudad Juarez in northern Mexico, an activist of the Center of the Defense of Human Rights describes how services have been skewed by the government and how some wealthy families tend to invest in their own self interest. An excerpt from his interview in the Multinational Monitor follows:

> "On the Juarez frontier there's a marginalized residential zone. For a dozen years the government has been saying that the people have to sacrifice water and electrical service in order to be prepared for NAFTA . . . the frontier towns have two faces- the one they show to NAFTA . . . well paved, and the other is cities without services, communities where 60 to 70 percent of all inhabitants don't have water or electric light . . . four families in the area own practically 80 percent of the land on the frontier...so it is quite complicated for people to find housing. The big families sell most of their lands to industrial parks, and there have been occasions where they've tried to come in and destroy entire communities in order to build industrial parks" (Nairn, 1995 p.8).

The living conditions in Mexico vary from rural to urban locations. The Human Development Report of 1995 listed some of the inequities in the distribution of resources and wealth in Mexico. According to their figures, the lowest 40 percent of households in Mexico during 1982-1991 had just 11.9 percent of the income share (Human Development Report, 1995 p.78). Poverty was also more concentrated in rural areas where in 1990, a reported 43 percent of people were in poverty compared to 23 percent of the people in urban areas as demonstrated below (Human Development Report. 1995 p.6).

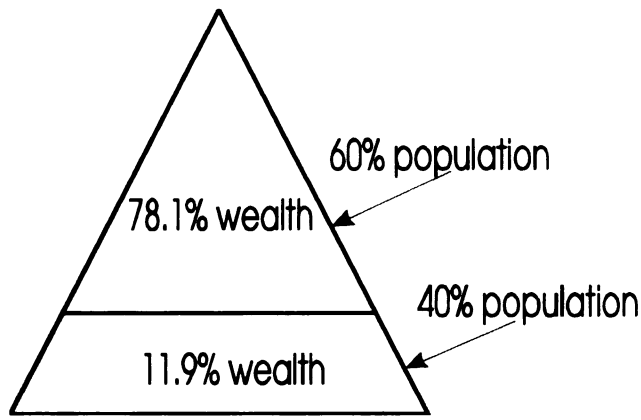

Figure 1: Income Share

This urban - rural gap can be further demonstrated. The distribution of basic services is discussed in the Report and gives the percentage of the population that had access to services such as health, safe water, and sanitation on a rural versus urban basis. Access to health services is defined by the Report as "the percentage of the population that can reach appropriate local health services or by local means of transport in no more than an hour"

(Human Development Report, 1995, p. 222) In Mexico, 80 percent of the urban population was found to have access to health services and only 60 percent of the rural population had access (Human Development Report, 1995 p 6).

Safe water access was defined as " the percentage of the population with reasonable access to safe water supply, including treated surface water, or untreated but uncontaminated water such as that from springs, sanitary wells and protected boreholes" (Human Development Report, 1995 p.224). Again, a gap was seen between the urban population's access compared to the rural population's access with 94 percent of the urban population having access versus 66 percent of the rural population (Human Development Report, 1995 p.6).

Sanitation access was defined as "the percentage of the population with reasonable access to sanitary means of excreta and waste disposal, including outdoor latrines and composting" (Human Development Report, 1995 p.224). While 70 percent of the urban population had sanitation access, just 17 percent of the rural population did. Clearly, the access to the most basic services in Mexico has been skewed to urban areas and the estimated 26 percent of the total Mexican population that resides in rural areas have been undeserved (Human Development Report, 1995 p.6).

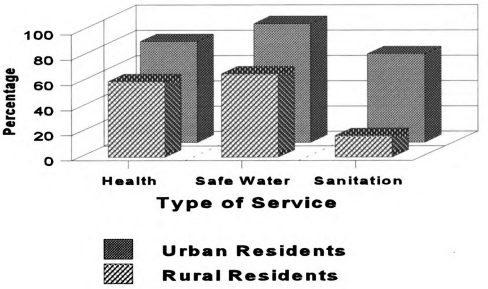

Figure 2: **Residential Access to Services**

Income levels play a role in terms of access to services as well. Rural Mexicans tend to have lower income levels than urban Mexicans. The World Development Report of 1994 shows that the income gap between the richest and poorest quintile is reflected in their access to services such as the public water supply, sewers and electricity. The table below shows that for each service, the poorest quintile lacks access to services in comparison with the richest (World Development Report, 1994).

Table 1: Percentages of the poorest and richest quintiles in Mexico with access (1989)

Public water supply		Sewers		Electricity	
Poorest Quintile	Richest Quintile	Poorest Quintile	Richest Quintile	Poorest Quintile	Richest Quintile
50.2	95.0	14.2	83.2	66.2	99.0

The poorest tend to live in rural areas or on the periphery of urbanized areas (McKinley and Larcon, 1992; World Development Report, 1994). If these services are traditionally unequally provided, the provision of basic telephony may be skewed as well unless a specific commitment is made to provide telephone service to the rural areas. Based on past government attempts to distribute more equitably the services mentioned above, it seems that telephone service will be distributed inequitably as well.

President Salinas, elected in 1988, started a program in 1989 intended to combat poverty and the imbalance of services. Despite its intention, this National Solidarity Program (Pronosol) has been criticized for its delivery of service. Most critics claim that the services are primarily used by politicians at the local level to influence voting patterns. For example, if a village votes for the main political party, the P.R.I. it will receive the financing or services the village needs. On the other hand, if the village votes for another political party, the village will continue to be under served. In essence, the program is politically motivated and services are distributed as such (Barry, 1992 p.238). The program's resources were generally not intended for the poorest regions of the country (McKinley and Alarcon, 1994 p.1582).

It is important to note that most of this data was reported for the years between 1985 to 1993. From 1988-1994 when President Salinas was in power and the Solidaridad program was initiated to alleviate rural poverty, actual poverty increased. John Summa of the Multinational Monitor reported that:

> "the incomes of the wealthiest grew 11.3 percent between 1989-1992 and those at the bottom saw their incomes shrink 7 percent . . . Nearly half of the Mexican population lives at poverty income levels . . . with 54 percent of the families struggling on a monthly income lower than the minimum wage for a single worker (about $135) (Summa, 1995, p.24).

The economy of Mexico has not improved since this data was collected. In fact, the economy has taken a turn for the worse. At the end of 1994, the Mexican peso was initially devalued by 13 percent and then eventually by 50 percent (Wheat, 1995 p.11-12). It appears that the distribution of telephony service will be particularly skewed toward urban and wealthier areas more now than ever due to the fact that many Mexicans may simply not be able to afford telephony due to this devaluation.

2. Mexican Telecommunications

This section presents an overview of Mexican telecommunications development. Using information from academics and Telmex Annual Reports, the beginning of telecommunications development in Mexico will be discussed as well as the privatization of Telefonos de Mexico S.A. in 1990.

Cynthia Baur outlines the history of telecommunications in Latin America and discusses Mexican telecommunications in "The Foundations of Telegraphy and Telephony in Latin America " (Baur, 1994 p.9-23). For the first seventy years of telephony in Latin America, the government served as a regulator. Long-distance service was provided only for specific groups, such as the government. Private investment was restricted. The goal of Mexican telecommunications was to aid the government in its activities and generate revenue for the telecommunications owners.

> "The state and capital developed a mutually beneficial relationship in which the state authorized the establishment of telegraph services as a means of expanding its informational and administrative capacities, while investors reaped whatever profits were available by conforming to officials' demands " (Baur, 1994 p. 15).

Little emphasis was given to the development of telecommunications for the public. Telecommunications was conceived as a political necessity. So, the telegraph was introduced in Mexico in 1850s and its expansion occurred during the period of French occupation during 1860s (Baur, 1994 p.14). During this period, the Mexican government prohibited the general public from using telegraphs...while demanding expedited services for the government ... the "communication needs" of the general public were last on the list of priorities (Baur, 1994 p.13-15).

In essence, the provision of telecommunications services was to meet the administrative needs of the government and private owners. Around this time, Mexico began

to move toward export oriented manufacturing and production. This was when a strong telecommunications infrastructure needed to be developed.

In the late 1870s, The Mexican government realized that some private investment was needed to build a stronger infrastructure. Once licenses were granted, the government expected service discounts from licensees in return for the license. In the early 1880s, telephone service was first established in Mexico City to link up some police stations with government officials (Baur, 1994 p.19).

According to Baur, the Mexican State was viewed as a regulator at that time. The state influenced the licensing, but then allowed the market to dictate expansion plans and the types of service offered. Little cross-subsidization of local and long distance occurred. There was a high degree of fragmentation due to foreigners setting up companies independently (Baur, 1994 p.18). For a more detailed examination of the history of Mexican telephony, refer to the outline below.

Mexican Telephony Development

1872 First telephone call made in Mexico

1878 Wireline telephony introduced in Mexico

1882 Local Telephone Service- Compania de Telefonica y Telegraphica Mexicana (Mexican Telephone and Telegraph), subsidiary of International Telephone and Telegraph Corporation (ITT)

1888 Telefonica Mexicana wins license to provide service to Mexico

1905 Telefonicos Ericsson, subsidiary of L.M. Ericsson, founded

1907 Telefonicos Ericsson, began competitive operations

1941 Local and long distance linked between Ericsson and Mexicana

1947 Merger between Telefonicos Ericsson and Telefonica Mexicana, to become Telefonos de Mexico, S.A.(Telmex)

1950 Telmex acquired properties and licenses of the Mexican Telephone and Telegraph Company

1958 Mexican businessmen acquire ITT's and Ericsson's interests

1963 Mexico City, Monterrey, and US Border linked by microwave route

1966 National Link completed for 1968 Olympic Games in Mexico City

1972 President Echeverria's administration acquires 51 percent of the corporation's equity (49 percent remained private and publicly traded on Mexican Stock Exchange)

1989 President Carlos Salinas de Gotari ordered the privatization of Telmex

1990 Telmex sold to a consortium of Grupo Carso, Southwestern Bell, and France Telecom (Barerra, 1995 p. 56, Baur, 1994 p.19, Mexican Telecom Market Access, Canadian Embassy 1991 p.2, Petrazzinni, 1995 p. 108-109, Telmex Annual Report, 1990).

Mexican telephony has gone through periods of private and public ownership, as outlined above. While these periods deserve examination, they are outside the scope of this thesis. However, in 1989, President Carlos Salinas de Gotari embarked upon a large scale

modernization plan for the nation. The sale and modernization of Telmex was part of it (Pettrazinni, 1995 p 2). This most recent government privatization of Telefonos de Mexico S.A. of 1990 (Telmex) will be discussed at length.

Privatization

Lilia Perez Chavolla, Rohan Samarajiva, and Sungwoon Cho (1995) suggest two reasons why President Salinas wanted to privatize Telmex. One factor cited was Mexico's debt to the International Monetary Fund and commercial banks. These forces pressured Mexico to move toward a more open economy. Additionally, the transformation of the global information economy forced Mexican leaders to reconsider their role in the international economy. President Salinas's move to open the economy, by selling the government's stake in Telmex, would generate much needed state revenues, relieve some debt, and draw foreign investors to Mexico.

According to the research of Chavolla, Samarajiva and Cho, President Salinas officially claimed that Telmex was inefficient and lacked the financial resources to improve the quality and quantity of service. In addition, "Salinas stated that the mode of privatization of Telmex should fulfill the following requirement:

1) guarantee government oversight over telecommunications,

2) improve quality of service,

3) guarantee employees' rights under the Modernization agreement signed by Telmex and the Union in April of 1989, and give them equity participation in the

company,

4) expand the telephone system,

5) engage in research and development to strengthen Mexican sovereignty, and

6) keep Telmex under Mexican majority control" (Chavolla, Samarajiva, and Cho 1995 p.16).

As a state owned, bureaucratic monopoly, Telmex was perceived to be more concerned with keeping jobs and helping friends than providing service (Rodriguez, 1995 p.17-24). By law Telmex only had to provide one telephone in every town with a population of 1,500 inhabitants (McCarthy, 1993 p. 255). The service record of Telmex was also poor:

> "Though Mexico is the world's 13th largest economy , it ranks 83rd in the world in phone lines per capita. The average wait for a new line is three years. Most Telmex pay phones operate for free because repair crews can't keep up with the vandals. Productivity has always been substandard. Repair crews have traditionally sold their services to the highest bidder (Moffett, 1992 p.A1).

Also, the revenues that Telmex did generate were used to subsidize other state activities and therefore, little money was left to reinvest in the corporation itself (Petrazzini, 1995 p.109-111).

As President Salinas de Gotari worked toward an eventual North American Free Trade Agreement with the United States and Canada, it seemed imminent that telecommunications would be included. The pressure from the transnational was strong and

American telecommunication companies, eager to enter new markets, looked to Mexico. Chapter 13 of the Treaty is devoted to telecommunications specifically. The table below gives an overview of tariff reductions on telecommunications products by the NAFTA.

Table 2: NAFTA TelecommunicationTariff Reductions

Products	Duty	NAFTA duty reduction schedule
Telephone sets	20%	B
Public Telephone	20%	B
Modems	15%	A
Facsimile	15%	A
Answering machines	15%	A
Amplifiers	10%	A
Relay equip.	10%	A
Optical fibers, individually isolated	10%	A
Fiber optic bundles	10%	A
Fiber optic cables	10%	A
Optical fibers	5%	A

A) Duties eliminated entirely January 1, 1994.
B) Duties removed in five equal stages on January 1, 1994. (Market Access, 1994).

Transnational corporations also had an interest in seeing Mexico's telephony develop. These corporations use telecommunications on a daily basis to decentralize certain aspects of production and to keep in close contact with all parts of their operations. For example, Ford Motor Company must have secure telephony lines to E-mail, transmit data, visuals and voice in order to keep operations running. If Mexico had an antiquated system, it would be difficult to keep up with daily business transactions. A transnational could pull out of Mexico and relocate to another area that could better serve them. Mexico, therefore, needed a

fundamental change in its approach to telephony and the privatization of Telmex appeared to be the answer. Privatization would bring investment funds to Mexico and effectively wash the government's hands of the responsibility of providing telephone service to its citizenry.

Without much input from Mexico's Congress, President Salinas de Gotari privatized Telmex in December of 1990. Telmex was sold to a consortium of Southwestern Bell Company, France Telecommunications and Grupo Carso, a Mexican holding company for a total of 51 percent voting control and 20.4 percent of the equity of Telmex. Initially, Southwestern Bell Company bought 5 percent, and later another 5 percent. France Telecom purchased 5 percent and Grupo Carso 10.4 percent of the equity (Hoover, 1995). Anthony DePalma noted in 1994 that "Of the company's $33.5 billion capitalization, 60 percent is held by foreigners, mostly American (DePalma, 1994 p. D8). Further research indicates that 90 percent of the welfare gain of the sale went to foreign investors (Petrazzini, 1995 p. 174).

The sale did guarantee Telmex a local service monopoly until 2026, and a long distance monopoly until 1996. At the time of privatization Telmex committed to complete the following by 1994:

- install a network of 9.4 million lines,
- have 8.3 million subscribers,
- a telephone density of 8.6 per 100 inhabitants,
- 57 percent digitalization,
- 80 percent digitization of its long distance network.

During its monopoly stage, Telmex must:

- annually expand the number of main lines by 750,000;
- increase the number of public pay phones;
- improve the quality of long-distance transmission;
- provide service for towns with greater than 500 inhabitants;
- provide automatic switching for towns greater than 2500;
- reduce the waiting period for telephones to six months or less in towns with greater than 5000 inhabitants;
- and guarantee same day service on repairs (McCarthy, 1993 p.255).

Competition

Many critics perceive that competition will drive long distance prices down in Mexico as Mexico's long distance market opens. Beginning in 1997, Mexico will have unlimited competition in long distance service provided by companies that recently made joint ventures between American telecommunications companies and Mexican companies. For example, in November of 1994, AT & T announced that it had formed a joint venture with Grupo Alfa to provide long-distance service when the market opens (Barrera, 1995 p.146-151). MCI and Mexico's Banamex joint venture plans to cover the continent of North America with their service (O'Shea, 1994 p.9).

American telecoms also began to provide cellular services in Mexico. After buying Grupo Domos's cellular region in May of 1994, Motorola and Protexa, formed a joint venture to cover the entire border of Mexico and the United States with cellular network reach. According to Protexa, Motorola has its eyes on acquiring licenses in the Baja California region (Rigdon and Torres, 1994 p. A15). Bell Atlantic teamed up with Iusacell, a cellular operator to offer wireless services in Mexico. Bell Atlantic has 23 percent ownership of the company. Southwestern Bell and Telmex formed a joint venture to provide cellular roaming service to the northern part of Mexico (Forbes-Jamieson, 1995 p. 253).

Mexican Entrepreneurs

Three Mexican businessmen are heavily involved in telecommunications development in Mexico and should be presented. All three men were mentioned in Forbes list of millionaires and have been key political actors in Mexico. They are; Bernardo Garza Sada- member of the Monterrey Group, head of Grupo Alfa, Mexico's second largest financial group: Roberto Hernandez Ramierz- Chairman, with 10 percent stake in Banacci, Mexico's largest financial group, and Carlos Slim Helu- a major Telmex shareholder (Galarza and Millman, 1993 p.68-77, Millman and Brasten, 1994 p.194).

Carlos Slim Helu is the C.E.O. of Grupo Carso that owns 10 percent of Telmex. Additionally, Grupo Carso bought 15 percent of Grupo Alfa over the past few years, which announced that it had performed a joint partnership with AT & T to offer long-distance telephone service in 1996 (Millman and Brasten, 1994 p.194).

The C.E.O. of Grupo Finaciero Banamex-Accival, bought from the Mexican government in 1992, is Roberto Hernandez Ramierz. (Millman and Barsten, 1994 p. 195) Mentioned earlier, this joint venture will compete in the Mexican long-distance market. This venture will allow Hernandez to use MCI services to modernize the banking at Banamex, the country's largest financial group (Torres, 1994 p. A10).

Lastly, Alfonso Romo Garza acquired a 15 percent interest in the British wireless company Ionica. If granted a license from the Mexican government, he proposes to put 40 percent of his services into the rural areas of Mexico as well as urban centers. This service, expected to be simpler and cheaper than what Telmex and cellular providers can offer, hopes to start in Mexico and expand into the rest of Latin America (Torres, 1994 p. A10).

Although these joint ventures will certainly improve the quality of the telephone service in Mexico and possibly cut long distance rates as competition grows, the distribution of telephone service in Mexico may follow the same path as other basic services. Wealth and service distribution in Mexico is concentrated in urban areas. Basic telephone service may only be provided in urban areas or to those with wealth and therefore many people in Mexico will be left without realizing the benefits of the privatization of Telmex. As a government distributed service, there was hope that distribution would not be skewed, but the sale of Telmex leaves distribution in the hands of the private company itself.

Telmex's Accomplishments

Due to the investment Telmex received through privatization, the company invested in new technologies and brought telephone service to some communities previously not served. Despite these improvements, Mexicans remain dissatisfied with Telmex's service. Two years after privatization, Telmex had more consumer complaints than any other company in the nation with 88,000 formal complaints filed with the national consumers' protection agency PROFECO (Robberson, 1993 p. A16). The number of complaints rose in 1993 to 114,000 (Summa, 1994 p.25).

Nevertheless, Telmex has made some progress toward fulfilling its privatization goals. As of 1994, Telmex had wired 52 cities with fiber optics, digitized nearly 70 percent of its lines and decreased the waiting time for phones from six months to three to four months in some areas. Mexico had an estimated 8.4 million main lines, a 9.5 percent penetration rate for an 88 million population at the end of 1994. The wireless loop intended to cover eventually 10 percent of the total public network and international traffic, has grown (Forbes-Jamieson, 1995 p.251-254).

3. Mexican Politics

Because both the privatization of Telmex and NAFTA were initiated by the government in the last presidential term, it is critical to look at the political system in Mexico. The P.R.I., the "Institutional Revolutionary Party" is the political party in Mexico. George W. Grayson, commented on the P.R.I.'s power. " With the fall of the Communist Party in the

former USSR, the P.R.I., founded in 1929, has governed longer than any other political party in the world"(Grayson, 1994, p. ix). This statement, in and of itself, alludes to the immensity of the organization and its ability to wield its power.

All Presidents since 1929 have been members of the P.R.I. and until recently, most governors as well. This is important because the government in Mexico is very centralized and the Presidents enjoy much authority and control over the political process (Grayson, 1994 p.12-52). In fact, it is a long held tradition that the outgoing President hand picks his successor, despite the illusion of free elections. But, instability is in the air.

An indigenous uprising in the southern Mexican state of Chiapas on January 1, 1994, the very day that NAFTA took effect. Frustrated with government policies and neglect, a group of indigenous people, from largely Mayan decent, decided to wage a war on the Federal government and overtook town halls. After the bloodshed, the Zapatistas and the federal government began negotiations to settle the dispute (Nairn, 1994 p.7-9).

Later that March, the P.R.I.' s presidential candidate, Luis Donaldo Colosio was assassinated in Tijuana while campaigning. Although the gunman was presumably captured, much unrest and skepticism exist. Colosio's former campaign manager, Ernesto Zedillo de Leon, replaced Colosio and was elected President of Mexico in August of 1994 (Kootnikoff, 1995 p. 28).

Another blow to the P.R.I. came in September 1994. An influential party member, Jose Francisco Ruiz Massieu, was assassinated outside his office. His brother, then Attorney General of Mexico, began an investigation. Months later, in frustration, Mario Ruiz Massieu resigned his position as Attorney General claiming that the administration was holding back his investigation of his brother's murder and that the P.R.I. was covering up the affair (Fedarko and Lopez, 1994 p.84).

The Mexican government's power is not as strong after the turmoil of 1994. Effective government enforcement of Telmex's expansion of basic telephony seems unlikely in this climate of disorder. There is a lack of confidence in Mexico's leaders due to the recent instability and because of the government's unfavorable reaction to the crisis.

Although it is clear that there have been improvements in providing services and the sale of Telmex generated much needed revenue for the government and those involved, what remains to be seen is how well Telmex does in providing service to residential and rural customers. While some expansion has occurred, the data presented in Chapter III will show that residential telephony development in Mexico continues to be concentrated in the urban areas despite privatization.

CHAPTER II

RESEARCH QUESTIONS AND METHODOLOGY

This chapter will outline the two research questions and discuss the methodology used in this thesis.

The author will use telephony indicators suggested by Heather Hudson (1995, p.8) and to evaluate the residential and rural tariffs of basic telephone service. This analysis will use a case study method gathering secondary information from trade journals, scholars, newspapers, the International Telecommunications Union Development Report, the 1995 Human Development Report, as well as Telmex Annual Reports.

This thesis will attempt 1) to investigate the availability of basic residential telephone service in Mexico since privatization and 2) to investigate the affordability of basic residential telephone service in Mexico since privatization.

Heather Hudson's "Telecommunications Development Report Card" criteria will serve as the structure for examining the availability and affordability of service. Evaluation criteria are:

Availability of Service

- national teledensity

Price of installation

-as percentage of annual per capita income

Monthly connection charge

- as percentage of monthly per capita income

Additional indicators from the ITU, Telmex Annuals, and the author's research will be used to enrich the discussion. They are:

- overall teledensity
- teledensity in the largest city,
- teledensity in the rest of country,
- number of public telephones per 1000 inhabitants,
- towns with inhabitants of 500 with access to one telephone,
- installation cost of basic residential telephone service as a percentage of yearly income based on Mexico's minimum wage,
- monthly subscription rate of basic residential telephone service as a percentage of income based on Mexico's minimum wage.

The author will compare indicators from Chile, Korea and Argentina where possible, to get a broader sense of Mexico's achievements. Chile and Argentina are culturally similar countries who faced similar pressures to expand service, and chose the privatization route. Korea is included primarily because it faced pressures to expand services, but it chose a state-guided strategy to telecom infrastructure expansion. This thesis will look at the comparative performance between the privatized operators (Argentina, Mexico, and Chile) and compare them with a state-guided operator (Korea).

The International Telecommunications Union World Development Report of 1994 gathered data on telecommunications development from many nations. The report presents this data in the form of charts for assessment. This study uses the definitions from the ITU study:

1. **the percentage of residential lines** refers to the total number of main lines serving households (i.e., lines that are not used for professional purposes or as public pay phones) divided by the total number of main lines,

2. **total residential lines** refers to the number of main lines used by households,

3. **pay phones** refers to the total number of all types of public telephones including coin- and card- operated ones, without consideration of operational or non-operational,

4. **installation** refers to the connection charges involved in applying for basic telephone service,

5. **The monthly subscription** refers to the reoccurring fixed charge for subscribing to basic telephone service, and

6. **subscriptions as a percentage of GDP** shows the percentage of annual per capita income spent by a residential telephone subscriber.

CHAPTER III

LITERATURE REVIEW

Academic literature on the privatization of Telmex tends to focus on the details of the sale, the role of domestic capital and foreign investment in the privatization, and analysis of the effects privatization has had in limited sectors. Some discussion of the relationship and combined effect of the North American Free Trade Agreement and subsequent policy changes in Mexican Communications Law is provided in this chapter.

Literature Review

Barrera (1995, p.51) takes a look at the historical relationship of Mexican telecommunications policy and the function of telecommunications as a state power. First, he discusses three angles of how development is analyzed, as a technological paradigm, a regime of accumulation, and as a mode of regulation. He borrows from the French Regulation school five categories of forms of state intervention; 1) formal facilitation, 2) substantive facilitation, 3) formal support, 4) substantive support, and 5) direction to override. Barrera then looks at the systems of representation, dictatorship, parlimentarianism, corporatism, clientelism, and pluralism. Barrera emphasized clientelism and pluralism due to the concentration of capitalism mode of production and the increase in development and telecommunications.

Barerra divided and discussed Mexican telecommunications development in terms of the division of labor, the form of government representation, the telecommunications development, and the state intervention of each period. An overview follows: during the Porfiriato (1882-1911) authoritarianism, Mexico took its first steps toward industrialization

and had the telegraph developed alongside railroads. In 1882 the telephone was introduced by the Compania Telefonica y Telegraphica Mexicana, a subsidiary of ITT. In 1887 Ericsson began competitive service. In the next phase, the Dictator phase, the telephone linked Mexico City with mining and agriculture centers that broke the city/state capitalism and brought the nation together.

Rafael Rodriguez Castaneda provides a critical analysis and description of the events that took place up to the sale of Telmex (1995). He begins with a careful look at the intricate network of individuals, both in government and in the private sector, that played a role in the privatization. He alludes to a meeting between their wealthy business elite of Mexico who met with former President Salinas at a private dinner. It is reported at this dinner that each gentleman contributed $25,000 US dollars to the P.R.I.' s campaign fund. Although those in attendance deny expecting a political "favor" in return, coincidentally a number of these gentlemen were subsequent purchasers of Telmex.

In addition, Rodriguez noted inconsistencies in the government's discussion of the privatization. Most negotiations appear to have been behind closed doors and even when questioned by the Mexican Congress, little detail was given prior to the actual sale.

In terms of who benefited from the sale, Rodriguez points out the amount of wealth Carlos Slim Helu and other business elites generated from their purchase. Slim, in Forbes, was reported to have a family worth of three billion dollars in 1989, and, after the

privatization, of six billion. Most of his wealth derived from his investment in Telmex.

Eduardo Barrera also examines the privatization of Telmex in two articles. In "The Role of Domestic Capital in Latin America" (1995) Barrera provides a comparative analysis of four formerly state-owned telecommunications enterprises in Latin America. He a) identifies reasons that led to privatization, b) compares political systems and relationship to the SOTEs, c) examines the role of domestic capital in privatization and d) the impact of the inclusion of workers as capitalist partners (Barrera, 1995 p. 135). One of the cases is Mexico.

Barrera outlines a series of debt crises, the fourth in 1982 and the relationship the crises had on the privatization of the SOTEs. He claims that these debt crises resulted in a restructuring of the public sector, which had been criticized for employing people and using government funds to continually bail out capitalists. Secondly, the four nations studied were spending large portions of their budget on servicing the debt and its interest. And lastly, investment in the telecommunications infrastructure to modernize and expand service had almost come to a halt, due to the lack of funding available. The solution; privatize the telecommunications enterprises.

Barrera then outlines five government approaches to the debt crisis, and describes the privatization of the SOTEs and mobile communications. Carlos Salinas de Gotari was head of Budget and Planning during the de la Madrid administration of 1982-1988, and he

mentioned then the inefficiency of Telmex service and the need to modernize Telmex. As a candidate for Presidency, Salinas publicly commented on the possibility of privatizing the SOTE. In fact, Telmex itself started a media campaign noting the inefficiency of its service. Once elected President in 1989, Salinas's path to privatization had been paved.

The research indicates that before the privatization of Telmex, the government believed in state intervention and had a corporate culture, but as Salinas took control of the government the Presidency changed. The Salinas government moved toward a government supportive role in telecommunications and privatized Telmex. Domestic capital played a significant role in the privatization of Telmex namely Carlos Slim Helu, the head of Grupo Carso. Fully 35 percent of investment money came from Mexican nationals and the voting power was left in their hands. In fact, it encouraged the nouveau rich of Mexico, Carlos Slim Helu, in particular, to assume a greater stake in the wealth of Mexico breaking the old system. Once ranked 54th in wealth in Mexico, Slim in 1993 was felt to be one of the four richest men in the world in 1994 (Rodriguez, 1995 p. 19).

In "State Intervention" Barrera examines the effects privatization has had on "International organizations, transnational and multinational corporations, labor, and Mexican law and policy" (Barrera, 1995 p.51). In particular, he notes that the transnational and international businesses have benefitted from the privatization. The expansion and modernization of telephony have allowed business, which increasingly relies upon the synchronous and the fast transfer of data, to benefit greatly from these new services. In

addition, it makes it easier for information to flow across country boundaries.

In some regards, the privatization has helped the Telmex Union labor force. Telmex Union members purchased a small portion of stock as well, 4.4 percent share of the controlling interest (Barrera, 1995 p.157). As stockholders, the Union now has access to information about the company that was previously denied. The members are more aware of what technologies are going to be introduced and the goals of the company, and they can generate higher returns from their work. The drawback is that job security is no longer as strong as it once was. Due to modernization efforts it is possible that some types of jobs will be lost. For example, as more switches become automated, the fewer human hands are needed to make the connection. Also, wage freezes and cuts were made to make the company more profitable to draw the investment needed. Labor is already underpaid in this nation, so any cutbacks in laborers pay checks will have somewhat of an effect on their standard of living.

Joseph Straubhaar also examined the restructuring of formerly state-owned telecommunications systems. He used several indicators in his analysis, economic indicators such as gross domestic product, inflation, foreign trade and external debt, and socioeconomic indicators such as population, population growth, literacy, infant mortality, and life expectancy. The telecommunications indicators used were the number of main lines per 100 inhabitants, growth rates, waiting time for service, data connections, telecommunications investment as a percentage of gross domestic capital formation. He provides a synopsis of

telecommunications restructuring in several countries including Mexico (Straubhaar, 1995 p.227).

In general, Straubhaar claims that state owned telecommunications systems tended to provide poor service and penetration rates in rural areas. Many governments aimed to restructure their telecommunications sectors in hopes to improve the service and to raise much needed revenue for the state. The replacement of the older telecommunication systems in Latin America required a lot of funds which the countries did not have.

In Mexico's case, large blocks of stock were negotiated with companies interested in becoming strategic investors or partners with Telmex once it became private. The majority of the voting shares still had to rest in Mexican nationals hands.

Straubhaar cites that this restructuring was possible because of the strong control that then President Salinas had over the Mexican Congress. A deadline for the end of monopoly status was negotiated for Telmex and rates of expansion were set, although the rate has not been very different than before privatization.

Chavolla, Samarajiva and Cho (1995) overview the history of Mexican foreign investment policies, in regards to telecommunications development in Mexico. Treaties, laws, regulations, relevant to foreign investment are analyzed. Only the periods of the state monopoly 1972-1990 and liberalization 1990- present will be reviewed below.

In 1973 a law to promote Mexican investment and to regulate foreign investment was created. It established that the telegraph and the telephone were for the government only while radio and television were meant for the people (Chavolla, Samarajiva and Cho, 1995 p.10). There was an increase in joint venture activity at the time and this helped create employment opportunities, and diversified foreign investment. The President converted stock to voting shares and therefore took control of Telmex. These stocks, called "AA" were to be held by the government 51 percent and the remaining 49 percent of stock was referred to as "A" shares and could be held by Mexican nationals or foreigners. Government appointees made up the majority of the thirteen board members of Telmex. Presidents Salinas and Zedillo were board members at some point before their respective presidencies (Chavolla, Samarajiva and Cho, 1995 p.11).

During this time period, Telmex had to borrow money to expand lines and to improve service. And, despite subsidizing rural telephony with urban telephony, service was still skewed. Discussion of privatizing Telmex began as the external and internal pressures to open the economy built up. In 1989, President Salinas liberalized foreign investment rules, and privatized Telmex in 1990. Citing slow growth and a need for modernization, Telmex was sold to the aforementioned consortium for $609.8 million more than the valued worth of Telmex in 1988 (Chavolla, Samarajiva and Cho, 1995 p.19).

Tariff changes occurred at the outset of privatization. The international long distance rates were cut 40 percent, domestic long distance rates as much as 100 percent, local calls

after a minimum were charged, and local rates went up 620 percent (Chavolla, Samarajiva and Cho, 1995 p.17). According to the authors, the privatization of Telmex served to signify the opening of the Mexican economy and demonstrated Salinas's commitment to modernization.

Telmex was a large and profitable business before privatization. President Salinas's experience and knowledge about the corporation, having previously served as a board member of Telmex, influenced his decision. Prior to Salinas, telephone service was perceived to be sovereign and as such owned by Mexican nationals. However, President Salinas did not believe that telephone service fell under this guideline and since the sale would gain international attention, it would be fairly easy to privatize (Chavolla, Samarajiva and Cho, 1995 p.19).

Universal Service

An overview of universal service is necessary to examine its prevalence in Mexico. Milton Mueller tackles the concept of universal service and its contradictory origins in "Universal Service in Telephone History" (1993). He argues that the origin of universal service stems from an operational definition of the early 1900s when other companies were providing access to telephony in the United States. At this time, AT & T was aiming to have "universal service" in the sense that it wanted all lines to interconnect with AT & T lines so that AT & T could have a wide service including all those that possessed a phone and providing "one company, one service."

At the local level, there were several providers of local telephony only interconnecting with those with the same service. An example today would be that Sprint customers would only be able to connect to Sprint customers, AT & T customers to other At & T customers and so on. Customers from other service providers would not be connected even if all households involved lived near one another. Because the subscribers were in different loops, there was no connection. In fact, some companies had two companies to service their needs.

Mueller contends then that the notion of a telephone for every household has evolved from a "universal service origin" to something all quite different, the notion of a ubiquitous service that allows for interconnections and telephone capabilities in many different, even remote geographical areas.

Patricia Aufderheide also wrote about the issue of modern "universal service" in regards to ubiquity (1987). She discussed the problem in future telecommunications policy due to differing interests of those involved in the United States. For example, most telephone consumers are primarily interested in having plain, old telephone service (POTS) at an affordable price and do not make a lot of long distance telephone calls nor use new technologies such as data transmission, call waiting, caller ID etc. whereas the telephone industries are interested in offering these type of value added services to as many customers as possible. The result is that included in the subscription cost of basic telephony is some portion or charge for these types of services. Because some subscribers want these, it is most cost effective for a company to lay the architecture and technology to be able to provide

them. This cost, in some fashion, does get shifted to the POTS subscriber.

Aufderheide elaborates on this general discussion throughout her paper and calls for the aim for universal service to target "access to and use of telecommunications, its affordable use, and a steady increase in penetration". At the time of publication, "of all US households, at least 8 percent (which tend to be larger than average households) and around a third of poor households in many areas do not even have a phone"(Aufderheide, 1987 p.81-82). Although the statistics are outdated, it is interesting to note that even today, as telecommunications companies in the United States brace themselves for unprecedented competition, the primary concern for many may be POTS. In a nation such as Mexico where POTS is not universal there is reason for concern for privatization. Local service competition generally expanded telephony in the United States. Although it is theoretically possible that future competition in Mexico may cause expansion to grow, Telmex will have a local monopoly for years to come.

Rural Telephony Development

In " Electronic Byways" (1995) Edwin B. Parker and Heather E. Hudson explore the relationship between rural telephony development and economic development. Based on a regression analysis completed in areas of the northwest United States, they drew the conclusion that a relationship does exist. When basic telephony service was made available, there seemed to be an increase in the economic performance of the rural village. If this scenario also holds true for Mexico, more attention to universal service should be given.

Heather Hudson takes universal service a step further. In a presentation she made to Michigan State University in the Fall of 1995, she presented a "Telecommunications Development Report Card" reasoning that there needs to be some standardized manner of evaluating telecommunications development and differing some of these performance indicators based for developing or developed nations. This thesis will use her approach and some of her criteria to evaluate basic residential service in Mexico since the privatization of Telmex. Her criteria, as presented at Michigan State University, are as follows:

- Availability of Service
  - national teledensity
  - teledensity in cities over x million
  - teledensity in rest of country
- Quality of Service
  - average length of time to obtain service
  - average time to repair service:
    urban and non urban
- Price of installation
  - as percentage of average annual per capita income
- Monthly connection charge
  - as percentage of average monthly per capita income
- Price of a three minute 100 km and 500 km calls
  - as percentage of average monthly per capita income
- Mobile communications

- percentage of land area covered by mobile services

- percentage of population covered by mobile services

♦ Internet Access

- number of Internet gateways per million populations

- percentage of universities with Internet connection

The privatization of Telmex met the government's goals to draw the funds needed to modernize infrastructures and to enable Telmex and others to import telecom equipment with lower tariffs through the NAFTA. Telecommunications technologies are now more available, but only affordable for a few. The data to support this thesis will be presented in the next chapter.

CHAPTER IV

FINDINGS

Data collected from Telmex Annual Reports of 1990 and 1994, along with data from the ITU's World Telecommunications Development Report of 1994, are used in this chapter to examine the performance of Telmex since the restructuring. Mexican telecommunications performance is compared, when possible, to the performance of other nations such as Argentina, Chile and Korea. These nations experienced telecommunications restructuring as well.

1. Availability

According to Hudson's criteria for availability of service, the national teledensity, teledensity in cities of a certain size, for example 2 million, and the teledensity in the rest of the country should be examined. While the International Telecommunications Union does not perform a breakdown of cities by 2 million, it does provide telephone penetration rates for the country, the largest city, and the rest of the country. These statistics are shown below.

The 1994 International Telecommunications Union reports the teledensity of a nation in terms of the largest city in that nation and the teledensity of the country overall. This is important to examine. The overall telephone penetration level of a nation does not give a clear picture of the distribution of lines within a country, only an average. The overall level includes the largest city as well as the rural areas. In general, the overall teledensity level may suggest a much higher distribution level for the nation and mislead developers. The largest cities are typically more modern, have better access to services and have higher telephone penetration levels than the rural areas. By comparing the largest city, the rest of the country,

and the overall level, a more accurate reflection of the distribution of telephone service within a particular nation is given.

Teledensity

The teledensity of the nation (main telephone lines per 100 inhabitants) includes the rural and the urban areas and generally suggests the availability of basic telephone service. Argentina stood at an overall teledensity of 11.12, Korea 36.34, Mexico 7.54 and Chile 8.92 based on 1992 figures reported to the ITU. **Korea certainly had the highest telephone penetration rate. Mexico proved to have the smallest out of the four nations examined.**

Examining the teledensity of the largest city in each nation versus the teledensity of the rest of the country, a more accurate reflection of the distribution of telephony is apparent. Figure 3 indicates the national teledensity, the teledensity of the largest city and the rest of the country for Argentina, Korea, Mexico and Chile. All nations had higher levels of telephone penetration in their largest cities: Argentina 17.99, Korea 51.34, Mexico 12.08, and Chile with 14.64. After excluding the largest city, the rates are 7.74 for Argentina, 32.08 for Korea, 6.54 for Mexico, and 6.17 for Chile. The Latin American countries have similar urban-rural distributions while Korea is far ahead of them in providing telephony services. In terms of reaching areas outside of the largest city, Mexico appears to be only slightly ahead of Chile in 1992.

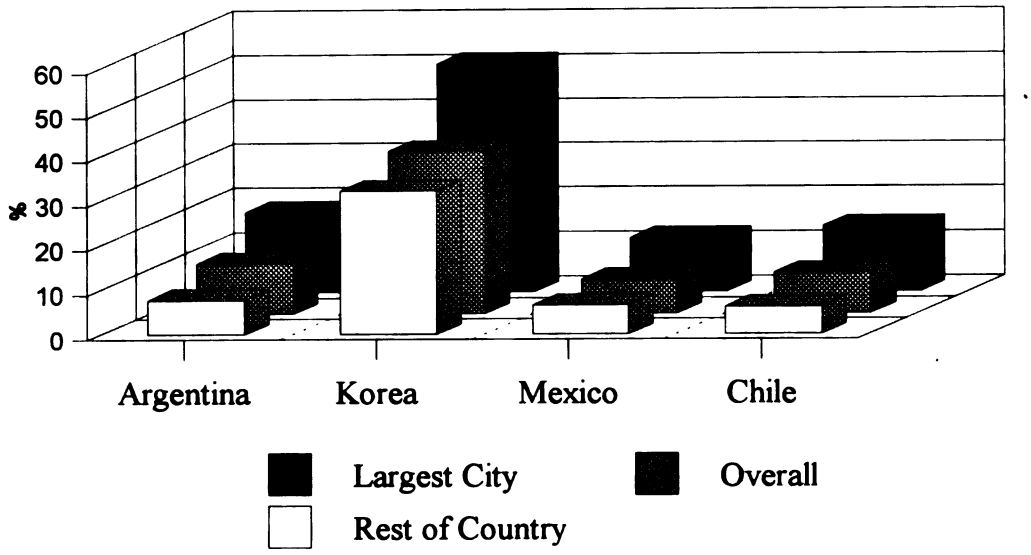

Figure 3: Teledensity Per 100 Inhabitants

Regional Distribution

The International Trade Authority reported the skewed penetration of local services in Mexico. Local services are divided into three regions: "Communications infrastructure is most advanced in the Metro and North regions; the South has only 29 percent of all local lines, compared with 45 percent of the country's population" (McCullough, 1995 p.4).

Although Telmex wired more villages previously unserved, more effort and investment are needed to bring the rest of the nation up to the teledensity level of Mexico City. In fact, Telmex reported that 44 percent of all lines are located in three large cities: Mexico City, Monterrey, and Guadalajara (Telmex 20-F, 1994 p.4). These three cities, home to an

estimated 24.6 million people out of 90 million, receive a disproportionate number of lines (Academic American, 1995).

Pay phones

Legislation required Telmex to provide at least one telephone or agency for long distance services in every village with at least 500 inhabitants (Telmex Annual Report, 1994 p.10). Telmex chose to do this by installing pay phones. Table 3 shows the number of communities reached by service from 1987- 1994 (Telmex Annual Reports, 1990 and 1994). The average rate of expansion from 1986-1990 was 17 percent and after privatization, from 1991-1994, 19 percent. Although an increase, **this is not a striking difference.**

Table 3: Number and Increase in Communities Served

Year	1986	1987	1988	1989	1990	1991	1992	1993	1994
Number	5693	6069	6172	7320	10221	12914	15783	18281	20447
Increase	n/a	6.6	1.6	18.6	39.6	26.3	22.2	15.8	11.8

Chile's regulations, on the other hand, stipulated that a phone be provided for every 50 inhabitants by 1997 (Stehmann, 1995 p.677). This requirement suggests that regulators were more concerned about universal service issues compared to the Mexican regulators. The requirement that Telmex provide all towns with at least 500 inhabitants was met by 1994

and Mexico now has a pay phone density 2.4 pay phones per 1000 inhabitants. The Mexican government has maintained that Telmex must go further with providing public pay phones and must reach a rate of 5 pay phones per 1000 inhabitants by 1998 (Telmex 20-F, 1994 p.12). Pay phone development is measured by the International Telecommunication Union and comparisons between Chile, Argentina, Mexico and Korea can be made.

The 1994 International Telecommunications Union World Telecommunications Report collected information from many nations on their pay phone development. As demonstrated in the figure below, in 1992 the proportion of pay phones per 1000 inhabitants in Mexico was virtually the same as in Chile and somewhat greater than Argentina. **Korea was ahead of all three nations with a rate of 6.23 pay phones per 1000 inhabitants. Even if Telmex reaches its 5 pay phones per 1000 inhabitants goal by 1998, Mexico will still be behind Korea. In essence, eight years after privatization, Telmex will not even equal the penetration level reached by Korea six years earlier.**

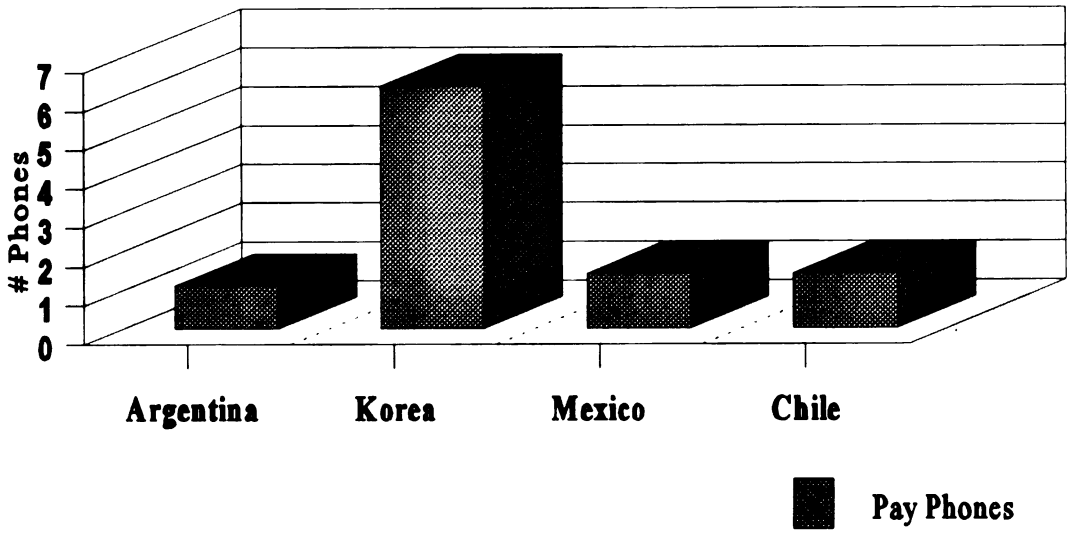

Figure 4: Pay Phones per 1000 Inhabitants

2. Affordability

While ITU figures give an average of the cost of obtaining basic telephone service in a nation, they cannot relate the costs in regards to the affordability of service. Heather Hudson urges that the cost of installation and the monthly subscription be calculated and reported in terms of the percentage of GDP that must go toward that service. The author calculated these statistics for each nation where information was available.

Residential Installation

Figure 5 below shows that proportionally, Mexicans, at 13 percent, and Argentineans, at 11 percent, are paying more for their residential installation compared to Korea at less than 2 percent. This may be due, in part, to the higher gross domestic product of Korea.

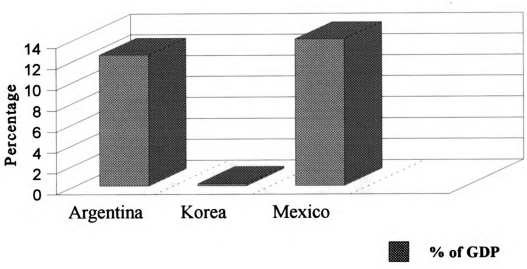

Figure 5: Residential Installation Cost as a % of Real GDP Per Capita

Monthly Service

As Hudson recommended, the monthly service charge as a percentage of per capita income was calculated for Mexico, Argentina, and Korea. The monthly rate for residential service as a percentage of per capita income shows similar results as the residential installation fee. Again, Mexicans and Argentineans paid a higher percentage of their per capita income to subscribe for monthly service. Figure 6, on the next page, shows this disparity.

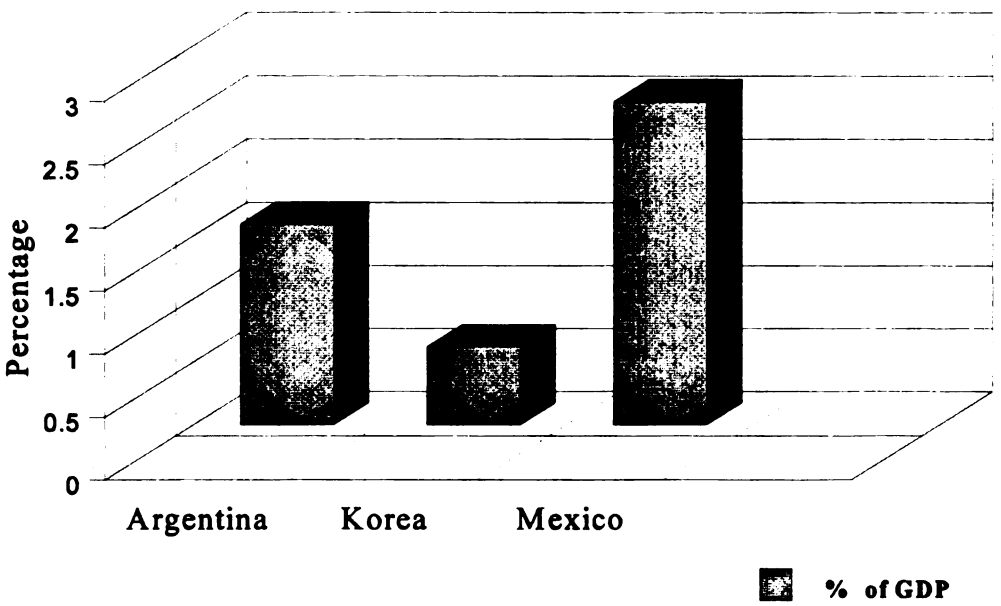

Figure 6: Monthly Subscription as a Percentage of GDP

Wages

For a more in-depth examination, the author used the minimum wages in Mexico to calculate the percentage of income used for monthly service in the following section. To discuss any wages in Mexico, a description of the wage structure must be provided to clarify and better interpret the costs of basic telephony service in Mexico. First, the informal and formal employment sectors will be discussed.

Informal Sector

The informal sector, made up of street vendors and day laborers, or any employment where an employee does not have a written contract with the employer and is not protected by Mexican wage laws, is estimated to be 25 -30 percent of the urban Mexican population (Roberts, Hyatt, and Dorman, 1995 p.15). One survey indicated that "fewer than one fourth of all employees in its small business sample had a written contract, and just over one-tenth were registered for social insurance. In addition, researchers found that almost half of all Mexican workers were paid at sub minimum wage standards in the late 1980s. Lastly, a relationship between low wages and employment in the informal sector has been documented (Roberts, Hyatt, and Dorman, 1995 p.13). These findings indicate that many Mexicans may not be able to afford basic telephone service.

While the monthly subscription of basic telephone service in Mexico seems inexpensive at $7 dollars a month, that may not be the case for a number of Mexicans. Mexican salaries are based on a minimum wage.

Minimum wages

The minimum wage is set by the Federal Government in Mexico City, with the country divided into three geographic regions. In general, one region covers the north, one the central metropolitan region and the third, the southeast. These areas will be referred to as Area A, Area B, and Area C. In 1992, the official average minimum wage for Mexican workers in Area A was N$13.33, in Area B N$12.32, and in Area C N$11.11(FISTPAC, 1996 p.1)

Adjusting for dollars at the official Average Annual Exchange Rate (new pesos) of $3.09, the daily wage was approximately for Area A $4.31, Area B $ 4.0, and Area C $3.60 for an eight hour day of work (Grayson, 1994 p. 35).

Calculated for a 40 hour work week for one month, the wage would be $86.20 for Area A, $80.00 for Area B, and $72.00 for Area C. Figure 7 shows the percentage of this monthly income that would go towards the monthly subscription of a telephone.

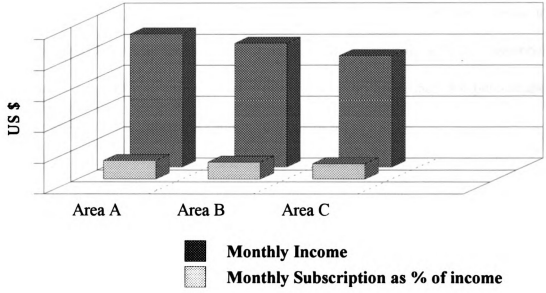

Figure 7: Monthly Subscription as a % of Mexican Minimum Wage

Although looking at minimum wages does not give a true picture to the actual benefits of holding a full time job, such as other possible benefits, it is standardized. By looking at the minimum wages in Mexico in comparison to the monthly subscription rate of basic telephone

service, it becomes more clear that under the current wage and pricing structure, it is doubtful that Telmex will achieve a comparable rate of telephone penetration as Korea.

Cost of Service

Telmex increased the cost of basic telephone service before privatization to generate more revenue as mentioned earlier. Since the privatization in 1990, this trend has continued. In 1993, the nominal installation charges and nominal monthly rent increased 10 percent and 24 percent respectively. The nominal installation charge and measured services charges increased another 8.7 percent and 9.3 percent respectively in 1994 and the increase in monthly rent totaled 24 percent for residential service. After the peso devalued in December of 1994, Telmex decided to increase residential monthly rates an additional 18.6 percent and measure service charges 10 percent (Telmex 20-F, 1994 p.3).

Previously, the long distance revenues Telmex helped to subsidize the local telephone service. In 1996, Telmex will face competition for long distance service and with competition in mind, Telmex moved to decrease its reliance on long distance service as the premiere revenue generator. So, Telmex had to increase the cost of basic residential telephone service to avert potential revenue fall out as competition moves into Mexico.

In most cases that would not spell disaster if the wages in Mexico increased. They have not. In fact, Mexicans, in general, are living a lower standard of living in 1995 than in 1980s when Mexico was going through an economic crisis. While that is true of today, the

government, which set wages, made agreements with companies to keep wages low during the Salinas administration (1988-1994). This was due in part to the upcoming Free Trade Agreement with the United States. The low wage was seen as Mexico's comparative advantage (Economic and Business Overview, 1995 p.6).

In the wake of the recent peso devaluation, most Mexicans are struggling to survive. The government cut back on services and issued an austerity plan aimed at cutting costs and increasing savings. The plan was summarized in April of 1995 to

> "raise fuel prices by 33 percent and residential utility rates by 20 percent, limits the minimum wage increases to 10 percent, which based on the government's projection of a 42 percent inflation rate in 1995, will inflict a 18 percent decline in buying power on minimum wage workers. Government action also pushed interest rates on consumer credit up to 125 percent"(Wheat, 1995 p.9).

The likelihood that Mexicans will be able to subscribe to basic residential telephone service during this crisis seems unlikely without either a significant wage increase or price decrease from Telmex.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

This chapter will summarize the data collected for the study and answer the two research questions stated in Chapter Two. Specifically, this thesis set out to investigate the accessability of basic residential telephony and to investigate the affordability of basic residential service since the privatization of Telefonos de Mexico S.A.. Recommendations for further reasearch will be given.

1. Accessability

Telephone expansion has occurred in Mexico over the past six years. In 1994 there was an 11.8 percent increase in the number of communities served (Telmex Annual Report, 1994 p. 10). However, the rate of expansion before and after privatization has not changed significantly. The privatized Telmex committed to expanding service at 12 percent a year, similar to the rate of expansion before privatization, and to expanding service to all towns with at least 500 inhabitants by 1994. Telmex has accomplished these goals.

What is not known is how the regulators formed these goals and exactly who participated. Further research into this aspect of the privatization is needed in order to better asses whether the goals set were actually challenging for Telmex. **The data gathered for this thesis suggest that the levels set by the Mexican regulator were difficult not to meet. At the current target rate of expansion, Mexico will only reach an overall teledensity of 12.49 by the year 2000, one- third of the rate Korea had in 1993 (ITU, 1994 p. A-59).**

The data collected also show that despite this expansion, the distribution of telephone service is still skewed toward urban areas as shown by Figure 3 illustrating Teledensity (p.38). It appears that the achievement of universal service was not a goal of the privatization. If the distribution of basic telephone service follows the pattern of distribution of other public utilities discussed in Chapter I (p.4-10), it is questionable whether Mexico will ever achieve universal service, or even service resembling that of Korea.

Also, there is little incentive on the part of Telmex to continue to wire smaller villages. As noted in the Telmex Annual Report of 1994 " The provision of service to rural areas has not been a profitable activity for the Company, and management does not expect it to become profitable" (p. 5). The company admits that it has little incentive to distribute lines more equitably and will only wire villages or areas that are profitable. If only a few Mexicans can afford to call to the metropolitan centers, telephony may be deemed as unnecessary. Therefore, the expansion of basic residential lines outside major metropolitan areas may come only after the introduction of competition against the present monopoly or by a strong government with an enforceable, challenging government decree .

It is possible that other providers, if allowed to compete in local service, may establish wireless options to reach remote regions. However, until substantial competition arrives, pay phones are the only option: government regulation requires Telmex to provide at least 5 pay phones per 1000 inhabitants by 1998 (Telmex 20-F, 1994 p.12).

Since public pay phones are the main mode of accessability to basic telephony, the following questions remain to be investigated:

1. Smart Card Equipped phones- Telmex's Annual Report (1994) stipulated that most new pay phones that have been installed use "smart cards". These cards are bought for a set amount of money (N$10 pesos, N$20 pesos, N$50 pesos) and inserted into a telephone like a debit card. If a phone is set up to use smart cards it can not accept coins. It would be interesting to investigate the distribution of these cards. Where are these cards purchased? How frequently is the supply replenished and in what monetary amounts are they sold ?

2. Location of pay phones- Exactly where is the pay phone or the phone to be used in each village placed? For example, are these phones placed in public locations that are easily accessible? Although the pay phones are provided by Telmex, a private company, is there any relationship between the politics of the towns that have service?

3. Towns with fewer than 500 inhabitants- Is there an attempt to provide pay phone service to towns with fewer than 500 inhabitants? How can villages with less than 500 inhabitants get service: can they pay a fee?

Additional questions related to public access include:

a. Wireless telephony - To what extent is wireless service being considered for basic residential telephone service for rural areas by Telmex?

b. Emergency service- Is there a cost to place emergency calls for rural areas? Is emergency telephony service available for towns with less than 500 inhabitants?

4. Privatization Goals- An assessment of the goals set by the government needs to be made.

2. Affordability

The data presented earlier showed that telephone service is costly for many Mexicans. Even if Telmex can provide the expansion of lines, can Mexicans afford the service?

The financial data presented in the previous chapter was reported before the peso devaluation of 1994. If the Mexican economy remains in a recession, it becomes even more difficult for Mexicans to afford basic telephone service.

Currently, many individuals are unemployed and / or under employed. Although estimates vary, at least 2.3 million Mexicans have lost jobs since December of 1994, 21.5 million people work in the informal economy, and 15.2 million are formally employed (Taylor,

1995 p.1). The ability to save to pay the installation cost, around $600 dollars, for residential service will be difficult (DePalma, 1995, D8). And, the rate increases that have occurred make it more difficult for a household to afford the service once installed. The cross subsidies that once helped the rural areas afford service are now gone.

In addition, the long distance competition that Telmex faces in 1997 from companies like AT & T, MCI and Sprint is significant. Will Telmex survive? After six years of privatization, the company has improved the expansion of lines, but many Mexicans are frustrated with the service of Telmex. Rates for residential areas have increased. As details of the privatization become clearer, Telmex's public image may be in jeopardy. Former President Salinas's modernization policies are in question. Many Mexicans blame him for the devaluation. Because it was Salinas's decision to privatize Telmex, the public image of the company is at risk.

As competition increases for long distance service, however, there may be a decrease in the long distance rates causing some Mexicans to better afford long distance phone calls to larger metropolitan areas. While this may prove positive for those Mexicans with relatives in urban areas or in the United States, it also may make emergency medical service calls more affordable for rural residents trying to reach the medical community in the urban areas. The affordability for long distance service for residential customers therefore may become more affordable.

However, the affordability of local basic residential telephone service may be out of reach for many Mexicans. The relative cost of a residential telephone may prohibit some from owning a telephone. And, it may be that some villagers may not see the need for owing a home phone or calling within the local areas. Therefore, the cost of local service will be high due to fewer users. An increase in the affordability of this local service will only be seen if either Telmex reduces the local basic residential rates and installation costs or an increase in income is realized for many Mexicans.

The following questions may need to be considered to enable Mexicans to afford basic residential telephone service.

1. Pay for service rendered -Are residential customers currently paying for the increase in costs due to the digitization of lines needed by business and large users?

2. Methods of payment- Can vouchers be used to offset costs or installation fees paid in installments rather than in one lump sum?

This thesis has investigated the accessability and affordability of basic residential telephone service in Mexico since the privatization. While some improvements in the expansion and accessability of service have occurred, it has become increasingly difficult for Mexicans to afford basic residential telephone service. This is in part due to the increase in

cost for service and in part due to the poor performance of the Mexican economy since 1994. It appears that significant increases in basic residential telephone service will most likely continue to be skewed in favor of urban areas where Mexicans are able to afford the service and Telmex is interested in providing the service. The prospect of universal service looks doubtful: rural areas will most likely remain under served.

LIST OF REFERENCES

LIST OF REFERENCES

Academic American Encyclopedia. Groiler: 1995.

Adler, Emmanuel. "Three Strategies for Managing Science and Technology". The Power of Ideology.(pp.52-82). Berkeley, CA.: UC Press, 1987.

Americas Telecommunication Indicators. International Telecommunication Union. Geneva:1994.

Aufderheide, Patricia. "Universal Service: Telephone Policy in the Public Interest." Journal of Communication. Winter 1987:81-96.

Awkule, Raymond. Global Telecommunications The Technology, Administrations, and Policies. Massachusetts, Butterworth-Heinemann:1992.

Bagchi-Sen, Sharmishta and Parthavi Das. "Foreign Direct Investment by the U.S. Bells."In Mody, B., Bauer, J.M. and Straubhaar, J.D., (Ed.), Telecommunications Politics (pp. 85-111). Hillsdale, NJ: Lawrence Erlbaum Associates, 1995.

Barrera, Eduardo."The Role of Domestic Capital in Latin America." In Mody, B., Bauer, J.M.and Straubhaar, J.D., (Ed.), Telecommunications Politics (pp.135-163). Hillsdale, NJ: Lawrence Erlbaum Associates, 1995.

Barrera, Eduardo. "State Intervention and Telecommunications in Mexico." Journal of Communications. Autumn 45(4) 1995:51-69.

Barry, Tom. ed. Mexico A Country Guide. New Mexico. The Inter-Hemispheric Education Resource Center:1992.

Baur, Cynthia. "The Foundations of Telegraphy and Telephony in Latin America". Journal of Communications, Autumn 1994:9-23.

Bernier, Paula. "NAFTA Could Create Telecom Field Day for U.S. Firms Looking to Invest" Telephony 29 November 1993.

Brown, Lori Hylton. Industry & Trade Summary: Telecommunications Equipment. Washington DC. USITC Publication 2820, 1994.

Carroll, Paul B. "Taking on Telmex." The Wall Street Journal. 20 March 1995:R22.

Carroll, Paul B.. "Mexico Rejects Phone Market Entry Fees." The Wall Street Journal. 12 April 1995:A11.

Catanada, Jorge G. "Can NAFTA Change Mexico?" Foreign Affairs. September/October, 1993. In Paul Goodwin (Ed.). Latin America. Sixth Edition. (1994) Connecticut: Dushkin, 1994.

Chavolla, Lilia Perez, Rohan Samarajiva, and Sungwoon Cho. "A Politico-Economic Analysis of Mexico's About-Face on Foreign Investment in Telecommunications" Presented at the Communications Technology Division, International Communication Association's 45th Annual Conference, Albuquerque NM, May 1995.

Cleveland, Harlan. "Twilight of Hierarchy". In The Passing of Remoteness? Information Revolution in the Asia-Pacific. Jussawalla, Wedemeyer & Menon (eds). Singapore: Inst. of Southeast Asian Studies, 1986.

Cook, Maria Lorena, Kevin J. Middlebrook, and Juan Molinar Horcasitas. The Politics of Economic Restructuring. Cook, Middlebrook & Horcasitas (eds). Center for U.S.-Mexican Studies, UCSD,1994.

Crespo, Mariana. "Telmex: Slim's Pickings. "Fortune. 3 January 1995:20.

DeLottinville, Paul. "Telecommunications in South and Central America" Datapro Reports on International Telecommunications. New Jersey: McGraw-Hill,1993.

DePalma, Anthony. "Telmex in Competition, So Far Just With Itself" The New York Times. 18, July 1994:D1-D8.

Dwivedi, O.P. Development Administration; From Underdevelopment to Sustainable Development. Macmillian Press Ltd. London 1994.

Economic and Business Overview: Mexico. The Mexican Investment Board. New York:1995.

Estabrooks, Maurice. Electronic Technology, Corporate Strategy, and World Transformation. Quorum Books, Westport, Connecticut. 1995.

Fedarko and Lopez, "His Brother's Keeper". Time 5 December 1995:84.

FISTPAC. *Salarios Minimos Generales Y Profesionales Vigentes A Partir Del 1o. De Enero De 1996.* (General and Professional Minimum Wages from January 1, 1996) Mexico:1996.

Forbes-Jamieson, Doug. "Mexico The Commercial and Regulatory Environment." In Datapro Reports on International Telecommunications. NJ: McGraw, 1995:251-256.

G-7 Ministreal Conference on the Information Society Theme Paper. Brussels, 27 January 1995.

Galarza, Pablo and Joel Millman. "The Americas." Forbes. 5 July 1993:68-77.

Galceran, Ignacio and Berry, Jon. "A New World of Consumers". American Demographics March 1995.

Gonzalez-Manet, Enrique. Informatics and Society. New Jersey: Albex Publishing, 1992.

Goodwin, Paul. Global Studies, Latin America. Connecticut, Dushkin:1994.

Grinspun, Ricardo and Maxwell A. Cameron. The Political Economy of North America Free Trade. St. Martin's Press, New York, 1993.

Grayson, George W. A Guide to the 1994 Mexican Presidential Election. Washington DC: CSIS Americas program, Mexico project, 1994.

Hikino, Takashi and Alice H. Amsden."Staying Behind, Stumbling Back, Sneaking Up, Soaring Ahead: Late Industrialization in Historical Perspective". In W.J. Baumol et al ed, Convergence in Productivity. NY:OUP, 1994.

Hoover's Handbook Database. Austin, Texas: The Reference Press Inc. 1995.

Hudson, Heather. "Towards a GII: Closing the Telecommunications Gap in the Developing World." Paper presented at Michigan State University, December 1994:8.

Hudson, Heather E. and Edward B.Parker. Electronic Byways: State Policies for Rural Development Through Telecommunications. Washinton DC: Aspen Institute, 1995.

Human Development Report 1995. Published for the United Nations Development Program. Oxford University Press:New York, 1995.

Irwin, Manley R. and Michael J. Merenda. "Corporate Networks, Privatization and State Sovereignty: Pending Issues for the 1990s?" Telecommunications Policy. December 1989:329-335.

Jones, R.J. Barry. Globalization and Interdependence in the International Political Economy: Rhetoric and Reality. Pinter Publishers, London, 1995.

Kay, Roger L.. "Making the Mexican Connection; One Year Later". Computerworld. 19 December 1994:63-65.

Keohane, Robert O.. After Hegemony Cooperation and Discord in the World Political Economy. New Jersey, Princeton:1984.

Kootnikoff, Lawrence. "Free Fall in Mexico." US/ Latin Trade. February 1995:26-30.

Landau, Saul. "The Mexico Myth." The Washington Post Weekly Edition. 20-26 November 1995: 20-26.

LaRose, Robert and Jennifer Mettler. "Social and Antisocial Uses of the Telephone: An Exploration of Social Learning Explanations of Personal Telephone Behavior" Paper Presented to the International Communications Association. Dublin, Ireland. June 1990:7.

Levine, Jonathan B.. "For Emerging Countries, Cellular is No Luxury" Business Week 5 April 1993.

Market Access. The U.S. Embassy in Mexico, 1994.

Mexican Telecom Market Access. Canadian Embassy, 1992.

McCarthy, Clare." Mexico: The Commercial and Regulatory Environment." In Datapro Reports on International Telecommunications. NJ: McGraw, 1993.

McCullough, Stephanie. "Mexico- Telecommunications Market". International Trade Administration. US Department of Commerce.

McKinley, Terry and Diana Larcon."The Prevalence of Rural Poverty in Mexico." World Development. Great Britain: 1992:1575-1584.

Millman, Joel and Lisa Brasten. "The Americas:Mexico." Forbes. 18 July 1994:186-195.

Mody, Bella. "The Changong Role of the State. " In Mody, B., Bauer, J.M.and Straubhaar, J.D., (Ed.), Telecommunications Politics (pp. 179 -197). Hillsdale, NJ: Lawrence Erlbaum Associates, 1995.

Moffett, Matt. "Rewiring a Nation" The New York Times 19 February 1992, eastern ed..A6.

Morrison, Scott."Call Waiting" U.S./ Latin Trade June 22-24, 1995.

Mueller, Milton. "Universal Service in Telephone History." Telecommunications Policy. July 1993:352-369.

Nairn, Allan. "After NAFTA: Chiapas Uprising." Multinational Monitor. January/February 1995:6-9.

Norvell, Scott. "Telecommunications The Dawn of a New Era" U.S./ Latin Trade. August 1995:60-65.

O'Brien, Bob and Dolores Kazanjian. "Telefonos de Mexico: initiatives to upgrade the national infrastructure." Telecommunications. December 1993:47-49.

O' Shea, Dan. "MCI ventures into Mexico." Telephony. January 31, 1994:8-9.

Payne, Douglas W. "Mexico and Its Discontents." Harper's Magazine. April 1995:68-74.

Petrazzini, Ben. The Political Economy of Telecommunications Reform in Developing Countries. London: Praeger. 1995.

Rigdon, Joan E. and Craig Torres. "Motorola and Mexico's Protexa Set Cellular-Phone Joint Venture" The Wall Street Journal 15 January 1994.

Robberson, Tod. "Mexico's Hang-up", The Washington Post 17 May 1993. A16.
Roberts, Karen, Doug Hyatt, and Peter Dorman. "The Effect of Free Trade on Contingent Work in Michigan". March 1995.

Robertson, Douglas S. "The Information Revolution". Communication Research, 1990, 17, 2:235-254.

Rodriguez C., Rafael. Operacion Telmex. Mexico City: Gribjalbo. 1995.

Romo Garza, Alfonso. An Advertising Supplement to the Washington Post National Weekly. 16-22 October:1995:M2.

Ruiz-de-Chavez, Salvador and Jose S. Mendez-Morales."The Economic Evolution of Mexico 1982-1995 and the North American Free Trade Agreement"1995, Prepared for the 1995 American Accounting Association Distinguished International Visiting Lecturer Tour. East Lansing, MI. Michigan State University. March.

Samarajiva, Rohan & Peter Shields."Integration, Telecommunications and Development: Power in the Paradigms". Journal of Communication, 1990, 40,3:84-105.

Sinclair, John."Dependent Development and Broadcasting: the Mexican Formula". Media, Culture, and Society, 1986, Vol 8:86-101.

Smith, Geri. "Will Telmex be Left on Hold?."Business Week. 8 May 1995.

"Southwestern Bell". Datapro Reports on International Telecommunications. New Jersey: McGraw-Hill: September 1992.

Straubhaar, Joseph. "From PTT to Private: Liberalization and Privatization in Eastern Europe and the Third World. " In Mody, B., Bauer, J.M. and Straubhaar, J.D., (Ed.), Telecommunications Politics (pp. 3-30). Hillsdale, NJ: Lawrence Erlbaum Associates, 1995.

Straubhaar, Joseph, Patricia K. McCormick, Johannes M. Bauer, and Consuelo Campbell. "Telecommunications Restructuring: The Experience of Eight Countries." In Mody, B., Bauer, J.M. and Straubhaar, J.D., (Ed.), Telecommunications Politics (pp. 225- 248). Hillsdale, NJ: Lawrence Erlbaum Associates, 1995.

Stehman, Oliver. "Network Liberalisation and Developing Countries". Telecommunications Policy. Vol. 19, No. 9, 1995:667-684.

Summa, John. "Mexico's New Super-Billionaires." Multinational Monitor. November 1994:24-26.

Taylor, Marisa. "Black Market Blues". Mexico Business. September 1995.

"Telmex, Sprint form Alliance." Facts on File, 22 December, 1994. V54 n2821:965.

Telmex Annual Report 1990. Telefonos de Mexico S.A. de C.V.: Mexico City, 1990.

Telmex Annual Report 1994.Telefonos de Mexico S.A. de C.V.: Mexico City, 1994.

Telmex 20-F for 1994. Securities and Exchange Commission; Washington DC, 1995.

Torres, Craig. "Telmex Monopoly to Face Fight From Wealthy Mexican Investor." The Wall Street Journal. May 3, 1994:A10.

Torres, Craig and Paul R. Carroll. "Mexico's Mantra for Salvation: Export, Export, Export." The Wall Street Journal. 17 March 1995:A6.

Velasquez, Sonina. "Motorola" DataPro Reports on International Telecommunications. 1995, McGraw-Hill: January.

Vissepo. Dario "Telecommunication in Mexico and the North American Free Trade Agreement; a Retrospective", 1994.

Wheat, Andrew. "The Fall of the Peso and the Mexican "Miracle"." Multinational Monitor.April 1995:8-15.

World Development Report 1994 Infrastructure For Development. The World Bank. Oxford:New York:1994.

World Telecommunications Development Report 1994. International Telecommunications Union. Geneva:1994.