



Telecommunications Industry in Mexico:

Performance and market structure analysis, and conflicts of interest prevailing
between operators and authorities

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INTRODUCTION

There is a consensus in economic literature that telecommunication services, particularly broadband Internet, significantly contribute to economic development. Quantitative empirical studies identify the contribution of these services to GDP growth, employment, productivity and foreign trade of any country (Del Villar, 2009; Mariscal & Ramirez, 2007). However, the potential benefits depend on how generalized the use of these services is and how accessible they are to the majority of the population.

During the last twenty years, telecommunications technology has experienced accelerated change: the digitalization of contents, the popularization of services such as mobile telephony, the convergence of radio broadcasting and telecommunication markets and the provisioning of voice, data and video services over a single telecommunication platform (triple play).

In Mexico, technological advances have led to a more competitive atmosphere with lower prices of voice, data and video services. According to the International Telecommunication Union (ITU) price for voice, data and video services decreased by almost 53% between 2008 and 2009 in Mexico. This dynamic has also caused an increase in landlines and mobile phone subscriptions and an increase in broadband Internet service speed. In a single year, Mexico went from being ranked 77 out of 159 countries in 2008 to being ranked 48 out of 161 countries in 2009 regarding telecommunication service accessibility to the population (ITU, 2010). In short, technological advance and its implications for competition in telecommunications has lowered prices for consumers, better services and greater accessibility.

However, the benefits of technological advance and increased competition are still insufficient: (1) Internet access and service conditions are uneven across regions of the country and prices are not yet at international standard levels. Moreover, in each market segment —fixed-line and mobile telephony, broadcast television, per-pay restricted television and broadband Internet— there is a dominant firm and the difference in market participation with its closest competitor is large¹; (2) There has been a gradual

¹ For example, in fixed-line telephony Telmex owns 79.9% of the market and Axtel/Avantel, which is the second largest company, owns only 5.1%; in mobile telephony Telcel represents 70% of the market, while Telefónica Movistar 21%.

consolidation of two telecommunication groups, each of them present in almost all of the market segments, and as time goes by they could coordinate themselves and collude to protect their interests; and (3) Although technological advance have been able to change the nature of competition in the sector, these changes have taken place at the pace set by the dominant players that operate in each segment.

The Mexican State admits its backwardness regarding both the coverage and the scope of telecommunication networks, such as access, content, use of the services and the dynamics of competition. In an effort to identify the necessary route to improve telecommunications in the country, the Federal Telecommunication Commission (COFETEL), through the Ministry of Communications and Transport (SCT), signed an Agreement with the Organization for Economic Cooperation and Development (OECD) to draft an evaluation of the telecommunication sector performance in Mexico. The objective of this agreement is to sketch out a road map and a menu of public policy items for decision making in the sector.

This document is part of the telecommunication sector material that the OECD has requested to deepen its understanding of Mexico's market. Its objective is to present an analysis of the recent evolution and the degrees of competition per segment in Mexico's market. This study is not intended to be a rigorous analysis of the regulatory framework currently in force. Its objective is rather to examine per market segment (1) the evolution of prices, quality and degrees of competition, (2) the most relevant aspects that are at stake, and (3) the conflicts of interest that prevail on the one hand between authorities and operators and, on the other, among the operators themselves.

The document is structured as follows: The first part covers the regulatory environment, a brief summary of three key periods of regulation in Mexico in order to give the reader an idea of the stages that led us to the current context. Then, a review of the evolution, composition and performance of each of the five market segments of the sector. Later, the research focuses on the documental review of the most recent declarations of dominance issued by the Federal Competition Commission (COFECO). The analysis of the declarations of dominance is complemented with a deeper analysis of the role that telecommunication networks, interconnection and contents play in the Mexican context.

1. RECENT PHASES OF TELECOMMUNICATION SECTOR REFORMS IN MEXICO

In Mexico, like in most countries, a gradual liberalization and regulation of the telecommunication industry has taken place in the last 30 years. This section presents three key periods of the sector regulatory reforms in Mexico.

An important observation is that the regulatory approach, which began with Telmex's licensing, has historically imposed asymmetric conditions among the various firms of the sector, mainly through its concession license. As shown in this document, these asymmetric regulations have had an impact on the evolution and contest levels of the sector in its different market segments.

(a) *Teléfonos de México* privatization

Fixed-line telephone service in Mexico was provided by the State through only one telecommunication company for a long time: *Teléfonos de México* (Telmex). Mexico carried out the first phase of telecommunication sector reforms, during the government of President Carlos Salinas, between 1989 and 1994. Although several reforms took place, two of them stand out: the privatization of the fixed state-owned telephony company (Telmex) and the creation of the mobile telephone market.

The first element of this sector regulation process is the Telmex's concession license (Aguilar, 2003; World Bank, 1996). Through this concession license, the government imposed on the recently privatized company a set of requirements to meet; for example, greater coverage,² an accounting division of fixed-line telephone in local calls and international long distance calls market, prohibition of monopolistic practices, the obligation to prepare the interconnection of Telmex network so future competitors could have access to final consumers and price controls of the basic telephone services³ through price caps. Regarding price control, the authority had serious problems to determine the

² In Telmex's concession license it was stated on obligation to expand the number of basic service lines to an annual minimum average rate of 12%, during the period 1990-1994. Likewise, Telmex was committed to offering basic telephony services in all of the populations over 5,000 inhabitants according to the 1990 General Census of Population and Housing (Del Villar, 2009).

³ The basic telephone service includes charges for installation and connection, basic rent (that includes a maximum number of free calls), medium local service (according to the number of calls, duration and distance) and national and international long distance calls.

costs and follow up tariffs fixed by the company⁴. The concession license also granted Telmex an exclusivity period during which it would not have competitors in the long distance call market until 1996.

While deciding the privatization process, there were three possible scenarios for market structures: (1) sell Telmex as a vertically integrated company in network and service, temporally protected from competition; (2) divide the company into smaller, regional monopolies; and (3) segment the market by business line. Even though the option of selling Telmex as a vertically integrated company was not the best option to create a competitive market, the authority considered that this structure had at least three key advantages, and that was why it was decided to sell it as such. First, a world-class company could be created that in a near future could compete with other transnational telecommunication companies in both national and international markets. Second, in terms of time, it was faster to sell a company the way it was structured at that moment. Finally, the privatization, in addition to be thought as a lever for the transformation of the country's telecommunication platform, implied resources for the public treasury. In other words, there was an opportunity cost between what the government could collect —the company as a whole was worth more than each of its parts— and its effects on the contest (Mariscal, 2004). For some sector specialists, the monopolistic power that Telmex holds is based on the fact that this company is the only operator that has had a telecommunication network with national coverage since before its privatization.

In regards to the mobile telephone market, in the first place, there is an asymmetrical treatment for Telmex. When the mobile telephony market was formed at the end of the 80s, the country was divided into nine regions with the idea of delivering two service licenses in each one of them. *Teléfonos de México* partner in the mobile market, Telcel, received licenses to operate in all nine regions of the country. However, this was under the restriction that it would not be the sole provider of service in any of these regions; its contemporaneous competitors only got regional concessions. In return, *Teléfonos de México's* concession license was modified in such a way that Telmex was explicitly

⁴ For a more detailed explanation see Aguilar (2003).

prohibited to offer television services in a direct way, regardless of whether its networks could support the transmission of such service.⁵

(b) The Federal Telecommunication Law of 1995

The second critical phase of sector reforms started at the end of 1994. It is characterized by the liberalization of the fixed-line telephony of both local calls and long distance calls, as well as by the privatization of the telecomm satellites owned by the government, the auctioning of the radio spectrum for mobile and wireless telephony services. The period of contest entry and adaptation could take place between 1996 and 2000 (Aguilar, 2003).

In light of the possibilities of the imminent technological convergence, the Federal Telecommunication Law (LFT) was drafted in 1995. This law sought to solve the following key issues: (1) a dearth of restrictions regarding the number of participating companies in the sector; (2) the absence of segmentation of the market according to technological platforms; (3) that the different network operators could offer all the services their platforms could support; and (4) incorporate the need of technical plans for the interconnection in non-discriminatory terms.

The LFT opens to competition in all the telecommunication market segments. As a result, there is no longer a geographic limitation for cable licensees and telecommunications fixed and mobile network operators. There are no longer any distinction in the nature of the services that each operator could offer in its network. Moreover, interconnection between different operators networks became compulsory and the network rates could only be regulated for companies with substantial market influence and agreed upon through direct negotiations in any other case. Foreign investment was limited to 49% of the telecommunication company's voting shares, except for mobile telephone which could be up to 100% with the express authorization from the government.

Even though under the LFT wired networks are allowed to provide any service, the concession licenses are delivered by business line and are subject to certain rules. It is

⁵ The Clause 1.9 Distribution of Television Signals states, among other themes, that: (a) the distribution of television signals consists of telecommunication service carried out in one way towards various reception points simultaneously; (b) Telmex, with the prior authorization given of SCT, will be able to distribute television signal through its network to authorized companies to provide television service to the public, according to the applicable law terms (being carrier of carriers, in other words, only carrying television signals that are not offered to the public); and (c) Telmex will not be able to exploit, directly or indirectly, any licensee of television service for the public in the country.

therefore necessary *de facto* to have received an explicit authorization by the Ministry of Communications and Transport for each additional service an operator may want to offer. The most visible example is the entry of Telmex, a company that traditionally offered fixed-line telephony service, to the restricted television segment. Nowadays it is technically possible to allow this company to offer video service through its network. However, in its license it is explicitly prohibited to offer television service in a direct way. On the other hand, the title modification is subject to the performance of an agreement, which is still being negotiated, about the access conditions and rates it charges for interconnection with its networks.

(c) Convergence Agreement (2006)

Even though the LFT was conceived as a legal instrument to promote convergence among networks and services, there remained two obstacles that prevented convergence from happening in the Mexican market.

First: when *Teléfonos de México* was allowed to offer the mobile telephone service, on its concession license was clearly stated that it was prohibited from offering directly television services. Telmex concession license had to be changed so that it could offer video services. However, without any prior conditions this was not feasible, as the government political cost would have been enormous since Telmex had failed to meet its obligation to connect its network with those of other concessionaries.

Second: when it was agreed, by a sector agreement in 2003, that cable television companies could offer bidirectional data service (Internet), a government decree was issued stating that other telecommunication companies (especially fixed-line telephone companies) would be able to rent the infrastructure of restricted TV companies in order to offer fixed-line telephone service to their subscribers. Hitherto cable companies had not been authorized to do so. Cable television companies did not agree to this regulation (better known as the loop disaggregation), and therefore they refused to offer Internet services.

In this context, the Ministry of Communications and Transport issued the Convergence Agreement in October 2006. The objective of this agreement was to lay to rest the foundations for the two hegemonic groups —restricted television concessionaries

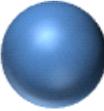
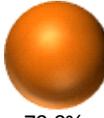
and local telephone companies— to be able and willing to offer voice, data and video services.

The Agreement, in principle, makes it easier for fixed networks operators to provide different services using their technological platforms. It lists the processes for restricted television services to be provided by fixed-line telephone companies and for fixed-line telephone services to be provided by cable television companies. However, the conditions that fixed-line telephone concessionaries must fulfill for television service rendering are actually specific procedures that would allow Telmex to provide restricted TV services. Telmex's adherence to the Framework Agreement for Interconnection —now called the Fundamental Technical Plan for Interconnection and Interoperability— is an essential requirement to consider modifying Telmex's concession license. As it is described later in this document (see section "Interconnection analysis", p. 37) Telmex (among other companies) protested this regulation in a court of appeals.

2. CURRENT PANORAMA OF THE TELECOMMUNICATION SECTOR IN MEXICO

In Mexico, private companies are the main telecommunication services suppliers. The fixed-line companies that stand out are: Telmex, Bestel, Miditel, Alestra, Marcatel, Axtel and Maxcom. For mobile telephone, there are Telcel, Iusacell, Nextel and Telefonica Movistar. For broadcast television operators, Televisa and Television Azteca; cable and satellite television companies: Cablevision, Cablemas, Cablecom, Megacable, Maxcom, Dish and Sky; and finally, for companies that offer trunking services: Nextel. Even though it seems that there are several telecommunication companies in the market, only a few of them, some holdings, operate in more than one market segment. For example, Telmex and Telcel belong to the same holding (*América Móvil*), Televisa and Bestel, Cablevision, TVI, Cablemas and Sky belong to another (*Grupo Televisa*), and Television Azteca, Total Play and Iusacell to another holding.

Illustration 1. Telecomm Market Share per Service per Player

	Mobile Telephony	Fixed Telephony	Internet	Broadcast TV	Per-pay TV
América Móvil ⁽¹⁾	 70.3%	 79.9%	 74.0%		 10.0%
Televisa ⁽²⁾		 4.8%	 15.0%	 70.0%	 41.0%
Grupo Salinas ⁽³⁾	 4.3%			 30.0%	
Others ⁽⁴⁾	 3.7%	 5.1%			 23.0%
	 21.7%	 2.3%	 11.0%		 26.0%
TOTAL:	100%	100%	100%	100%	100%

Source: Own elaboration with COFETEL data (2011), Pyramid Research (2010) and *Expansión* (2011)

*The spheres' size represents the market share percentage of the different companies per segment (mobile and fixed-line telephony, broadband, broadcast and pay television).

¹ América Móvil: Mobile telephony: Telcel (70.3%); Fixed-line telephony: Telmex (79.9%); Broadband: Prodigy (74%); Pay TV: Dish (10%), even though Telmex does not directly participate in Dish Mexico capital, it provides assistance for invoicing and collection.

² Grupo Televisa: Fixed-line telephony: Cablevision and Bestel (4.8%); Broadband: Yoo –Cablevision, Cablemas and Megacable– (15%), even though Megacable does not belong to Grupo Televisa; Broadcast TV: Televisa (70%); Pay TV: Cablevision and Cablemas (26.3%), Sky (15%).

³ Grupo Salinas: Mobile telephony: Iusacell/UNEFON (4.3%); Broadcast TV: TV Azteca (30%)

⁴ Others: Mobile telephony: Nextel (3.7%), Telefonica (21.7%); Fixed-line telephony: Axtel (5.1%), Megacable (2.3%), The rest (7.9%); Broadband: The rest (11%); Pay TV: Megacable (23.2%), Others (25.5%)

The main role of the State in this sector is to enforce a regulatory framework aiming to promote the efficient development of telecommunications. This requires that the various telecommunication services be provided with suitable coverage, prices, diversity and quality in the interest of users (COFETEL, 2009). The Federal Electricity Commission (CFE), the state-owned electric utility, is the only public operator allowed to provide *carrier of carriers'* services, this is, to rent its optical fiber infrastructure to transport third-party digital data.

To place Mexico in the international context, it is useful to analyze the ITC Development Index (IDI), which is constructed yearly by the International Telecommunication Union (ITU). The objective of the Development Index is to measure and compare the level of advancement of information and communication technology (ITC) in 159 countries. The IDI focuses on evaluating three conditions that favor the penetration of these services: 1) the physical existence of networks capable of providing services, 2) the existence of computers and other electronic devices, and 3) the existence of trained personnel to operate them⁶. According to this index, in 2009, Mexico was ranked 77 out of 159 countries. In the Americas it placed 15 out of 25, below Argentina, Uruguay, Chile, Brazil, Venezuela, Colombia and Peru, in spite of being the 4th largest economy in the continent.

Table 1. Telecommunication services penetration, service subscription per 100 inhabitants (selected countries in the Americas, year 2008)

Fixed-line telephony		Mobile telephony		Fixed broadband	
Canada	55	Argentina	116.5	Canada	29
USA	51.3	Uruguay	104.7	USA	25.6
Uruguay	28.6	USA	87.6	Uruguay	8.6
Argentina	24.1	Colombia	88.5	Chile	8.5

⁶ The IDI development index is an indicator with three sub-indexes that include eleven indicators. The first sub-index measures infrastructure levels and access to it per country and includes five indicators: fixed-line and mobile telephony, broadband, households with Internet and households with computers. The second sub-index measures how much the infrastructure is used through indicators such as the number of Internet users, fixed and mobile broadband. The third sub-index measures the capacity that a population has to use telecommunication services. The indicators in this case are the ability to read and write of the adult population and the percentage of youth studying at high schools and universities (ITU, 2010).

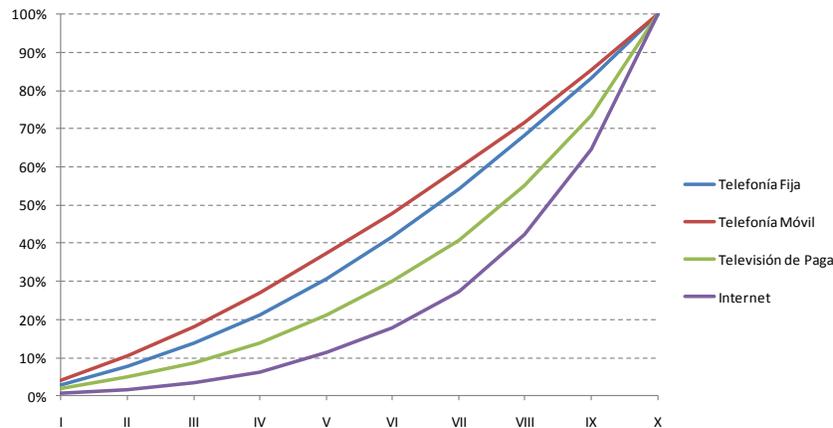
Brazil	21.2	Chile	88.1	Argentina	8
Chile	21	Brazil	77.6	Mexico	7.1
Mexico	19.1	Mexico	69.9	Brazil	5.2
Colombia	14.6	Canada	64.7	Colombia	4.1

Source. International Telecommunication Union, Statistical Profiles 2009 Americas

Given the per capita income of the Mexican economy, what is striking is that the fixed-line telephone service market in 2009 registered a 19.1 fixed lines penetration per 100 inhabitants. According to the International Telecommunication Union, such penetration is generally higher than 40 per 100 inhabitants in developed countries. In contrast, the mobile telephone density in that same year was approximately of 80 lines per 100 inhabitants. According to the 2010 census carried out by the National Institute of Statistics, Geography and Information Technology (INEGI), 29.4% of Mexican households have a computer. Furthermore, 41.2% of households have pay television services (LAMAC, 2011) and the only in 33% of households the mobile phone is the only communication device available (INEGI, 2009).

Regarding penetration of these services across income groups, mobile telephony is consumed in a more democratic way than other technologies. As it can be observed in Graph 1, among the first four population deciles by income almost 30% of the total households have mobile telephone line, and barely 6% have Internet service (Flores & Mariscal, 2009). This is due to the fact that with the pre-paid modality (or pay-as-you-go schemes), which accounts for 92% of the total mobile phone clients, users can stop buying refill airtime minutes for up to 60 days and keep their mobile line active. In that way, regardless of the number and duration of calls a user makes, he/she can receive an unlimited number of calls without any additional costs (Lajous and Galvez, 2011). It is worth mentioning that, even though in Mexico it is possible to have a mobile line at a very low cost, this does not necessarily imply that users use the service to make calls or access data services.

Graph 1. Accumulated telecommunication services penetration per income decile



Source. Own adaptation of Flores & Mariscal graph (2009) based on INEGI data, ENIGH 2008.

In Mexico, price for voice and data services were stagnant until the recent (and belated) incursion into these market segments by cable television operators. As mentioned before, despite the fact that the 1995 Federal Telecommunication Law does not restrict public wired telecommunication networks from providing new services, it was until 2003 that cable television companies were authorized to provide broadband services. These were already being provided by this type of companies in 26 countries belonging to the OECD. In 2006 these companies were finally allowed to provide telephone services. In other words, it was only until 2007 that Telmex had to face competition from these companies, specifically regarding triple play offers (TV, telephony and Internet).

As a result of competition, prices have decreased. According to International Telecommunication Union's calculations, the price of a telecommunication basket that includes voice, data and video services decreased by 53% between 2008 and 2009 in Mexico⁷.

⁷ The ICT Price Basket is an index that calculates the accessibility of telecommunication services in 161 countries. It relates the combined cost of monthly prices of fixed-line and mobile telephony and broadband services with average GDP per capita in every country. Since it is not an index in real terms (let's say in dollars or PPP) ITU uses it to compare telecommunication services prices among countries and in time. The fixed-line telephony price basket includes an average monthly rent plus 30 local calls, each of them lasting three minutes and 15 of them made in peak hour. The mobile price basket includes 25 outgoing calls – inward and outward of the operator network, during peak hours, off-peak hours and weekends– plus 30 text messages. The broadband service price basket is equivalent to a month subscription of a 1-gigabyte speed plan (ITU, 2010).

3. MARKET SEGMENTS ANALYSIS

The mobile service segment –voice and data– is the biggest telecommunication market in Mexico: 60% of the industry income comes from mobile services. Regarding services, even though increasingly more services are offered and subscribed to voice, data and video (triple play) packages, at the end of 2010, voice services generated 72% of the industry income, while 19% was generated by data services and 9% by video services (Pyramid Research, 2010).

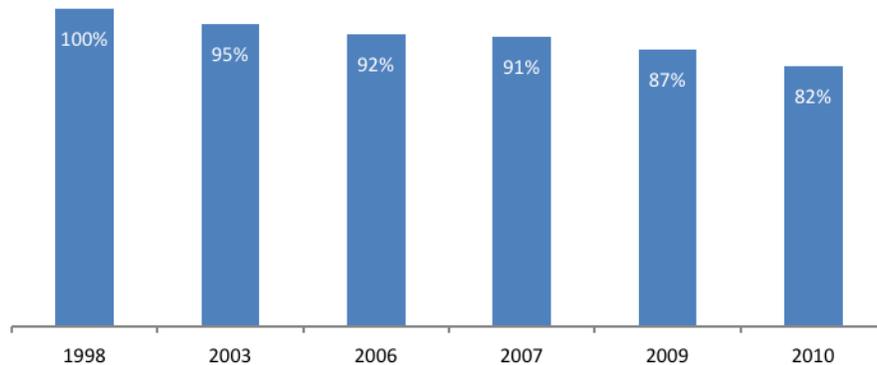
(a) Fixed-line telephony

Since the privatization of Telmex, the coverage of this service has increased from six lines per 100 inhabitants in 1990 to 17.5 in 2010. However, this increase in penetration has not been equitable at a national level. The Federal District, the state with the greater number of lines per capita, has a teledensity of 45.9 fix lines per 100 inhabitants, while Chiapas and Oaxaca, the country's poorest states, have 5.4 and 7.2 telephone lines per 100 inhabitants respectively.⁸ Telmex, the dominant company, provides fixed-line telephone services in 22,965 communities in the country. Out of its total lines, 31.3% of them are located in Mexico City, Monterrey and Guadalajara.

Although, the government opened, in theory, the local telephone market to competition with the privatization, it actually started ten years later because the operating rules were not set until 1998 (Del Villar, 2005). Apart from Telmex, nowadays at least 15 other companies participate in the market, some of them offer voice, data and video package services (Cablevision, Megacable, Cablemas, Cablecom, TVI, Maxcom, among others). Today, Telmex market share is equivalent to 79.9%. As it can be observed in graph 2, even though Telmex market share is high, this figure has significantly decreased in the past few years; first of all, because users have migrated from fixed-line to mobile telephony and more recently, due to the triple play competition.

⁸ Some other examples: Nuevo Leon has a concentration of 26.2 lines per 100 inhabitants; Jalisco, 23.1; Aguascalientes, 20.7; Tabasco 8.1 (with data of the Federal Telecommunications Commission, 2010).

Graph 2. Telmex market share evolution (fixed-line telephone segment)



Source. Own elaboration based on various market reports

The cable television companies have experienced a quick increase in the telephone and Internet markets. In a two year operating period, from 2007 to 2009, telephone companies other than Telmex that have been operating for more than nine years —Alestra, Axtel/Avantel, Maxcom, Marcatel— reached almost 28% of the market share (COFETEL, 2010).

This increased competitiveness has been reflected in prices. Families that subscribe to a voice, data and video package service have seen a 40% reduction on the cost of these services. According to International Telecommunication Union calculations (2010) the cost of a fixed-telephone basket that includes an average monthly rent of a line plus 30 local calls decreased 30% between 2008 and 2009.

(b) Mobile telephony

When the mobile telephony market developed at the end of the 80s, Telcel had two fundamental advantages over its competitors: (1) it was the only company capable of offering mobile telephone services throughout the country, and (2) it had access to spaces well located to efficiently develop its wireless network (roofs of the buildings owned by Telmex)⁹. As time went by, the industry consolidated and the other companies got

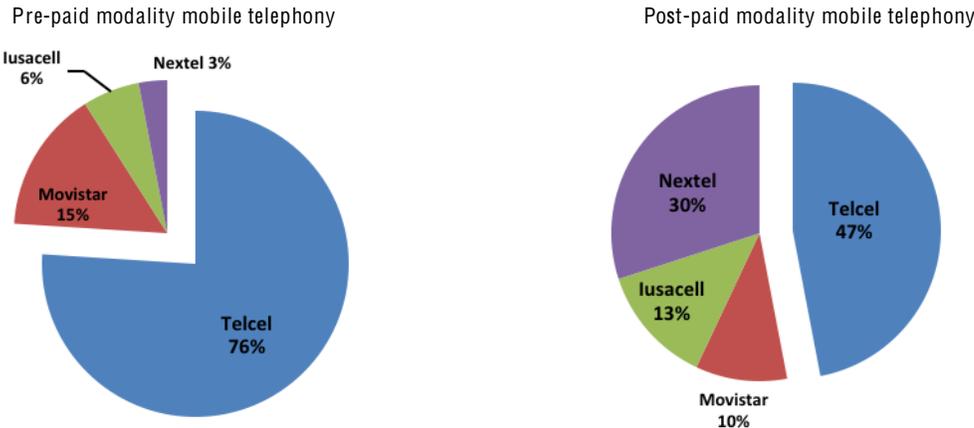
⁹ One of the most important elements for the development of a mobile network is the spaces or places where towers and antennas used to provide service are installed. For an new comer the access to these

concessions in all of the regions (through the acquisition of competitors or new spectrum bidding processes). However, Telcel’s initial advantages allowed it to consolidate a leading position;¹⁰ that made it the mobile telephone operator with the widest network coverage throughout the country and a 70.3% share of all mobile telephone users¹¹.

When Telcel entered the market it quickly overtook Iusacell, who was the leader and first mobile telephone operator in Mexico. Later in 2005, Grupo Salinas, UNEFON’s owner, bought Iusacell in an effort to compete with Telcel, but it did not succeed, largely due to Telcel's strong market positioning derived from its initial advantages.

If we consider that in Mexico mobile telephone services are divided in two different segments: pre-paid modality and post-paid modality, Telcel has 76% pre-paid market share and under 50% market penetration in the post-paid market. In Mexico, 92% of the total mobile numbers are subscribed by pre-paid modality and barely 8% are post-paid users.

Graph 3. Mobile telephony market share distribution, 2007



Source: Ministry of Communications and Transport, 2007

According to ITU, for the 2008-2009 period, Mexico is among the countries where mobile telephone prices decreased most dramatically, 52% less in comparison with the

spaces is not easy; these spaces are already taken by the established operators, or their price is very high due to the high demand level (Del Villar, 2009).

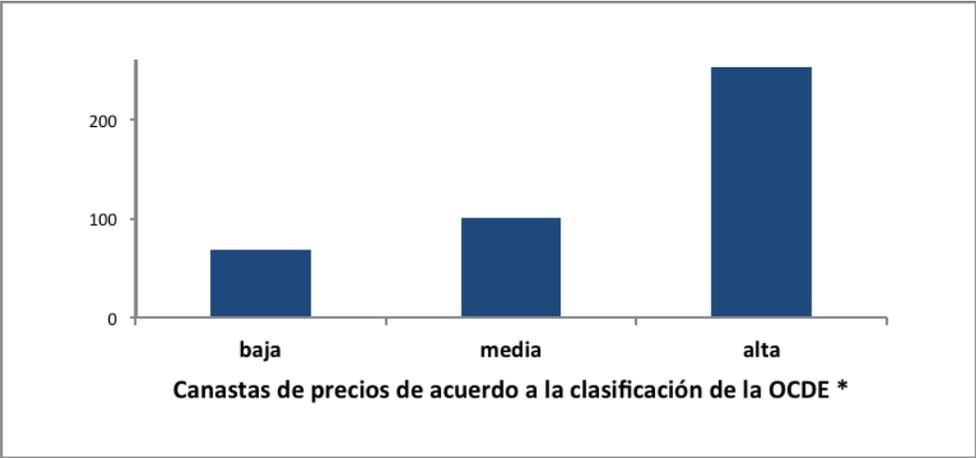
¹⁰ Besides the advantage of being, at first, the only company capable of offering the mobile telephone service throughout the country, Telmex used cross-subsidies in 1994-1995 coming from their local and long distance call telephone services to finance the operations of its mobile telephone company (Del Villar & Soto, 1995).

¹¹ Talking about the market as a whole (without taking into consideration pre-paid and post-paid modalities), Telcel has 70% of the market, Movistar 22%, Iusacell 4.3% and Nextel 3.7%.

previous year. The package that includes 25 outgoing calls, equivalent to 37.1 minutes inward and outward of the operator network, during peak hours, off-peak hours and weekends, plus 30 text messages, is the third cheapest in Latin America below Costa Rica and Panama, and it is less expensive than an equivalent package in the United States or Canada. On the other hand, even if prices in the Mexican market have decreased, mobile telephony is still expensive in comparison with the average monthly income of the consumers: in terms of accessibility, Mexico ranked 48 out of 161 countries in 2009.

According to OECD, even though mobile telephone tariffs in Mexico have been decreasing in the past eight years, they are still above the average of member countries (see graph 4). Moreover, the users that consume the most are the ones that comparatively pay more. This effect could be explained by the fact that in the high-end sector, mobile operators in Mexico face less competition.

Graph 4. Difference of the basket price in Mexico regarding to the average basket price of OECD member countries with regard to the mobile telephony
(Figures in dollars – Purchasing Power Parity (PPP))



Source: OECD 2010; 2009 data

*OECD classifies the different basket price based on calls distribution (local calls, national long distance, voice mail or text message), number of dialed calls, time of the day they were dialed (peak hour, off-peak hour or weekend) and its duration (OECD *Communications Outlook* 2009)

How can it be that mobile telephony prices have decreased while market concentration prevails? As it will be explained in detail later (see section “Declaration of

dominance in the mobile telephone market”, p. 34), what has allowed Telcel to offer low prices, get profits and concentrate a large market share is the difference between the prices that it offers its in-call users and the interconnection prices that it charges when a Telcel user calls another network telephone number (or vice versa).

In July 2010, two biddings of 3G+ technology spectrum took place. These new spectrum assignments were expected to intensify the competition in the sector in three ways:

First, limiting the accumulation of the spectrum of the two biggest operators –Telcel and Telefonica Movistar. With this purpose, the bidding bases stated maximum spectrum accumulations for all potential participants. The accumulation was stopped by adding the spectrum that they already operated to the one that by virtue of the bidding could get. After the bidding took place, Telcel and Telefonica Movistar kept almost the same spectrum proportion (32% and 25% respectively), each of them only losing a one percentage point in regards with their original distribution.

Second, a new participant was expected to enter the market. Back then, it was announced that Televisa and Nextel would participate together, and hence enter into the pre-paid mobile telephony market segment.

The third source of competition that was expected with the new biddings was the possible expansion of Telefonica Movistar services. In this respect, even though Movistar lost one percentage point in the spectrum distribution, the tender allowed it to offer for the first time 3G services.

However, six months after the biddings (March-April 2011), it seems that the competitive dynamics will not be as intense as it was expected. On the one hand, the Nextel-Televisa alliance was dissolved (only Nextel kept the concession),¹² and, on the other hand, Movistar, who has 21% of the market and is Telcel closest competitor, recently declared that it goes from an “attacking position to a conservative one”¹³, as declared by the company’s president for Latin America. In December 2010, an interconnection agreement

¹² Due to the restrictions to spectrum accumulation set by COFECO, tender 21 results favored Nextel (its spectrum ownership increased from 12% to 21%, 9 percentage points). Since there were no more bidders, Nextel got an important portion of the spectrum without having other holdings putting prices up. Hence, the bidding was strongly questioned by the public opinion and objected by 70 court of appeals proceedings filed by Iusacell.

¹³ *El Universal, Cartera Section*, p. 6, 15th April 2011.

was signed between Telcel, Telmex and Telefonica (known as the “Christmas agreement”) where the interconnection price is set at 95 peso cents towards a mobile network that will gradually fall down to 69 cents in 2014. This fee, although high, —double COFETEL’s recommended 39 cent price— seems to offer advantages to both *America Movil* (Telmex and Telcel) and Telefonica Movistar¹⁴.

While we write this document, a potential market entry of Televisa in the mobile sector was announced, through the acquisition of 50% of Iusacell shares (although, COFECO approval is still pending). Even though this transaction would be the first mobile asset of the television company and Iusacell owns less than 5% of the market, it is estimated that it could have an effect on the competitive dynamics as Televisa would be able to offer the quadruple play with a wide content network.

(c) Internet and broadband

According to data from the Organisation for Economic Cooperation and Development (OECD 2009), from 2000 until now, the total number of broadband subscribers in Mexico increased by 145%. The growth rate seems big, but it contrasts with the fact that among OECD member countries, Mexico ranked 28 out of 30 in 2005 regarding the number of broadband subscribers per 100 inhabitants, and in 2007, it went down to being ranked 30 and last, below Greece and Turkey. Mexico's backwardness compared to other OEDC member countries regarding broadband subscribers can be observed in Table 2.

Table 2. Number of subscribers and broadband service growth rate
(OEDC selection of countries)

Country	Suscribers per 100 inhabitants (year 2007)	Annual growth rate (2000-07)
Korea	30.36	20.17
Canada	27.4	30.30
United States	23.29	41.32
Ireland	18.05	206.81

¹⁴ It is worth mentioning that for Telefónica Movistar an abrupt interconnection price reduction could have a negative effect of up to 10% of its profits (Lajous y Gálvez, 2011).

Spain	17.6	101.57
Hungary	13.88	149.73
Greece	9.70	295.20
Turkey	6.02	167.72
Mexico	4.34	144.85

Source. OECD Communications Outlook 2009

In Latin America, Uruguay has the greatest penetration level of broadband subscribers, followed by Chile, Argentina, Mexico, Brazil, Colombia and Venezuela (see Table 1, p. 11). Although the penetration levels in Mexico are higher than in Brazil, Colombia and Venezuela, and not so different from Chile's and Argentina's, the penetration is far from the level reached by more developed countries (for example, in 2007 the subscription level per 100 inhabitants was 27.4 in Canada and 23.4 in the United States).

Considering the number of households that have a computer and an Internet connection, Mexico looks bad with regard to Chile, Brazil and Argentina. Table 3 shows that in 2007, 22.7% of Mexican households had a computer,¹⁵ and that, even though 21.6% of the population were Internet users, only 13.5% of the households had its own connection¹⁶. According to the 2008 National Survey on the Availability and Use of Information Technology in Households, 48% of households that had a computer did not have Internet connection; out of those, 53.7% declared lack of economical means as the main limitation for having an Internet connection (24.3% said they did not need it) (INEGI, 2009).

¹⁵ It is worth mentioning that the computer per household penetration level in Mexico is the same Europe had 16 years ago (ITU, 2009). According to the 2010 census, the percentage of households with a computer is now 29.4% (INEGI, 2010).

¹⁶ According to the 2010 census, the percentage of households that have their own Internet connection has grown rapidly, from a 13.5% in 2007 to a 21.3% in 2010 (INEGI, 2010).

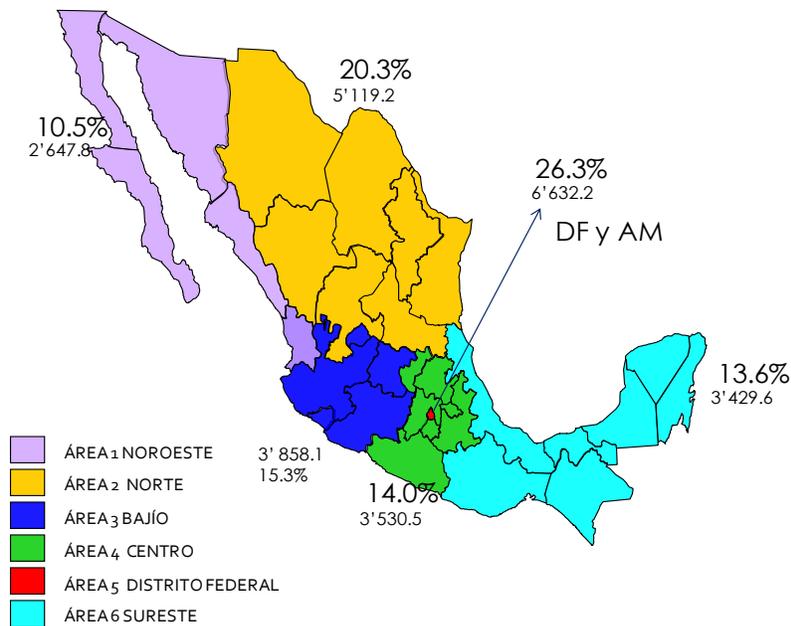
Table 3. Internet use and computer penetration, year 2007
(Select countries in the Americas)

Country	Internet users per 100 inhabitants*	Percentage of households with a computer	Percentage of households with Internet access
Argentina	28.1	36.4	27.5
Brazil	34.8	20.8	15.4
Canada	72.4	79.1	72.1
Chile	32.5	36.4	22.1
Colombia	17.6	27.4	8
United States	71.2	70.2	61.7
Mexico	21.6	22.1	12
Uruguay	40	27	13.5
Venezuela	25	11.9	3

Source. International Telecommunication Union, Statistical Profiles 2009 Americas
(*) For the year 2008

It should be added that Internet access is still uneven in the different regions of the country. According to the Internet World Project Mexico Report (2008) elaborated by the Monterrey Institute of Technology and the University of Southern California, there are currently a little over 25 million people with Internet access in Mexico. As it can be observed below in the map of Mexico, 31% of total internet users concentrate in the north region, and in the center region 55.6% (out of which the Federal District concentrates 26% of total users). The southeast region of the country, the least economically developed, has the remaining 13.4%.

Illustration 2. Internet penetration in Mexico



Source. World Internet Project, Mexico Report, 2008

Regarding the market structure, Telmex concentrates 74% of broadband Internet lines in the country. The cable television companies are getting a more dominant position. In particular, Grupo Televisa and Megacable under the *Yoo* brand¹⁷ have approximately 15% of the market share. However, it is not expected that the market structure will change dramatically in the near future; this is due to a coverage limitation of cable TV companies with regard to Telmex (Pyramid Research, 2010).

Another aspect to take into consideration is the broadband connection speed. Telmex has highlighted that since 2003, the speed offered in Internet access services has increased 100 times from 56 kilobytes per second to over five megabytes¹⁸. In contrast, the World Bank's Information and Communications for Development 2009 Report states that Mexico offers an Internet speed of 178 kilobytes per second¹⁹. According to this study, countries with lower or similar income present better results: for example Honduras has a

¹⁷ *Yoo* is the brand used by Cablemás, Cablevision, Cablevision Monterrey and Megacable to commercialize their voice, data and video services in the different regions where each of them operates in the country.

¹⁸ *Mexicanos, sin medios para triple play: Telmex*, 4th February 2010.

¹⁹ According to COFETEL (2011), now a days, internet speed is 2.64 megabytes per second.

connection speed of 244 Kbps, Costa Rica 820, Brazil, one megabyte, Argentina 2.3 megabytes, and Chile’s 4 megabytes.

Telmex also states that the kilobyte price in packages has dropped up to 48 times in the 2003-2009 period. According to ITU data, from 2008 to 2009, out of 161 economies that were analyzed, Mexico was among the 20 nations that registered the greatest price reductions in broadband services and ranks 42 out of 161 in the broadband accessibility index through a consumption basket formed by one monthly subscription plan to a speed of one mega.

On the other hand, the Internet World Stats Broadband Penetration 2009, which compares both the monthly price of a Mbps and the connection speed average, states that Mexico ranks 29 out of 30 OECD member countries, with a download speed of less than one mega per second at a monthly price of more than 20 dollars. In this same study, Japan holds the first place with a download speed of 61 Mbps at a USD \$0.27 cost per mega per month (see Table 4).

Table 4. Internet: connection speed and cost comparative
(Selection of OECD member countries)

Country	Place	Monthly price per 1 Mbps (en dollars)	Average connection (en Mbps)
Japan	1	\$0.27	61
Korea	2	\$0.45	46
Finland	3	\$2.77	22
France	5	\$1.64	18
Portugal	7	\$10.99	8
Canada	8	\$6.50	7.6
Poland	9	\$13.00	7.5
United States	15	\$3.33	4.8
Mexico	29	\$20+	Less than 2

Source. Internet World Stats Broadband Penetration, January 2009

One last remark for this market segment is that currently, the main broadband supplier in the country, Telmex, only offers this service in a package including fixed-line telephone services. The Federal Competition Commission announced in April 2010 that it

will review this practice since the bundling of these services discourages the consumers' decision to subscribe to broadband services as they bear an additional expense related to subscribing to a telephone service (Del Villar, 2009).

(d) Broadcast television

Broadcast television reaches 92.5% of Mexican households, in other words 28.14 millions of households (INEGI, 2010). This figure is close to the average of the OECD member countries, where 95% of all households have at least one television. Regarding the number of competitors, this cannot be compared with the more developed countries. In our country there are five television networks—which belong to only two companies—, compared with other countries such as Japan where there are 128 national television broadcast channels, Turkey 23, New Zealand and Greece 10, respectively, and 9 in the United States and Italy (OECD, 2009).

For years, Televisa, the biggest media group in the country, was the only private broadcast television company to own a television network until 1993 when channels 7 and 13 were privatized, purchased by Television Azteca. Together, both companies own 94% of the total 700 MHz frequency spectrum given in concession for the transmission of this service.

Televisa owns 70% of the market in terms of switch-on or share. This company broadcasts three national television networks (Channel 2, Channel 5 and Channel 9) and a metropolitan signal (Channel 4) through 257 stations, representing 65% of the broadcast television frequencies in the country. It has also concessions in the pay television market (see below). TV Azteca, basically the only competitor, reaches 25% of viewers. It has 180 frequencies throughout the country that broadcast two television networks (7 and 13), plus the Channel 40 signal that broadcasts in the Mexico City metropolitan area.

However, there are signs that the relationship between Televisa and TV Azteca is not only that of two competitors, but it is also a collaborative and in some cases a collusive one. This is based on the fact that actors and producers' agreements tend to be exclusive and by doing so the companies can offer lower salaries than the ones that could be offered if there were in open competition. Moreover, there are commercial relationships between them. For example, they make arrangements regarding the broadcasting times of football

matches and practice cross advertising (Lajous and Galvez, 2011). According to the Expansion magazine article “The reason why they fight, why now, and why this is the decisive fight” (April 2011), Mexican television companies have high profit margins (29% for Grupo Televisa and 36% for TV Azteca) compared with other countries networks where there is more competition, for example, 10% for CBS in the United States, 8% for ITV network in the UK or 10% for Zee in India.

Digital TV conversion

One of the recent technological changes advantages in the 700 MHz spectrum band, which is the ones used for television service broadcasting, is that more television channels fit.²⁰ Due to this, for digital signal broadcasting (high definition television, HDTV), the Mexican government can allow up to two new television operators with 92% and 82.6% coverage throughout the national territory, respectively. Furthermore, it can get back part of the spectrum that the actual operators have and that it would be left if they changed from analog to digital signals (see discussion below). COFETEL and the Federal Competition Commission are actively seeking the possibility of bidding the spectrum under government control for the entry of at least one new broadcast television national operator.

There is speculation about the possibility of Carlos Slim, the majority owner of *America Movil*, being interested in participating in this market (Lajous & Galvez, 2011). He has always said that he was not interested in a broadcast television channel; however, in March 2011 he stated that “today we do not disregard that option.” On the other hand, COFETEL has mentioned that as long as the regulator does not consider that Telmex improves the prices for interconnectivity to its competitors, its concession license will not be modified for television signal broadcasting, and thus, it cannot participate. This year [2011], in August, COFETEL will announce a tender to let two new television companies enter the market: “Only if Telmex manages to change its concession license by then, will it be allowed to participate.”²¹

In our opinion, the possibility of having a broadcast television channel should be a different discussion over the option of Telmex being able (or not) to enter the pay television

²⁰ With the technology known as Digital terrestrial Television (DTT), the same signal can be broadcasted saving up to 75% of the frequency.

²¹ Newspaper Reforma, Business section, Interview to Rafael del Villar, Commissioner for Cofetel, 6th January 2011.

market. The networks infrastructures are different and the broadcast television company could be other than *America Movil*. Instead, we believe that the discussion on whether to award Telmex a concession in the open TV segment should center on its political implications.

Regarding the government's possibility of getting back the spectrum left by Televisa and TV Azteca when they switch to digital signal, the story goes back to July 2004 when President Vicente Fox announced an agreement establishing the transition from analog to digital television in 2021, which effectively prolonged the two networks' concessions until the analog switch-off.

Later, in April 2006 the Congress approved by an absolute majority a set of reforms to the Radio and Television Federal Law (*Ley Federal de Radio y Televisión*). This reform allowed each of the television companies, among other things, to keep after the switch-off the digital spectrum in equivalent proportions to the ones they have in the analog spectrum. Two months after the passing, a group of legislators, arguing that they had been forced to vote in this way by political-electoral pressure applied by the television companies, brought legal actions for the defense of constitutional rights contesting that the new amendments violated sections of the Constitution of Mexico, and countersigned the spectrum freely to the two current operators.

In June 2007, the Supreme Court of Justice declared parts of the texts of the law unconstitutional. Some of the parts that were eliminated are: the concession auction process, the automatic countersigning of them, the 20 year period of the concession, and the sections that allowed getting additional digital services using the same radio spectrum (SCJN, 2006).

On the other hand, in September 2010, President Calderon published the "Decree to Complete the Transition to Digital Terrestrial Television", which substitutes the one published in 2004 to bring forward six years the transition from the analog television to a digital one and set the definitive date of the "analog switch-off" December 31st 2015. Furthermore, the objective of the decree is to specify the quantity of radio spectrum that would be available to the television broadcasters and that could be recovered by the State to bid it again for advance mobile telephony or television services. After signing this decree,

another group of legislators filed an unconstitutional action, arguing that COFETEL and not the president is the entity in charge of handling this matter.

In short, television concession renewals, the spectrum to be released and to be bid, the possibility of providing additional services over the 700 MHz frequency band, and the possibility of the “analog switch off” are all in legal limbo. On the one hand, there has not been any law-making related to the cancelled decisions by the Supreme Court, and on the other hand, since the decree is suspended, it is unknown whether the digital conversion will take place in 2015 or in 2021.

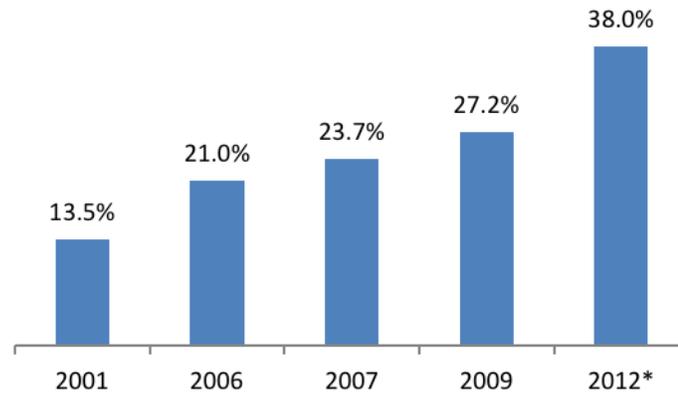
Finally, it is also worth mentioning that penetration of high definition television in Mexico is still limited: 86% of the Mexican household televisions are analog and to get a digital sign need a converter that costs between 600 and 780 pesos (50 to 64 USD) (COFETEL, 2011). President Calderon’s decree contemplates that the bidding money of the remaining spectrum of current operators can be used to subsidize the convertors.

(e) Pay television

At the closing of 2010, in Mexico there were more than 9.5 millions households with pay television services, either satellite or cable, accounting for 27.2% household penetration. There is a greater penetration in the states of the north and west of the country; for example, Sonora has a 48 per 100 inhabitants penetration, Colima, 48 and Jalisco 39 respectively. The Federal District has a penetration close to the national average of 27. The smallest penetration is found in Chiapas with 7, and Oaxaca with 6, which are the poorest states in the country (COFETEL, 2006).

The increase of the penetration rate of this service is striking: according to INEGI data, in 2001, 13.5% of the country’s households were subscribed to a pay television service, in 2009 this figure reached 27.2% (an over 100% increase) and it is expected to go up to 38% penetration in 2012 (see graph 5).

Graph 5. Recent evolution of restricted television penetration rate in Mexico



Source. INEGI, 2012 projections

The simple explanation of this increase is the offer of triple play packages, where voice, data and video services are offered in a package. Let's remember that in 2006 cable television companies were authorized to provide telephony services and in 2007 the offer of the three services in a package began. In that one-year period of time, the number of households that had pay TV services increased from 21.0% to 23.7%. On the other hand, even though penetration has increased, these percentages noticeably contrast with the penetration average for OECD member countries, which was 73% for 2006 and 2007 (OCDE, 2009).

In terms of market shares, taking into account all the technologies, Grupo Televisa holds approximately 50% of the market share. At the same time, cable television is the dominant technology: two out of three subscriptions are through this technology. In this sub-segment, Televisa, through Cablevision and Cablemas owns 35% of the market, and Megacable, its closest competitor, follows with 31% (Pyramid Research, 2010).

The satellite television segment was completely dominated by Sky, belonging to Televisa, until Dish, which is owned by MVS and Telmex, started offering this service at the end of 2008. A year after Dish started operating, at the closing of 2009, there were 2.3 million satellite service subscribers, Sky holding 72% of the total subscriptions. At that same time, Dish had 20% of the market and was present in the 10 main cities of the country. Dish entered the market with a 31channel package —without Televisa channels— at a price 20% less than Sky's. Even though at that time Sky reacted by creating a package 27% less expensive than its original basic package, after two years of having presence in

the market, it is estimated that Dish has created 2.2 new millions of subscriptions and owns 40% of the satellite television market (Expansión, 2011).

Market segments analysis: Final comment

The analysis of the various telecommunication sector segments in Mexico lets us state that competition has increased in the interest of consumers, since prices have gone down in the voice, data and video services and the number of fixed lines, Internet connections and restricted TV services have increased. On the other hand, the sector growth has not been even among all the country's regions. Specifically, there is a significant difference regarding the penetration level of Internet services and broadband between Mexico City, Guadalajara and Monterrey and the rest of the country. Finally, it can be seen that in each one of the market segments there is a leading company and that, in general, the difference in the market share between the leading company and its closest competitor is significant.

A widespread trend is the reduction in market share of the dominant operator in fixed-line services and broadband (Telmex), and the new presence of the telecommunication group Televisa in almost all of the market segments. It seems that the telecommunication industry in Mexico is being divided between these two groups: *America Movil* (Telmex and Telcel) leading the fixed-line and mobile telephony segments, and *Grupo Televisa* commanding the pay television and television contents segment. Regarding this matter, political and financial analysts have suggested in the national press that it seems that there is an order from the federal government to drive the consolidation of Televisa for it to become a competitor at the same level of Telmex and Telcel.

In the short term, the transition to a more competitive sector depends on two public policies implemented in 2010 and to be seen matured in 2011. The first one, the awarding of part of the Federal Electricity Commission optical fiber network capacity to a telecommunications consortium (formed by Televisa, Megacable and Telefonica Movistar) so that these companies can expand their telecommunication services, especially broadband, without using the Telmex's networks and links. The second one, the last spectrum tender with the purpose of getting a more balanced distribution of the spectrum, the opportunity to offer more services to the existing operators, and the possibility of getting attracting new operators.

As described previously in the mobile telephony section (p. 15), the current scenario is that even when the spectrum distribution is less uneven than last year's, the competition dynamics will not be as intense as it was once expected. It will depend on how aggressively Televisa's entry to the market through Iusacell is, and on the reduction of interconnection rates. With respect to the awarding of the CFE dark fiber threads to the consortium Televisa, Megacable and Telefonica Movistar, tests are expected to be carried out at the end of June 2011; subsequently commercial service will be provided to voice, data and video suppliers. As it will be explained in detail later (see section "Network analysis", p. 46), such project would imply the duplicity of telecomm services transport infrastructure and, hopefully, a downward on the final price of this services.

The next step towards a more competed sector could derive from the possible entry of Telmex to the per-pay television segment. As explained before (see section "Convergence Agreement (2006)", p. 9), there is a decree, the Convergence Agreement, which specifies the procedures that would allow Telmex to provide restricted TV services. This decree was contested by this company in a court of appeals and in this month (May 2011), by judicial order, the Ministry of Communications and Transport has to pronounce itself with respect to Telmex's level of compliance with the agreement. If this entry comes about, it is expected that the company would offer the voice, data and video package services at accessible prices: Telmex already offers this type of channel package services in 12 Latin American countries and due to its regional market power it can buy television contents at relatively low prices.

4. ANALYSIS OF THE COMPETITIVE ENVIRONMENT

How to determine whether there is competition in the telecommunication industry in Mexico? The conventional way to determine rivalry level within a sector or market is to analyze whether one or more companies belonging to it enjoy a powerful position within the market.

In Mexico, the Federal Competition Commission (COFECO) is responsible for carrying out this analysis. According to Mexican laws regarding economic competition, — Federal Economic Competition Law, section 13, fraction I—, to determine if an agent has substantial power in the market we should consider its market share, as well as if it can set

prices unilaterally or restrict the supply without competitors being capable of counteracting such power. According to section 63 of the LFT, if the Competition Commission issues a declaration about the existence of substantial power, then the telecommunication authority, in this case the Federal Telecommunication Commission (COFETEL) could apply an asymmetric regulation over the company declared as dominant. Coincidentally, the companies that have greater market share in fixed-line, mobile telephony and cable television services have also been recently declared dominant by the antimonopoly authority.

We will mention these declarations below. The analysis of the declarations of dominance issued to Telmex and Telcel show that their substantial power is related to the effect that the cost, quality and /or availability of the infrastructure they own— including their networks, transmission and access links— has on the performance of fixed-line and mobile telephone end markets. At the same time, the declaration of absolute monopoly practice in the restricted television market shows the market power that the analyzed companies, especially Televisa, have regarding television content.

It is worth pointing out that the regulations that the antimonopoly authorities have attempted to apply as a result of these declarations, and in general, as an effort to mitigate market power of the sector dominant companies, have been legally questioned. As a consequence of these appeals, the enforcement of regulation in the sector is somewhat paralyzed.

This legal questioning of the regulatory authorities is, on one hand due to the fact that the courts do not have training on competition or telecommunication subjects. Due to the lack of specialized courts, the judges can only pronounce on the form or content of the resolutions issued by the regulatory agencies. Therefore, as long as it can be proved that there is a legal error in the form, regardless of the arguments or legal content of the resolution, the whole resolution can be disregarded.

On the other hand, there is the issue of the time it takes to exhaust all the administrative and legal instances before the execution of the resolution issued by the regulatory authority can be put into place. After the definitive resolution has been issued by the authority, the operator can file for an appeal before a district judge (known as the “amparo indirecto”, which automatically suspends the resolutions of the authority while it

rules). Furthermore the operator can then file another appeal for review before a collegiate court and an appeal to reverse a judgment before the same regulatory agency. Mexico does not have a time limit between the resolution and the various appeals for review. Hence, a telecommunication company can postpone for years the enforcement of regulations that do not favor it by filing appeals of review and “amparo” proceedings.

Both conditions together —the lack of specialized courts and the structure of review procedures—, contribute to encourage legal actions to void regulations taken by the regulatory authorities.

(a) Declaration of dominance in the fixed-line telephony market

In 1997, COFECO issued a resolution declaring that Telmex held substantial power in five markets: local fixed telephony, national and international long distance telephony, interurban transportation, and access or interconnection services. In that moment, Telmex challenged the said resolution before the Judicial authorities, and after 10 years of appeals, the rulings favored the company and the regulatory authority could not apply any kind of asymmetric regulation to the dominant operator.

For a second time, in 2007 the antimonopoly commission opened four investigations on Telmex’s dominance. In June 2009, it issued the first two resolutions: the dominance declaration on the local transit calls and the rent of dedicated link segments. These two market segments are related to the transportation of any type of traffic between different points of the Telmex network, whether for final users to have access to this network or other network operators to be able to connect to the Telmex network so as to transport their services (transport links) and exchange traffic (access links).

Telmex is the only supplier of dedicated link services with almost nationwide coverage. Therefore, the Telmex network is an essential facility²² for the rest of the operators who need these links to complement their transportation infrastructure or to reach customers located in places where they do not have infrastructure of their own.

In October of 2009, the Commission also declared *Teléfonos de México* as dominant in the market of traffic origin services provided to other long-distance telephone

²² In telecommunication literature this term is used to describe the asset or infrastructure that is essential to provide services to consumers or to let competitors take their services from one point to another one, and that is not easily replicable because it requires an enormous investment.

companies, and in the market of call termination services. These third and four declarations deal with interconnection.

Particularly, the call termination service refers to the possibility that the other fixed-line telephone concessionaries –Axtel, Alestra, Maxcom, Marcatel, Cablevision, among others— have to connect safely the calls that are originated in their own network and finish at Telmex’s network. Due to Telmex market share, approximately 80% of all calls to a fixed telephone line end up in Telmex’s network.

Telmex argues that Mexican regulation in terms of interconnection for the termination of calls already sets forth provisions regarding this issue. The law states that interconnection is a general obligation for all the telecommunications public network concessionaries and failure to comply with this obligation can result in the revocation of the concession (Notimex, 2011).

The Commission’s argument is that this procedure is not about interconnection *per se*, but about the power that Telmex has to restrict the supply of such interconnection or unilaterally establish interconnection rates without other telecomm operators being able to counteract its decisions. According to the declaration of dominance, to conceive the restriction of the offer as a ‘disconnection’ or non-termination – that certainly could happen and is the crudest expression of such power – is a mistake. The restriction to offer may be done through the delay to the interconnection or through a charge on the connection rates that can be significantly superior to Telmex’s costs, which increases the costs of the rest of the concessionaries who demand the service (COFECO, DC-03-2007).

Several facts suggest the substantial power of Telmex. For instance, the frequent request by other telecomm concessionaries trying to obtain termination services from Telmex for arbitral intervention from COFETEL, the delay of such negotiations even with the mediation of the competent authority and Telmex’s non-compliance of the COFETEL resolutions (COFECO, DC-03-2007). As a result of this declaration, there is a possibility that this operator will be imposed with asymmetric regulations by COFETEL, but it depends on the ruling in regards to this issue.

Some COFETEL commissioners have publicly declared that they are analyzing this possibility. Some commissioners reckon that there soon will be regulations of these type

imposed. In case that any kind of asymmetric regulation is issued, it would be expected that Telmex will appeal this ruling before the Judicial Branch.

(b) Declaration of dominance in the mobile telephony market²³

With regards to the mobile telephone market, even though COFECO acknowledges that the implicit rates²⁴ of Telcel have been reduced by approximately 45% on a continuous basis in the period 2003-2007, it also declared that the company has a dominant position in the national market of mobile telephone services for final users (21st January 2010):

“...Telcel’s high market share in terms of subscribers and revenues, the high profit margins that it has earned steadily in recent years, its ability to gain net subscribers above its competitors as a result of its high coverage level and wide distribution network throughout the country, and the existence of entry barriers that are significant for new economic agents, are considerations that allow us to conclude that Telcel is an agent with substantial power in the relevant market” (COFECO, Resolution DC-008-2007, p. 230).

For COFECO, what has enabled Telcel to offer lower prices, with sustained profits and even with incomes that are five times more than those of its closer competitor (Movistar with 20% of the market), is the difference between the prices offered in the calls made by its users to the users of other networks, and those charged to its own users for calls among themselves.

The resolution explains that, in a context of asymmetric networks, the dominant operator tends to fix the *off-net* call rates (when the origin and termination of the calls are in different networks) above the prices for the *on-net* calls (when their origin and termination happen inside the same mobile network). Thus, if the *on-net* price in the biggest network is more attractive, the dominant operator will stimulate its consumers to perform the highest quantity of calls within its network and reduce the calls to other networks. As a result, potential consumers will want to belong to the biggest network, thus making the service

²³ In April 2011 while writing this document, Mexico's antitrust regulator levied a \$1-billion fine against Telcel — the biggest in Mexico's history — for alleged monopolistic practices. In this paper we analyze the COFECO's declaration of dominance of 2010 toward Telcel. This is because this recent fine is based on reincidence of the same monopolistic practices’.

²⁴It refers to the tariff for a part of the service that can be deducted from the package tariff. For instance, total tariff and interconnection tariff, or the calls included in a basic rent.

offered by competitors even less attractive. This pricing strategy increases Telcel's capacity to attract new customers above its competitors, and if more users belong to this network, the value of belonging to this network will be greater (an effect known as network externality). Based on this network externality, the Commission decided that the high market share of Telcel is the origin of its market power.

The pre-paid plan Amigo Kit of Telcel is an example of the above. In 2007, *on-net* calls cost 1 peso per minute, while the *off-net* calls cost 3.47 per minute, from which 1.39 pesos corresponded to the interconnection tariff and 2.08 was the surplus for the company. This means that the cost per minute that Telcel offers to its network users is lower than the one charged to its competitors for using the infrastructure under its control (1 peso versus 1.39 pesos per interconnection per minute).

Telcel does not share the conclusions of the Commission. It argues it is a leader because, for years, the company has invested on infrastructure in order to achieve the most advanced network nationwide. Also, that it has no market power in areas such as Monterrey and Mexico City, where competition is intense and fair among the main operators; and that in some rural areas of the country (including more than 60,000 communities with less than 5 thousand inhabitants) it is the sole operator providing services because, thanks to its investments, it is the only company with infrastructure and customer service centers. It also points out that Telcel's average price per minute is, the same as in the US, which has the lowest rates among OECD countries.

Having been, since the beginning, the only company with capacity and infrastructure to offer the mobile telephony service throughout the country's territory was the decisive element of its dominance (Del Villar 1995). So much so that, in the resolution – last paragraph of the statement of motives – the Competition Commission recommends the regulatory agency (COFETEL) to analyze whether the most efficient solution to this dominance is, rather than regulating the service price in the final market, to regulate those critical inputs that could be in the root of the substantial power inside the company. By critical inputs, COFECO refers to: (1) the rights to operate the radio-electric spectrum appointed through public tender; (2) the interconnection, particularly, when the call originated in a network must be routed and terminated in the network of a user served by another operator; and, (3) the dedicated links, being Telmex the sole operator of this service

with national coverage and Telcel and Telmex belonging to the same economic group (CFC, Resolution DC-008-2007).

Just as in the fixed-line telephony segment, COFETEL has not made an official statement regarding the application of asymmetric regulations to Telcel. This company, which is against the application of special obligation, argues that this kind of regulation is equivalent to subsidizing other operators. It also states that the reduction of interconnection rates would not result in benefits for customers: “There is no relation between the reduction of interconnection rates and the reduction of prices for users. The only thing that produces a decrease which is sustainable in time in the price for the end user is the investment in capacity, because that would result in a greater supply and thus the final prices for the consumer would decrease.”²⁵

(c) Declaration of dominance in the pay television market

Productora y Comercializadora de Television por Cable (PCTV) is a company that produces and commercializes pay television content and is owned by several pay TV companies (Canitec, 2008). PCTV is an instrument that its shareholders use to buy television contents to third parties at wholesale prices. Among the main shareholders are Grupo Televisa (through Cablemas and Grupo Multimedios), which at the same time is the biggest producer of television contents in Spanish language, and Megacable, the pay television company with the highest market share in Mexico.

On January 2010, the Federal Competition Commission decided that 175 pay television operators, all PCTV partners, are responsible of absolute monopolistic practices because PCTV partners agree on the appointment of geographic areas in which each one of these concessionaries provide their services as to avoid competition among themselves.

The results of the research demonstrate that PCTV buys its cheap content under the name of all its partners, while it enters into agreements with them so that they refrain from entering the geographic location appointed to other partners. When one of the partners fails to comply with the agreement, PCTV punishes it by selling him/her content at a higher price (*El Universal*, 8th March 2010).

²⁵ Newspaper *El Universal*, section Portfolio, 19th April 2011.

What we see in this case is that the market power is related to the asymmetry existing in the access to television contents (in terms of cost and/or availability) among the partners of PCTV and all the other per-pay TV players. Television content is the critical input, and through Cablemas and TVI, Televisa has an important presence in PCTV.²⁶

5. ANALYSIS OF THE CRITICAL INPUTS OF THE INDUSTRY

There are several perspectives to understand the limits both to competition and the development of the telecommunications sector in Mexico²⁷. The declarations of dominance show that the dynamics of competition are stagnant because the basic inputs for the sector's operations – interconnection, networks and contents – are concentrated in a few hands. In this section we analyze thoroughly each one of these inputs.

(a) Interconnection analysis

Interconnection services are identified as critical inputs of the telephone services, for the local transit of calls and for the termination of a call originated in a network and that ends in another. Interconnection agreements in non-discriminatory conditions are an indispensable factor for real competition in the sector, especially because of the existing asymmetries in the amount of users on the different networks and the power of negotiation among companies, particularly Telmex. At the same time, the interconnection rate is one of the main elements of the cost structure of the operators, and directly affects the final prices for the public and the development of the competition. (Del Villar, 2009).

²⁶ With the purpose of avoiding monopoly practices in terms of content motivated by the participation of Televisa in PCTV, when the former asked for authorization to buy shares in Cablemas and TVI, the anti-monopoly authority imposed certain conditions to the concentration, among them that Televisa had to offer its broadcast television content to any pay television company in non-discriminatory terms (*must offer*) and the share release of Cablemas and TVI from PCTV (these transactions have not yet been performed) (See section “Analysis of the television content” below for more information).

²⁷ For instance, one could be that the nature of the privatization of Telmex (a vertically integrated monopoly) has had as a consequence that, at the end of the exclusiveness period and when the market opened to competition, there was a significant sized operator and with the power to co-opt the regulatory authority. Another explanation could be the course of the amendment process, initiated with the privatization of *Teléfonos de México* and the exclusiveness period, extended for years after the issuance of the Federal Telecommunications Law and the regulatory agency.

Interconnection rates analysis

Although interconnection rates are the same between any two companies that offer the same service (because the law demands reciprocity in the interconnection), the rates that are further away from the cost levels affect more the companies that have less market share. This is because the operators of big sized networks have a smaller average cost of termination than other operators, due to the fact that a higher proportion of their traffic, compared to other networks, originates and finishes inside its own network. This effect is even more exacerbated when the interconnection rate is above the final user's on-net price for a call. Here are some examples:

A first example is the pre-paid plan Amigo Kit which has already been analyzed in this document. Telcel offers an *on-net* price of 1 peso per minute while it charges 1.39 pesos for the interconnection rate. Supposing that the cost for call termination is of 50 cents –the *on-net* price is of 1 peso per minute, and Telcel might operate with margins above 50% (*The Economist*, 2009, COFETEL, 2010)–, that the interconnection rate between a mobile network and another one is of 1.39, and that Telcel's market share is of 76%, what we can appreciate (as seen in Table 5) is that the average cost of call termination is of 0.7136 pesos for Telmex and of 1.1764 pesos for its competition, and that this average termination cost for the competition is superior to the price that Telmex charges to its users for making a one minute call.

Table 5. Average cost simulation of call termination (to a mobile phone)

Company	Market Share ¹	Termination Cost	Interconnection Rate ²	% of traffic in network		Average Termination Cost
				Own	Other	
Telcel	76%	0.50	1.39	76	24	0.7136
Others	24%	0.50	1.39	24	76	1.1764

Source: Own elaboration based on an example presented in Del Villar, et al. (2009a).

- (1) From the total of mobile telephones in Mexico, 92% are rented on a pre-paid basis. Telcel's market share on the pre-paid market is of 76%.
- (2) According to the declaration of dominance from COFECO to Telcel, the *off-net* or interconnection tariff is of 1.39 pesos per minute. We suppose that this tariff is the same as the one the rest of the operators charge Telcel because law requires reciprocity in the interconnection.
- (3) For the argument to be valid, it is necessary that the traffic between companies be asymmetric and that the *on net* tariff is below the interconnection tariff.

In other words, as it can be seen in Table 5, the elevated interconnection rates increase the operation costs of the small concessionaries, which allows the biggest operator (Telcel) to offer its consumers prices for the final service that are impossible to beat by its competition.

Companies who are competitors of Telcel, believe that the interconnection rate scheme in Mexico is the greatest anticompetitive action there can be in the market, because mathematically there is no way to offer the customer a lower price than the interconnection one. But, who authorizes the interconnection rates? [COFETEL].

According to Mexican legislation regarding interconnection, when the network concessionaries cannot reach an agreement on the rates, they can ask for the intervention of the COFETEL so that it can set one. Nowadays, we have three operators (Telmex, Telcel and Movistar) who entered into an agreement of interconnection rates (December 2010) of a fixed or mobile line to a mobile network of 95 cents for call termination with gradual decreases for the next three years until it reaches 65 cents. The rest of the telephone operators have agreed with Telcel a 0.95 peso rate for 2011, while at the same time they are asking for the intervention of the authority to reduce that rate.

There are several ongoing lawsuits between operators for the lack of acceptance of the interconnection tariffs²⁸. Most of the times, they disagree with the prices established “unilaterally by the dominant operator”. For instance, Axtel (2008) and Alestra (2011) disagreed before the regulator for the interconnection rates with Telcel. The authority intervened and ruled in favor of allowing them to pay 42 and 39 cents, respectively. The cost model used for the calculation of these 39 cents could be the reference to solve the rest of the disagreements²⁹.

At the same time the Supreme Court of Justice (SCJN) is analyzing if the operators should charge the rate that the COFETEL sets or the one that the operators agree (or are forced to observe). Until now, the SCJN has only solved that while the Judicial Branch determines if COFETEL’s intervention is legal, the motions (amparos) will no longer suspend the interconnection tariffs that COFETEL announces when the operators

²⁸ As of April 2011, there were at least 41 disagreements on interconnection before COFETEL (Official Communication 04-2011, COFECO).

²⁹ On April 12th of this year, COFETEL issued the criteria that will be used to solve disagreements on tariffs of interconnection services, on the Official Gazette, to enter into force the day after.

cannot agree (3rd May 2011). This implies that Telcel will have to observe the 39 cents fee per interconnection minute and not its own 95 cents fee due to disagreements that have not been solved so far but are being decided in court. However, if in the definitive ruling of the ‘amparos’ the courts would decide to revoke COFETEL’s resolutions because, according to their own judgment, Telcel’s guarantees are being violated, then the 39 cents tariff would not be valid anymore.

Another example of high interconnection rates, especially if compared to international standards, can be seen on the rates on termination of fixed-line local calls³⁰. According to COFETEL’s data, during the last years the interconnection rates in all segments have decreased in real terms (SCT, 2008a). Particularly, the fixed-line local termination rate has gone from 6 dollar cents in 1997 to 0.975 dollar cents (equivalent to approximately 12.5 peso cents) from six years until now.

For Telmex, according to their figures (presented on Table 6), the current rate is located within the world’s average, which they calculate to be 1.15 dollar cents for termination point.

Table 6. Cost termination tariff of local calls, fixed phone line to fixed phone line

Country	Dollar cents	Peso cents
Brazil	3.06	39.11
Japan	2.42	30.92
United States	2.21	28.24
Austria	1.68	21.55
Korea	1.62	20.74
Portugal	1.13	14.55
Norway	1.06	13.66
Spain	1.03	13.28
Ireland	1.01	12.97
Netherlands	1.01	12.95

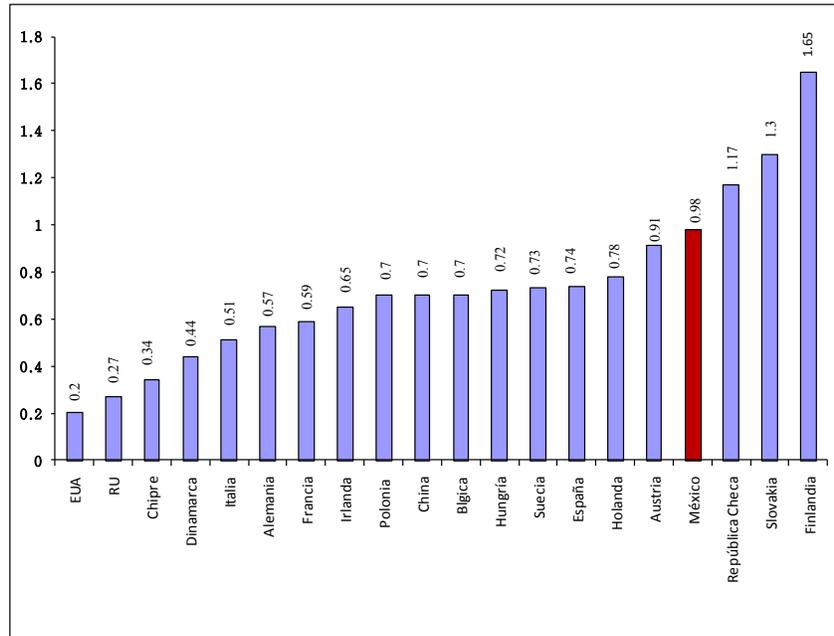
³⁰ The country is divided into 397 local service areas (LSAs). Any call that starts and ends in the same LSA is considered a local call, any call that originates in a LSA and ends in another one is considered as a long distance national call.

Mexico	0.97	12.46
Peru	0.94	12.03
Germany	0.92	11.83
Italy	0.82	10.55
Poland	0.78	10.03
France	0.70	9.05
Switzerland	0.62	7.99
Sweden	0.56	7.21
United Kingdom	0.43	5.61
Denmark	0.38	4.89
Hong Kong S.A.R	0.25	3.31

Source; Telmex (28th April 2010)

On the other hand, although the reduction of rates has been important, if we compare it to other nations' rates according to SCT data, Telmex's rate is not in the middle of the table (see Graph 5)

Graph 5. Tariff of local call termination (dollar cents per minute)



Source: Ministry of Communications and Transports (2008b)

The difference in the calculation among these world averages is in the amount and type of countries considered for its elaboration. For example, in the chart of Telmex, and according to which it makes its calculations, Cyprus, China and Hungary are not considered; all of them, according to the SCT have fixed-fixed interconnections rates lower than Mexico's.

On the other hand, the National Chamber of the Telecommunications Industry (Canitec) says that this rate is almost like “a tax fee for the incoming operators and a rent for the established operator because an average of 91% of all the calls made from a per-pay television concessionary network to a fixed telephone will end up in a Telmex telephone and only 1% of the calls made from Telmex to a fixed-line telephone will end up in a pay television operator telephone” (Canitec, 2008, p.19)

A third example of high interconnection rates and also above the *on-net* final user's price, is the long distance resale's rate. This rate is charged when the transportation and call termination service is to a location where the operator hired by a customer does not have an infrastructure of its own. In practical terms, because Telmex is the only telecommunications company with a nationwide coverage network and the only operator of fixed-line telephony in 199 of the 397 local service areas, this resale's rate is the one that other concessionaries pay to Telmex for the completion of calls in those areas where they have no presence. This termination call rate costs 75 peso cents.

The national long distance price that Telmex charges to his final users is of 1 peso per minute. The package that Telmex used to offer in 2010, called “*México sin límites*” included Internet of up to 5 Mbps and unlimited national long distance calls. When the package components are broken down and assigned with a market price for the public, it can be inferred that the national long distance has a price inferior to the 75 cents resale rate that is charged to other operators for national long distance calls. That is, the implicit price for a long distance national call with Telmex is less than the resale rate.

If the long distance telephone price is of 1 peso per minute, 75 cents are equivalent to a 25% discount with regards to the costumer price. Telmex's argument is that: “If the other operators are not willing to pay the 75 cents, they should put up their own network. The rest of the operators face a build or buy decision, and it appears that it is more convenient for them to continue using our infrastructure.”

Telmex is right in arguing that if it gets paid for the use of its infrastructure it is because it is convenient for the operators to rent (even at high prices) more than building their own networks; however, the fact is that in the areas where there is no competition and only Telmex operates, the fixed-line calls termination rates are 6 times more expensive than the rate where there is actually a competition in networks (this is the difference between the 75 peso cents or 6 dollar cents for national long distance resale versus the 0.975 dollar cents for the termination in local calls).

Interconnection agreements analysis

A second issue to be analyzed, beyond the issue whether interconnection rates are increased or not, is the history of interconnection agreements in Mexico, which is marked by disagreements and legal disputes among companies. Below are two newspaper notes as an example of this:

“Gustavo de la Garza, from Marcatel, said that Telmex offers lower prices to the public for its services than those it charges to its competitors for using the telephone infrastructure under its control; that Telmex blocks or cuts the calls of other operators; and that Telmex makes the service more expensive in the areas where it has absolute monopoly.”³¹ It also said that COFETEL inspectors verified since March 2009 that out of 10 calls intended to be made from the Marcatel network to Telmex, only 2 are completed. Marcatel presented criminal and administrative lawsuits against Teléfonos de México before the General Attorney’s Office, the Federal Telecommunications Commission, and the Federal Competition Commission for the ‘illegal’ interruption of interconnection.

“Axtel presented an accusation before COFETEL and the Ministry of Communications and Transport against Telmex, in which it accuses this company of interrupting its traffic with a 20 second recording that the former company does not pay for the interconnection. Ermilo Vázquez, interconnection director of the company said that these recordings can be heard in some calls made from a Telmex line to an Axtel one in the areas that are not open to competition (...) These recordings have the objective of discrediting and put us under pressure to accept the conditions they want to impose over us for the interconnection”.³²

³¹ *Reforma*, 23rd October 2009, Business, p. 3, column “Capitanes”; the same was said during an interview with the author.

³² *El Universal*, 20th January 2010.

In the Federal Telecommunication Law, articles 41 and 42, we find the legal grounds for interconnection. The Law provides that all network concessionaries have the obligation of interconnecting their networks upon request by other operators in a specific period of time. Otherwise, the authority responsible of regulating the sector will intervene. The Law, however, does not provide specific guidelines. With the intention of giving the concessionaries a greater certainty with regards to access and charging conditions to the interconnection services, particularly rates and times, the Federal Commission of Telecommunications regulated this topic and issued a Technical Plan for Interconnection and Inter-operation (February 2009). From the regulatory measures considered in the Technical Plan for Interconnection, some are of general character and others only apply for the concessionaries that operate the greatest amount of fixed-line or mobile phone accesses on the coverage areas of its concessions.

With regards to rules applicable to all operators we find, for instance, that the Plan provides as an obligation that when a concessionary requests for the terms and conditions of interconnection that are already being offered to others, the agreement should be made in less than 10 calendar days; it also provides that the operators are legally bound to attend all the interconnection requests, as well as the service quality, at the same time and on the same way that they attend their own needs and those of their affiliates, branches, subsidiaries or companies that belong to the same economic group (COFETEL, 2009).

From the rules that are only applicable to the bigger sized operators, the Plan forces satisfying the demand for the capacity and quality in every interconnection point that is requested. Additionally, Telmex argues that in this Plan it is asked to make available to third parties infrastructure that is not intended for interconnection such as buildings, antenna masts, pipes, and posts; or whatever the authority deems as infrastructure sharing. The current situation is that in face of the enforcement of this regulation, Telcel, Telmex and Movistar have presented appeal (“amparos”) and thus the Plan is halted by the legal procedures unde way.

Why establish differential treatment among networks that provide the same service? COFETEL views Telmex’s network as a *hub* or radial center: Being the country’s largest and only national coverage network it serves as a link for all the other networks. From this point of view, it is economically more efficient, for instance, that a call initiated

in Alestra's network and finishing in Axtel's network travels and links through Telmex's network, rather than of having direct interconnections among those two. The advantage of a hub scheme over a *point to point* scheme is that, when concentrating in one network all the passing calls from several origins and destinations through the radial network, the transportation cost per kilometer of network is reduced.

There is a different position among some former commissioners of the COFETEL that have made the regulatory commission responsible for the 'amparos', because they consider that it exceeds itself in its faculties by establishing differentiated treatments by setting forth asymmetric interconnection rules among networks that provide the same services (*Reforma*, 5th August 2009). They are implicitly saying that the regulatory commission should prevent and put remedy, on equal bases, of actions related to the interconnection that affect competition levels. In this sense, it is important to consider the statement of the legal director of one of the telecommunications company:

"The objective of the regulation should be to create a balanced field, no matter whether you are small or big. I would not make anything asymmetric, it is paternalist; it is subsidizing certain operators in the industry. However, interconnection rates cannot be allowed to be higher than the public sale prices. This practice must be prohibited, to all the companies on equal terms."

What has been the federal government's strategy to solve interconnection legal disagreements and disputes? For the former Minister of Communications and Transports, Juan Molinar, the solution for the problem was, aside from trying to negotiate with Telmex on a cap for interconnection fees and not allowing its formal entry into the restricted TV market³³, has been trying to generate more infrastructure: "The problem is that infrastructure is scarce and the tenders for spectrum and dark fiber exist for that purpose" (interview with *El Universal* newspaper on February 18th, 2010).

³³ For example, Pascual Garcia Alba, former Coordinator of consultants of the Deputy Minister of Communications of the SCT in 2008-2010, declared that one of the actions taken by the Federal Government to encourage competition had been to restrict Telmex entry in the video segment. He considers that the fact that Telmex concession license has not changed, helped some operators to position themselves in the market. *El Universal*, Business Section, p. 7, 23th April 2010.

(b) Network analysis

For the purposes of this study, the infrastructure on telecommunications networks in Mexico will be analyzed in a very general way and in two levels: local or last mile, and in transport/transmission networks, both long distance (*longhaul*) and intermediate (*backhaul*). Transportation networks connect different locations within two geographic areas, and the last mile networks connect such transmission networks with urban centers where demand is concentrated. In other words, the local network is the connection that goes from the customer's address to the central or hub, which interconnects this network with the transmission or long distance networks.

In Mexico, until recently, only the topic of last mile networks and public policies related with the arrival of more competition in this type of networks had been studied. For instance, the liberation of additional spectrum, the framework to regulate interconnection, numeric portability, disaggregation of the local loop and the regulation of tariffs due to dominance issues. More recently, because it is evident that the transmission networks are a key element for third parties to deploy local or last mile networks, the discussion focus has also turned towards the analysis of the availability of transmission networks in the country.

According to SCT data, telecommunication networks in Mexico cover and are redundant mainly in the center and the north of the country, with limited or null presence in other regions. In Mexico City, for example, there are at least 8 networks (Telmex, Marcatel, Bestel, Axtel, Maxcom, Cablevision, Total Play, and Alestra, among others), and in other cities such as Guadalajara, León, Monterrey, and Puebla there are between 5 and 6 telecommunication networks. While 46.9% of the population with access to telecommunication services is attended by only one network, 37.4% is covered by four or more networks (Mariscal, 2008)³⁴. One of the factors that seem to determine the amount of networks in a city is the size of the population.

³⁴ According to the SCT, 46.9% of the population with access to telecommunication services, receives it through one network that faces no competition at all; 9.37% through at least one competitive network; 2.75%, from two competitive networks; 3.32% three competitive networks; 37.4% four or more competitive networks.

Table 7. Selection of cities and number of available telecommunication networks

Region	City	Population	Amount of Networks
Northwest	Ciudad Juárez, Chihuahua	1,332,131	3
	Mexicali, Baja California	936,826	4
	Chihuahua, Chihuahua	819,543	3
	Ensenada, Baja California	466,814	2
Northeast	Monterrey, Nuevo León	1,135,550	6
	Nuevo Laredo, Tamaulipas	384,033	5
	Tampico, Tamaulipas	297,554	4
	Matamoros, Tamaulipas	107,160	4
West	Guadalajara, Jalisco	1,495,189	6
	Morelia, Michoacán	729,279	4
	Tepic, Nayarit	380,249	2
Center North	León, Guanajuato	1,436,480	5
	Querétaro, Querétaro	801,940	6
Center South	Ciudad de México, D.F.	8,851,080	8
	Puebla, Puebla	1,539,819	5
	Toluca, México	819,561	6
South	Acapulco, Guerrero	789,971	3
	Villa Hermosa, Tabasco	755,416	2
	Cancún, Quintana Roo	661,176	3
	Coatzacoalcos, Veracruz	305,260	2
	Orizaba, Veracruz	120,995	2

Source: Own elaboration based on maps of network coverage with information, available on websites of the following telecommunication companies: Alestra, Axtel, Bestel, Cablevision, Marcatel, Maxcom, Telmex, Total Play. The population of the cities comes from the 2010 Census of the INEGI.

Note: In all the cities, one of the telecommunication networks belongs to Telmex.

The problem is not the number of networks in each location –which are like rings covering certain geographic areas– but that there is not a single skeleton, apart for Telmex’s network, that binds them all together. The availability of access to transportation networks is uneven through the different regions in the country. While in the area limited by the main cities (Mexico, Guadalajara and Monterrey) there is competition among different transport networks, in low development level areas, particularly in the southeast of the country, such infrastructure is scarce.

Almost 15 years after the opening of the telecommunications market, Mexico only has one transportation network of telecommunication services with wide presence throughout the country, which is that of *Teléfonos de México*, with 107,000 kilometers of optic fiber that cover approximately 85% of the territory. While there are other important

transportation networks in the country (Alestra, Avantel, Bestel, Marcatel and CFE), they are regional or have limited coverage (Mariscal & Flores, 2009; Del Villar, 2009).

In the case of per-pay television operators, all of them together form a 80,000-kilometer network with a potential scope of 10 million homes. Restricted television networks cover the most important cities in the country: Mexico City, Monterrey, Guadalajara, Puebla, Chihuahua, and Ciudad Juarez. Also, most of these companies, if not all of them, have capacity and concessions that allow them to offer TV, internet and telephone services. Yet, these are actually last mile networks: they are networks shaped like metropolitan rings that are not useful for the transmission of voice, data, and video among different locations nationwide (COFECO, DC-03-2007). Also, with regards to Telmex's network, it is worth mentioning that they cover approximately the same users and therefore their presence will not improve the coverage and access to telecommunication networks, unless they are willing to invest in the creation of more infrastructure.

Among the possible alternative networks (those not belonging to Telmex) that can also be used for the transportation of telecommunication services, Bestel's network –with 8,600 kilometers of its own fiber, and with metropolitan rings in the 30 of the main cities of the country– is the only offer in the route Nogales-Mazatlan (which covers: Hermosillo, Guaymas, Ciudad Obregon, Los Mochis, Guamuchil and Culiacan). This network does not cover the Gulf's area or the southeast of the country (it has no presence in the Matamoros to Mérida route, passing through intermediate cities like Tampico, Poza Rica, Xalapa, Veracruz and Coatzacoalcos).

In Marcatel's case, its network is only for transmission purposes. It covers areas like Nuevo Laredo, Monterrey, Querétaro, Guadalajara, Mexico City and the State of Mexico, Puebla, Reynosa, Poza Rica and Veracruz. Even though according to its owner it covers approximately 50% of the population of the country, it still depends entirely on Telmex's last mile network to have access to its customers.

The only other network that has presence in the Southeast of the country, is the Federal Electricity Commission's network (in fact, has nationwide scope), but it is not really an urban network but a semi-urban one, because it needs the construction of an

infrastructure several kilometers long in order to reach the urban centers where demand concentrates.

Within the Federal Electricity Commission, CFE Telecom operates since November 2006. This is the business unit responsible for the commercialization of the telecommunication service that this company may provide through its own network according to the provisions of its concession title. It is basically aimed to the transmission of telecommunication signals of third parties, through the rent of its network's capacity or offering dedicated links. The criticism directed to CFE Telecom focuses on the fact that instead of acting as a publicly owned company interested on reducing the costs of telecommunications transportation, it fixes fees thinking only on its recovery of its operation and investment costs. Its pricing policy has been that of charging rates 10% below Telmex ones (Tejado Dondé, 2009), with volume discounts that favor the big operators. Thanks to this price strategy, where there isn't any competition or volume, for instance, Acapulco, Tuxtla Gutierrez or Oaxaca, transmission fees are similar to those of the dominant company (Telmex).

The lack of accessibility to the transmission infrastructure translates into high prices for services, insufficient points of coverage and limited bandwidth. When only one network is present, there are almost perfect conditions to impose prices above the real costs of the service rendering and to limit or degrade the access of third parties (Del Villar, 2009).

As it can be seen in table 8, it is common to find huge differences in the prices for the rent of Internet access lines where there is no competition in the transmission networks. In the areas where there is no competition between networks, the transportation cost can represent approximately 70% of the operation cost of the wide band service, making the service cost so expensive for the potential operators that it makes it economically unviable to render the service in such areas (Del Villar, 2009). For internet transmission, there are areas in the country where there is no other way for the transmission of services than through Telmex's network.

Table 8. Line rental for Internet access price (2 megabytes per second)

City	Long distance transmission service provider	Monthly rent to the Internet service provider (MXN\$) ¹
Toluca, State of Mexico	Bestel, Maxcom, Alestra	\$ 3,300
León, Guanajuato	Bestel, Maxcom, Alestra	\$ 3,300
Zitácuaro, Michoacán.	Telmex	\$ 6,000
Tenancingo, State of Mexico	Telmex	\$ 6,000
Tapachula, Chiapas	Telmex	\$ 13,000
Salamanca, Guanajuato	Telmex	\$ 18,200
Cd. Altamirano, Guerrero	Telmex	\$ 20,971
Huetamo, Guerrero	Telmex	\$ 35,108
El Grullo, Sayula, Jalisco	Telmex	\$ 40,000
San Miguel de Allende, Gto.	Telmex	\$ 58,650

Source. Ministry of Communications and Transports (2008a).

¹ Corresponds to the monthly payment that the Internet Service Provider makes to the transmission service supplier for a line that allows the transmission of up to 2 megabytes per second.

At the same time, the high costs for the interurban transportation service in the regions where the optic fiber network is scarce have decreased since the development of broadband networks in such locations. Particularly for per-pay television developers it is very expensive to provide internet service and it is very difficult to obtain interconnection and links on a timely manner.

The lack of infrastructure is reflected on the quality of service that the final consumer receives and it is a problem that becomes worse as you get far away from important cities. The package of Yoo is an example of this: the consumer price is the same in all the country, although the quality of the service varies in each location. Through this package, Cablevision in Mexico City offers Internet with 2 megas for download, while in Cancún, through Cablemas, it offers a download speed of 300 kilobytes.

The following table shows the rent costs for Internet access lines and the maximum download speed that suppliers of top internet access offers to its clients. It can be clearly seen that higher prices corresponds a lower download speeds.

Table 9. Comparative transmission price and Internet service's download speed

City	Transmission service supplier (2Mbps)	Monthly rent for transmission service (MXN\$)	Internet Service Providers	Maximum theoretical capacity of download speed for ISP (Mbps)
Toluca, State of Mexico	Bestel, Maxcom, Alestra	\$ 3,300	Megacable Bestel Maxcom	4.71 3.18 3.04
León, Guanajuato	Bestel, Maxcom, Alestra	\$ 3,300	Megacable Bestel Maxcon	4.41 2.88 2.76
Tapachula, Chiapas	Telmex	\$ 13,000	Uninet ¹	1.48
Salamanca, Guanajuato	Telmex	\$ 18,200	Megacable Uninet	2.69 1.42
El Grullo, Jalisco	Telmex	\$ 35,108	Uninet	1.71
Sayula, Jalisco	Telmex	\$ 40,000	Uninet	1.21
San Miguel de Allende, Gto.	Telmex	\$ 58,650	Uninet Bestel Alestra	1.61 1.45 0.96

Source. Own elaboration based on data from Speedtest.net (<http://www.speedtest.net/global>)

¹ Uninet, S.A. de C.V. is the name of the company through which Teléfonos de México started to offer Internet service (ISP) in the mid-90's in Mexico.

In the opinion of some experts, the transmission problem is solved when there are at least three network operators. This would imply that a solution for the price difference could be the existence of a network with nationwide coverage that introduces the competition in transmission services.

A public policy in this sense, soon to be mature, is the awarding from the federal government to a group of operators (Televisa, Telefonica and Megable) of one part of the network capacity, from the optic fiber of the Federal Electricity Commission so that third parties can operate and use said network for the telecommunication services.

The companies that are part of the winner group were interested in participating in the bid for two strings of the CFE so they would not have to depend on Telmex, Axtel or third party networks on long distance transmission. If the Internet connection cost is reduced in small urban areas, it will become more attractive for per-pay television companies to invest in the last mile to deliver the service to the final customer (since the

CFE's lines are only semi-urban), and it will be attractive to offer their services in this type of areas.

Also, with this mechanism the authorities want this consortium to compete directly with Telmex and other transmission service suppliers, under the logic that other companies from the sector will then be able to choose among a greater amount of inter-urban transport service suppliers with a direct effect on the prices of this service. Such project would imply the duplicity of infrastructure and, in several cases, especially in less traffic routes, this duplicity would eliminate the situation of the sole supplier existing today.

In this sense, in an interview with *The Economist* (2009), Cablevision's CEO estimated that with the new fibers the final price for broadband in the southeast region of the country could be reduced at least by two thirds. The impact of final price reductions could extend to other regions. For example, Megacable in La Paz, that at the moment of the interview paid a tariff of 250 dollars a month for a line of 1 mega, could be paying to the consortium 25 dollars, a cost equivalent to that paid by Cablevision to Bestel in Mexico City.

It seems that the government understood that if it introduces policies that really reduce the cost of creating a nationwide coverage network, its deployment will be possible³⁵. However, even with this policy, part of the low-income rural population, (around 20% of total population) will still not have access to broadband services.

There are areas in the country where the market simply is not attractive for any of the telecommunication companies. Theoretically, all the operators would ideally like to have the infrastructure and the possibility of taking their services to all the regions in the country. If it has not happened it's because there are no operators who are willing to do so,

³⁵ It is worth mentioning that when the bidding requirements were issued, several criticisms were voiced with regards to the CFE only bidding two optic fiber strings when it has more available and unused strings: (1) Bidding only two optic fiber strings can elevate the price of the object in bid with an impact in the price of the service and it is described as a contest with collecting purposes, will produce that the service prices for the customer not to reduce; (2) The fact that there are available strings to be bid at any moment, because the bidding requirements do not mention any kind of exclusiveness, makes the investment return doubtful; and (3) Only having two national networks, both in hands of private companies will create the ideal environment to carry our collusion practices, which will reflect on the coordination of transmission prices for telecommunication services among these two companies (Mariscal, Flores & Aldama, 2009).

because it seems that deploying networks in certain geographic areas has not commercially feasible until now. Axtel, for instance, is the only telecommunications operator, aside from Telmex, that has transmission networks in the route Veracruz-Mérida. Apparently it hasn't been able to recover such investment yet.

To show that some areas are not commercially attractive, Telmex announced that in the beginning of 2011 it will divide among two companies, one of which will offer the telephone service exclusively in rural and marginal areas (Telmex Social). Also, Telmex warns that in case of regulating the long distance resale costs [that isn't currently regulated and could be the consequence of the imposition of any asymmetric regulation], the company could go from providing service to almost 23 thousand communities to only 10 or 12 thousand. Telmex could apply article 3.4 of its Concession Title [on rural telephony networks], which stipulates that the company, since 1995, shall only provide services in the areas considered within the program for the expansion of rural telephony in which it can recover at least 75% of the costs for installation and operation maintenance of the services. The strategy of both declarations is to make it clear that the company endures losses due to its operation in some rural areas and maintains them only as a charity.

That the rest of the operators derive a benefit from renting Telmex's infrastructure, even at non-competitive prices, rather than building their own infrastructure, means that the government should consider using other resources of the State, including tax policies, to facilitate the development of networks that reach the places where low-income demand concentrates and that are not commercially feasible. Thanks to the CFE, approximately 97.5% of the homes in the country are already connected to the national electric network. Therefore, there is an infrastructure –posts, towers, pipes in the highways – spread on almost all the territory that could be used (Mariscal, Flores & Aldama, 2009).

(c) Analysis of the television content

The term *must carry* means that the operators that transmit broadcast television in a certain place, can demand to the per-pay television operators to include their signal and their programming (including advertising) in their channel offer³⁶. This kind of practice benefit

³⁶ Within these type of legislation *carry one carry all* refers to the legislations that prohibit a pay television company to discriminate among the concessionaries of local television.

broadcast television operators because it increases their audience and the value of the publicity they sell. At the same time, the *must offer* refers to the per-pay television operators being able to demand from the broadcast television operators to grant access to its programming.

In the specific case of Mexico, “the *must offer* obligation would mean that Grupo Televisa [or TV Azteca] must offer their broadcast television contents in non-discriminatory conditions to all the pay television companies who ask for it; [while] the *must carry* would imply that all the per-pay television networks should transmit, in a non-discriminatory conditions, all the broadcast television contents whose transmitters so ask for” (Milenio. 2008)³⁷.

The story of this conflict dates back to 1989 when the company Multivision became the first company other than *Grupo Televisa* to offer a per-pay television service. In the beginning, Multivisión did not have an open signal but offered a package of channels brought from the United States. In 1990, Cablevision from Grupo Televisa started offering a similar product based on packages of foreign channels to which it added local channels. Then, Multivisión tried to offer local channels too, but Grupo Televisa denied the concession of its broadcast television channels. Broadcast television channels, both from Televisa and TV Azteca, are the most tuned in channels, even by television viewers subscribing to the per-pay television system.

In terms of regulation, neither the Federal Radio and Television Law, nor the Federal Telecommunications Law provide obligations on must-carry and must-offer. The reality is that the government strategy has been based more on the negotiation with suppliers. For example, when Televisa asked for permission to buy most of Cablemas shares (2007), COFECO imposed several conditions, among which was to offer publicly the access to its contents in non-discriminatory terms (to a fixed price per subscriber) to any per-pay television concessionary (must-offer). In that moment, Televisa accepted the condition of implementing the *must offer* 90 days after the authorization, at the latest.

³⁷ Televisa has to decide which option is more attractive: to receive a payment on restricted systems for its broadcast television signals or to allow their free transmission and increase its audience. In past decades, broadcast TV companies found benefits on the pay TV companies to disseminate their programs because in that way they reached audiences that were impossible to attack other way. More recently, satellite broadcasting (for Televisa through SKY) allows them to transmit their signals to all the country.

It is worth pointing out that non-discrimination does not imply that the signals are free. In fact, the charging on either broadcast signals or the sale of package signals is not prohibited. According to the Federal Competition Law, for the case of concentrations, the Commission is not entitled to impose or fix prices along with the authorization of the concentration, at the most it can avoid that competitors are not driven out of the market (in this case, small per-pay TV companies) that could happen through the imposition of uneven conditions in the charging of TV signals between the group companies and other pay TV operators. Within the conditions for the *must offer* there is a clause that states that the only-price offer shall not apply to the pay TV operators from a certain size, with more than 5 million customers.

The packaging of contents (not always including broadcast ones) is a common international practice. That the concentration Televisa-Cablemas does not prohibit it, does not imply that Televisa or any other content company is allowed to disregard Article 10 of the Competition Law, where under certain circumstances the packaging can drive out competitors, and thus would be illegal.

The appearance of Dish in the market opened again the discussion on the *must offer* issue. MVS states that the per-pay television systems must include broadcast signals for free within its channel offer. Televisa denies this.

In these moments (April 2011), Televisa offers to the restricted television companies with less than 5 million subscribers its broadcast television signals in a bundle along with other 10 signals produced for the per-pay TV market and charges a uniform price per subscriber of 1.96 dollars. Cable or satellite television operators cannot rent these 14 channels on a breakdown basis (purchase *a la carte*). Dish, due to its business model, would only be interested in the broadcast television channels. Its product consists on a commercial package to an accessible price for low-income sectors. Bundling makes its offer more expensive.

According to Dish employees, Televisa does not even offer the package signals under the argument that they are indirectly using a network of more than five million users (Telmex network, because of their alliance with Dish, for the emission of receipts and collection). They say that, although Dish might overcome this obstacle, they would not take it anyway because when Dish reaches five million users, Televisa could unilaterally take

the product away from them. In Televisa, they say that Dish has not asked for the bundle of channels, only the broadcast ones for free.

Some analysts from the sector say that Televisa has failed to comply with the *must offer* condition. As COFECO's decision did not have support of any telecommunications law, Grupo Televisa supported its defiance with article 114 of the Copyright Federal Law, which states that broadcast televisions are entitled to authorize or prohibit with regards to their emissions. On the other hand, an evaluation made by the Federal Competition Commission on the compliance of the concentration conditions, states that there is no evidence that Televisa is not complying with the *must offer* (Official Communication, 02-2008), which is not the same as having no competition problems in the sector or that all the operators agree on the conditions imposed by Televisa.

In recent times, the president of the Competition Federal Commission (CFC), Eduardo Pérez Motta, has asked the Congress to modify the Federal Telecommunication Law so that the broadcast television operators provide the per-pay TV concessionaries with their signal for free. Because broadcast channels are the most seen in per-pay TV systems, the Commission considers that the free service will result on more competition in the pay TV segment, lower prices, and higher penetration of the service.

FINAL CONSIDERATIONS

Our most general impression is that in Mexico the telecommunications market is deficient in terms of coverage indexes, it has low levels of competition (although it has improved) associated to a deficit in networks and the concentration of these in some players only. We also think that the technological advances have had a wider impact than the regulation and policies to change the nature of the sector's competition.

For example, competition within the fixed-line telephone companies and per-pay television companies in the fixed-telephone and Internet markets is a consequence of network *overlapping* more than of the "design" or the impact of existing regulation. Actually, this dynamic started to show up recently, after the SCT lately authorized the provision of broadband and telephone services for per-pay television companies in 2006.

For this same reason, access to Internet is still uneven in quality and price among the different regions of the country, depending on the existence of other networks apart

from Telmex's. Where there is no competition in transportation networks, the rent tariffs for dedicated links cost much more than in those places where there is competition.

The recent policy that the government has launched for the transformation of telecommunications in the country has been to foster the development of more telecommunication networks and the entrance of new companies to the market, particularly opening the main network of the Federal Electricity Commission (CFE) and the bidding of the radio-electric spectrum for mobile telephony. Indeed, this strategy is correct and will be successful in terms of competition levels on a medium term, which we will see once the investments mature. On the other hand, all of these actions seem to especially favor one player: *Grupo Televisa*.

Also, these actions will not be enough to achieve the desired levels of appropriation of telecommunications among the population and it will also be necessary to work on other fronts. Let's explain why:

1. Although in the different market segments the dominant operator has been losing its market share, the shortage of the essential resources (networks, links, spectrum, content) causes the rest of the operators to still depend to a high extent on the dominant operator.

2. Public policy has sought to substantially reduce the dependence of the operators with regards to essential facilities of the dominant operator, but still, there will be regions in the country where the market is simply not attractive for any of the telecommunication companies to invest in.

3. In places where there are no networks, there will be no services; and in those regions where the networks are only a few, transmission prices will be expensive, which will cause a negative impact on the adoption of new telecommunication services, especially among the low-income population who need affordable telecommunication services in order to become users.

4. Investments in infrastructure take time to mature. To accelerate that the telecommunications arrive to every corner of the country at affordable prices, it will probably be necessary to regulate access of third parties to the networks in the short term. Recent history shows that the application of all kinds of regulation is legally questioned through 'amparo' and its application is decided on courts.

5. Even if we suppose that telecommunication services will reach every place in this country, this is not enough to achieve the appropriation of services among the population. The virtual existence of relevant contents– applications and information – is also important for telecommunication users and human resources with sufficient training on the use of equipment and contents. More networks do not automatically translate into more telecommunication users.

The sector needs a public policy on telecommunications that includes the three fronts that support the appropriation of telecommunications: infrastructure, human resources, and content. It is also necessary that the policies help the private sector not to depend on critical input in hands of competitors. Some of these inputs are: long distance and/or last mile networks from Telmex for the transmission of its service; the useless spectrum hoarded for speculation; the television content that could be for everyone; and the capital for private investment that could be available in hands of foreigners and nationals.

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