



COUNTRY STUDIES

Mexico - Regulatory Reform in the Telecommunications Industry 1998

Introduction

The Review is one of a series of country reports carried out under the OECD's Regulatory Reform Programme, in response to the 1997 mandate by OECD Ministers. This report on regulatory reform in the telecommunications industry in Mexico was principally prepared by MM. Darryl Biggar and Patrick Hughes for the OECD.

Overview

Related Topics

BACKGROUND REPORT ON

REGULATORY REFORM IN THE TELECOMMUNICATIONS INDUSTRY*

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1. THE TELECOMMUNICATIONS SECTOR IN MEXICO

1.1. *The national context for telecommunications policies*

1. In the past ten years, the regulatory regime in the Mexican telecommunications sector has undergone significant reform as part of a broad-based effort designed to move away from protection and central control toward a market-based economy. This reform has transformed the telecommunications sector from a state-owned monopoly industry with relatively weak performance, to a sector increasingly reliant on competition to deliver benefits to users and consumers. To date the reform has led to significant growth in competition in long-distance telecommunications services and has laid a foundation for competition in local services.

2. The telecommunications sector in Mexico, with around \$US 7.6 billion in revenue is the 12th largest in the OECD, ranking slightly behind the Netherlands (\$US 7.9 billion) and slightly ahead of Sweden (\$US 6.9 billion).¹ Telmex, the incumbent telecommunications operator in Mexico, is the 20th largest telephone carrier in the world (10th largest outside the U.S.), roughly comparable in size to KPN in the Netherlands, and a bit larger than Bell Canada and Telia of Sweden.² Telmex is one of the largest companies in Mexico, representing 25-30% of the Mexican stock market's capitalisation.

3. In 1990, many performance indicators for the telecommunications sector in Mexico showed significant room for improvement: telephone penetration in 1990 was about 6.4 lines per 100 persons, the density of public payphones was 0.5 per thousand inhabitants, the percentage of network digitalisation was 29%, and the waiting time for new line installation was two years.³ Over the subsequent eight years, substantial progress was made. By 1997, the density of public payphones was 2.7 per thousand inhabitants,⁴ the waiting time period for a new line was 27 days (substantially less in Mexico City), and 96.7% of the Mexican network was digitalised.⁵

4. This progress was made in spite of several adverse macroeconomic factors, including lower-than-average GDP per capita,⁶ high population growth, a skewed income distribution and, most importantly, a substantial macroeconomic shock in 1995.

5. In part as a result of these adverse factors, Mexico's penetration of telecommunications access lines per capita remains very low. In 1997, there were only 9.8 access lines per 100 inhabitants in Mexico,⁷ almost half the next-lowest of 19.4 in Poland, and well below the OECD average of 48.9 lines per 100 inhabitants.⁸ Furthermore, prices for telecommunications services in Mexico remain relatively high. According to the OECD basket methodology, prices for telecommunications services in Mexico are among the highest in the OECD.⁹

6. In the past few years many key steps have been taken to establish a regulatory regime in Mexico setting out the framework for competition in the telecommunications industry. Virtually all telecommunications markets are now open to competition and in some markets competition has developed rapidly. In the long distance market new entrants gained market share more quickly than in many other OECD countries. In the medium term, with certain adjustments to the existing regulatory regime, the challenges Mexico faces, such as low penetration, present significant opportunities for the growth of rival networks, and the further development of network competition, to the ultimate benefit of Mexican users and consumers.

1.2. General features of the regulatory regime, telecommunications market and market participants

1.2.1. Brief history

7. Prior to 1990, telecommunications were provided by a monopoly incumbent, Teléfonos de México (“Telmex”) which was nationalised in 1972.¹⁰ Throughout the 1970’s and 1980’s, the government maintained a controlling interest, but partial private ownership remained and Telmex shares were quoted and traded on the Mexican stock exchange. During this period, the quality of service provided by Telmex was very poor and penetration rates were low.

8. In 1988, the Mexican government embarked on a major investment to expand and modernise the network in preparation for privatisation, and later, the opening of competition. Important events in the history of regulatory reform are outlined in Box 1.

9. In 1990, Telmex was partially privatised. The government sold a controlling interest to a consortium led by a Mexican conglomerate, Group Carso, and including Southwestern Bell and France Telecom as foreign partners.¹¹ As part of the privatisation, Telmex was granted a new concession containing many important provisions that established the foundation of a new regulatory regime for telecommunications in Mexico. The concession was granted for 50 years, from the date of the original concession, 10 March 1976. The new concession expires in 2026.

10. The concession includes provisions relating to universal service, price controls, quality of service, competition safeguards, and rules regarding accounting separation. The concession maintained a monopoly for Telmex in long distance and international telephony until August 1996, to allow Telmex time to achieve network expansion targets and to “rebalance” its rate structure – *i.e.*, reduce long distance rates and increase local rates in a revenue neutral fashion.

11. The concession was not exclusive in regard to other services. Entry into wireless, paging, trunking, VSAT networks, customer premises equipment and value added services was permitted. Entry into local service was also permitted, but no concessions were granted.

Box 1. Important events in the regulatory reform of the telecommunications sector

- In August 1990, the *Secretaría de Comunicaciones y Transportes* (SCT) agreed to a new concession for Telmex, providing Telmex with a monopoly in domestic and international long distance until 1996.
- In October 1990, a new regulatory framework (*Reglamento de Telecomunicaciones*) was adopted which spelled out SCT's responsibilities and provided for the grant of new concessions in all areas except those reserved for the government.
- In 1993 the Foreign Investment Law enhanced foreign investment participation in the telecommunication sector. Foreign investment of up to 49% ownership of capital stock of operators of a fixed network was permitted. Higher levels of foreign investment were permitted in cellular carriers, provided a favourable resolution from the National Commission of Foreign Investment was obtained.
- On 1 July 1994, SCT published a resolution on how interconnection agreements between long distance carriers and the incumbent were to be established. The same resolution established a calendar for the opening of equal access competition, beginning with 60 cities in 1997, and spreading to the whole country by 2000. The resolution also established that interconnection would be cost-oriented and in line with international norms and benchmarks.
- In March of 1995, the Mexican Constitution was modified to allow foreign private investment in satellite communications.
- On 7 June 1995, the Federal Telecommunications Law (FTL) was enacted, substituting in large part the old "*Ley de Vías Generales de Comunicación*" which had applied since 1940.
- On 26 October 1995 and 5 January 1996, SCT published the rules under which concessions would be granted to long-distance (interstate) operators and local networks, respectively. During late 1995 and 1996, concessions were granted to new entrants into fixed domestic and international long-distance services.
- On 26 April 1996, following the failure of the carriers to reach agreement (filed with SCT in March 1996), the SCT issued a resolution determining the interconnection charges for long-distance service to be applied during 1997 and 1998, and establishing that the charges for "special projects" needed to provide interconnection would be determined by an expert hired by all long distance carriers.
- On 21 June 1996, the Long Distance Service Rules were published together with the new national numbering and signaling plans.
- On 9 August 1996, a sector specific regulator, the Federal Telecommunication Agency ("Cofetel") was set up by Presidential Decree. Late November the same year the first auction for paging services took place.
- On 11 December 1996, Cofetel published rules governing the provision of international long-distance services, setting out the proportional return system. On 16 December 1996, the regulation governing resellers of pay phones was implemented.
- On 1 January 1997, competition began in those long distance services that required interconnection.
- During 1997, Cofetel auctioned spectrum for the purposes of providing microwave point to point and point to multi-point links (10, 14, and 23 GHz), for fixed or mobile wireless access, local wireless telephony and pay TV and Audio services (MMDS).
- In August 1997, Cofetel published the regulation governing communication via satellite (*reglamento de comunicaciones vía satélite*). In the same month Satmex was privatised.
- On 23 October 1997, Cofetel published the Local Service Rules.
- In December 1997, the competition authority concluded that Telmex had "substantial market power" and in March 1998 it confirmed its resolution.
- During 1998, Cofetel auctioned spectrum for the purposes of providing land mobile radiocommunications systems, point-to-point links (37-38 GHz) and narrowband personal communication services.
- In December 1998, Cofetel published a resolution setting out the interconnection charges to apply for 1999 and 2000. Interconnection charges were lowered, and a system of calling-party pays introduced for mobile. In addition Cofetel published rules for accounting separation, reductions to the number of local service areas and a program to expand national numbers from 8 to 10 digits, according to the basic numbering plan.

12. Quality of service requirements for the first four years of the concession were set out in an annex to the concession itself. The concession specifies that quality of service targets for subsequent periods of four years are to be set through negotiation between the Ministry and Telmex. At the end of 1994 and concurrent with the peso crisis, the government and Telmex agreed on a set of less onerous performance targets.

13. At the same time, Telmex delayed planned rate rebalancing in line with government policies in response to the crisis.¹² During this period network expansion dropped off sharply to a level that was insufficient even to keep up with population growth.

14. Competition in wireless telephone services began in the early 1990s when duopoly cellular concessions were granted for nine regional markets throughout the country. In each of the nine regions, two concessions were issued, one reserved to the wireline incumbent while the second was issued to a competitor. Telmex's entry into cellular was accomplished through a subsidiary, Telcel. This market structure is parallel to what was introduced in cellular communications in Canada and the U.S.

15. Before the end of the long-distance monopoly period, the Mexican government implemented an entirely new telecommunications law, the Federal Telecommunications Law (the "FTL").¹³ The FTL completed the foundation for the introduction of competition that was first sketched out in the Telmex concession. The FTL also foresaw the establishment of a new regulatory authority. Key features of this law and the Telmex concession are described in the appendix.

16. Throughout 1995 and 1996 concessions were granted to a number of new entrants for fixed domestic and international long-distance services. In late 1995, Telmex and the new long distance carriers initiated private negotiations to establish interconnection rates. As no agreement could be reached, and as stipulated in the Telmex concession, the regulatory authority stepped in. In a resolution of April 1996, the SCT set the interconnection tariffs to be applied for origination and termination of long-distance charges during 1997 and 1998.

17. This resolution was challenged on 4 October 1996, in a formal action filed by all new long distance entrants. After an initial industry hearing hosted by the authorities in December, Cofetel delayed the resolution of the disagreement for more than a year. A court injunction ultimately ordered the authorities to answer the carriers' petition. This resulted in Cofetel issuing a resolution on 11 March 1998, backing the SCT's previous interconnection resolutions of July 1994 and April 1996. Under these circumstances, on 2 April 1998, Avantel filed an *amparo* against the 11 March 1998 Resolution. The District Court granted Avantel a suspension of the relevant payments until the merits of the *amparo* are resolved.

18. In August 1996, competition was permitted in non-switched national and international long-distance services. In the same month, a new sector-specific regulator - the *Comisión Federal de Telecomunicaciones* ("Cofetel") was created by delegation of the powers of the SCT, through presidential decree. In December 1996, Cofetel established a "proportional return" system for international traffic under which all international carriers would receive a share of the in-bound traffic in relation to their share of outbound international traffic.

19. Competition in the Mexican long distance market began on 1 January 1997, when six new carriers started to operate.¹⁴ Competitive entry into domestic and international long distance quickly put downward pressure on rates and erosion in the incumbent's market share. By the end of 1997 the new entrants had gained 18.8% of the domestic long distance market and 31.6% of the international market. This represents a rapid erosion of the incumbent's market share relative to the experience in other OECD countries.¹⁵

20. Throughout 1997 and 1998, customers in the 100 largest cities opening to competition were polled to determine their preferred long-distance carrier. This process, known as "pre-subscription" defined for each customer his or her default long-distance carrier.¹⁶ Non-voting customers remained, by default, with Telmex. By the end of 1998, 6.7 million users had either actively chosen their carrier or defaulted to Telmex. This represents 80% of the 8.2 million lines that are open to competition. (Approximately 83% of the installed lines in the country are open to long-distance competition).

21. As in many other countries, the introduction of competition has been associated with high-profile disputes and litigation as both the incumbent and the entrants seek to clearly establish their legal rights and to use all political and legal mechanisms at their disposal to influence regulatory decisions in their favour. These disputes have often given rise to legal injunctions. In Mexico, any act of authority deemed to violate the constitutional rights of a plaintiff can be suspended by means of an *amparo* (injunction) until the underlying merits of the case are resolved in court. *Amparos* are not class actions – only the plaintiff is granted relief. Industry-wide or class action suits, with their promise of generalised regulatory correction, do not exist in Mexico.

22. As an example, the 1990 Telmex concession set out a requirement that interconnecting operators would be required to pay the costs incurred by Telmex necessary to establish and maintain interconnection. In the April 1996 ruling (at the same time as determining the interconnection charges that would apply), SCT set out a procedure under which the costs of investment projects needed to provide interconnection services (the so-called "special projects") would be scrutinised by an international expert to determine their validity. Bellcore was hired for that purpose and decided that the amount due was \$US 422 million dollars. Cofotel issued the respective resolution on 28 May 1997, including the formula for distribution of this payment amongst all the long-distance carriers including LADA (Telmex's long-distance arm), based on their relative usage of the projects. Alestra, Avantel, and Miditel appealed these charges. Currently, none of the competing long-distance carriers are paying for these special projects pending the resolution of this issue.

23. At the time of the introduction of competition, Telmex still had not completely rebalanced its prices, in part due to the delay in the rate of rebalancing during the 1995 crisis. Therefore, in the first two years following the introduction of competition (from January 1996 until the first quarter of 1998) local service prices increased rapidly in real terms until they reached the individual price-caps originally scheduled for 1996. At the same time, and in accordance with the overall price-cap on Telmex's operations, Telmex substantially lowered domestic and international long-distance prices. Revenues from local service have risen rapidly as a portion of total revenues, from about 40% in 1996 to about 60% in 1998, while long distance revenues (domestic and international) have fallen from about 57% in 1996 to about 34% in 1999.

24. During the second half of 1997, the competition authority (the "CFC") carried out an *ex officio* investigation, which concluded in December 1997¹⁷ that Telmex has substantial market power in five markets: local telephony, interconnection services, national long distance, international long distance, and the resale of long distance. The CFC resolution was confirmed in March 1998, following a Telmex petition for reconsideration. Cofotel is authorised by the FTL to impose specific obligations on concessionaires that are deemed by the CFC to have substantial market power. Cofotel has publicly declared that the new

obligations will include provisions for avoiding predatory pricing in competitive markets and to restrict supra-competitive pricing in less competitive markets as well as additional conditions on quality and information. Telmex has filed an injunction against the decision of the CFC, which is currently “on hold” pending the decision by Cofetel as to the nature of the new regulations. In March 1999, some competitive carriers formally asked to be included in the process of forming these new regulations on the grounds that dominant carrier restrictions have an effect on the whole market. However, Cofetel believes that because the FTL does not mention such participation, to do so would open the decisions to legal challenge.

25. Progress in opening the market for local service to competition has been somewhat slower than in the case of the long-distance market. The SCT published procedures for applying for new concessions for local networks in January 1996. The local service rules were published in October 1997. In late 1997 and early 1998, Cofetel auctioned a substantial amount of spectrum suitable for the provision of PCS and wireless local loop applications. The winning bidders at these auctions received concessions to provide fixed or mobile local services.

26. Competition in the local telephony market is expected to begin in 1999. To date, four firms have been granted a concession for fixed-wire local service. A further eight firms have acquired spectrum through the PCS and WLL auctions, and six have received local-service concessions (the remaining two have not yet paid the amount they bid for the spectrum). One firm, Pegaso, launched commercial operations in February 1999 with a nation-wide mobile PCS network. (Commercial operations of Pegaso have so far been limited to the Tijuana area. Its operations in Monterrey and Mexico City are due to begin in mid to late 1999). Another two firms, Axtel and MaxCom, began commercial operations in April 1999 using wireless technology. Altogether the new local operators have committed to 9.5 million new lines, which offers the promise of doubling the number of telecommunications lines in Mexico.

1.2.2. Market participants

27. As mentioned, the dominant incumbent telecommunications operator is *Teléfonos De México, S.A. de C.V.* (“Telmex”). In 1997 Telmex received around \$US 7.6 billion in revenue, had 55 000 employees and maintained around 9.2 million access lines.

28. Telmex is the second largest company in Mexico, the largest company listed on the Mexican Stock Exchange, and is the largest non-government employer in the country. Telmex’s subsidiary Telcel, is also the largest mobile carrier, with total revenue of about \$US 521 million in 1997. Other subsidiaries of Telmex provide long-distance and other services.¹⁸ Telmex also owns 49% of a cable TV provider.¹⁹

29. Telmex has achieved an operating income of between 14.5% and 19.4% of total assets (in real terms) over the 1993 to 1997 period.²⁰ Telmex weathered the macroeconomic crisis fairly well, in part because its revenues from in-bound international traffic were not directly affected, and in fact, appreciated in relative value given the decline in the value of the Mexican peso on international markets. For the last several years, Telmex has been engaged in a share buy-back program which has returned more than \$US 1.5 billion to the shareholders per year. Telmex has announced plans to purchase around \$US 2 billion of shares during 1999. Despite being the 12th largest telephone company in the world (by revenue), Telmex’s stock market capitalisation place it second in the world, next only to BT.

30. Telmex currently has the largest market share in local, domestic and international long distance and mobile markets in Mexico. (Telmex provides around 100% of all local telephony, 80% of domestic and international long-distance telephony, and 60% of mobile telephony). Telmex completed construction of a 30 000-km fibre optic network (*e.g.* trunks between exchanges) in 1995, which replaced a less reliable and lower capacity microwave network. An intercontinental submarine segment known as “Columbus II”

supports the new long distance network. Through an international alliance signed in 1995, Telmex co-operates with Sprint (a major US long distance carrier) to provide seamless international services between Mexico and the US since 1996 (including for example voice, video and data) and, through a joint venture company, long distance services in the US since August 1998.²¹ Through the Sprint alliance, Telmex also has access to “Global One” and provides 800 services.

31. As of March 1999, 17 firms held concessions to operate in long-distance domestic and international markets. The first major new entrant in the long distance market was Avantel, established by MCI and Banamex. It has built a 5 365 km high capacity fibre optic network based on MCI’s technology and Concert services with three main switching centres. The second major entrant was Alestra, established by AT&T and the Mexican group Alfa (Bancomer-VISA joined as a second Mexican partner). It has built a 4 596 km high capacity fibre optic network employing AT&T technology including three 5ESS digital switches in Mexico City, Guadalajara, and Monterrey.

32. Of the 15 long-distance concessionaires (not counting the incumbent carrier Telmex with its main regional subsidiary Telnor), eight have commenced operation: Avantel, Alestra, Iusatel, Marcatel, Miditel, Protel, Bestel and RSL ComNet. The seven remaining carriers, who are currently in the process of building infrastructure are: Maxcom, Intelcom, LadiMex, Presto Telecomunicaciones, Axtel, Telereunión and Unión Telefónica Nacional.

33. Concessions have been granted to six companies that will start competition in local markets (Maxcom, Megacable, Resetel, Unitel, Axtel and Avantel servicios locales). These companies have promised to invest more than \$US 1.2 billion in investment over the next five years. In 1998 licenses to operate PCS and wireless local loop were granted in nine concession areas. Three firms (Maxcom, Extensa and Axtel) were granted concessions and have ambitious five year plans relying on a combination of wireline and wireless technologies. Maxcom’s five-year plan calls for 500 000 new lines covering 25% of the population. 40% of the lines will involve wireless technology. Extensa’s five-year plan involves coaxial and wireless technology, covers 40 cities, and involves 1 900 miles of fiber-optic cable. Axtel’s five-year plan involves 2 million lines, using mostly wireless technology for 210 cities.²² Overall, the new local players have committed to building 9.5 million new lines over the next 5 years.

34. In mobile, the largest operator is Telcel, a subsidiary of Telmex that provides a nation-wide mobile service. Telcel’s market share is about 60%, similar to the market share of the largest mobile carrier in most OECD countries.²³ The largest competing mobile operator is Iusacell, majority-owned by Bell Atlantic. Iusacell has cellular operations in four of the nine regions in Mexico (covering about 70% of the population). Iusacell also holds a long-distance concession and facilities. The number of cellular subscribers in Mexico was 1 million in October 1996 reached about 2.3 million by May 1998 and (projected) 3.3 million by the end of 1998 – though penetration rates remain low compared to other OECD countries.²⁴

35. Satellite providers are an additional source of potential competition in telecommunication service markets. In 1990, a decentralized state-owned organization named *Telecomunicaciones de México* (known as Telecomm) was created to provide telegraphy, packet switching, microwave, and satellite services. It is also a signatory to Intelsat and Inmarsat services. In 1995, the Constitution was modified to allow private investment in satellite communications. Later, during 1996 and the first half of 1997, Telecomm was divested from its satellite services, to create the company *Satélites Mexicanos S.A.* (“Satmex”) which was privatized on August 1997 through a public tender. The assets of this company are three modern geostationary satellites using the Ku and C bands to provide services in Latin America and selected cities of the US. The L band transponders provide mobile services within the Mexican territory.²⁵

36. In December 1997, a concession was granted to GE Capital Spacenet Communications Services de México. This concession allows the company to install, operate and exploit a public telecommunications network to offer services of transmission and reception of signal, writing, image, voice, sound, or any other form of information for private networks. Cofotel has given a favourable opinion to granting companies like Iridium, Globalstar and Orbcomm a concession to exploit the rights of emission and reception of signals from frequency bands associated with their respective satellite systems. The approval of the SCT is still pending.

37. Public payphones have been open to competition since a *reglamento* governing payphones was issued on 16 December 1996. To date 29 permits have been granted to commercialise the service and Cofotel is processing 18 additional applications. According to the business plans of the permit holders, investment in this service for the next five years will be close to 400 million pesos (\$US 40 million) with the installation of 150 000 pay phones, additional to those installed by Telmex. The most ambitious of new pay phone operator, a firm called "World Centre of Video Conferences" intends to install 25 000 and \$US 60 million worth of pay phones in 200 cities over three years. Another firm, Aditel, intends to install 300 telephones in subway cars and stations in Mexico City

38. Competition has existed in trunking and paging services since 1991. In trunking services there are 48 concessionaires, 12 provide local services and 26 regional service covering 215 cities and the main highways. In paging there are 107 concessionaires, 62 provide local services, 30 regional services and 15 national service. They provide service in 86 cities. As Table 1 shows, the penetration of paging has increased significantly since competition began.²⁶

Table 1. Growth in trunking and paging services

	1991	1992	1993	1994	1995	1996	1997*	1998**
Trunking (Thousands of users)	3	15	30	54	64	79	111	135
Paging (Thousands of users)	53	88	129	167	207	273	445	544

*=preliminary; **=estimated

39. Competition has existed in value-added services since 1990. Since 1995, 280 *Constancias de Registro* for value added services have been granted. The services considered by Cofotel to be value-added services are: audiotext, electronic data interchange, videotext, teletext, access to internet, remote data processing, electronic data mail and facsimile, voice mail, and remote access to databases.

Table 2. A synopsis of telecommunications regulation in Mexico

Category	Regulatory restrictions	Notes
Entry regulations		
Facilities-based carrier	Entry on the basis of a concession. The FTL requires that certain conditions and obligations be imposed on concessionaires. Concessions specify network coverage and investment obligations.	No limit on the number of concessions, permissions or registrations.
Reseller	Entry on the basis of a permit.	To date no requests for permits for pure resale have been granted. Cofetel says that requests for permits will be granted once the respective regulation is in place.
Value-added service provider	Entry on the basis of registration.	
Line-of-business restrictions	Telmex cannot exploit, directly or indirectly, any concession for television services to the public in the country. Separate application and approval is required whenever a business plan is changed.	
Foreign ownership restrictions	No concessionaire can be majority foreign owned, except in the case of cellular telephone services.	Limited rights shares do not count in calculating foreign ownership proportions.
Price controls		
Telmex	A system of price caps on total average revenue, allowing flexibility on the individual prices. The price-cap rises with inflation less a productivity factor. All prices must at least cover incremental cost. Price of residential local service should not be above its incremental cost.	
Other operators	Prices must be registered.	All carriers' prices are publicly available on the Internet.
Interconnection controls		
Telmex	The obligation to interconnect is set out in the Telmex concession and the FTL. Prices are set by Cofetel within 60 days in the event of failure to reach agreement between the parties. All parties must allow desegregated access to services, capacity, and functions of their networks based on non-discriminatory rates and must respect reciprocity of rates and conditions for concessionaires providing each other similar services, capacities, or functions.	Cofetel believes that in the absence of alternative mechanisms to support residential service and given limitation to further increases in local rates, interconnection charges should contribute to a deficit on Telmex's local residential service.
Spectrum allocation	Concessions for the use of spectrum are auctioned.	
Numbering policy	Rules for carrier pre-selection for long-distance and international service were established in 1996. Policies for local number portability are not yet established.	Call-by-call selection of long-distance carrier is not possible in Mexico.
Universal service	There are limited coverage obligations set out in the Telmex concession. New concessionaires must meet minimum network build-out obligations to obtain a concession.	Cofetel has the intention to establish a "universal service"-type fund to cover the deficit on residential local service.
International Issues	Competition for termination of in-bound international calls is not allowed, given Mexico's use of a proportional-return and uniform-settlement-rate system. The right to negotiate the common terms and conditions for international settlements with a foreign carrier is given to the domestic carrier with the highest market share in each route for the previous six months (which, in the past, has been Telmex).	The termination charge for inbound international traffic is well above cost and the ratio of incoming to outgoing traffic is around 2.5 to 1, so international traffic is an important source of revenue.

2. REGULATORY STRUCTURES AND THEIR REFORM²⁷

2.1. *Regulatory institutions and processes*

40. Reform of sectoral regulatory structures were an important part of the initiative to introduce market forces into the telecommunications industry. Prior to reform, telecommunications regulation was the responsibility of the *Secretaria de Comunicaciones y Transportes* (“SCT”) – a ministry that has a broad mandate encompassing not only telecommunications but also highways, railways, aviation, ports, the postal service, and the national merchant marine. Within SCT was the *Subsecretaria de Comunicaciones* under which telecommunications was regulated. For the first five years of the Telmex concession, SCT was the sole regulator.

41. On 9 August 1996, the *Comisión Federal de Telecomunicaciones* (“Cofetel”) was created through a Presidential Decree published in the *Official Gazette*. The then SCT Under-secretary was appointed to be its chair. Cofetel is autonomous from but not independent of the SCT. Cofetel derives its powers through delegation of the powers of the SCT, as set out in the Presidential Decree. Cofetel’s budget is determined separately from the budget for the SCT.

42. Cofetel has four commissioners, including its president, who are appointed by the President of the Republic from a list provided by SCT. Commissioners do not have a fixed term of appointment. They remain in office until they resign or are replaced. Commissioners can be appointed and dismissed by the President of the Republic, on the advice of SCT. The three commissioners other than the president assume specialist responsibilities in, respectively: legal matters; economic planning and analysis; and engineering and technology. Matters are decided through majority vote, with the president having a tie-breaking vote. These arrangements concentrate significant power with the chair, who prevails in a decision unless all three commissioners vote in a contrary manner. In practice, Cofetel indicates that all decisions have been taken unanimously.

43. In matters related to the issuing, enforcement and revocation of concessions, Cofetel cannot act on its own. Cofetel merely issues an opinion to SCT who takes a decision whether or not to act. In all other areas (in the resolving of disputes, the authorisation of prices and the issuing of rules and regulations), Cofetel acts independently of SCT. SCT cannot issue, enforce or revoke concessions without an opinion from Cofetel.²⁸

44. Cofetel currently employs around 300 staff. Under Mexican law, government employees cannot take up employment in the sector with which they have been directly involved for one year from the date of resigning from the public sector.

45. Serious concerns have been raised in Mexico regarding the actions and independence of Cofetel. Some new entrants and Telmex have alleged that Cofetel has been selective and discretionary in its implementation and enforcement of the existing regulatory regime and that Cofetel’s decisions have lacked transparency.

46. The establishment of Cofetel as a regulatory agency distinct from the SCT was an important step towards developing an independent and transparent regulatory framework in Mexico. However, the independence of Cofetel, and the transparency and accountability of its decisions, do not go as far as is desirable. Regulatory independence from day to day political pressures is essential to build confidence of all market participants that government intervention in the telecommunications market will be transparent. Further, independence from the regulated companies, is needed to ensure transparent, fair, and reasonably predictable decisions. Arrangements differ in each country, but the essential features include complete independence from the regulated companies, a legal mandate that provides for separation of the regulators

and the regulatory body from political control (*e.g.*, by removing the power over appointments to the regulatory body from political control), a degree of organisational autonomy, well-defined obligations for transparency (*e.g.*, publishing decisions) and for accountability (*e.g.*, appealable decisions, public scrutiny of expenditures). The combination of transparencies – of objectives, powers, processes, decisions, and information – enables the public to evaluate how the regulator is fulfilling its role as a neutral arbiter of market competition and enforcer of regulation.

47. Cofetel derives much of its power from its ability to recommend the approval or denial of concessions, or to recommend the imposition of conditions on concessions. In addition, although Cofetel has developed and disseminated formal regulations on two occasions, Cofetel develops and disseminates its policies primarily through administrative rules and official resolutions of disputes. Cofetel has implemented the decisions set out in the rules through the mechanism of conditions on concessions. Unlike formal regulations (*reglamentos*), administrative rules are not subject to the requirement to be reviewed by the president's legal counsel (*Consejería Jurídica del Ejecutivo Federal*) and are not signed by the president.

48. Since 1995, the government has established a horizontal programme to register all formalities imposed on businesses and to review all new regulations under a programme called ADAE (*Acuerdo para la Desregulación de la Actividad Empresarial*). In 1997, a reform of the administrative procedure law reinforced this regulatory oversight capacity and established the requirement for a regulatory impact analysis regarding all new rules and regulations. However, Cofetel and SCT are still in the early stages of compliance with this regulatory control policy (see Section 2.2.9 below). Cofetel has said that it will combine the assorted rulings and case by case decisions into a single uniform body of regulation (*Reglamento de Telecomunicaciones*). It is important that SCT and Cofetel comply rigorously with the regulatory oversight control for such regulation as well as future other regulations.

49. Since its creation, Cofetel has had to establish its own processes and procedures for operation. Like many new agencies, this process has involved learning from experience. On more than one occasion Cofetel has been challenged in the courts. In part, this litigation reflects a change in attitudes in Mexico to the role of government in industry. Informal, around the table negotiations are being replaced by formal, arms-length regulatory procedures. In part, this litigation reflects the strategic use of the legal system by the major players. In Mexico, government actions against individual interests can be blocked by means of the legal mechanism of *amparo* – a form of injunction which stays the government action pending the adjudication of the underlying argument. This adjudication can take years to resolve. All of the major firms in the telecommunications industry have made use of this tool, including the incumbent.²⁹ To win an *amparo* a plaintiff must make a convincing case to the court that an authority has acted in violation either of the constitution or of the nation's written body of law and regulation. The new entrants have won interim injunctions against the special projects charges and the interconnection regime established by Cofetel, pending the resolution of these disputes in the courts.

50. Although Cofetel has widely consulted with the industry on an informal basis, Cofetel has not, to date, implemented a formal public process of consultation before taking important decisions. Before the second semester of 1998, Cofetel did not publish the reasoning behind its decisions, contributing to a general lack of transparency in the decision-making process, and enhancing the scope for legal challenge. The adoption of processes involving a public, transparent and accountable procedure of notifying for comment, publicly accepting or rejecting other positions based on reasonable standards and the regulatory framework, and issuing final resolutions based on such procedures, would result in a more credible, less contentious and more efficient regulatory process.

51. Cofetel indicates that it intends to adopt a formal public consultation process during 1999.³⁰ This process will involve formal timelines, distinct steps, the keeping of detailed records and the publication of the reasons for all decisions. It is hoped that the introduction of such a process will enhance transparency and limit the probability of legal challenge of Cofetel's decisions. Cofetel should move quickly to implement policies to enhance the transparency of its decision-making, such as those stated in the SCT 1999 Work Program.

52. A regulatory institution such as Cofetel would be powerless without a mechanism for enforcing the regulatory regime, including its own decisions. The FTL sets out the maximum sanctions that may be applied in the case of violations of the provisions of this law. The fines to be imposed range from 2 000-20 000 "minimum wages" for minor violations (such as failure to register rates); 4 000-40 000 "minimum wages" for medium violations (such as non-compliance with obligations and concessions set forth in concessions) and 10 000-100 000 "minimum wages" for serious violations (such as providing telecommunications services without a concession). Since the current minimum wage is around \$US 3, the largest possible penalty on a carrier is \$US 300 000, for the most serious violations. This amount is small relative to the revenue of \$US 7.6 billion of Telmex, the largest carrier. The largest penalty that Telmex could receive under the FTL is less than 0.004% of its revenue. These monetary penalties are unlikely to be a sufficient deterrent.

53. Cofetel (through the SCT) has the power to revoke a concession (either immediately, in the case of certain serious violations, or only after three violations in the case of minor violations). However, the revocation of a concession is a draconian measure that would disrupt telecommunications services for millions of users and have a serious adverse impact on investors and is therefore unlikely to ever be used for a large company such as Telmex. For other companies, revocation is such a severe penalty that even the threat of a minor sanction is met with legal action. It is unlikely that the other concessionaires will ever accept a sanction without first exhausting every possible legal recourse. In either case the enforcement of concession violations is difficult.³¹

54. In addition to Cofetel, the Mexican competition authority, the *Comisión Federal de Competencia* (CFC) plays an important role in the telecommunications sector. The CFC has played an active role in screening applicants in the process of spectrum auctions. In addition, the FTL provides an explicit role for the CFC in determining when a telecommunications firm is dominant. As explained further below, Mexico's general competition law fully applies in this sector. Thus, in principle, anti-competitive actions such as horizontal arrangements between firms, abuse of dominance and predatory pricing can be controlled through the prohibitions set out in the competition law. The CFC's responsibilities include responding to formal complaints of anti-competitive behaviour by an economic agent found to have substantial market power in the relevant market. Telmex has been the object of such complaints for abuses such as cross-subsidies, charging for dialling to 800 numbers from public telephones, resale of both switched and un-switched interurban transport capacity to new entrants, and abuses of the local data base, among others.

55. As in other countries, the competition authority and the telecommunications regulator play complementary (but sometimes overlapping) roles. Although Cofetel is given specific powers with respect to resolving certain disputes and insuring compliance with all aspects of concessions (including those requirements in the Telmex concession forbidding anti-competitive actions), Cofetel's primary role is in establishing the regulatory framework. On the other hand, the role of the CFC is primarily to respond to complaints regarding anti-competitive behaviour as well as investigate on its own initiative when it has reason to believe monopoly abuse may be occurring. The new entrants, frustrated with what they see as Cofetel's inability or unwillingness to resolve complaints of anti-competitive actions in an effective and timely fashion, are increasingly turning to the CFC for resolution of such matters.

56. Furthermore, as mentioned earlier, Cofetel cannot act on its own - the final power to issue, enforce and revoke concessions rests with the SCT and not with Cofetel. For example, as noted earlier, although Cofetel has recommended the approval of concessions for Iridium, Globalstar and Orbcomm, to date, the SCT has not issued the concessions.

2.2. Regulations and related policy instruments in the telecommunications sector

2.2.1. Regulation of entry and service provision

57. The requirements for entry into markets for telecommunications services in Mexico are set out in the FTL. The FTL requires that all facilities-based providers of telecommunications services obtain a concession before offering service. Non-facilities-based telecommunications service providers must obtain a permit, while value-added service providers need only be registered. The concession system is the mechanism by which services deemed to be “public services” by the Mexican constitution may be opened to private entry. Concessions are transferable, but only after three years from the date of the issue.

58. As mentioned in the previous section, the issuance of concessions and permits is carried out by the SCT, on the advice of Cofetel. The FTL stipulates the information that an application for a concession must contain. An application must include: a statement of investment and coverage commitments; a business plan; and evidence of legal, technical, financial and administrative capacity. If the concession is granted, the FTL requires that a concession must specify at least: the different services to be rendered by the concessionaire; the rights and obligations of the concessionaire; and the commitments of geographical coverage of the network. Cofetel must issue its opinion on a concession within 120 days from the date of application. In practice, some concessions have taken more than a year to grant. Cofetel states that these delays arise when applications have been filed with incomplete information.

59. The FTL obligates Cofetel to scrutinise the business plan and legal, administrative, financial and technical capacity of each potential entrant. In addition, the FTL requires Cofetel to set out in the concession that the services the concessionaire can offer and the obligations and coverage requirements of the new concessionaire. One consequence is that concessionaires are, in practice, subject to a form of line-of-business restriction. For example, a cellular provider who (after receiving its initial concession) wishes to enter the long-distance market must re-apply to Cofetel for an extension to its concession.

60. The FTL does not specifically limit what conditions can be set out in a concession. In the absence of body of regulation (such as the proposed *reglamento* that is mentioned in the previous section) Cofetel uses its ability to impose conditions on concessionaires as a mechanism for regulating the industry. In practice, this occurs through a process of negotiation over the business plans of individual companies, with Cofetel/SCT delaying or withholding the concession if the business plan of the intended entrant is not in line with Cofetel/SCT’s intentions.

61. The intention of the FTL is that, as a mechanism for network expansion, new concessionaires will be required to undertake obligations to build out new infrastructure. Before accepting applications for concessions, Cofetel has adopted the practice of specifying (for certain services) the minimal coverage commitments and obligations that new concessionaires will have to undertake. For example, long-distance operators are required to commit to link at least three cities in three different states of Mexico with their own transmission facilities. An operator planning to offer only long-distance service between two cities with its own facilities, or between several cities in the same state, would not be granted a long-distance concession.

62. New concessionaires, even in the absence of any obligation, would normally choose to build some new infrastructure. The focus of this provision is therefore on obligations on new entrants to construct more infrastructure than they would otherwise choose. A requirement or obligation to build out more infrastructure than an entrant would normally choose is a form of “tax” on entry. The objective seems to be to promote faster network build-out at the risk of foregoing higher levels of competition, lower prices, efficiency and innovation. This policy trade-off is most clearly seen in the decision to grant a monopoly to Telmex for six years in exchange for (amongst other things) network build-out obligations.

63. To date a number of concessions have been granted in many different segments of the market, including 15 concessions in long-distance and a further 10 in local service (not counting the incumbent). A certain level of competition is therefore developing under the current policies. Nevertheless, in the longer term, the policy approach of regulating entry to promote infrastructure development can be questioned:

64. First, competition itself provides powerful incentives to enhance network penetration. By diminishing competition in the market place, it is possible that the mechanism is reducing the overall level of new investment relative to the situation in which there are no restrictions on entry. There need be no policy trade-off between network build-out and competition. Competition itself provides strong incentives for new investment. Second, as a tax on entry, this tax is relatively non-transparent. It is difficult to observe the price that consumers are paying in the form of reduced competition. Third, the network investment obligations set out in the concession (which must be specified many months or years in advance) may restrict the ability of the new entrants to respond to new technological, demand and market developments in the industry as they arise.

65. Fourth, and more important, the discretion of Cofetel to impose conditions on entry may itself become a problem. All existing concessionaires have a strong incentive to induce Cofetel to raise the requirements for new entry over time. Cofetel has already been criticised by the incumbent firms for granting “too many” concessions. Existing concessionaires might also argue for a relaxation of their concession obligations, while insisting upon maintaining the same obligations on new entrants. Indeed, concession obligations have recently been relaxed for existing cable TV concessionaires in response to pressure from the concessionaires themselves. Cofetel states that, overall, the conditions on concessions for both existing and new entrants have been gradually relaxed.

66. Finally, one of the conditions that Cofetel seeks to impose is a requirement to abide by the rules established by Cofetel itself.³² This amounts to a waiver of the legal right to challenge those rules. The ability to challenge legal rulings is an important tool for ensuring that rulings are efficient, appropriate and do not exceed the scope of the powers of the regulator. By insisting on waiving the right to challenge those rules, Cofetel can enhance its powers, possibly at the expense of new entrants, and possibly raising barriers to entry.

67. Given Mexico’s constitutional requirement that the private provision of “public” services such as telecommunications be regulated through concessions, the FTL was an important step forward in liberalising entry into the telecommunications industry. The further steps suggested here would extend the liberalisation provided for by the FTL to further promote competition and ensure that new barriers are not raised to entry in telecommunications.

2.2.2. *Resale*

68. Cofetel has not yet established a procedure for granting permits to carriers proposing to offer simple resale of domestic and international long distance services. Cofetel argues that this is a consequence of a wider policy to encourage facilities-based carriers in preference to resellers, at the initial stages of reform.³³ In addition, international simple resale is not allowed because it is incompatible with the proportional returns and uniform settlement rate system for international traffic (see Section 2.2.7).

69. Section 54 of the FTL requires that pure resellers “shall be subject, without exception, to the respective regulatory provisions”. At this time, such provisions only exist for the resale of pay-phones.

70. In the long-run resale competition is not as effective at lowering prices and delivering benefits to consumers as facilities-based competition. Nevertheless, pure resale may be a legitimate entry strategy for an entrant who wishes to establish a market presence prior to investing in sunk facilities of its own. In addition, a prohibition on resale entry may actually reduce the incentives for infrastructure investment. Preventing the entry of resellers eliminates one class of customer of network operators, thereby potentially limiting the value of the network.

71. In practice, the prohibition on domestic resale may neither promote network expansion nor act as a restriction on entry because concessionaires are allowed to resell to other concessionaires. Since the requirements for becoming a concessionaire are not unduly onerous, concessionaires can follow a largely resale-based or facilities-based strategy as they wish. Indeed, the concessionaire Bestel appears to be following a policy of constructing facilities with the primary purpose of reselling the network to other concessionaires.

72. Cofetel’s 1999 work programme considers the initiation of a consultation process with the industry in order to set the regulatory provisions needed for pure resale, in line with Mexico’s WTO commitments.

2.2.3. *Line of business restrictions*

73. At present, the only line of business restraint in the Mexican telecommunications regulatory regime is set out in the Telmex concession. The concession states that “Telmex cannot exploit, directly or indirectly, any concession for television services to the public in the country”.

74. As a result of convergence, it is increasingly likely that, in future, voice telephony, Internet services, and cable television services will be provided off the same infrastructure. Line of business restraints that prevented, say, voice telephony and cable television services from being offered over the same infrastructure may, in the long run, hinder the process of convergence.

2.3. *Regulation of interconnection*

73. Both the 1995 FTL and the 1990 Telmex concession contain provisions under which interconnection is to be made available to a public switched telephone network. The FTL specifies that where one firm seeks interconnection to another, the parties are first to negotiate. In the event of the failure of the negotiation, after 60 days either party can appeal to Cofetel to rule on any outstanding issues, including the level of interconnection charges. Cofetel is required to make a decision within 60 days.

74. The FTL states that concessionaires must “allow desegregated access to services, capacity and functions of their networks based on non-discriminatory rates”. Furthermore, reciprocity must be respected in the interconnection among “concessionaires providing each other similar services, capacity or functions”. Volume discounts are explicitly prohibited.

75. There have been allegations that the process of resolving interconnection disputes has taken far longer than the statutory 60 days. For example, Megacable, after 60 days of unsuccessful negotiation with Telmex, appealed to Cofetel to resolve its interconnection dispute on 5 June 1998. Sixty days later Cofetel asked for further information (on the basis that Megacable’s request did not specify exactly what terms and conditions Cofetel was to specify). Cofetel did not issue its final resolution until eight months after the formal start to negotiations, despite the fact that the FTL clearly contemplates this process to take no longer than four months.

76. Resolving interconnection disputes is never easy. Given the amounts at stake these disputes are intensely controversial. Nevertheless, delays in the resolution of interconnection disputes unambiguously favour the incumbent and slow the development of competition.

2.3.1. Interconnection of local networks with other fixed networks

77. In 1996, after negotiations between the new long-distance companies and Telmex failed, Cofetel stepped in to determine interconnection rates. At the time, Telmex had not completed its rebalancing of local and long-distance rates as permitted under the concession. Telmex claimed that, as long as the structure of prices remained unbalanced, it was entitled to receive a contribution in interconnection charges towards the deficit it incurred on its residential local service. SCT upheld this view. In its April 1996 interconnection resolution, the SCT imposed a relatively high interconnection charge equivalent to 5.3 US cents per minute (at each end of a long-distance call, not including the additional revenue from billing the customer directly for the local call component) to be applied during 1997 and 1998.³⁴ This charge included a basic rate equivalent to 2.5 US cents (0.19 pesos, indexed to inflation) and a surcharge on the termination of incoming international calls equal to 58% of the settlement rate, which increased the estimated average interconnection rate by 2.8 US cents. The total contribution from these two rates was calculated so as to cover an alleged deficit on Telmex’s residential local service while rates were being rebalanced. The SCT resolution also established that in 1999 the total interconnection charge would not be more than 3.1 US cents, similar to the average interconnection rate prevailing in the US at the time.³⁵

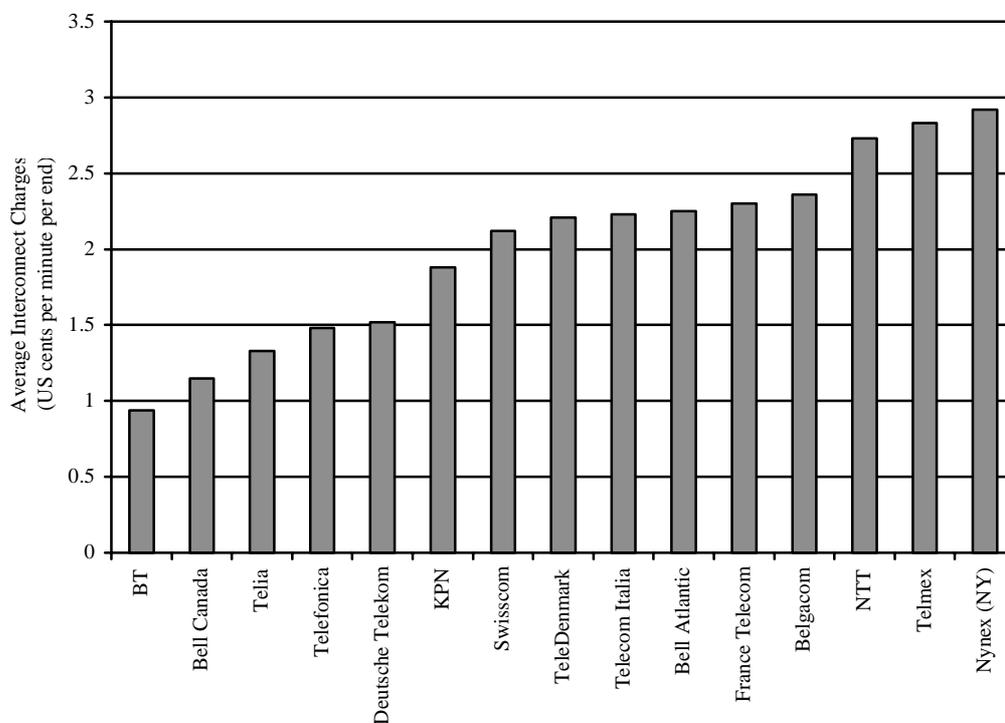
78. During 1996, 1997, and 1998 Telmex engaged in rapid rebalancing of its local and long-distance prices, increasing local rates in real terms to the levels originally scheduled under its concession. This rebalancing substantially reduced the deficit on the residential local service. Correspondingly, in December 1998, Cofetel substantially reduced the interconnection charges. The 58% surcharge for each minute of international traffic terminated by Telmex was allowed to lapse. The effect of this measure was to cut the interconnection charge by more than half, to an equivalent of 2.6 US cents. This new rate will apply throughout 1999 and 2000.³⁶

79. It is important to note that interconnection charges are not the only source of revenue for Telmex for covering the costs of originating and terminating long-distance and mobile calls. In addition to billing the long-distance or mobile operator for interconnection services, Telmex also directly charges the local customer the price of a local call. Local calls in Mexico are charged a flat rate per call of about 12.07 US cents. In addition, residential customers receive the first 100 calls per month for free. Around 45% of residential callers do not exceed this limit. If it is assumed that an average call length of 3.5 minutes, the average revenue per minute per end is around 1.7 US cents. If it is assumed that 40-60% of all local calls are charged, the additional revenue per minute per end received by Telmex for providing local service,

over and above the interconnection charges, is in the region 0.7-1.0 US cents. (In other countries, local telephony providers also sometimes benefit from sources of revenue beyond interconnection charges in the maintenance of the local network, such as the “subscriber line charge” in the U.S. In the case of the U.S. this additional revenue is equivalent to an additional 1-1.5 US cents per end minute on interconnection charges).

80. The absolute level of interconnection charges in Mexico are high by international standards (see Figure 1).³⁷ Cofetel notes that for the purposes of the comparisons below, the basic rate of 2.6 cents should be adjusted to reflect the charge for uncompleted calls. If this were included the tariff would be approximately 2.76 cents. In addition, Avantel asserts that interconnection port charges should also be added, yielding (by Avantel’s estimates) around 2.84 cents. This compares with rates less than 1.5 US cents per minute per end for Bell Atlantic and less than 1 US cent per minute per end for BT.

Figure 1. **International comparison of interconnection charges**



Source: OVUM Quarterly Update, April 1999, Cofetel.

81. Cofetel recognises that the 2.6 US cents interconnection rate is above the cost of providing the service, because it includes a contribution to cover what it believes is a deficit on the provision of residential telephone service. The contribution is necessary, Cofetel believes, to prevent an additional sharp increase in the residential service rates.

82. In December 1998, Cofetel issued a resolution on the interconnection of Telmex with other fixed local and mobile networks. In that decision Cofetel held that the interconnection rate should be the same for the termination of calls in Telmex’s network for calls originating in fixed local and mobile networks, as the service provided by Telmex is the same in each case. Moreover, the new fixed local carriers (wired or wireless) will be paid 2.6 US cents per minute for terminating calls in their networks when their networks

provide (or are committed to provide) significant coverage of the local service area, including a relevant percentage of the residential users in the local area. In contrast, local fixed networks with a limited coverage of the local service area (like fibre rings) that are not intending to provide services to a significant percentage of residential users, will be paid only 1 US cent per minute (the underlying cost).³⁸

83. Furthermore, the December 1998 resolutions set out specific provisions relating to the interconnection of Telmex with other local networks that cover residential areas. In this case Cofetel considered that the reciprocal application of an interconnection rate well above cost represents a threat to the financial viability of the new entrant since it is likely that, at the beginning of its operations, traffic will be unbalanced against the new network. Therefore, Cofetel mandated the application of “bill and keep” agreements for a reasonable range of unbalance. On these grounds, Telmex and Axtel agreed that they will pay each other only the minutes exceeding a ratio of outgoing minutes to total interconnection minutes of 70%, during the first two years. This means that Axtel can send up to seven minutes of traffic to Telmex for every three minutes it receives from Telmex without payment..

84. As in all countries, issues surrounding interconnection have been in Mexico an intense source of controversy. Cofetel states that its broad intention is to abide by their WTO undertakings to have “cost-oriented” interconnection charges. They acknowledge that the costs of providing call origination and termination services (including a contribution to joint and common costs) is around 1-1.2 cents. However, they argue that a higher charge for origination and termination in Telmex’s network is necessary to cover the losses incurred by Telmex on its residential local service. Estimating the number of access minutes in 1999 to be around 25 billion, the excess of 1.6 cents per access minute over cost yields Telmex a contribution from interconnection charges of around \$US 400 million. To this should be added the contribution that Telmex receives by directly billing customers for a local call each time a long-distance call is made. This amount of about 0.86 cents per end minute, yields an additional \$US 215 million. In other words, Telmex is receiving around \$US 615 million each year in contribution to the non-traffic-sensitive costs of providing local service. In 1997 this represented around 20% of the revenues of Telmex’s local service. (However, the total revenue flows to Telmex’s local service were taken into account when the three independent experts considered the level of the “initial value” and the X factor in the price cap, thus in principle, interconnection charges above cost should be translated into lower retail prices for local services). Cofetel has initiated consultations with the industry in order to create a fund to support the provision of residential services in non-profitable areas (where consumers do not have the ability to pay cost-based residential rates) that will allow the elimination of any implicit contribution in the interconnection rate.

85. Box 2 sets out some basic principles for setting access prices. As the box emphasises, it is not possible to set access or interconnection prices efficiently without taking into consideration all the other local service charges – and, in particular, the monthly rental and local calling charges for business and residential customers. The full set of charges should satisfy two conditions. First, the price-cost margin for each service should be inversely related to the elasticity of the service and second, the overall level of charges should be sufficient to allow an efficient operator to just recover his or her costs of providing the local service. These two principles will be used as a basis to examine and critique the local service charges in Mexico.

86. In regard to the elasticity of services, traditionally telecommunications operators maintained low monthly rental charges, by increasing the contribution from long-distance services. Mexico has been rebalancing, and thereby lowering interconnection charges. There are some signs that, at least in the case of residential customers, this rebalancing has proceeded as far as it is possible to go. Cofetel point out that during 1997 and 1998 nearly half a million users disconnected each year and an increasing percentage (currently 45%) of residential users have been limiting their calling to the free calls included in the monthly rent. Telmex has acknowledged that in the last months of 1998 and the first months of 1999

Mexico has experienced negative line growth. Technically speaking, the elasticity of demand for residential telephone lines with respect to further increases in monthly charges appears to be high. It remains an open question, however, whether there remains further scope for rebalancing by raising business monthly rental charges further. Thus there may be further scope for basing interconnection charges on the number of business lines (or the equivalent in bandwidth) served by the new entrants (rather than on the number of interconnecting minutes).

87. In general, it might be expected that demand for business calling is more inelastic than demand for residential calling. It makes sense therefore for business calls to be charged more than residential calls. In its December 1998 decision, Cofetel implemented this form of discrimination in a rough way by distinguishing interconnection charges with significant coverage of the local area (which would include residential customers) and networks with very limited coverage of the local service area (that serve primarily business customers). Networks which primarily serve business customers (such as the network of Megacable) must pay the higher rate of 2.6 cents per minute to terminate local (business) calls on Telmex's network (and other residential networks), while other networks can terminate calls on Megacable's network for just 1 cent per minute. This approach has two problems. First, the distinction made by Cofetel is on a network-by-network basis rather than a subscriber-by-subscriber basis. This forces Cofetel to make arbitrary and intensely controversial decisions as to what constitutes a network with limited coverage of the local service area. Because of the higher charges, a network which is designated a "limited coverage" network could not expect to compete effectively for residential customers. The second problem with this approach is that, because not all calls originate or terminate on the other network, some calls avoid paying the surcharge. This could be avoided by basing the interconnection charges on the *total* number of local business minutes provided by the entrant (rather than the number of *interconnecting* business minutes).

88. To date, Cofetel has provided no public information justifying the levels of Telmex's local charges. As Box 2 notes, Telmex's local service should only receive enough revenue to cover the costs of an efficient operator today. Because of technological developments and increasing incentives for efficiency, these costs do not necessarily correspond to the historic costs incurred by Telmex as revealed in Telmex's accounts.

Box 2. Access deficits and the theory of access charges

“Local telephone service” is a group of services comprising the provision of local calls and the provision of the local (originating or terminating) component at either end of a long-distance or mobile call. The provision of local telephone service exhibits substantial economies of scale and scope. This means that if each service (local calls and originating/terminating of long-distance/mobile calls) was charged at marginal cost, the provider would not be able to recover its full costs, including fixed costs and common costs. In most countries, some or all of the fixed and common costs are recovered through a two-part tariff – customers (both residential and business) are charged a monthly rental fee in addition to a usage fee. If the monthly rental fee can be set high enough (with little or no effect on telephone penetration), the usage fees can be set low, close to marginal cost. Economic theory says that this would be the efficient outcome.

In practice however, it may not be possible to raise the monthly rental fee to this level, especially in a poorer country, such as Mexico. The higher the monthly rental fee, the more likely are customers to drop off the network. In this case the optimal price for local services would involve trading off the economic losses from higher monthly charges against the economic losses from higher usage fees (local call charges and interconnection charges). Economic theory says that the price-cost margin should be higher on the less elastic services. In general, monthly rental will be more inelastic than usage. Therefore monthly rental charges (especially on businesses) should be raised as high as possible before raising usage (especially long-distance call origination/termination) charges.

It is important, of course, that all competitors contribute on a competitively neutral basis to covering the fixed and common costs of the local service. Raising only the incumbent’s monthly rental charges for businesses to cover a local service deficit will invite “cream skimming” competition in this section of the market and will prevent the incumbent from sustaining the necessary cross-subsidies. Although, in principle, it might be possible to structure the interconnection fees as a charge per business line of the competitor, it is more common in practice to recover such revenues in a competitively neutral manner through the use of a fund.

In general, an efficient set of prices for local telephony services satisfy two conditions: First, the margin between prices and marginal cost for each of the services should reflect the elasticity of the service and second, the overall level of prices should just allow the provider to recover the total costs. Laffont and Tirole³⁹ suggest that these conditions could be met with a simple price cap incorporating both final prices and interconnection prices. One of the difficulties in practice is determining the appropriate level of total costs. The books of the incumbent can, at best, reflect historic costs. The right measure of costs is the forward-looking cost of an efficient replacement technology.

With all the charges set optimally, there would be no deficit on local telephone service only if the elasticity of monthly rental was such that the monthly rental could be raised high enough to cover all the fixed and common costs of local service, without any significant effects on telephone penetration. In the more likely case in Mexico, it will be necessary to cover at least some of the costs through usage charges. In this circumstance there would still be a “deficit” on local telephony service even once all the charges are set optimally. On the other hand, if the revenues from interconnection and/or a universal service fund are taken into account, the local telephony service should always fully cover its costs.

89. The revenue to cover fixed and common costs need not all derive from charges related to interconnection. Another approach is to raise this revenue via some form of fund to which all competitors contribute, such as the fund described in Section 2.2.6. This fund could be (and should be) structured in a way as to “tax” most heavily the most inelastic telecommunications services (such as business line rental). Cofetel has expressed its intention to develop such a fund. Indeed, Cofetel has repeatedly stated that the interconnection rate will be lowered when a fund is created to finance network expansion.

90. There are two further comments which can be made in regard to the interconnection policy in Mexico. Under the current policy, Mexico has followed international precedent in charging for interconnection on a per minute basis. However, economic theory suggests that interconnection charges should be structured according to the underlying costs. Whenever the structure of prices is unrelated to costs, the pattern of consumption is distorted and there may arise opportunities for anti-competitive

behaviour. As an example, although the underlying costs of terminating calls may be in the vicinity of 1 cent per minute on average, there are likely to be important differences in the cost of terminating calls at peak and off-peak times. At off-peak times, once a call is established, the cost of maintaining the call is very small indeed (and possibly indistinguishable from zero). A flat per-minute charge for interconnection is therefore likely to under-compensate at peak times and over-compensate at off-peak times. This is likely to distort consumption. More importantly, a positive off-peak interconnection fee may allow the incumbent to act anti-competitively. Since the cost of maintaining a call at off-peak is close to zero, the incumbent can offer a simple flat fee-per call. An entrant paying for interconnection on a per-minute basis may not be able to match this price as it knows that it will lose money on all calls which are maintained beyond a certain length of time. This problem arises with respect to local calls, which are charged a flat fee in Mexico, whatever the length of the call. If the entrant is charged on a per-minute basis, the entrant has an inefficient incentive to seek customers whose calls are shorter than the average and to offer reduced rates for short calls.

91. It is more efficient to have interconnection charges closely match the underlying cost structure. This involves adequately discriminating between call set-up and call maintenance charges and between peak and off-peak, etc. In particular, if the underlying cost structure more closely matches the flat fee-per-call than a per-minute charge, the interconnection charges should reflect this with a flat fee per call.

92. In a high-inflation country such as Mexico (inflation was around 18% in 1998), fixing the interconnection charge in nominal terms would imply that real prices for interconnection services would be rapidly declining. It is more appropriate, therefore, to incorporate an adjustment for inflation. Presently, Telmex's interconnection prices are allowed to increase monthly to reflect changes in the consumer price index. There is a real question, however, whether it is appropriate for interconnection prices to fully adjust to reflect inflation. If interconnection charges are cost based and if costs are declining, it is more appropriate for interconnection charges to decline to reflect those costs. It makes sense, therefore, for the interconnection charges in Mexico to decline, in real terms, in line with the productivity adjustment factor (current 4.5% *p.a.*) in Telmex's price cap.

2.3.2. *Interconnection of local and mobile networks*

93. The December 1998 resolutions also made some important changes to the interconnection tariffs for the interconnection of mobile and local networks. First, for calls originating in mobile networks and terminating in a fixed local network, the interconnection charge was reduced, consistent with the above decisions, from around 3.1 cents per minute to 2.6 cents.

94. On the other hand, for calls originating in a fixed local network and terminating in a mobile network, the new resolutions introduce the concept of an asymmetric interconnection rate that recognises the higher termination cost on mobile networks. The resolution sets this interconnection rate equivalent to 18 US cents, (and establishes that it will be revised in six months based on additional information of the actual costs of providing the service). Since local carriers are allowed to pass this higher rate to its users, plus billing and collection costs, this means the introduction of the system of calling-party-pays ("CPP").

95. Under the previous regime, the fixed user paid the local call charge plus a supplement of 1.6 cents per minute. The fixed network did not pass this supplement on to the mobile company. The entire termination costs were charged to the mobile recipient of the call. Under the new regime, if the mobile user opts for called party pays, the charges are essentially the same, except the 1.6 cent surcharge is eliminated. If the mobile user opts for calling party pays, the fixed caller pays local call charges plus a surcharge of 25 cents per minute for calling a mobile number; the fixed network pays the mobile network 19 cents (inflation adjusted) for termination in the mobile network.

96. The authorities have praised CPP as a key instrument to promote competition based on reciprocal cost based interconnection charges and to expand cellular penetration. CPP allows mobile users to better control their telecommunications charges and reduces the incentive to leave the phone switched off. However, the rule set CPP as an optional service, while the existing Mobile Party Pays remained the default system. Users opting for CPP had to ask for the service, include a 044 prefix to their old number and inform their callers of the change. Following the introduction of the service on 1 May 1999, Cofetel accepted a petition of the cellular carriers to adopt CPP as the default system.

97. The tariff set for CPP service is 25 US cents per minute (in addition to the normal cost of a local call). This includes a payment of 19 US cents to the mobile carrier, and a charge of 6 US cents per minute covering billings and collections. Since Telmex must already bill its own customers, the incremental cost of billing on behalf of mobile companies is likely to be negligible. This charge for billing and collection appears unnecessarily high. Cofetel accepted the price based on Telmex assumptions of higher costs for uncollectables and for attending to customers' complaints on their bills, but the price will be revised in November based on new information on actual costs.

2.3.3. *Technical aspects of interconnection*

100. "Equal access" or pre-subscription was a component of the regime from the start of competition in 1 January 1997. Starting in 1997, on a city-by-city basis assignment of subscribers to long-distance carriers as the "default" or "1+" carrier was accomplished through balloting – *i.e.*, Telmex subscriber was sent a ballot 60 days before competition was opened in a particular city which allowed it to choose among long distance carriers. At the end of 1998, such ballots had been carried out in 100 cities, accounting for 80% of the population of Mexico.

98. In another component of the December 1998 resolutions, Cofetel made adjustments to the number of local calling areas, and expanded the stock of numbers available. The number of local service areas, which are based on switching groups, will be gradually reduced from 1 406 to 406 over a three-year period. This will increase the size of the smaller local calling areas. The intention is to provide all carriers common and well defined geographic areas, in order to allow them to plan their networks efficiently, reducing the investment requirements and so barriers to entry while promoting economies of scale in the use of capacity.

99. Overall, in a few years Cofetel has made important steps to develop interconnection policies in a highly contentious environment. Interconnection charges have reduced rapidly to a level that is at the upper end of a range of world prices. The policies set out here would build on these steps to ensure that in the future interconnection charges in Mexico are established in a transparent manner, using transparent, broadly acceptable cost information and pursuing broadly accepted telecommunications objectives.

2.4. *Regulation of prices*

2.4.1. *Regulation of Telmex's prices*

100. The Telmex concession sets out a system of control of the prices of Telmex. The most important component of this is a price cap, which operates over a basket of basic controlled services including local and long-distance. In addition, for the period from 1990-1996 further individual controls operated on the individual local service prices that were intended to limit the rate of rebalancing between local and long-distance prices.

101. The concession permits Telmex to set its rates subject to an aggregate ceiling on the price of a “basket” of services – essentially volume weighted prices of basic telephone services. Basic telephone services, as defined under the concession, include installation charges, basic monthly rent, measured local service, domestic long distance service, and international long distance service. In effect, the cap takes the form of a constraint on the average revenue received by Telmex for basic retail telecommunications services.

102. For the years 1990-1996, the overall price cap increased regularly to take into account inflation in the previous period, permitting Telmex to increase its nominal rates to offset inflation (as measured by the “Mexican National Consumer Price Index”). From 1 January 1997, onwards through 1998, the price cap was adjusted by 0.74% per quarter less than the rate of inflation, leading to a real price decline of approximately 3% per year.

103. The specific formula for the revenue cap on prices is set out in Section 6.3 of the 1990 Telmex concession. It specifies that prices can adjust quarterly such that the product of the price, times by one-period (*i.e.*, three-months) lagged volumes for each component of the basic basket, summed over all products, remained constant in real terms from 1990 to 1996 and, during 1997, fall by 0.74% per quarter (equivalent to 3% per annum). What this means is that if one price falls significantly in a given period (*e.g.*, national long distance), there is increased scope to raise other prices in the basket (*e.g.*, local measured service rates, although residential rates cannot be higher than incremental cost).⁴⁰

104. Beginning 1 January 1999, and every four years thereafter, the level of the adjustment factor is set by Cofetel after administrative hearings with the articulated purpose of “allowing Telmex to maintain an internal rate of return equal to the companies’ weighted average cost of capital”. The procedure is as follows: Telmex has to submit a study on the incremental costs of providing controlled services, as well as a tariff proposal. Based on the long run incremental cost methodology, the initial level of the basket and the value of the X factor are set in order to produce a net profit such that the internal rate of return of the controlled services will be equal to the weighted average cost of capital (WACC). If no agreement on the initial increase or the X factor can be reached between Cofetel and Telmex, then three experts’ opinions will be requested. One of the experts is to be chosen by Cofetel, the second by Telmex and the third one should be chosen by mutual consent. As no agreement occurred for the 1998 renegotiation, three experts were chosen and their verdict submitted to Cofetel in February 1999. For 1999-2002 the X factor was set at 4.5% per year. On 9 March 1999 Cofetel announced a nominal price increase for Telmex of 14% in long distance and 4% in local service (with further local service price increases of 4% on 1 July 1999 and on 1 October 1999 depending on the inflation rate registered from April to June).

105. In addition to the price controls set out above, the Telmex concession also specifies that the price of residential local service must never be above its incremental cost.

106. The global cap under which Telmex currently operates heightens the likelihood of anti-competitive behaviour. When the cap covers prices in both competitive and non-competitive markets, there may be an enhanced incentive for the incumbent to engage in anti-competitive cross-subsidisation.

[A cap on the average price in the two markets] “can distort competition by making the incumbent excessively aggressive in the competitive market. As the incumbent reduces prices to win custom in the competitive market [a revenue cap] enables it to charge a higher price to customers in the captive market. This has the effect of reducing the incumbent’s costs of serving the competitive market. It is quite possible that pricing below marginal cost, which is often regarded as predatory pricing, could be induced by average revenue regulation. As a result, competition from rivals may be thwarted even if they are more efficient than the incumbent. ... In sum, the way that the pricing structure is regulated can have an important influence upon the

nature of competition faced by a multi-product incumbent. In particular, regulating average revenue in a way that allows the incumbent complete freedom over price structure may have serious anti-competitive consequences.⁴¹”

107. The Telmex concession explicitly forbids pricing below incremental costs, but there is room for a strategy where most of the burden of common costs is recovered in the local business service (local residential rates have their own ceiling equal to incremental costs), while reducing prices closer to incremental costs in the long distance service.

108. Indeed, following the introduction of competition in the long-distance market there have been sharp allegations of anti-competitive behaviour and cross-subsidisation, since the prices of long distance services have declined sharply while local rates have increased. However, Cofetel claims that the only reason for the increase in individual local rates since 1997 is to allow Telmex to reach the price caps originally scheduled for 1996, but delayed due to the peso crisis.⁴²

109. As noted earlier, in December 1997, CFC found that Telmex was dominant in five markets. As a consequence of this ruling, Cofetel has authority to impose additional price regulation on Telmex. Cofetel indicates in its 1999 work programme that it intends to implement a system of separate caps for Telmex’s local and long-distance prices.

2.4.2. *Regulation of other retail prices*

110. The FTL states that all concessionaires shall “freely determine the rates for telecommunications services, in terms that will allow the rendering of such services within satisfying conditions of quality, competitiveness, safety and permanence”. The FTL requires that all concessionaires register their prices with Cofetel before they are used.

111. According to Cofetel’s procedures, concessionaires must apply to Cofetel to register new prices 15 days before the new prices come into effect. Cofetel must make a decision on whether or not to grant registration within 10 days. The FTL specifies that all prices must be available for inspection on a public register. Cofetel facilitates such inspection by posting all registered prices on the Internet. Cofetel registers most tariffs within the 10-day period. Delays of tariff registration have, however, been as long as a month.⁴³

112. Aspects of this system give rise to competition concerns. First, the system facilitates collusion among competing firms. Sustained profitable collusion requires the detection of “cheating” on the agreed prices. If firms are required to publicly disclose all their prices, the detection of such cheating is much easier. Under the current system, firms have advance notification of their competitors price changes even before those price changes take effect. Firms cannot discount without it becoming public knowledge even before the discounts apply. Although it is common practice in other industries to publish official price lists, an important source of competition is in the size of discounts off official prices. In the telecommunications industry in Mexico all such discounting is completely transparent. Long-distance prices have fallen significantly in Mexico, but with a relatively small number of large players, collusion remains a long-term threat in this industry.⁴⁴

113. Second, the process diminishes incentives for innovation in pricing and marketing schemes. Since a new pricing plan must be publicly disclosed to a firm’s rivals before the new plan can be implemented, the rivals have several days head start on the introduction of a similar competing plan themselves (although the rivals also have to enter the same process).

114. Third, although the FTL states that, in general, concessionaires shall freely determine their tariffs, Cofetel has a degree of discretion in interpreting when tariffs are sufficient to ensure “quality, competitiveness, safety and permanence”. This discretion might potentially become a tool exercised in the interests of the industry. As an example, in 1998, in the presence of an intense price war in the long-distance market, the major players came to Cofetel to assist them to prevent further price declines through denying registration to new, lower prices. This request was carefully considered by Cofetel, but was not taken up.

115. Economic theory suggests that regulation of prices, terms and conditions is only warranted for a firm in a dominant position. A well-known economist, Roger Noll, in a comment on the telecommunications sector in Mexico notes “... regulation of prices, profits and investment decisions by entrants is unnecessary, for entrants must beat the regulated offerings of the dominant carrier in order to gain a foothold in the market. And, establishing detailed conditions for entry is also unnecessary, since the presence of alternative providers that are seamlessly interconnected protects consumers against loss arising from a firm that is under-financed or incompetently managed. Thus there is simply no need to engage in detailed licensing processes for competitors....”⁴⁵

116. In summary, the price registration system set out in the FTL may threaten the development of competition under certain circumstances. The system of disclosure of all prices greatly facilitates the possibility of collusion amongst the major players. Second, the requirement of registration before using prices limits the opportunities and incentives for introducing new pricing innovations. Third, given the importance of pricing decisions to the industry, the power to refuse registration may become a focal point for industry lobbying to promote price increases or prevent price declines.

117. In addition to exercising its regulatory authority over prices charged by non-dominant firms, Cofetel also controls the contractual terms and conditions offered by those firms. Certain concessions contain a provision that forces the concessionaire to obtain prior authorisation from Cofetel for the contract boilerplate it intends to use with its end-user customers.

118. The price registration provisions of the FTL do not adequately distinguish between dominant and non-dominant firms. Economic regulation should be reserved for dominant firms. In contrast, the price registration, accounting separation and other provisions of the FTL apply to all firms. This imposes unnecessary compliance costs, and as the discussion above illustrates, can in fact threaten competition.

119. The system of price regulation introduced in the Telmex concession was advanced for its time and a major step towards a system of transparent non-political price setting. The proposals here build on this base with minor improvements to minimise the undesirable side effects of the regulation and oversight of telecommunications prices.

2.5. *Quality of service*

120. The 1990 Telmex concession specifies concrete targets for certain quality of service indicators and network expansion. If the indicators were not met, Telmex was required to provide a rebate to subscribers. The level of these indicators was initially set at low levels that became increasingly demanding over time. The required targets are negotiated every four years between Telmex and Cofetel.

121. As Table 3 illustrates, in 1994 at the end of the first four-year period, the quality of service targets were reduced downward significantly, thus allowing quality of service to deteriorate.⁴⁶ This occurred at the time of the macroeconomic crisis triggered by the peso devaluation. By 1996, the quality indices had recovered their 1994 levels, although the ICAL index in 1997 remained below the level achieved in 1994.

Table 3. **Quality of service indicators under the concession**

		1990	1991	1992	1993	1994	1995	1996	1997
1. Service continuity Index ("ICON")	Target	80.20	83.42	86.19	87.07	87.95	83.86	85.60	87.46
	Actual	84.72	86.27	89.53	90.89	92.17	89.94	92.45	92.73
2. Quality Index ("ICAL")	Target	90.84	91.66	92.38	92.82	93.64	86.80	88.74	89.98
	Actual	89.55	92.36	93.68	95.93	97.31	95.91	96.39	97.23
3. Private Line/Circuit Index ("ICIRC")	Target	n.a.	n.a.	n.a.	69.62	79.86	60.00	67.60	77.15
	Actual	n.a.	n.a.	n.a.	35.59	81.12	79.95	81.44	87.52

122. Given the quantity of variables in the quality indexes and the size of the universe of users they are applied to, it becomes virtually impossible to prove non-compliance with the title's quality indicators. Individual quality parameters are integrated into quality indexes and are not taken into account independently of each other. Compliance with the quality indexes is assessed on the basis of the whole universe of Telmex users (commercial clients together with long distance carriers).

123. The concession also contained targets on network expansion and related targets on indices of the availability of service such as waiting time for new lines. Targets for the reduction of waiting time have been achieved much more quickly than required under the concession.⁴⁷ Telmex also met the network expansion requirement of 12.2% average annual rate of expansion until 1994. This is discussed further in Section 3.3.

2.6. *Resource issues*

2.6.1. *Access to spectrum*

124. The FTL requires that concessions for the use of spectrum be granted through a public bidding mechanism. Cofetel fulfils this obligation through public spectrum auctions.

125. To date, Cofetel has conducted public auctions of spectrum for various services including paging, point to point links, MMDS, Personal Communications Services ("PCS") and wireless local ("WLL") access. The PCS auction brought in revenues of \$US 802.2 million. For the provision of PCS, Cofetel allocated four frequency bands for each region, two for 30 MHz of bandwidth and two for 10 MHz. Concessions to operate PCS and wireless local loop were granted in nine concession areas which coincided with the original nine geographic regions in which cellular concessions were granted.⁴⁸

126. The bidding process adopted is a "simultaneous ascending auction", whereby participants submit daily bids via computer. In the wireless services market, the process prohibits cross-subsidisation of concessionaire and competitive services and states that concession holders for public wireless service may not receive subsidies or preferential treatment from other telecommunications concessions. All wireless concession and permit holders must be completely independent of other organisations, and must have their own accounting, administrative, operational, maintenance, development and supervisory staff. In addition, wireless concessionaires are prohibited from using equipment or installations belonging to other telephone concessions, unless they can prove that they are renting at market prices, and that all wireless groups are being offered the same arrangement.

127. Mexico's approach provides concessionaires flexibility on how to use assigned spectrum. Area, rather than site-by-site, concessions, and desegregation and partitioning rights have expanded options for concessionaires to make the most productive use of the spectrum. Broad flexibility for concessionaires enhances efficient use of the spectrum, and permits concessionaires and the marketplace to develop the products that consumers want. In terms of transparency, fairness and competitive access, the system for spectrum allocation has been successful.

128. One unfortunate consequence of the use of spectrum auctions is that they provide the government with a financial interest in the artificial creation of spectrum scarcity and consequent reduction in competition. In order to minimise this potential problem, Cofetel publishes each year the annual auction program, assessing the demand for spectrum by potential investors given the available technology and equipment. Cofetel argues that it will follow a policy of auctioning spectrum as long as the marginal value of spectrum is positive.

2.6.2. *Access to right-of-way and related facilities*

132. Access to rights-of-way is an important requirement for new entrants. Entrants must in many cases negotiate with incumbents in telecommunication markets, other utilities (such as power, water and railroad companies), and local governments to secure access to necessary rights-of-way or facilities. Sometimes access entails the right to install facilities (*e.g.*, to dig to install cable in the case of fixed networks, or to erect towers for mobile communications), and other times may involve access to facilities already in place (such as poles, ducts, and conduits).

129. In general, the issue of access to rights-of-way and related facilities is a matter appropriately left to private negotiations. In some instances, however, there may be jurisdictional problems in extending initiatives to reduce barriers to entry adopted at the national level to local authorities. In addition, incumbents can sometimes protect their market power by denying access to new entrants.

130. The FTL specifically includes provisions addressing access to rights of way. Article 45 states that "whenever the technical, safety and operational conditions may allow it, the rights of way of the general communication ways, of the electric transmission and radio-communication towers; the set of posts with electric distribution wires; adjacent land plots to oil and other hydrocarbon ducts; as well as posts and ducts with public telecommunications networks wiring that may be available to a public network concessionaire must be equally available to other concessionaires on a non-discriminatory basis".

131. The Mexican initiatives to promote local competition do not effectively address the issue of rights-of-way. Specifically, the initiatives do not appear to provide a regime establishing the rules under which new entrants are provided access to the incumbent's ducts, conduits, and other relevant facilities. An absence of such rules could delay local competition by leaving scope for the incumbent to raise the costs of its rivals. The absence of such rules could also delay mobile competition by raising the costs of securing permission to install towers. The experience of other OECD countries indicates that the establishment of rules and arbitration mechanisms can be helpful steps to lower barriers to entry.

2.6.3. *Numbering issues*

132. Number portability refers to the ability of customers to change their location, service provider, or service without being required to change their number. An absence of provisions to allow for number portability acts as a disincentive for customers to switch from the incumbent to a new entrant because such switching imposes costs, such as the burden of informing others of their new number. In the administration of their numbering plans, regulators in most OECD countries have been gradually moving forward to

achieve number portability.⁴⁹ While it is possible to provide number portability through “call forwarding” variants (under which a customer in effect is given two or more numbers), there is general agreement that solutions involving Advanced Intelligent Network is superior (though more costly) since the former puts pressure on the availability of numbers.⁵⁰ Longer-term solutions based on Advanced Intelligent Network functions require the establishment of a data-base and signalling systems such as common channel signalling/Signalling System 7 (SS-7). In Mexico, a Committee was created, with the industry and Cofetel, to decide on the specific features of SS-7 to be adopted by all carriers. The conclusions were adopted in the National Basic Signalling Plan.

133. Mexico does not yet have an agreed plan for number portability, either through a “call forwarding” variant or through a solution involving Advanced Intelligent Network. Mexico is, however, currently in the process of adopting a new dialling plan. Mexico will add an eighth digit to numbers in Mexico City in February 1999 as well as Guadalajara and Monterrey by the year 2000. By increasing the stock of available numbers, Mexico is making the initial steps to facilitate a more comprehensive number portability scheme at a later date.⁵¹ It is important, however, that further concrete steps be taken to introduce number portability, which include geographic mobility as well as mobile numbering mobility. The new dialling plan is outlined in Box 3.

Box 3. Changes to Mexico's telephone numbering regime

By December 1998, Mexico faced the prospect of running out of numbers in major cities. In Mexico City, for example, 8 120 000 of the available 8 180 000 numbers had been assigned – leaving less than 1% available for new subscribers or new carriers. In Tijuana, a little less than 90% of the available numbers had been assigned. Thus, the Local Competition decision adds an extra digit to numbers across the country in stages, beginning with Mexico City in February 1999. The decision also aligns Mexico’s international dialling prefixes with international norms. The old and new dialling prefixes are as follows:

	<i>OLD DIALLING PREFIXES</i>	<i>NEW DIALLING PREFIXES</i>
To the US and Canada:	95+ Area Code + number	00 + 1 + Area Code + number.
To other countries:	98+Country Code+City Code+number.	00+Country Code+City Code+number.
Domestic Long-distance:	91+City Code+number.	01+City Code+number.

134. It is not currently possible for telecommunications users in Mexico to select a long-distance carrier on a call-by-call basis. Plans for call-by-call selection of the long-distance carrier were set out in the numbering plan published in June 1996, with the intention of commencing the service in September 1997. Each of the 11 carriers holding long-distance concessions at that time were allocated an “identification code” using the mechanism set out in the numbering plan. However the concessionaires requested Cofetel to delay the process until April 1998 and Cofetel agreed. At the beginning of 1998, concessionaires asked once more to defer the process. Cofetel resolved to establish the basis for the start of the service and on 30 March 1998 Cofetel published the “Resolution by which it establishes the conditions and operational characteristics to start the system of call by call selection of the long distance carrier”. This resolution sets out the guidelines under which call-by-call selection will be provided as well as the guidelines for local carriers to comply with their obligation to provide this service. By the start of 1999 call-by-call selection service had not commenced operation.

135. In the absence of call-by-call selection of carrier, competition between long-distance carriers is focused on becoming a user’s default or pre-subscribed carrier. To the extent that there are costs involved in switching from one carrier to another (in the form of delays or paperwork), competition is likely to be

less intense than if users can select the long-distance carrier on a call-by-call basis. The switching costs can also be used as a barrier against new entry by firms that did not participate in the original balloting process. This may partly explain why the existing concessionaires have opposed the introduction of this service.⁵² The lack of call-by-call selection of the long-distance carrier is a weakness in the Mexican regime.

2.7. *Universal service obligations*

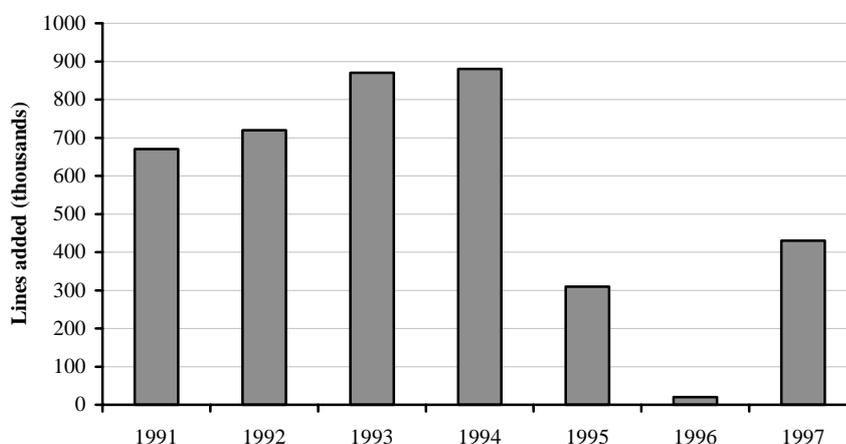
136. Mexico currently has one of the lowest penetration rates of telephone lines of any country in the OECD. Mexico's teledensity also appears low in comparison with its neighbours in South America, taking into account the GDP per capita (see Figure 6). Accordingly, the promotion of network expansion and "universal service" has been a central policy goal of Mexico.

137. As stated earlier, the 1990 Telmex concession included requirements for network expansion. Specifically, the Telmex concession states that:

Between [10 September 1990] and 31 December 1994 Telmex must expand its number of basic telephone service lines in operation excluding public telephone booths, by an average minimum rate of 12% annually except in fortuitous circumstances or force majeure.⁵³

138. As Figure 2 shows, Telmex complied with these requirements in its concession. However, network expansion has lagged in subsequent years. In part this is due to the effects of the macroeconomic crisis, a skewed income distribution, and the rapid rebalancing which has taken place.

Figure 2. **Lines added to the Telmex network**



Source: Telmex.

139. In addition, the SCT, together with the governments of the States (Mexico is composed of 31 states and the Federal District) has established a Rural Telephone Program to provide telephone service for towns with between 100 and 499 inhabitants. From the Census of 1990 it was determined that there were 32 230 such towns in Mexico. In 1995 this program was changed to allow new technologies (such as cellular telephones) to participate in the program. Cofetel reports that during the present administration approximately 21 000 localities have been connected.

140. For the last few years Mexico has relied primarily on the forces of competition to expand the network. To that end, policies have been put in place to enhance competition in local service, including

rebalancing of local and long-distance tariffs, auctioning of spectrum suitable for PCS and wireless local loop applications, and the establishment of interconnection rules for local access. With these policies now in place, the outlook for network expansion is better. It is the government's opinion that through the auctioning of the spectrum for the supply of wireless telephone services (together with investments in cable telephony projects), teledensity could be doubled with the installation of 9.5 million new lines in five years.

141. However, as this chapter demonstrates, overall telecommunications prices in Mexico, especially for local telecommunications services remain high and penetration low. It is to be hoped that the growth of competition in local service will drive down local service prices. If this can be achieved, this will likely have a major impact on teledensity in Mexico.

142. Telecommunications networks exhibit a characteristic known as "network externalities", meaning that the value of a connection to the network depends upon the number of people who are also connected. There are ways for individuals to internalise this externality – that is, mechanisms by which firms or consumers can subsidise the cost of telecommunications services for others with whom they want to remain in contact. For example, businesses that value being reached by their customers can offer to pay for the charges themselves through "free call" or 0800 numbers. Some telecommunications firms offer "private 0800" numbers under which individuals can offer to pay the charges for specific callers to their telephone. Of course, individuals can always make private arrangements to subsidise or reimburse the telephone costs of friends or relatives with whom they desire to remain in contact.

143. However, it is possible that these private arrangements do not work perfectly. It is therefore possible that setting a structure of prices so that individuals are encouraged onto the network at the margin could enhance total welfare. In rich countries, the elasticity of demand for telephone service with respect to prevailing prices is so small as to make such programs largely ineffective. However, the situation in Mexico may be different. In some cases it appears that Telmex has already raised the local service charges to the point where Mexican subscribers are having difficulty remaining on the network. Prices for telecommunications services in Mexico are very high in relation to Mexican incomes.

144. As discussed earlier in this chapter, it may be that, in Mexico, overall welfare could be improved by setting the structure of telecommunications prices in a manner which encourages subscribers onto the network at the margin. As discussed earlier, in a competitive environment, the structure of the prices of the incumbent cannot be adjusted without inducing competitive entry into the high margin services. In a competitive environment, a readjustment of prices (raising on some prices and lowering of others) can only be achieved through the establishment of a portable, competitively and technologically neutral fund.

145. Cofetel has expressed the intention to establish such a fund. Some general economic principles to guide the establishment of such a fund can be articulated. First, the funds should be raised in a manner that distorts competition as little as possible. This usually implies that the fund should be financed to the extent possible from general tax revenues.⁵⁴ Alternatively, if it is necessary to finance the fund from the telecommunications industry, the funds should be recovered in a broad-based manner (so that the "tax" on any one telecommunications service can be as small as possible). In addition, the "tax" should be higher on services that are relatively less elastic. Fixed or non-traffic sensitive charges on subscriber (especially business) lines are therefore preferred to usage charges on interconnection services.

146. Second, the funds should be available to all carriers, independent of their technology and in a manner that ensures that the service is provided in the lowest cost manner. This is particularly important as a mechanism to prevent the incumbent inflating the alleged size of the necessary contribution. One approach is to tender the right to provide services in loss-making areas.⁵⁵

147. As emphasised earlier, such a fund would allow the incumbent to recover the costs of any deficit on local residential service in a manner which distorts all prices (including interconnection charges) as little as possible.

2.8. *International aspects*

148. International issues in Mexican telecommunications are dominated by the important fact that the vast majority of the international telecommunications traffic of Mexico (88.6%) is with just one other country – the USA. The next largest country is Canada with 1.6%. No other country has a volume of more than 1%.⁵⁶

149. Historically, in-bound calls from the US have exceeded out-bound calls by a factor of two and a half to one. Termination charges for calls (based on the international accounting rate system) have been decreasing since the beginning of this decade, but are still above the underlying costs, yielding a significant revenue stream for Mexico.

150. From the early days of the deregulation of telecommunications in the US, the concern was expressed that competition between US long-distance companies would drive termination costs down in the US, while foreign monopolies could maintain termination costs at high levels. This would lead to large imbalances in the “trade” of telecommunications services, with US companies making large payments to foreign monopolies. The proposed solution was to restrict competition between US long-distance carriers in the termination of foreign calls. Under the “proportional return” system companies in the US would agree on a common termination charge and incoming traffic would be shared amongst the local carriers in proportion to the outgoing traffic generated by that carrier. Over time, bilateral and multilateral negotiations would seek to lower the accounting rates closer to cost. This system has also been adopted in other liberalising countries.

151. At the time of the liberalisation of long-distance competition in Mexico, Mexico was not faced with a foreign monopoly in the US, but was concerned about equality of treatment for US companies in Mexico and Mexican companies in the US. Also, Mexico had a very sizeable telecommunications “trade” imbalance in its favour. In order to preserve the revenue flowing to the Mexican telecommunications industry from this imbalance, Mexico decided establish the proportional return system. As in the US, the competing international operators adopt a single, uniform termination charge. Incoming international traffic is distributed amongst them in a manner proportional to the share of outgoing international traffic. The right to negotiate the uniform termination charge was given to the carrier with the largest share of the traffic (which is likely to be Telmex for the foreseeable future). At the time of writing Telmex and AT&T have agreed that the settlement rates for 1998, the first semester of 1999 and the second half of 1999 and the year 2000 will be 37, 31, and 19 US cents, respectively.

152. Since the termination charges are maintained well above cost, there are strong incentives on the US carriers to seek to “bypass” the official public network to avoid paying the termination charges.⁵⁷ Cofotel has rigorously defended the proportional return system by refusing to grant concessions for international simple resale and by prosecuting informal interconnection of networks near the border with the US.⁵⁸

153. Estimates of the effect of the proportional return system can be seen by comparing prices. Telmex currently offers to certain major domestic customers the ability to call anywhere in Mexico at an average of 11 cents per minute (including both origination and termination charges). In contrast, the rate for terminating international calls from the US border to a telephone in Mexico is charged at 25 cents (average) in 1999. International long-distance prices have come down as a consequence of competition and

a decline in the settlement rates. Cofetel note, based on data from registered prices, calls to the US have dropped between 42.6% and 20.6% between 1996 and 1998.

154. The proportional return system for international traffic in Mexico is due to be reviewed during 1999. Rule 40 of the rules for international long distance services (published in June 1996) state that: "The proportional return system established in these rules cannot be modified before the third anniversary of its entry into force. Despite that, Cofetel, after reviewing the current conditions of competition and reciprocity for the operation of telecommunication services of Mexico with other countries, the evolution of international references for interconnection tariffs and settlement rates for the traffic of Mexico with its main commercial partners, as well as the growth and development of the telecommunications markets of the country, can determine the convenience to make modifications to the proportional return system established in these rules, before the time stated in the previous paragraph."

155. Foreign ownership remains subject to restrictions in most areas of the telecommunications sector. Under the Federal Telecommunications Law (Article 12) foreign investment participation in telecommunications concessions may not exceed 49%, except for cellular telephone providers. In the case of cellular operators, higher levels of foreign investment participation may be allowed, subject to the approval of the National Foreign Investment Commission ("*Comisión Nacional de Inversiones Extranjeras*"). No foreign investment restrictions apply in respect of value added services. The 1997 reforms to the Foreign Investment Law introduced additional mechanisms to enhance foreign investment participation. An enterprise with 51% of the voting stock in the hands of Mexican investors and 49% in foreign investment is considered as 100% Mexican when acquiring the 51% of the stock of another company. In addition, limited right shares can be considered as neutral investment and not taken into account for the purposes of foreign investment limitations.

156. International agreements have played a role in Mexico, as in many other countries. The conclusion of the NAFTA agreement significantly increased the degree to which Mexican telecommunications equipment markets were opened to foreign suppliers from Canada and the US.⁵⁹ Importantly, with the successful conclusion in February 1997 of the WTO agreement on basic telecommunications, Mexico took a strong step toward promoting foreign participation in the telecommunications services market. Mexico made significant market-opening commitments in the agreement and joined 64 other WTO Members in subscribing to a Reference Paper on Pro-Competitive Regulatory Principles.⁶⁰

2.9. Consumer protection

157. In Mexico, as in many other countries, consumers may designate a long-distance company as their "default" or "1+" carrier to which long-distance calls are automatically directed. In many OECD countries, some carriers have undertaken to be designated as the "default" carrier without proper subscriber authorisation. This is called "slamming". Because in Mexico there is no possibility to select a long-distance carrier on a call-by-call basis, competition to become a user's default carrier is particularly intense.

158. In Mexico, slamming complaints are a responsibility of Cofetel, and also a general agency responsible for consumer protection called *Procuraduria Federal de Proteccion al Consumidor* ("Profeco"). All three major carriers, Avantel, Alestra and Telmex have been fined for slamming.⁶¹ In November 1997, Cofetel established the obligation that a third party verifies all changes to pre-subscription.

159. Telmex has also been fined for delays in providing subscriber information from its database necessary for rivals to switch a subscriber's default carrier in cases where the subscriber has legally authorised the switch from Telmex.⁶²

160. A further issue relates to the way Telmex charges for local measured service. In Mexico subscribers are billed for each call made after a certain minimum. However, Telmex did not list the specific numbers called and thus customers could not verify whether the calls were made. Profeco reports that there have been about 39 000 complaints against Telmex relating to charges for local measured service.⁶³ To deal with this issue, following Profeco recommendations, Telmex introduced a new billing system to provide customers with detailed information since 1998.⁶⁴

2.10. Streamlining regulation and application of competition principles

161. Since 1989, an explicit national policy on regulatory reform has been in place and has steadily expanded in scope and ambition. An important element of this strategy was the creation in 1989 of an economic deregulation unit called the *Unidad de Desregulacion Economica* (UDE) in the Ministry of Trade and Industry, *Secretaria de Comercio y Fomento Industrial* (Secofi).

162. By the early 1990s, this economic deregulation programme had broadened to include an effort to review obsolete and inadequate regulations and build the necessary microeconomic conditions to increase efficiency and lower costs in all markets. In November 1995, a comprehensive policy, called the *Acuerdo para la Desregulacion de la Actividad Empresarial* (ADAE), was enacted in a new executive order, and was confirmed a few months later in the National Development Plan. It gave the UDE greater review powers, created an Economic Deregulation Council (CDE) and, most important, established a scrutiny process for new regulatory proposals and existing formalities.

163. In November 1995, a review process was established for all new regulatory proposals likely to have an impact on business activity. According to the UDE, the rate of compliance with this new process has generally been high. As in other countries, minor rules or politically sensitive regulations may still be implemented without following the appropriate review by the CDE/UDE. However, the strong support of the Comptroller General and political support at the highest level may combine to force the establishment of a new regulatory culture in Mexico (see Chapter 2).

164. The ADAE comprehensive process permitted broader consultation and review through the CDE of any regulatory proposal likely to have an impact on business activity. However, most of the regulations produced by SCT, and later Cofetel, after the enactment of the FTL were not reviewed by UDE/CDE because rules related to concessions were exempted from the ADAE. In December 1996, a reform of the Administrative Procedure Law established a more powerful review mechanism through the obligation to present a Regulatory Impact Analysis to the UDE/CDE for all proposed regulations including those related to rules governing telecommunication concessions.

165. As mentioned earlier, Cofetel proposes to combine the assorted rulings and case by case decisions into a single uniform body of regulation.⁶⁵ The process of implementing such regulation would involve exposing Cofetel's regulation to close scrutiny by the UDE/CDE. As stated earlier, given the importance of the telecommunications industry to the economy and the resources at stake in many regulatory decisions in telecommunications, it is important that Cofetel's rules and policies be subject to external oversight by an agency charged with responsibility for ensuring high-quality regulation such as the UDE.

2.10.1. *Application of competition principles*

166. Many aspects of the interface between competition law and sector-specific regulation are well designed:

- Competition law applies to the telecommunications sector, and the CFC has the authority to take enforcement actions and provide competition policy advice as in other OECD countries. As indicated elsewhere in this chapter, the CFC has been involved in numerous proceedings in the telecommunications sector, including a few merger proceedings. In July 1995, Telmex acquired the major cable provider in Mexico City (in spite of a prohibition in its concession on the provision directly or indirectly of television services to the public). The decision of CFC not to challenge the transaction is controversial since, in the longer-term, the cable infrastructure could provide an important means of entry into local markets.
- The FTL explicitly provides for a role for the CFC in spectrum auctions. As one example, in authorising Telmex's participation in the auction for fixed-wireless services, the CFC placed certain obligations on Telmex, such as the requirement to submit to an outside auditor to monitor compliance with competition principles and a requirement to wait 24 months before commencing operations.⁶⁶
- Lastly, the FTL explicitly provides a role for the CFC in declaring a carrier dominant for the purposes of imposing additional regulation and, as discussed earlier, the CFC has done so in the case of Telmex.

167. At one level, there is a significant overlap in the responsibilities of Cofetel and the CFC, particularly in the prevention of abuse of a dominant position (including predatory pricing). Indeed, many of the provisions of the Telmex concession and the FTL relating to interconnection and prevention of cross-subsidisation can be viewed as the sector-specific outworking of the more general principle that a firm in a dominant position should not be allowed to use its dominant position to restrict competition.⁶⁷ At another level, the roles of Cofetel and the CFC can be viewed as complementary. The CFC, as an enforcement body, is intended to respond to complaints of aggrieved parties (or its own investigations) in the prosecution of anti-competitive behaviour. On the other hand, the primary role of Cofetel is to set policies, issue concessions and arbitrate on interconnection disputes. Recently, partly as a result of dissatisfaction with Cofetel, the new-entrant carriers have been increasingly turning to the CFC to resolve allegations of anti-competitive behaviour in the sector.

168. Despite the overlap in their functions, the formal interaction between the competition authority and Cofetel has been limited. For example, Cofetel seeks to prevent predatory pricing, and cross-subsidisation through its control over prices, largely independently of any input from the CFC.

169. In general, in the design of regulatory laws and institutions, there are good reasons to prefer generic as opposed to industry-specific approaches. Generic approaches are more inclined to be based on broad, well-tested underlying principles and are more likely to be immune to special-interest pleading. This is one reason why it is desirable (and the usual practice) for competition law to apply widely to as many sectors of the economy as possible.

170. In this light, it is desirable for competition enforcement activities in the telecommunications sector to conform as closely as possible to competition enforcement practices in the wider economy. To this end, Cofetel and the CFC should closely co-ordinate on their approach to enforcement activities. This could be achieved through the establishment of mechanisms for co-operation and statements of common approaches to issues such as market definition and enforcement. As one example, there is clear scope for

collaboration on the determination of any specific restrictions to be imposed on Telmex following the CFC's determination of dominance. In making its determination the CFC identified specific competition deficiencies in five markets. It is appropriate therefore, that the CFC assists in the identification of specific remedies to address those deficiencies.⁶⁸

171. More generally, given the expertise of the CFC in assessing how regulatory constraints affect competition, the input of the CFC into Cofetel's regulatory deliberations would be invaluable. This could be achieved by taking into account the views of the CFC as part of the wider consultation prior to taking important regulatory decisions.

172. As in any sector, it is important that a dominant firm be prevented from enhancing that dominance through acquisition of control over enterprises or assets which would allow it to strengthen its dominant position. Cable television providers are an important source of potential competition in the market for voice telephony and other telecommunications services. A merger of a dominant telecommunications company with a major cable TV provider would therefore raise competition concerns. In July 1995 Telmex acquired 49% of a major cable TV provider in the Mexico City area. In the medium term competition in telecommunications services in the Mexico City area would be enhanced if Telmex were required to divest this holding.

173. At present the Mexican regime contains no explicit mechanism for the lifting of regulation as competition develops. Although Telmex has been deemed to be dominant today, it may not be so in the future. The price control and other firm-specific requirements should be lifted, on the advice of the CFC, when Telmex is no longer considered to be dominant.

2.11. The dynamic view: convergence in communications markets

174. As technology develops, increasingly broadcasting and telecommunications are being provided over the same infrastructure by the same firm. This phenomenon is known as convergence. Convergence can create tensions for the regulatory regimes for broadcasting and telecommunications by either holding up the benefits of convergence or, where convergence is allowed, encouraging firms to exploit gaps or differences in the respective regulatory regimes. Convergence can also create tensions regarding regulatory institutions as, in some countries, these two sectors are regulated by separate regulatory institutions.

175. In Mexico, the regulatory regime for broadcasting and telecommunications largely reflects the underlying technological convergence. In Mexico conventional over-the-air broadcasting (or "Open TV and Audio" as it is known in Mexico) is regulated by the Law of Radio and Television and is the responsibility of the *Dirección General de Sistemas de Radio y Televisión* of the Under-Ministry of Communications in the SCT. However, cable broadcasting (known as "Restricted TV and Audio") is considered a telecommunications service and is regulated by the FTL under the responsibility of Cofetel.

176. The FTL allows concessionaires of restricted TV to offer other value-added services, such as digital music and Internet, among others.⁶⁹ In the coming months Cofetel will publish the Rules for Restricted Television and Audio which seek to provide incentives for fair and non-discriminatory competition, protect copyright rights and promote national production regardless of the technology used. As a consequence of these steps, the interest of customers and companies on restricted audio and TV has increased in the past few years. Restricted (*i.e.*, cable) TV has increased demand for programming and encouraged the development of content targeted at specific segments of the population. As in other countries, cable TV also plays an important role in making broadcast services available where over-the-air reception is poor. Today there are 1.1 million users in Mexico.

177. As of 1996, there were 246 concessions granted for cable TV, increasing to 284 in 1997 and 394 in 1998. 19 concessions have been granted for TV via microwave (MMDS) services, and six concessions to provide satellite direct-to-home television (DTH) services.

178. Holders of local and long-distance telecommunications concessions can apply to Cofotel to amend their concession to allow them to provide television services. Telmex's concession expressly prevents Telmex from offering directly, or indirectly, public television services.

3. MARKET PERFORMANCE

179. Regulation is not an end in itself. Rather, the final objective of regulation is the efficient delivery of benefits to users and consumers. This section assesses the performance of the Mexican telecommunications industry in the delivery of those benefits to users and consumers, using a variety of indicators related to price, quality, investment, network penetration and so on.

3.1. Price and quantity indicators

180. Price is, of course, one of the most important indicators of performance. In an efficient market, prices are driven down towards the underlying costs. Reliable cost information is, however, difficult to obtain. Therefore, rather than comparing prices directly with costs, it is more common to compare current prices with two alternative benchmarks – price levels in the past and price levels in other comparable countries.

181. Consider first the movement in prices over time. Competitive entry into the provision of long-distance and international services has led to pronounced decreases in prices in these markets. Prices have fallen by 50%, in real terms, in two years. This has been brought about by general price reductions as well as the introduction of new discount schemes for calls with particular time and destination characteristics and the extension of off-peak and weekend rates.

182. As in most countries, discount plans have played an important role in the reduction of the effective price of these services. In January 1998, Avantel offered a 33% discount off all national long distance and international calls, when a customer spends 150 pesos a month or more. In July 1998, Avantel enhanced this discount calling plan by launching a *Friends & Family scheme* under which customers receive preferential prices on calls to a limited list of friends and family members. Customers receive a further 10% discount on calls made to other Avantel clients. In the same week Alestra (AT&T) released its *AT&T Destinations Program*, offering low rates on calls made to AT&T customers in the United States.

183. After being fixed in nominal terms during 1995 (in spite of 59% inflation of that year), local service tariffs subsequently increased faster than inflation. This includes not only increases in the monthly flat rate, but also increases in local measured service charges. Figure 3 illustrates the movement in the nominal price of a basket of local services for residential and business users. The basket includes the cost of installing a new line (at a per month rate, averaged over 3 years), the monthly line rental and the usage cost for a number of calls. For residential customers the number of calls is 150 (for which the first 100 are free) and for business customers, the number is 200 (all of which are charged). As is apparent, the prices for local service have risen rapidly since 1995.

Figure 3. Trends in Mexican business and residential local service charges



Source: Materials gathered from market participants by OECD.

184. Long-distance volumes have been increasing throughout the 1990s, as Table 4 indicates.

Table 4. Trends in volumes of lines and calls 1990-1998

	1990	1991	1992	1993	1994	1995	1996	1997	1998
Lines in service	5.35	6.02	6.76	7.82	8.493	8.801	8.826	9.254	9.927
National long distance calls	951	1068	1221	1358	1630	1747	1967	2222*	2511*
Intl long distance calls	169	210	284	324	461	416	491	555*	627*

All figures in millions.

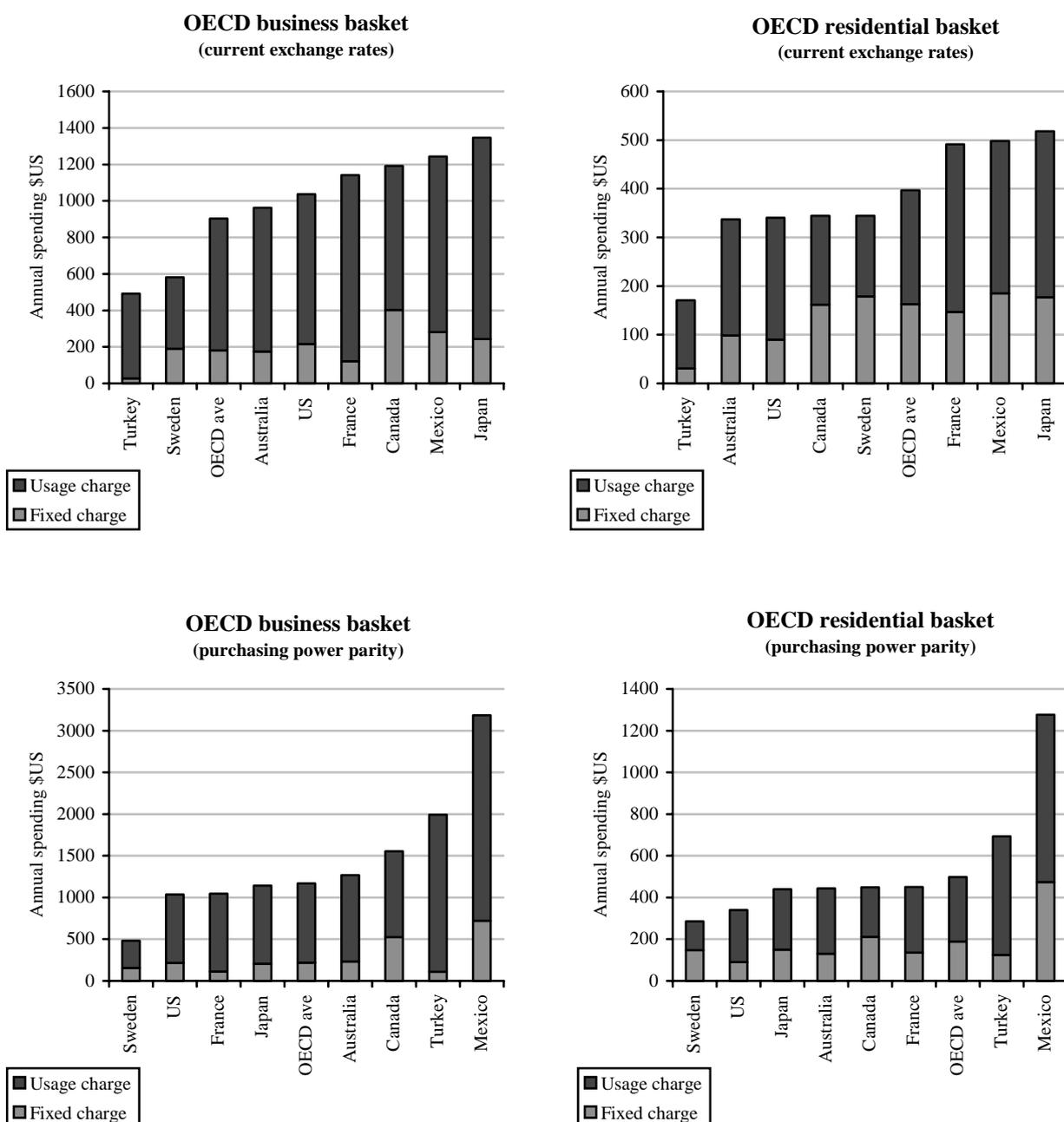
*estimated by the OECD.

Source: Cofetel, Telmex annual reports.

185. Price levels in other countries provide a second important source of price benchmarks. For these purposes the OECD collects the prices of a basket of telecommunications for residential and business customers in each of the OECD countries. The basket includes a number of calls distributed at different times of the day, different days of the week and over different distances. The statistics are prepared in \$US using both purchasing power parity (PPP) and current exchange rates. In general, it is considered that the PPP figures provide a more reliable comparison. However, there are reasons to doubt the reliability of PPP figures for those countries experiencing high inflation.⁷⁰ For comparison purposes both sets of figures are presented below.

186. The results of these comparisons with selected OECD countries are displayed in Figure 4. It is apparent that in both cases Mexico's prices are well above the OECD average. In both cases the fixed (*i.e.*, monthly rental) component of the basket is also above the OECD average. These price comparisons do not reflect the nominal price increases announced in March 1999.

Figure 4. International comparison of business and residential charges (August 1998)

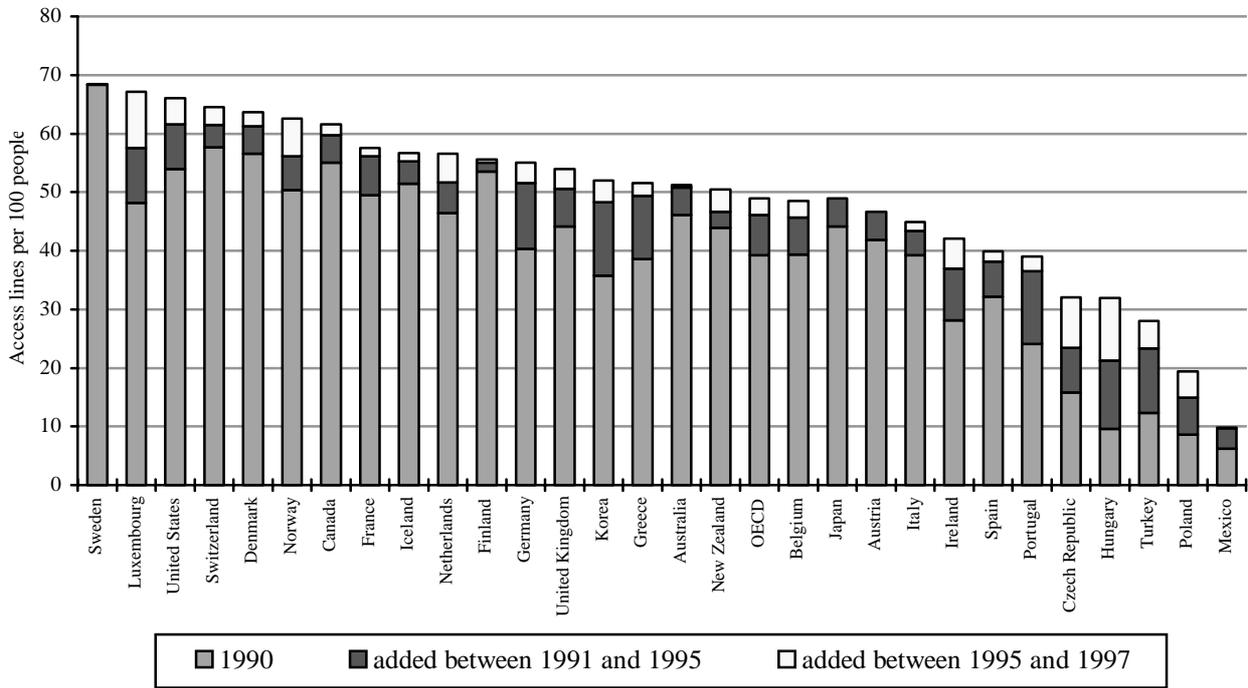


Source: OCDE (1999), *Communications Outlook 1999*, Paris.

3.2. Penetration rates

187. As this chapter has noted, the penetration rate of telephone lines in Mexico remains low in comparison with other OECD countries. As Figure 5 shows, Mexico's performance in terms of penetration rates has lagged behind OECD countries, and Mexico has lost ground since 1990. Indeed, while Mexico is only at about 10 access lines per 100 inhabitants, the next lowest OECD country, Poland, is near 20 lines due to an increase in about 10 lines per 100 inhabitants since 1990.⁷¹

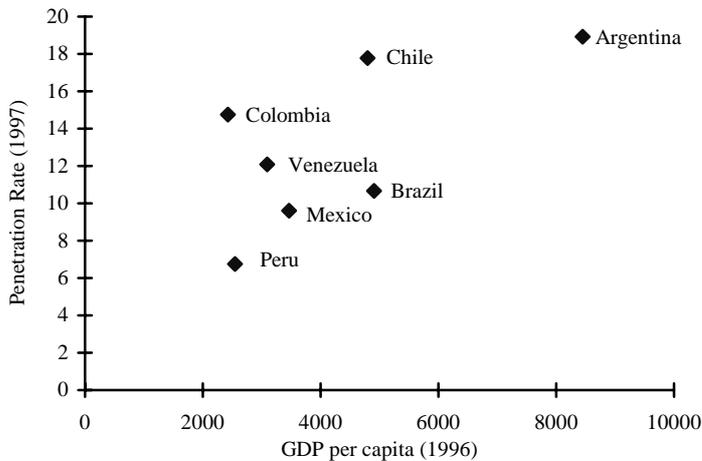
Figure 5. International comparison of progress toward network penetration



Source: OECD (1999), *Communications outlook 1999*, Paris.

188. There is a strong link between GDP per capita and telecommunications penetration. It may be more appropriate, therefore, to compare Mexico with other countries at a similar level of development. Figure 6 compares Mexico's telecommunications penetration with other Latin American countries. Compared with these other countries, Mexico appears closer to the average, although there remains room for improvement.

Figure 6. GDP per capita vs penetration rate (selected countries)



Source: ITU, *Basic Indicators: 1997* posted at: <<www.itu.int/ti/industryoverview/index.html>>. Source: ITU.

189. As indicated elsewhere in this paper it is expected that the new local service concessionaires have committed to build 9.5 million new access lines over the next five years. This will increase Mexico's penetration rate to at least 18-20 access lines per person.

3.3. *Quality of service*

190. As discussed earlier (Section 2.2.4), Telmex's quality of service has significantly improved since 1990 (with a temporary decline in service quality in 1995-1996), in part due to significant investment in improved telecommunications technology. Table 5 presents the change in key service quality indicators that Telmex is required to meet, according to the terms of its concession.

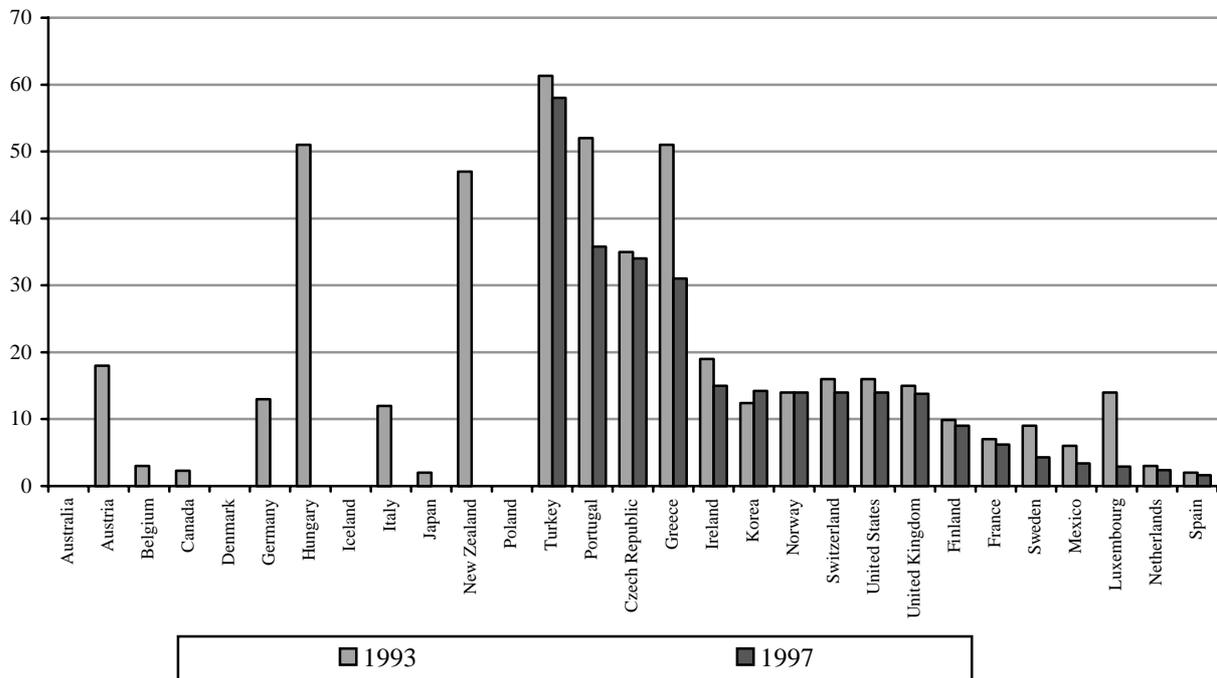
Table 5. **Telmex's quality of service 1990 compared with 1998**

Indicator	1990 (%)	1998 (%)
<i>Local service:</i>		
Index of service continuation	80.2	91.4
Percentage of call failure	10.0	2.8
Repair within same day	45.0	80.4
Repair within 3 days	80.0	94.0
Index of quality of service for basic service	91.2	97.8
Obtaining dial tone within four seconds	97.0	99.9
% of calls reaching destination	92.0	98.3
Public payphones out of service as % of total	13.0	1.9
% of calls that are answered by the operator	90.0	92.6
<i>Long distance service</i>		
III. Index for quality of service for long distance	90.0	98.1
% of calls that reach their destination	90.0	99.3
% of calls that are answered by the operator	90.0	95.3

Source: Telmex, "El Título de Concesion de Telmex y la Apertura a la Competencia en el sector de las telecomunicaciones", 3 Noviembre de 1998.

191. Another indicator of quality of service is the number of faults that are recorded. As Figure 7 shows, Mexico ranks fairly well in this indicator.

Figure 7. Quality of service faults per 100 lines per annum



Source: OECD (1999), *Communications Outlook 1999*.

3.4. Network investment and modernisation

192. The degree of network modernisation in terms of digital switching and fibre optic cable provide a measure of non-price aspects of the service provided to subscribers. Digitalised networks allow, for example, faster connections and increased bandwidth (and thus flexibility of uses such as video). An important development in this regard was the replacement of Telmex's microwave long distance network with fibre optic lines. Telmex has installed more than 30 000 km of fibre-optic network.

193. Progress has been made toward network modernisation. From the time Telmex was privatised in 1990 through the end of 1995, the company had invested over \$US 14 billion, including \$US 1.3 billion for telephone equipment, \$US 2.7 billion for transmission equipment, \$US 3.9 billion for switches and transmission and power equipment, and US \$3.7 billion for outside plant. Most progress was made during the 1990 to 1994 period, as shown in Table 6.

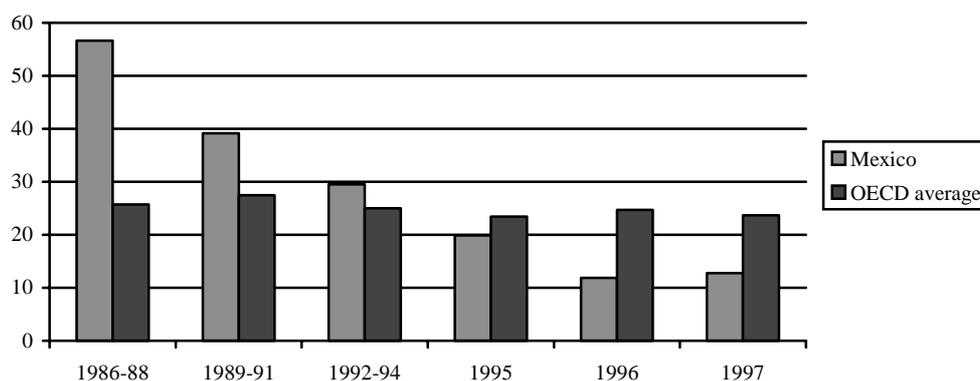
Table 6. Increases in the rate of digitalisation over time

Year:	1990	1991	1992	1993	1994	1995	1996	1997	1998
% Digital:	29	39	52	65	83	88	90	90	96.7
Increase in %	n.a.	10	13	13	18	5	2	0	6.7

Source: Rates for the period 1990-1996 from COFETEL, *Estadísticas de Lentes Sobre Telecomunicaciones "Digitalisation de la Planta Telefonica: 1990- 1996,"* posted at <<www.cft.gob.mx/html/5_est/graficas/Coraf3_pag5.html>>. 1998 figures for May 1998.

194. Public telecommunications investment has fallen off since the investment program undertaken in the late 1980's and the early years of the privatisation. Beginning at about \$US 16 per capita in the late 1980s and increasing to about US\$ 24 per capita in the early 1990s, the level of investment has fallen in 1997 to about US \$10 per capita, well below the OECD average.

Figure 8. **Public telecommunications investments as a percentage of revenue**



Source: OECD (1999), *Communications Outlook 1999*, Paris, Table 4.10, p. 111.

3.5. *Employment*

195. In considering the effects of technological developments, it is also pertinent to recognise the impact on employment levels. Despite considerable "downsizing" by telecommunications carriers in many countries, the number of telecommunication employees in Mexico rose between 1995 and 1996 but fell slightly in 1997. Most of the growth in employment over this period is the result of substantial increases in the radiotelephone (cellular, beepers, paging) industry, which grew at an annual average growth rate of approximately 20%. Since 1990, employment in Telmex has in fact risen by some 12% (see Table 7).

Table 7. **Number of employees in telecommunications service supply**

Year	1985	1990	1995	1996	1997
Employees	37 487	50 620	50 413	57 750	56 650

Source: OECD, *Communications Outlook 1999*, Paris.

196. The current and future entry of new operators in the telecommunications industry as a whole will continue to create new jobs in the future⁷². Cofotel estimates that the new wired and wireless local telephony projects will generate 50 000 new direct jobs.⁷³

4. CONCLUSIONS AND RECOMMENDATIONS

4.1. *General assessment of current strengths and weaknesses*

Box 4. **Strengths**

- Sustained policy direction in favour of regulatory reform over the last decade.
- The process of policy development and new entry in the transition from monopoly to active competition has been rapid in most telecommunications markets, particularly long distance service.

Substantial improvements have been seen since 1989 in the quality of telecommunications services for businesses and residences.

The Mexican domestic telecommunications market has been attractive for foreign investors, and Mexican consumers have benefited from the capital and new technologies that they have brought into Mexico.

- The fundamental telecommunications law is generally sound, and establishes an institutional basis for independent regulation of the industry.
- The spectrum allocation regime is market-based and well-managed.
- There is an explicit role for competition law.
- The Telmex concession includes competition safeguards and asymmetric regulation that was far-sighted for the time.
- Relatively rapid rebalancing of the price structure in advance of the introduction of competition.
- Rapid downward movement in the interconnection tariffs.
- The establishment of a distinct regulatory agency separate from the government and independent of the major industry players.
- Immediate prospect of sizeable new investment and network expansion.

197. Overall, Mexico's telecommunications regime has several strengths. Mexico has designed and implemented a sustained long-term process of regulatory reform based on two stages. The first stage, from 1988 to 1994, involved privatisation and a reorganisation of the government's role. The second stage involved the issuing of a completely new law to modernise the regulatory framework and introduce competition in the market for telecommunications services.

198. The interconnection regime was established before competition started and allowed transitory periods to review interconnection tariffs and adjust them in the light of international references and Mexican market conditions.

199. In little more than three years Mexico has moved from a statutory monopoly to a situation of active competition in most telecommunications markets. Competition has developed particularly rapidly in long-distance service, and has led to rapid price declines. New entrants in the long-distance markets achieved higher market shares in two years than in most other OECD countries that have liberalised entry. Consumers have benefited from long distance prices that are up to 50% lower in real terms. Competition is expected to start in local service during 1999.

200. From the Telmex concession in 1990 it is clear that the Mexican regime contemplated and prepared for the development of full competition. The concession itself includes specific competition safeguards that were relatively far-sighted for the time. The 1995 Federal Telecommunications Law is a well-conceived statute that incorporates central elements of effective telecommunications regulation. The FTL promotes market mechanisms for the allocation of scarce spectrum rights and explicitly provides for a role for the federal antitrust authority in assessing market competition. It also sets out a basic framework for interconnection by rivals to the incumbent's public switched telephone network and establishes the basis of the institutional framework necessary for independent regulation of the industry.

201. Mexico has been aggressive in using market-based mechanisms to allocate spectrum. These mechanisms, together with the active role played by the CFC, have generated a competitive market structure in mobile and wireless communications. This strength is reflected in positive developments in the mobile market. While penetration rates remain low compared to other OECD countries, subscriber growth rates have been strong and the market share of the largest competitor is at about the same level as elsewhere in the OECD. This is an important strength given that wireless (particularly wireless-local-loop) may be more likely to become an alternative to wireline access in countries facing network penetration challenges.⁷⁴

202. The privatisation of Satmex during 1997 was another major step for regulatory reform, with the issuing of the *reglamento* on satellite communications to establish the basis for competition including the use of foreign satellite signals to provide services in Mexico.

203. Although there is room for improvement, aspects of the structure of the interface between competition law and sector-specific regulation are well designed. Competition law applies to the telecommunications sector, and thus the CFC has the authority to take enforcement actions and provide competition policy advice as in other OECD countries. As noted in Chapter 3, the quality of the competition law is high. The law is consistent and affords a solid foundation for applying competition policy in law enforcement and in other policy issues.

Box 5. Weaknesses

Institutional arrangements for the regulator do not yet provide adequate independence from the government, which has a direct role (through SCT) in granting and enforcing concessions.

Consultation and transparency in rule-making processes need more development, while the rule-making powers of the regulator are not subject to adequate oversight or review by other agencies.

The concession system gives significant discretionary power over entry to the regulator, and sanctions for violations of concessions are too weak.

Interconnection charges are high relative to international levels and the basis for establishing those charges is not yet sufficiently transparent.

Inclusion of competitive prices in the "basket" of the price-cap regulation system enhances the incentives on the incumbent to act anti-competitively.

- Requirements to register and disclose prices facilitate collusion among competitors and restricts innovation.
- International proportional return arrangements restrict competition and raise prices on international routes.

204. Despite these strengths, there remains considerable room for improvement. The independence of the regulator could be improved, and its methods for coming to decisions can also be improved further to fully meet international best practice standards for transparency, including disclosure of information or arguments supporting major regulatory decisions and consultations with industry players.

205. Cofetel's policies have not been subject to oversight or scrutiny by a third party agency. Given the importance of the telecommunications industry and the amounts at stake in many regulatory decisions, it is important that Cofetel achieve decisions of the highest quality. This can be assured by enforcing the requirements that Cofetel's policies be subject to government-wide regulatory review processes.

206. Although the FTL is generally a sound statute, it has its flaws. To begin with, the FTL places a great deal of power in the hands of the regulator in its decisions to grant concessions and the conditions placed on those concessions. The FTL also, unnecessarily, requires all concessionaires to register their prices before their use, and to publicise those prices. This facilitates collusion and hinders innovation in pricing schemes. Although the FTL explicitly sets out the sanctions that can be applied, the monetary sanctions are too small (by a factor of about one thousand) to make an impact on a large player and the only alternative is the draconian step of revoking a concession. Enforcement of concessions is unnecessarily difficult.

207. The Telmex concession also has its flaws. Although the price-cap system of regulation on Telmex was far-sighted, the inclusion of both competitive and non-competitive prices within the same cap has the effect of enhancing the incentives on Telmex to behave anti-competitively in the competitive sector.

208. Finally, the existing system of uniform settlement rate and proportional return has prevented prices from decreasing for Mexican and foreign consumers calling to and from Mexico, to the benefit of the telecommunications operators. The Mexican government established this system in 1996 with the flexibility to review it after the third year of entry into force in light *inter alia* of prevailing reciprocity conditions on the US and other foreign markets and domestic market developments.

4.2. Potential benefits and costs of further regulatory reform

209. Mexican consumers have received some benefits from regulatory reform. Long distance prices, in particular, have declined rapidly. On the other hand, local service prices have risen, so that average prices (including both local and long distance) remain at high levels. However, further price-reductions in domestic and international long-distance will not be so easily translated directly into increases in local rates. In addition, it is to be hoped that local competition (especially from wireless companies) will eventually contribute to disciplining further the ability of Telmex to raise local rates further.

210. Further reform of the international proportional return system will yield immediate benefits in the form of lower international charges to and from the US. Lowering of interconnection charges closer to cost will place further downward pressure on long-distance rates.

211. Further reform will also cement in many of the benefits of competition. The benefits from competition could be eroded if carriers collude or if Cofetel is distracted from promoting competition through industry pressures. Enhancing the role of the competition authority and other government agencies responsible for regulatory reform will ensure that competition continues to thrive and that Cofetel continues to make decisions of the highest quality.

212. In the longer term, some of the problems that Mexico now experiences appear as opportunities. Although Mexican telecommunications prices are high and teledensity low, provided the regulatory regime can adequately prevent abuse by the dominant carrier, high prices will attract new entry. The low teledensity suggests that there is plenty of room for new entrants to build out networks without fear of duplication of the incumbent's network. Indeed, if Mexico reaches the teledensity that has been achieved in Asian countries in 15 years, there would be room for five telecommunications networks the size of Telmex.⁷⁵

4.3. *Policy options for consideration*

213. The following recommendations are based on the assessment presented above, and the policy recommendations for regulatory reform set out in the *OECD Report on Regulatory Reform* (OECD, June 1997).

1. **Ensure that regulations and regulatory processes are transparent, non-discriminatory and applied effectively.**

- *Enhance the independence of Cofetel by: appointing Commissioners for overlapping fixed terms; enhancing their tenure by making removal from office difficult.*

214. In the long-term, investment in the telecommunications industry requires the assurance that a regulatory framework will be developed, and disputes will be resolved, in an impartial, considered and efficient manner. It is desirable therefore to enhance the credibility and the independence of Cofetel by distancing the Commission even further from the SCT and from the political process in this way.

- *Delegate the power to issue, enforce and revoke concessions from SCT to Cofetel.*

215. The value of establishing an independent, transparent regulatory entity is reduced when its powers are limited. The power to issue, enforce and revoke concessions is appropriately exercised by Cofetel.

- *Establish formal consultation and transparency procedures for Cofetel with the government, the industry and the public to enhance the level of participation and improve the quality of decision making. This consultation process should include an opportunity for agencies such as the CFC to express their views publicly.*

216. Improved decision-making and consultation processes and publication of the reasons for all decisions would reduce the risk of litigation and would improve the overall quality of Cofetel's decisions. Cofetel has indicated that it intends to implement this policy during 1999. It should make all deliberate haste to do so. In particular, the CFC should have full opportunity to express its views.

- *Ensure that full use of mandatory quality controls established by the government for the review of its regulatory powers is made in the telecommunications sector..*

217. The regulatory policies of Cofetel are among the more important regulatory controls in any sector. It is especially important that the powers of Cofetel be subject to the government's regulatory quality controls.

- *Disclose the total amount of spectrum that could technically be used for a new service prior to auctioning new spectrum.*

218. Spectrum auctions provide the government with a financial interest in the artificial creation of spectrum scarcity and consequent reduction in competition. In order to offset concerns that more spectrum may be available than is sold, Cofetel should disclose the total amount of spectrum that could be feasibly made available for a particular technology prior to auctioning new spectrum.

- *Implement and enforce asymmetric regulation for the dominant carrier in conformance with article 63 of the FTL.*

219. The Telmex concession played an important role in the transition to competition by establishing a fixed timeline for the rebalancing of Telmex's charges and establishing procedures and policies governing interconnection and other competition safeguards. However, this rebalancing is now complete (or almost complete) and the important competition safeguards are more fully set out in the FTL. As has been argued, the price-cap regime in the Telmex concession creates competition problems. Transparency and legal certainty would be enhanced by placing Telmex under the regulation that is appropriate for a dominant firm, applied under article 63 of the FTL.

2. Reform regulations to stimulate competition and eliminate them except where clear evidence demonstrates that they are the best way to serve the broad public interest.

- *Limit the discretion of Cofetel to grant concessions and to impose conditions on concessions. Issue concessions that do not restrict lines of business. Minimise coverage and commitments required of the concessionaires.*

220. One of the most important requirements for healthy competition is low barriers to entry. At present Cofetel has the power to impose conditions on concessionaires. Although there is little evidence that the conditions imposed have significantly hindered new entry, this power may itself in the longer term become a potential threat to competition.

- *Reconsider the proportional return system for international traffic with the US and with other countries as competition develops.*

221. The proportional return system with the US and other countries is a restraint on competition in the international long-distance market which increases prices paid by Mexican consumers..

- *Amend the FTL to eliminate, for carriers which are non-dominant, the requirement for Cofetel to register and publicise prices.*

222. Competition on prices is one of the most fundamental forms of competition. This competition is threatened by a system in which competitors have advance knowledge of each other's price changes and can observe each other's discounts. This requirement should be eliminated for all except dominant carriers. This would require changes to the FTL.

- *Undertake a number of policies to improve the foundations on which interconnection charges are set, namely: clearly identify the components of interconnection charges which are designed to compensate for the fixed and common costs of local service; allow the process of rebalancing to be completed by allowing Telmex to raise its prices for local service (especially business local service) to eliminate any remaining deficit; and pursue other approaches to the covering a deficit on local service (if one exists) through other mechanisms (such as the fund mechanism below).*

223. The deficit on Telmex's local service is an important component in Cofetel's argument for above-cost interconnection charges. At a minimum the portion of access charges which is intended to contribute towards this deficit should be separately and clearly identified. Restraining Telmex's rebalancing increases the size of the deficit on Telmex's local service and thereby raises interconnection charges. Ideally, it is more appropriate for the deficit to be funded through a broad-based tax on general revenues or a tax on less elastic telecommunications services, which can be more easily achieved through the use of a formal fund. Finally, under current proposals, Cofetel is forced to make arbitrary, controversial decisions as to when networks qualify for the higher interconnection charges. This could be eliminated by basing charges on whether the originating line serves a residential or business customer.

- *Structure interconnection charges according to the underlying cost – especially, adopt a flat per call charge for interconnection for local calls and reduce real interconnection charges over time according to best practice to ensure that Telmex improves productivity.*

224. Given that local calls are currently charged on a per minute basis in Mexico, charging interconnection for local calls on a per-minute basis introduces opportunities for distorting and anti-competitive behaviour. Reductions in the costs of providing interconnection services should be passed on to new entrants.

- *Promote network expansion, universal service and economic efficiency objectives by establishing an explicit, portable, competitively and technologically neutral funding mechanism.*

225. There is some evidence that local service rates in Mexico are approaching consumers' willingness-to-pay. It may therefore be appropriate to subsidise consumers on to the network at the margin, using a mechanism that relies on market forces, is competitively and technologically neutral, and is administered in a transparent fashion.

- *Develop and carry out plans to implement number portability and access to rights of way as soon as possible.*

226. Plans to introduce number portability and rules to assure access to rights-of-way appear to be at an early stage. An absence of number portability acts as an artificial disincentive for customers to switch from the incumbent to a new entrant because such switching imposes transaction costs, such as the burden of informing others of their new number. Moving forward toward full implementation of a permanent form of number portability would be an important step to assuring that subscribers do not face artificial disincentives to switching between carriers in response to price competition. Similarly, progress on developing an effective regime to assure appropriate access to rights-of-way is also quite important in order to ensure that there are no artificial regulatory barriers to entry into local service markets. This especially applies to the activities of local authorities.

- *Restrict the price cap to only those services in which there is an absence of competition.*

227. A revenue cap that covers both competitive and non-competitive services enhances the incentives on the incumbent to act anti-competitively in the competitive market. With the present degree of competition in the long-distance market, it is no longer necessary to regulate Telmex's rates. These rates should be removed from the price-cap by relaxing the price regulation set out in the concession or regulating Telmex's prices through some other mechanism, such as article 63 of the FTL.

- *Dominant local carriers should be prevented from restricting competition by acquiring existing cable television infrastructure.*

228. Cable television infrastructure is an important source of potential competition in local telephony. In most cases strict enforcement of competition law can prevent a local telephony provider from purchasing a cable television infrastructure (on the basis that it reduces potential competition). In addition, requiring Telmex to divest its existing holdings in cable television should be considered.

3. Review, and strengthen where necessary, the scope, effectiveness and enforcement of competition policy

- *Develop formal co-operation arrangements between Cofetel and CFC for the joint enforcement of competition law prohibitions in the telecommunications sector.*

229. Given the substantial links between the functions of Cofetel and CFC, it is important for them to develop a consistent approach to preventing anti-competitive behaviour. This could be facilitated through explicit formal co-operation and interaction arrangements.

- *Increase the maximum sanctions set out in the FTL to a level at which the sanctions could have a material impact.*

230. The current maximum monetary sanctions in the FTL are derisory. The threat to revoke a concession after three violations is a draconian measure that is unlikely to be taken in practice. The monetary sanctions should be enhanced to a level where they could be expected to make a real impact on even the largest concessionaires.

NOTES

1. OECD, Communications Outlook 1999, Table 3.1, figures for 1997.
2. OECD, Communications Outlook 1999, Table 1.2.
3. 23.9 months. Source: Cofetel.
4. OECD, Communications Outlook 1999, Table 8.3.
5. Cofetel. Figure for May 1998.
6. In 1997, Mexico's GDP per capita was \$US 4 267. Within the OECD, only Poland (\$US 3 515) and Turkey (\$US 3 030), are lower.
7. Cofetel estimates this increased to 10.3 lines per 100 inhabitants by the end of 1998 (Cofetel 1999 Work Programme, page 15).
8. OECD Communications Outlook 1999, Table 4.2.
9. See Section 0.
10. Telmex was originally a wholly owned subsidiary of Sweden's Ericsson Group.
11. The government sold all the class AA shares, which embody a minority (20.4%) equity but controlling interest (*i.e.*, 51% of the votes) to Group Carso and the two foreign partners. In turn, 51% of these AA shares are held by the "Mexican Controlling Shareholders" in a trust. Group Carso (now Carso Global Telecom) is the controlling shareholder in this group. Carso Global Telecom is controlled by Carlos Slim. See, Telmex, Form 20-F: Annual Report Pursuant to Section 13 of the Securities Exchange Act of 1934 for fiscal year ending 31 December 1997. For further discussion, see Pankaj Tandon, "Welfare Effects of Privatisation: Some Evidence from Mexico," *Boston University International Law Journal*, Vol 13, 1995. Employee support was strengthened by selling them a 5% equity position. In 1986, Telmex experienced a work stoppage.
12. The postponement of rate rebalancing initiatives are described by Telmex as "voluntary compliance" with the government's price stabilisation measures of 31 December 1994, which generally froze prices of all public utilities. See Telmex, Form 20-F: Annual Report Pursuant to Section 13 of the Securities Exchange Act of 1934, 1997.
13. Reaction to the FTL when it was enacted in 1995 was generally very positive. For example, the U.S. Federal Communications Commission described the law as "a dramatic new telecommunications law which introduced broad opportunities for competition and new entry". U.S. FCC, "Special Report on Mexico", 26 October 1995. Similarly, Robert Lacy at Avantel (a new entrant) described the FTL as "pro-competitive telecom laws and regulations". See Robert K. Lacy, *Long Distance Competition in Mexico: Regulatory Framework and Enforcement*, 1998.
14. Specifically, these new carriers were Alestra, Avantel, Iusatel, Marcatel, Miditel and Protel.
15. OECD, Communications Outlook 1999, Tables 2.1 and 2.2.
16. This process is continuing with an additional 50 cities balloted for pre-subscription in 1999.

17. The decision was, however, not ratified until March 1998.
18. Telnor is a subsidiary of Telmex providing local exchange services in Baja California and Northern Sonora. Telnor's network is small relative to Telmex – e.g., it has less than 5% as many access lines. In August 1995, Telmex purchased Red Uno a leading Mexican company in network services integration and information services. In April 1997, Telmex acquired Kb/Tel Telecommunications, which develops and markets digital wireless communications systems (with applications that include point-of-sale terminals and automatic teller machines). These acquisitions were made by Telmex through a wholly owned subsidiary.
19. In July 1995, Telmex acquired 49% of Cablevision, the largest supplier of cable service in the country which provides cable service in the Mexico City metropolitan area. This purchase which appears to have been authorised despite a prohibition on Telmex operating public television services in Section 1.9 of the Telmex concession, is the subject of a law suit against Telmex by another television concessionaire.
20. Telmex, *Telefonos de Mexico: Annual Report 1997*, p. 1, "Highlights". Operating income and total assets expressed in pesos with purchasing power parity as of 31 December 1997. In a December 1997 report, Morgan Stanley Dean Witter provides a favourable financial assessment, stating: "we to see upside prospects for Telmex shares ... [w]ith a hefty free cash flow, Telmex will probably continue to by back its stock". Morgan Stanley Dean Witter, *Latin America Investment Research*, "Latin America Telecommunications," 3 December 1997.
21. Even though the 214 license to provide long distance international switched resale services was granted to Telmex Sprint Communications ("TSC") on 30 October 1997, the FCC, responding to complaints by AT&T and MCI, delayed the operation of this joint venture until August 1998. Today, TSC is operating under an appeal launched by these two companies.
22. See Gonzalez, Gupta and Deshpande (1998).
23. OECD (1999), *Communications Outlook 1999*, Table 2.2. Based on share of subscribers, 1997.
24. Growth in the number of cellular subscribers from: Cofetel, Estadísticas de Interés sobre Telecomunicaciones, "*Usuarios y Líneas telefónicas*", which is posted on www.cft.gob.mx. The number of cellular mobile subscribers per 100 persons in Mexico is the lowest in the OECD. See *Communications Outlook 1999*.
25. The L band is still under control of Telecomm as it is used to provide National Security Services, Emergency and Social Services. Telecomm also remains as the signatory to Intelsat and Inmarsat
26. For trunking concessionaires 1997 and 1998 has been a transitional period in the move from analog to digital. During 1998, Cofetel together with the trunking association (AMCOT) has studied the possibility of assigning more spectrum to allow this service to expand from its current infrastructure. If necessary, new auctions will be designed and programmed for these new bands.
27. Figures and charts contained in Sections 2 and 3 include information based on OECD data and methodologies which may differ from those used by Cofetel.
28. This requirement is set out in the Internal Rules of the SCT (*Reglamento Interior de la Secretaría de Comunicaciones y Transportes*), Article 37 bis.
29. Telmex has filed amparos or has pending amparos against the finding of dominance by the CFC, the disclosure of information required to resolve allegations of cross-subsidies in an anti-trust suit by Iusacell in 1995, calling party pays (this amparo was dismissed by a judge in February 1999), the payment of 800 numbers, accounting separation and an anti-trust suit filed against alleged monopoly abuse in the dialling of 800 numbers from public phones.

30. See Cofetel, 1999 Work Programme, page 20, Paragraph 17.
31. As an indication, the maximum penalty could be increased from 100 thousand to 100 million minimum wages.
32. For example, Cofetel has required the following clause: “The [concessionaire] accepts that in case that the legal provisions and administrative requirements ... which govern this Concession, are revoked, amended or added, the [concessionaire] shall comply with the new legislation and the new administrative requirements as soon as they go into effect”.
33. Cofetel argue that resale is allowed in only 12 countries (Canada, United Kingdom, Sweden, New Zealand, Australia, Netherlands, Norway, Denmark, France, Germany, Switzerland, Japan) all of which have much higher teledensity than Mexico and therefore less need to invest infrastructure.
34. Due to peso appreciation in real terms and the relatively higher growth of incoming international traffic the actual dollar value of the average interconnection rate in 1997 and 1998 was around 6 US cents.
35. In its April 1996 interconnection resolution, the SCT also reaffirmed four key criteria to be used in establishing interconnection rates for 1999-2000. These included, in order (a) the long-run average incremental cost of interconnection; (b) the evolution of international benchmarks for interconnection in those countries constituting Mexico’s main trading partners, (c) evolution of international traffic settlement rates between Mexico and those countries, and (d) the evolution and growth of telecommunications markets in Mexico.
36. However, Cofetel never published the new 1999-2000 rates in the *Diario Oficial de la Federación*.
37. See Cofetel Slide Presentation, “Resoluciones Para Fomentar El Desarrollo Y La Sana Competencia,” *Mimeo*, 1 December 1998.
38. In defining “significant coverage of the local service area” Cofetel uses the same minimum requirement established in the spectrum auctions for fixed and mobile access: to provide coverage, with the capacity to attend the request for service of any consumer, in an area where at least 40% of the population of the city, municipality or community live.
39. See Laffont, J.-J. and Tirole, J., “Creating Competition Through Interconnection: Theory and Practice”, 10 *Journal of Regulatory Economics*, 227-256, (1996).
40. Beginning on 1 January 1999, and every four years thereafter, the level of the adjustment factor (which was 0.74 per quarter prior to that date) is set by Cofetel after administrative hearings with the articulated purpose of “allowing Telmex to maintain an internal rate of return equal to the companies’ weighted average cost of capital”.
41. Armstrong, Mark, Simon Cowan and John Vickers, *Regulatory Reform: Economic Analysis and British Experience*, 1994, p. 131.
42. The Mexican Senate’s Committee on Distribution and Administration of Consumer Goods and Services is reported in the press to have stated that: “With Cofetel authorisation Telmex applied disproportionate local telephone tariffs, which permitted it to compete with advantage in the long-distance market”. The Committee went on to recommend that the appropriate authorities, together with the Congress, the telephone companies and consumers, begin a public discussion ... for “reaching a legal framework that is progressively more transparent, fair and just in the telecommunications sector”. 20 March 1999, “Senate Committee Issues Formal Determination That Telmex Failed In Its Obligation To Offer Low Tariffs; With Cofetel’s Authorisation, The Company Maintains a Local Monopoly and Advantages in Long Distance”, *El Excelsior*, page 1F.

43. Cofetel notes that where, in rare cases the registration of tariffs has taken longer than the 10 day limit, this has been due to the analysis Cofetel has had to carry out to prevent discriminatory and anti-competitive practices. On these occasions Cofetel has kept in close contact with the concessionaire “so full information is taken into account when registering the tariffs”.
44. However, despite the requirement to register tariffs, concerns have been raised that Telmex is surreptitiously discounting by packaging local service discounts with long-distance service.
45. Noll, Roger, (1995), *Telecommunications Competition in Mexico*, mimeo, 18 August 1995
46. The decline in performance since 1994 is also reflected in OECD cross-country comparisons. In 1994, Mexico’s performance indicators ranked fairly well. Mexico ranked 9th on digitalisation rates and 23rd on “answer seizure” rates (*i.e.*, of international calls that are answered on the terminating side) out of 27 countries reporting in 1994. By 1997, Mexico had fallen to 16th on digitalisation and 28th on answer seizure rates out of 29 countries reporting.
47. The concession required the waiting time to drop to six months in 1995, five months in 1996, four months in 1997, three months in 1998, two months in 1999, and one month in 2000. By the end of 1997, the actual waiting time was less than a month, and the backlog of pending applications was 91 400.
48. International Technology Consultants, Latin America & The Caribbean, *Telecom Market Report*, Volume 7, no 5, 29 May 1998.
49. The European Commission has been involved in numbering plans for many years (see <<www.eto.dk>>), and Australia has recently released a new numbering plan (see <<www.austel.gov.au/number/index.htm>>) Canada and the U.S. are covered by the North American Numbering Plan -- number portability in the North American context is discussed at <<www.fcc.gov>>. Number portability issues in both the UK and North America are discussed in detail in Martin B. H. Weiss and Douglas C. Slicker, “Funding Models for AIN-Based Local Number Portability,” *Mimeo*: 1998 TPRC, 8 September 1998.
50. See Martin B. H. Weiss and Douglas C. Slicker, “Funding Models for AIN-Based Local Number Portability,” *Mimeo*, 1998 TPRC, 8 September 1998.
51. See Cofetel Slide Presentation, “Resoluciones Para Forentar El Desarrolle Y La Sana Competencia,” *Mimeo*, 1 December 1998.
52. There are other reasons why the existing long-distance concessionaires have opposed call-by-call selection. These include high charges by Telmex for performing the necessary billing and collection services, high costs of terminating or originating long-distance calls “off-network” (which involve paying Telmex rates for carrying the call to the nearest network point) and fear of a competitive win-back strategy by Telmex.
53. Telmex Concession, Article 3-2.
54. Collecting funds through general tax revenues is generally less distorting because it is collected from a broader base, so the individual taxes can be lower and thus there is less distortion of relative prices. In practice, few countries (Chile is one exception) fund universal service through general tax revenues.
55. The example of Chile demonstrates the potential benefits of a market-based approach to meeting universal service and network expansion goals. Beginning with a teledensity rate of about four lines per 100 persons in 1988, Chile was able to increase its teledensity to 14 per 100 persons by 1996, and is projected to reach 24 lines per 100 persons by 1999. Over the period 1988 to 1996, the percentage of households with telephones increased dramatically from 14 to over 50%. The universal service plan in Chile incorporated five main principles: (i) transparency; (ii) market neutrality; (iii) targeted to beneficiaries; (iv) payments made external from any carrier; and (v) small and of limited duration.

An innovative feature of the Chilean approach was the auctioning of subsidies to provide telecommunications facilities in unserved areas. While the incumbent carrier won many of the projects, it faced competition from a long-distance rival, Chilesat, which sought to enter these markets through the bidding to build up its long-distance business (in fact, Chilesat bid zero on 16 projects -- *i.e.* no subsidy payment to provide the service - highlighting that services which are alleged to incur a deficit by the incumbent can often be provided without a cross-subsidy). The first bidding round in 1995 involved \$2.1 million in direct government funding and gave rise to about \$US 40 million in private investments. The result was 1 285 rural public telephones at an average cost of \$US 1 634 per telephone. See World Bank Group, Public Policy for the Private Sector, "Extending Telecommunications Service to Rural Areas -- The Chilean Experience," Note no. 105, February, 1997.

56. Telegeography 1998. Based on minutes of international telecommunications traffic. Data based on billing point of traffic. Totals for 1997 include all carriers; route data are for Telmex only.
57. In addition, in a country such as Mexico, with a sizeable imbalance in calls in its favour, the proportional return system has the side-effect that it creates incentives for carriers to fabricate out-going calls in order to increase their share of the lucrative incoming traffic.
58. In a letter to Telmex dated 18 March 1999 opposing proposals by AT&T and MCI to establish arrangements for the termination of international traffic directly with Avantel and Alestra, Cofetel states that "no operator of an international gateway [may] agree to rates other than those approved by Cofetel nor may they carry international traffic outside of the systems of proportional return and uniform rates, as such as violation of the provisions that regulate international long-distance service an would entail the imposition of applicable penalties pursuant to Article 71 of the Act, without prejudice to the revocation of the respective provisional authorisation for the install and operation of international gateways".
59. Prior to 1992, Telmex purchased network switching equipment from the Ericsson and Alcatel groups through long term agreements. In 1992, it signed an agreement with AT&T to provide such equipment, thus providing a second source of supply.
60. With its entry into force on 5 February 1998, the agreement set telecommunications services on the path of progressive liberalisation and pro-competitive regulatory reform in 72 signatory countries, including Mexico and most of the world's major trading nations.
61. The SCT announced that Avantel had switched 6 461 users without their consent, Alestra had switched 3 258 users without their consent, and Telmex had switched 1 103 users without their consent. See *World Telecom Law Report*, "Mexico Sanctions Carriers for 'Slamming' Practices," 9 February 1998, p. 14. Avantel has appealed the decision and is withholding payment of the fine pending the resolution of the issue.
62. Telmex was fined 100 000 times the minimum daily wage for delays in turning over its data base of local subscribers, as well as unauthorised switching of subscribers.
63. "Buena? Multinationals such as Qualcomm, Bell Atlantic, Bell Canada International and WorldTel Limited will enter Mexico's telecom market," *Business Mexico*, September 1998, p. 24.
64. At present consumers can ask Telmex to provide a list of the calls made during a specified month. However, this service incurs a charge.
65. See Cofetel, 1999 Work Programme, page 20, Paragraph 16.
66. The CFC's role in spectrum auctions is further set out in Chapter 3.
67. Indeed, in some countries, the national competition law is the primary regulatory instrument in the telecommunications sector.

68. See also the recommendation regarding the role of CFC in remedies implementing its dominance findings in Chapter 3.
69. In 1996, a procedure for obtaining a concession to install, operate and exploit a public telecommunications net was established according to the FTL. This disposition includes the procedure to change from a system status to a public telecommunications network for those concessionaires who were already in the market when the law came into effect. This implies to operate in a band spectrum of at least 450 MHz, and also the obligation to offer interconnection to other networks. A period of four years was established for the companies to do the change. However, in June 1998, the disposition was changed for those who had not opted to do it. They were allowed to present a new calendar, together with technical and financial information that justifies it. This decision has the aim of giving more flexibility to make the conversion, taking into account the real conditions of each place and concession.
70. OECD, *Communications Outlook*, states in Paragraph 215: “Other notable points for these baskets are in relation to Mexico and Turkey where relatively high currency inflation influences the outcome. For Mexico the high price is due to the fact that the latest PPPs always lag actual prices. In most other OECD countries with low inflation rates this does not significantly impact on the price of a basket. In Mexico the pace of inflation means that PPPs and yearly exchange rates are a less useful guide to the prices users pay than current exchange rates. The *Communications Outlook* does not provide an estimate of how much of the observed Mexican PPP basket price is a result of the calculation problem. Given the magnitudes involved, it seems unlikely that the rankings in regard to residential service would be changed significantly, though perhaps Mexico’s ranking in regard to the business basket would be improved. Several of the countries at the upper end of the pricing comparison have experienced high inflation in the last year, including: Turkey (76.6%), Mexico (16.7%), Hungary (12.3%), Poland (9.9%) and the Czech Republic (8.2%) in the last 12 months as reported by *The Economist*.
71. OECD data also shows cross-country comparisons of the number of mobile subscribers per 100 inhabitants. It does not appear that, to date, penetration of mobile subscribers has bridged the gap. Thus, relative to other OECD countries, a significant gap remains.
72. “Buena? Multinationals such as Qualcomm, Bell Atlantic, Bell Canada International and WorldTel Limited will enter Mexico’s telecom market” *Business Mexico*, September 1998, p. 24.
73. Cofetel, *1998 Annual Report*, p. 22.
74. See, for example, International Telecommunication Union (“ITU”), World Telecommunications Development Report 1998: Universal Access.
75. COFETEL, Presentation by Lic. Carlos Casasús López Hermosa (Presidente de la Comisión Federal de Telecomunicaciones), *Telecommunications in Mexico: Evolving Regulatory Framework*, 3 December 1997, Mexico City, Slide No. 63.

APPENDIX: SUMMARY OF THE REGULATORY PROVISIONS OF THE 1990 TELMEX CONCESSION AND THE 1995 FEDERAL TELECOMMUNICATIONS LAW

Objectives

- The objectives of the FTL are stated as: “to promote efficient development of telecommunications; to exercise State control over such matters in order to guarantee national sovereignty; to foster open competition among the different telecommunications service providers in order to render services at better prices, diversity and quality for the benefit of the users; and to promote an appropriate social coverage”.

Regulation of entry and exit

- The Telmex concession allowed entry in all markets except for long-distance services. Long-distance services were reserved as a monopoly for Telmex until 10 August 1996. Competition with interconnection to the PSTN was scheduled to start 1 January 1997.
- Under the FTL, a “concession” is required for service providers using frequency or installing, operating or exploiting a public telecommunications network. A “permit” is required for carriers engaged in other non-facilities-based commercial telecommunication operations, and registration is required for value added service providers. Concessionaires must be majority Mexican owned, except in the case of cellular providers.
- The FTL requires that concessions for the use of frequency spectrum be granted through public bidding. A concessionaire who is the sole provider of service in a region cannot withdraw from serving that region.
- The FTL requires that applicants for concessions must specify a business plan, and specific investment and coverage programs and commitments. Concessions granted must set out the different services to be rendered by the concessionaire, the rights and obligations of the concessionaire and the commitments regarding geographic coverage of the concessionaire. Concessions are transferable, on the approval of Cofetel and CFC, after three years have elapsed.

Interconnection

- According to its concession, Telmex is obliged to negotiate with other operators for the terms and conditions governing interconnection. In the event of failure to reach agreement, the terms and conditions can be set by Cofetel. Interconnecting parties are required to pay Telmex the costs of any procedure necessary to establish and maintain interconnection and Telmex is required to provide a full breakdown of the costs involved. Telmex is obliged to adopt an open architecture design so that other systems can be easily interconnected. Should the long-run incremental cost of interconnection be above the price, Telmex may negotiate an increase in the price.
- According to the FTL, all concessionaires are required to interconnect their networks. Private parties have 60 days to negotiate terms and conditions of interconnection. If this term expires,

Cofetel has a further 60 days to establish the relevant terms and conditions that were not agreed by the parties.

- In the interconnection of foreign networks, Cofetel has power under the FTL to establish conditions to which the agreements shall be subject with the purpose of incorporating proportionality (proportional return) conditions.
- The FTL states that tariffs and conditions for interconnection should respect reciprocity for concessionaires providing each other similar services, capacity or functions and must not include volume discounts on tariffs.

Price Regulation

- The Telmex concession specifies that the rate structure “shall seek to provide an efficient expansion of the public telephone system and provide a basis for healthy competition in the rendering of services”. All rates must cover “incremental long-term cost” so that cross-subsidies are eliminated and the necessary incentive exists to expand each service.
- The Telmex concession sets out a specific mechanism for controlling Telmex’s prices based upon a price-cap approach. The cap is over the average revenue of a basket including local, long-distance, and international services. The revenue is calculated using the quantities of the previous period. The cap allows adjustments for inflation, less a so-called “X” factor to encourage productivity improvements. For the period 1 January 1991 until 31 December 1996, the X factor was set at zero. From 1 January 1997 until 31 December 1998, the X factor was set at 0.74% per quarter, giving a real price reduction of about 3% per annum. Following 1 January 1999, the X factor as well as the “initial value” of the controlled basket, is set once every four years, based upon a LRIC study submitted by Telmex and approved by an expert. When no agreement is reached between Cofetel and Telmex, the opinion of a set of three experts, chosen by the company and Cofetel, is required. As of 10 March 1999, the X factor is 4.5% for 1999-2002. In addition, for the period 1991-1996 individual price-caps were applied to local services (installation charges, the monthly rental and measured service charge), in order to gradually rebalance rates towards costs.
- The concession states that “the rate structure shall induce Telmex to attain continuous improvement in productivity, in order to allow it to increase profits while gradually lowering rates to users”. The “initial value” of the basket and the X factor must allow Telmex to receive an internal rate of return on its regulated services equivalent to the weighted average cost of capital. Telmex’s rates for local residential services must not exceed the incremental costs for local service.
- The FTL states that prices are to be set freely by the concessionaires “in terms that will allow the rendering of such services under conditions of quality, competitiveness, safety, and permanence”; prices must not be discriminatory or include cross-subsidies, but if a concessionaire is found to be dominant by the CFC, the Cofetel is authorised to assign specific obligations related to “rates, quality of service and information”. Rates must at least cover long-run average incremental cost.

Universal service and network expansion obligations:

- Between 1990 and 31 December 1994, Telmex was obliged by its concession to expand the number of basic telephone service lines by a minimum of 12% per annum. By 1995 the waiting period for basic telephone service was to be reduced to a maximum of six months. The maximum waiting period was to be reduced by one month in each subsequent year, down to one month in the year 2000.

- By 31 December 1994, Telmex was obliged by its concession to provide telephone service to every town with more than 500 inhabitants and to increase the penetration of public telephone booths from 0.5 per thousand to two per thousand and to five per thousand by 31 December 1998. Every four years Telmex is to arrange with SCT a rural telephone expansion program. Rural telephone rates are not allowed to be higher than the price for basic telephone service.

Quality of service obligations:

- The Telmex concession sets out a list of performance indicators and sets targets to be achieved for those indicators for each year before 31 December 1994. The indicators include lines with failure, same-day repair, public phones in service, failure reports and so on. From 1 January 1995, Telmex must submit quality of service goals every four years to Cofetel¹ for approval.

Controls on anti-competitive behaviour:

- The Telmex concession explicitly sets out prohibitions against monopolistic activities, prohibitions against cross subsidies, prohibitions against tied sales and a prohibition against exclusive supplying.

Other Regulations

- The Telmex concession sets out requirements with regard to accounting separation. While Telmex may distribute the television signals of authorised broadcasters through its network, Telmex is forbidden, either directly or indirectly, from holding a public television concession.
- According to the FTL all concessionaires are required to maintain separate service accounting (accounting separation) and to “allow the portability of any number whenever, at the Secretariat’s opinion, this is technically and economically feasible”.
- The FTL specifies that all general communications ways (electric transmission towers, radio communication towers, posts and ducts with telecommunications network wiring) that may be made available to one public network concessionaire must be available to all other concessionaires on a non-discriminatory basis. No concessionaire can have exclusive use of such property.
- The FTL specified that no later than 10 August 1996, a new telecommunications regulator was to be established by Presidential decree. The law specifies a timetable for the introduction of competition. Long-distance service not involving interconnection was authorised to start on 10 August 1996. Negotiations for interconnection were allowed to start on 1 September 1995, and competition in long-distance from 1 January 1997.
- The FTL incorporates (as part of the transitory arrangements) the provisions of the resolution of 1 July 1994 governing the interconnection of competing long-distance networks with Telmex’s network. This resolution requires interconnection to be cost-oriented, non-discriminatory, and in line with international benchmarks. It also requires local and long-distance operators to be charged the same prices for interconnection and for interconnection charges to be publicly disclosed.

1. Strictly speaking, the concession refers to SCT, however SCT has delegated most of its powers under the concession to Cofetel.