

Market competition following Mexico's Telecommunications and Broadcasting Reform: Present and Future

Cristina Casanueva-Reguart & Erik Bacilio-Avila

Keywords: Regulation, competition, antitrust, telecommunications policy, institutions

JEL Classification: L5, L4, I3, O1

Introduction:

This paper explores the effects of increased competition in the telecommunications and broadcasting sectors that will be brought about by Mexico's recent Telecommunications Reform (2013).

The Reform includes measures to encourage competition in the telecommunications sector by way of a new institutional framework. A new Federal Telecommunications Institute (IFT) has been set up, with the power and autonomy to regulate competition in the marketplaces. Specialist tribunals have also been set up and an amendment made to the *amparo* law to prevent any immediate overturning of the regulator's rulings. This is in addition to encouraging foreign investment by allowing 100% investment in the telecoms sector and an opening up of the broadcasting sector, allowing for up to 49% foreign capital, subject to a reciprocal investment deal in the corresponding country of origin.

When it comes to policies on market competition, we propose to examine the results of the new designation of "*preponderante*" (market dominant agent) implemented by the Reform, which grants the new regulator an immediate entitlement to impose pro-competition requirements on any economic agent with a greater than 50% share nationally in a given sector. The regulator may thus impose asymmetric regulation on interconnection, local loop unbundling, passive infrastructure sharing, roaming, and potentially call for the divestment of assets to prevent anti-competitive behavior.

For over two decades (1990-2013) failures in regulation occurred as a result of a weak institutional framework and a marked imbalance of power between the regulatory authorities and operators from the market-dominant conglomerate. The latter comprises Telmex, with 65.1% of fixed landlines, and Telcel, with 66.9% of mobile lines (IFT: 4Q2014) and 74.5% of fixed broadband Internet services (IFT, 2014) and Grupo Televisa with a 59.6% share in Pay TV services (See Table 1) (Casanueva-Reguart, 2015; del Villar, 2009; OECD, 2012; Solano et al, 2006)

Table 1: Market Share of Telecommunication Service Providers, 4Q 2014.

Fixed landline services	
Telmex (América Móvil)	65.1
Mobile Services	
Telcel (América Móvil)	66.9
Internet service provision	
Telmex-Telnor (América Móvil)	65.3
Broadband service provision	
Telcel América Móvil)	74.3
Pay TV	
Televisa	59.6

IFT (2015)a; IFT (2015)b.

The paper is organized into two main sections. The first section presents the institutional and regulatory progress made, including the aforementioned legislation designed to foster competition in the telecommunications and broadcasting service markets.

The second section focuses on the effects of the Reform, describing progress that has taken place in the implementation of these measures in 2014 and the market's response to the implementation of these measures over the course of 2015, specifically in terms of the following variables:

Trends in *prices* to end-users as a result of the regulatory measures implemented to foster competition in the telecommunication service markets.

Investment: we determine whether there are any changes in investment flows on the part of existing operators and newcomers to the market as a result of the new regulation, as well as determining whether these fluctuations exceed trends observed over the past decades.

Distributive effects of the Reform: we break down figures for access to and expenditure on telecommunications services by *decile* (Engel Curves) and analyze the distribution of telecommunications services as a function of different levels of household income. We compare the results of this analysis between 2012 and 2014.

Economic activity in the telecommunications industry: changes in economic activity are examined, based on published GDP figures attributed to "other telecommunications".

The Context

We begin by presenting international comparisons in order to put Mexico's performance over these years in context, comparing it to two continents and one subcontinent with large proportions of

developing countries: Latin America, Asia, and Africa. We then present an analysis of connectivity in Mexico in 2014. Finally, we explore the effects of increased competition in the telecommunications and broadcasting sectors that will be brought about by Mexico's recent Telecommunications Reform (2013).

International Comparisons

Teledensity of mobile services has been greater in emerging economies, where a large majority of the population has had, and still has, limited access to conventional telephone services (Banerjee & Ros, 2004; Waverman, Meschi, & Fuss, 2005). According to Khalil, Dongier & Qiang (2009) the next billion mobile subscribers will consist mainly of the rural poor.¹ Furthermore, mobile services are set to be the medium by which millions of people from these countries will access the Internet in the near future, due to lower device costs and the rapid adoption of smartphoeness (Deb, 2012; Grönlund & Islam, 2010; Esteve & Machin, 2007; Marshall, 2007).

International comparisons for 2013 highlight that teledensity of mobile services in Mexico was 88.3, below the average for Latin American countries with similar (142.5) and lower levels of development (98.6) (ITU, 2014).

When we compare Mexico with emerging countries in Asia with similar or lower levels of income, we see that teledensity of mobile services in Asia is greater than in Mexico (88.3 in Mexico vs. 144.7 in Asia; ITU, 2014).

Similarly, when we compare Mexico with emerging African countries with a mean income per capita similar to Mexico's, we see that teledensity of mobile services in Africa is greater (88.3 in Mexico vs. 166.2 in Africa), even when comparing with countries whose income per capita is half that of Mexico (88.3 vs. 110.7).

When it comes to landline services, penetration levels in Mexico are lower than in other Latin American countries with similar levels of development (17.3 vs 23.5), although higher than in Asia and Africa (17.3 vs. 15.3 and 7.4 respectively).

The percentage of Internet users in Mexico is considerably lower than figures observed in other countries with similar levels of development in Latin America and Asia (38.4% vs 67.0%), but higher than in Africa (38.4% vs 21.1%).

Broadband penetration is higher in Mexico than in the emerging countries considered. This may be due to the fact that most Internet service providers in Mexico offer Internet access at speeds equivalent to broadband rather than because penetration levels per se are any higher. In other words, there are fewer Internet users in Mexico, but despite this, those users that do exist have access to broadband services.

¹ Mohsen Khalil, Philippe Dongier and Christine Zhen-Wei Qiang (2009) "Overview." Information and Communications for Development 2009.

In short, Mexico lags behind other countries with similar or lower levels of development when it comes to the adoption of telecommunication services. These results raise a number of questions regarding the reasons for the lower relative density of telecommunications services and lower growth in adoption of these services. We therefore present an analysis of connectivity in Mexico and annual average growth over the period 2000–2014, with special emphasis on the poorest regions² (see Table 2).

Table 2: International Comparison of Telecommunication Services Teledensity in Mexico and Other Continents and Subcontinent with Similar or Lower Level of Development, 2013.¹

	Fixed Telephony	Mobile Telephony	Internet users	Broadband	GDP US\$ PPP ³
Mexico	17.3	88.3	38.4	11.2	15,400
Latam² (average)					
High income	23.5	142.5	55.4	13.2	15,908
High-middle income	12.1	98.6	35.1	4.6	8,600
Asia high income & high-middle income					
High income	15.3	144.7	67.0	8.2	17,500
High-middle income	8.8	94.4	25.4	3.5	6,800
Africa high income & high-middle income (average)	8.7	118.8	26.3	2.7	
High income	13.0	166.2	21.1	4.7	17,234
High-middle income	7.4	110.7	28.4	2.1	7,510

1/International Telecommunication Union, 2014. 2/Latam refers to Latin America. 3/WB: How we classify countries.

Connectivity in Mexico

In Mexico, more than two decades have elapsed since the privatization of the state telecommunications company, and universal service coverage is still an unfulfilled promise. In 2014, on average, over half of all homes (55.9%) lacked a landline service (Instituto Federal de Telecomunicaciones [IFT], 2015). Although this sparse coverage may be mitigated in part by the 85.5% penetration rate of mobile lines (IFT, 2015),³ the distribution of mobile services is biased toward the more prosperous states and larger cities. In Mexico, only a third of homes (38.3%) have

² A poor state is defined as one where between 60% and 75% of the population is living in conditions of poverty or extreme poverty (CONEVAL, 2014).

³ For the International comparisons we used information from ITU for 2013 and in the national analysis we used more recent data published by IFT (2015), based on the information provided by telecommunications services companies. It is particularly striking that between 2013 and 2015, teledensity of cellular services in Mexico dropped from 88.3 in 2013 to 88.5 (IFT, 2015).

a computer and Pay TV (38.1%), and a little over one third (34.4%) have Internet (Instituto Nacional de Estadística, Geografía e Informática [INEGI], Modutih, 2014)

In poorer states, which account for 15.4% of the country’s population, where 65% live below the poverty line, there is a clear shortage of both landline and mobile services. On average, 25.1% of households have landlines, and 66.7% of inhabitants have mobile lines, 4 households out of 10 have Pay TV, only 2.3 households out of 10 have a computer and 1.6 have access to Internet (see Table 3).

Table 3. Telecommunications services in the 6 poorer states, 2014.

State	Land line density ¹	Cellular density ²	Computer density ³	Internet density ⁴	Pay TV ⁵	% Poverty ⁶
Chiapas	12.8	59.4	16.8	10.0	26.8	76.2
Oaxaca	19.4	57.9	22.3	14.6	32.8	66.8
Guerrero	29	60.3	23.7	20.8	39.5	65.2
Tlaxcala	32.7	63.7	30.1	25.5	43.5	58.9
Hidalgo	23.8	76.5	32.2	25.7	45.6	54.3
Zacatecas	31.9	66.8	31.8	26.1	38.2	52.3
Group Average	24.9	64.1	26.2	20.5	37.7	62.3
National Average	64.0	85.0	38.3	41.0	51.0	46.2

States are ordered by level of poverty. 1/ Residential lines per 100 households (IFT, 2015). 2/Cellular lines, per 100 people (IFT, 2014). 3/ Households with computer per 100 households (INEGI, 2014). 4/ Households with access to Internet per 100 households (INEGI, 2014). 5/ Households with Pay TV per 100 households (IFT, 2015) 6/ Percentage of population in poverty (CONEVAL, 2015).

These international comparisons and the unequal access to telecommunications services in Mexico are, to a large extent, explained by the difficulties that have been faced by regulatory bodies for over two decades, and their failure to promote effective competition by leveling the playing field between the incumbents and new entrants into the telecommunications service markets. A particular concern here is the extent to which the Telecommunications Reform might be able to reverse these outcomes by increasing coverage and access to quality services and fostering conditions for access to be distributed throughout the country, irrespectively of people’s incomes.

As of mid 2015 it is early to assess the impact of the Reform. However, this article reviews the progress made in the implementation of the relevant regulations and assesses the extent to which recent trends observed in prices to the end user, increased investment in the sector, as well as increased economic activity, may be attributable to the regulatory measures introduced by the Reform (Table 4).

Measures in the Telecommunications Reform to boost competition

The Reform⁴ includes measures to encourage competition in the telecommunications sector by way of a new institutional framework. A new Federal Telecommunications Institute (IFT) has been set up, with the power and autonomy to regulate competition in these markets. Specialist tribunals have also been set up and an amendment made to the *amparo* law to prevent any immediate overturning of the regulator's rulings. Additionally, foreign investment is encouraged, as 100% investment is allowed in the telecoms sector.

In the following section, we highlight the main points that this Reform stipulates for the telecommunications and broadcasting sectors. For each subject covered by the Reform, we include information on prior regulatory action, which was subsequently ratified when the Act was brought in.

“Preponderancia” or Significant Market Power

In order to boost competition, market efficiency and the respective benefits to consumers in terms of price, quality and diversity of services offered, the Federal Telecommunications and Broadcasting Act regulates concentrations of market power via two legal mechanisms: the first of these is sector-based, while the second is service-based. The sector-based mechanism consists of the ability to rule that a given party is “*preponderante*” (a dominant economic agent), defined on a national level as any party with a 50% market concentration based on the number of users, subscribers, audience and traffic or network capacity derived from data made available to the IFT.

Service-based regulation, in the form of a ruling of “*poder sustancial en el mercado*” (substantial market power), regulates concentrations in the market for a given service or set of services in the telecommunications and broadcasting sectors, that inhibit competition either nationally or in a specific region or geographic area. With service-based regulation under Article 279 of the Act, the IFT has the power to rule that certain parties have *market power* in any market related to the broadcasting and telecommunications sectors, as defined under Article 59 of the Economic Competition Act (Antitrust Act)⁵. The strength and virtue of the Federal Telecommunications and Broadcasting Act lies in its ability to regulate market power on a sector-by-sector or service-by-service basis.

On March 6, 2014, before the Federal Telecommunications and Broadcasting Act (2014) was brought in, the IFT deemed companies belonging to the *América Movil* group—Telmex, Telcel and Telnor—to constitute a dominant (“preponderante”) economic agent (IFT, 2014). On the same day, the Institute declared that companies belonging to the *Televisa* group and associated corporations

⁴ Henceforth referred to as the Constitutional Reform of Telecommunications and Broadcasting or simply “the Reform”. As explained below, its implementing legislation is referred to as the Federal Telecommunications and Broadcasting Act or simply “the Act”.

⁵ The Act: Articles 3, II. & 59 of the Federal Competition Act.

also constituted a dominant economic agent (IFT, 2014). These rulings are grounds for asymmetric regulation, and the main details of the asymmetric regulation implemented are set out in the following sections.

Asymmetric regulation: América Móvil

The ruling declaring América Móvil to be a *preponderant* economic agent was based on the number of subscribers per service in the sector, and the number of minutes of traffic consumed in the main services contracted by end users, leading to the conclusion that the América Móvil group at the time had a 61.8% share of the telecommunications sector nationwide (América Móvil, 2014).

This declaration is the trigger for the implementation of asymmetric regulation. The most significant measures of this are: interconnection charges, sharing of infrastructure, local loop unbundling (LLU), leasing of dedicated links, regulation pertaining to roaming services, virtual mobile operators, requirements in relation to marketing of services, audiovisual content, and information and service quality obligations. The Act included various additional measures such as elimination of long distance charges. These measures are detailed below.

Interconnection

The Federal Telecommunications and Broadcasting Act (2014) makes provision for imposing asymmetric regulation on the dominant party with respect to interconnection charges. The Act therefore went beyond what was set out in the Reform (2013) in both the latter respect and in mandating that the preponderant carrier not charge anything for termination of traffic on its networks. This new zero interconnection and mobile termination rate has been a major blow for (Pin, 2015), as has the requirement for the dominant operator to unbundle Telmex's fixed local loop.

In relation to the unbundling of the dominant operator's local network, the IFT set out reporting and administration requirements. The IFT ruled that the dominant operator must implement electronic administration systems via which both the Institute and any potential contractors and virtual mobile operators may, remotely, view up-to-date information on the public telecommunications network and perform operations associated with wholesale mobile and landline services.

The tariffs implemented for the leasing of dedicated interconnection links, whether local, long distance or international, are to be freely negotiated between the parties and, where they are unable to reach an agreement, will be determined by the IFT based on a "retail-minus" pricing model.

Passive infrastructure sharing and local loop unbundling

Ahead of the approval of the Federal Telecommunications and Broadcasting Bill⁶, the IFT (March, 2014) set out a requirement for the *predominant* operator to share what is termed the "passive infrastructure" or non-electronic infrastructure, which includes rights of way, masts, ditches, towers, posts, hardware facilities and associated power supplies, security, ancillary equipment, land,

⁶The Act (2014) Chapter IV, on infrastructure sharing, Art. 139.

physical spaces, ducts, routing, power sources and air conditioning systems, including unbundled access to network elements, other than the local loop (IFT, 2014)⁷.

The conditions for infrastructure sharing are to be negotiated between the dominant economic agent and the remaining operators based on the *Proposal to Supply Shared Access and Use of Passive Infrastructure* published by Telmex on November 21st, 2014 (Teléfonos de México, 2014; Radio Móvil Dipsa, 2014).

The regulations provide that the parties concerned must first attempt to negotiate interconnection terms. They have a period of 60 calendar days from the date one party requests interconnection to the other party to reach an interconnection agreement.

The IFT is entitled to intervene if the parties do not reach an agreement after the 60 days, if both parties so request, or if the parties have failed to reach an agreement within this time frame. Pricing regulation on infrastructure sharing should be based on cost-based tariffs while allowing operators to recoup investments and maintain their growth strategy, by using known cost-based calculation methods, i.e., long-run incremental cost (LRIC) with the exception of pricing for dedicated links, which are based on retail minus costs.

Roaming

Among the measures imposed on the dominant economic agent, Telcel () ceased to charge for roaming when users use their own network, irrespectively of whether they are located outside of the area of local service or region in which the service was contracted (IFT, April 8, 2014).

Prohibition of tie-in by the dominant party

In addition, it was ruled that the dominant economic agent must offer services that can be cancelled under the same terms under which they were contracted (IFT, April 8, 2014).

Other regulations to foster competition in the telecommunications sector

On the subject of long distance call charges, the Act required the abolition of national long distance charges to users for calls made to destinations anywhere in the country (Art. 118, V) since 1 January 2015 (IFT, 2014). In imposing this regulation, the Act went beyond the provisions set out by the IFT prior to this Act being brought in.

According to the draft regulation bill approved by the IFT, the merging of Local Service Areas in Mexico, completed on 1 January 2015 with the intention of doing away with long distance charges within the country, could mean potential savings to end users of up to 22.592 million pesos per year (IFT, 15 December 2014).

⁷ IFT (March 25, 2014).

As well as upholding net neutrality, the Act sets out means of collaboration with legal institutions. The introduction of these measures goes towards leveling the playing field, setting the conditions for greater market competition.

Asymmetric regulation: Grupo Televisa

In relation to broadcasting services, the asymmetric regulation put in place as a result of the fact that Televisa Group was deemed to be a dominant economic agent center around the following points: infrastructure sharing, information requirements and pricing regulation, “must offer,” regulation on advertising, non-exclusivity of broadcasting rights to major events and a ban on deals between two or more economic agents when purchasing content (IFT, 2013).

Infrastructure sharing

With regard to infrastructure, Televisa is required to share passive infrastructure (non-electronic items such as towers, posts, land and other facilities) with its competitors. This measure boosts competition and facilitates the swift entry of new broadcasters into the market.

Information requirements and pricing regulation

The asymmetric regulation put in place requires Televisa to offer technical and security-related information to assist other operators with accessing Televisa’s infrastructure under fair conditions and to a high standard.

When it comes to setting rates for the use of this infrastructure, no specific guidelines are set. The regulation states that tariffs will be set on an unbundled, service-by-service basis, and makes provision for the IFT to intervene in the event of any dispute between Televisa and any operator requesting access to the infrastructure.

“Must offer”

A central issue in the ruling declaring Televisa to be a dominant economic agent has been the requirement that the company must offer its TV broadcast signals to pay TV operators, whether terrestrial or satellite, operating within the same geographic region; these operators must then retransmit those signals free of charge.

Regulation on advertising

On the question of advertising, the company is required to publish the terms and conditions of its advertisement broadcasting services and its corresponding pricing structures. Televisa is expressly forbidden from engaging in practices that amount to a refusal to do business. The company will not

be allowed to favor or discriminate when it comes to advertising spaces offered across its various platforms. When it comes to bundle advertising services, it must also offer these in an unbundled form.

Non-exclusivity of broadcasting rights to major events

In relation to broadcasting rights, Televisa is required, as a dominant agent; to refrain from purchasing exclusive rights to events deemed to be *major audiovisual content* for any given location in the country.

For the purposes of defining *major audiovisual content*, Televisa will be required to present the IFT with any exclusivity agreements already signed for audiovisual content. The IFT will publish a list of *major events* every two years. To produce this list, they will take audience levels as a measurement, allowing them to identify content that attracts the greatest interest among a segment of the population within a given period of time and which has high audience levels (IFT, May 29, 2014).⁸

Ban on deals between two or more economic agents when purchasing content

Televisa is required to refrain from joining “*purchasing consortia*” without prior permission from the regulator. A purchasing consortium is defined as any deal between two or more economic agents to purchase broadcasting rights jointly in order to acquire those rights on better terms.

Independence of boards of directors of telecommunications and broadcasting services companies

Televisa will not be permitted to participate either directly or indirectly in the capital of, or influence in any manner whatsoever, the administration or control of the dominant economic agent in the telecommunications sector. In addition, the company is bound to ensure that members of the boards of directors of its constituent entities refrain from being members of boards of, or from undertaking administrative roles for, the dominant economic agent in the telecommunications sector.

Rules of tender for two new free-to-air television channels with national coverage

In addition to asymmetric regulation, the Reform includes a plan for the inauguration of two television channels in order to boost competition. Under the “*Rules of tender for new free-to-air television channels with national coverage to ensure that broadcasting services are provided under competitive conditions*”, the IFT must put out an invitation to tender within 180 days of its incorporation. Televisa and TV Azteca and other licensees with 12 MHz or more may not participate. Market efficiency and the right to information and social service are key principles of the bidding process. In addition, the Reform mandates the creation of a nationwide state-owned TV broadcaster.

⁸ The first of these lists was published on 30 May 2014 and identifies as *major events*: Mexican football selection matches; the opening and closing ceremonies of the Summer Olympics; the opening and closing ceremonies and opening matches, quarter finals, semifinal and final of the FIFA World Cup, held every four years and commonly known as the World Cup; final matches of the first division league tournament, held by the Mexican Football Federation and commonly known as “Liga MX.”

Due to a default on the licence payment for one of the national channels tendered for in 2015, the IFT has decided to open a new tender request during the last quarter of the year and hopes that the bidding process will take place during the first quarter of 2016. What is noteworthy is that not only will the 123 licences from the previous process be open for bidding, but the aim will also be to increase coverage of existing licences.

Most of these regulatory measures imposed on economic agents deemed to be dominant are in line with successful international practices, meaning that there is hope that by enforcing them—the task of the IFT—there will be greater competition in the sector, leading to improved penetration of telecommunications services and a reduction in the cost of such services as a result of improved market efficiency, which would then actually allow the *market efficiency gap* to be closed.

Period of asymmetric regulation

Under the Act, the requirements placed on the dominant economic agent will cease to apply upon a declaration from the Institute once, in accordance with the Act, conditions exist for effective competition in the market in question (Federal Telecommunications and Broadcasting Act: Article 262).

Declaration of service based market power

As mentioned before, service-based regulation, in the form of a ruling of *market dominance*, regulates concentrations in the market for a given service or set of services in the telecommunications and broadcasting sectors that inhibit competition, either nationally or in a specific region or geographic area, as defined under Article 59 of the *Economic Competition Act* (Antitrust Act). Investigations are underway into illegal market concentrations in relation to the provision of pay TV in which Televisa concentrates 64% of this market.

Response to the asymmetric regulation from América Móvil and Televisa

The reactions of economic agents deemed to be dominant in telecommunications and broadcasting services were expressed immediately in the form of legal action (injunctions through the Mexican legal process of *amparo*) against the regulator's rulings. In the case of Grupo Televisa, an announcement was also made of a divestment of the Group's assets in order to reduce its market share and hence no longer be a dominant agent in the sector.

A specialist court set up in Mexico City to handle cases involving Financial Competition, Telecommunications and Broadcasting rejected the injunction sought by América Móvil and Televisa, deeming the claim to be inadmissible.

With regard to Grupo Televisa's divestment of assets, specifically of telecommunications towers, the company has presented several initiatives to the IFT, mainly involving the creation of a new company aimed at serving third parties. The initiatives are being reviewed by the IFT. It is most

likely, however, that in spite of the fact that it would constitute a different firm, the status of dominant operator will remain intact.

In July, 2015, *amparo* proceedings were brought in an attempt to halt the measures for local loop unbundling. The case was thrown out by a specialist telecommunications, tribunal (Arias, 2015). This action in he part of the legal system suggests that the Reform has institutional strength.

Table 4. Regulations and Policies Introduced by the Recent Telecommunications Reform in Mexico (2013-2015).

	Mexico 2011	Mexico 2015	Brazil	Colombia	Finland	France	Japan	Singapore	South Africa	United States
Open access wholesale networks	✓	✓	✓	X	✓	✓	X	✓	X	X
Encourage (foreign) private sector investment	X	✓	✓	✓	✓	✓	✓	✓	✓	✓
Include broadband under universal service definition	X	✓	✓	X	X	✓	X	✓	✓	✓
Encourage demand for broadband services	X	✓	✓	✓	✓	✓	✓	✓	✓	✓
Promote, improve and expand public-private partnerships	X	✓	✓	✓	X	X	✓	✓	✓	✓
Subsidize local, regional and nationwide ventures	X	✓	X	✓	X	✓	X	✓	✓	✓
Promote facilities-based resale competition	X	✓	X	✓	X	✓	✓	✓	✓	✓
Mandate local loop unbundling (LLU)	X	✓	X	✓	✓	✓	✓	✓	X	X

Source: Adapted from Kelly and Rossotto (2012, p. 53). Source: Kelly and Rossotto (2012, p. 53). & IFT: 2013-2015.

Latest progress of the Telecommunications Reform: August 2015

In this section we examine the trends observed in the *pricing* of services to end users as a result of increased competition, analyzing its impact on the *consumer price index* (CPI). We analyze changes in *investment* flows on the part of both existing operators and newcomers to the market, in an attempt to determine whether these fluctuations are greater than trends observed over the past decade.

We also examine the potential effect of the Reform by income distribution, looking at how much households spend on these services as a proportion of their income (“Engel curves”, 2012-2014). We also examine *economic activity in the telecommunications industry*, taking as our reference GDP attributed to the industry in the period 1993 (following privatization of Mexico’s national telephone company) to 2014.

Main Findings: The effect of the Telecommunications and Broadcasting Reform and Market Competition (July 2015)

In this section we report the progress of the telecommunications and broadcasting Reform in terms of its effect on *prices* to end-users as a result of the regulatory measures implemented to foster competition in the telecommunication service markets. Similarly, we look at progress with *investment*, the *distributive effects* of the Reform, and *economic activity* in this sector.

Price Trends

In this section we analyze the possible effect of the Reform on prices. To this end, we take as our reference the National Consumer Price Index (CPI).

Despite the difficulties in separating effects on prices to the end consumer attributable to the Reform from those attributable to other market conditions, we have attempted to estimate the effect of the decrease in the price of telecommunication services on the Consumer Price Index (CPI).

As indicators of any potential changes in the prices of telecommunications services, we take the Telephone Service Index, which does not include Pay TV and Internet services, and because the latter services are omitted, we also take the corresponding Index for each of those services.

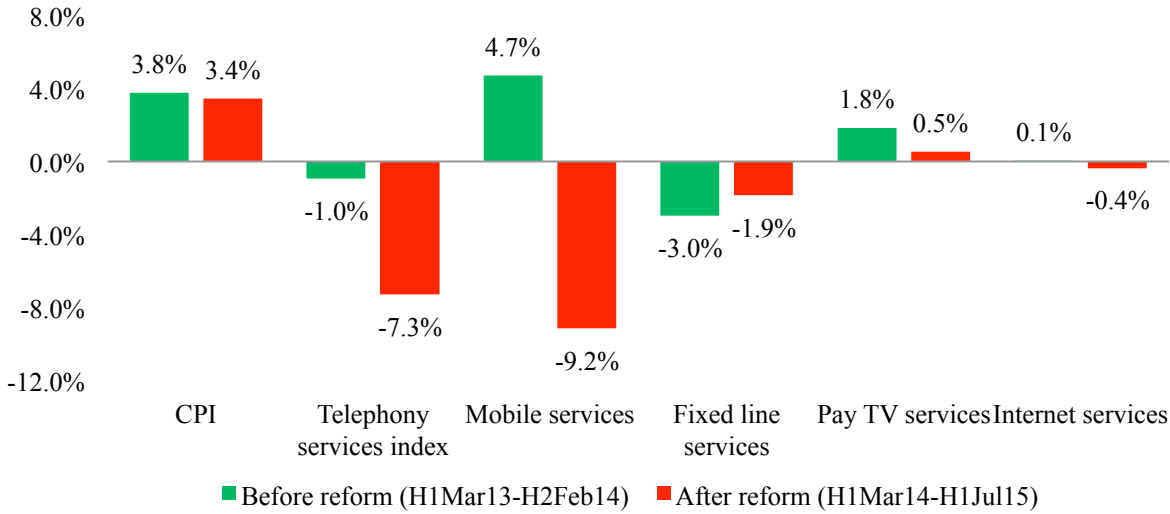
As shown in Figure 1, since the declarations of operator dominance and the enactment of the Federal Telecommunications and Broadcasting Act, the *Telephone Services Index* has fallen by an average of 7.3% per year when the first half of March 2014 is compared with the first half of July 2015.

This price drop is more salient when compared to the price drop of just 1.0%, according to this index, seen between March 2013 and February 2014. The Price Index for 2014, which includes both landline and mobile services, shows a greater shift toward mobile services, demonstrated by an even

greater decrease in prices of mobile services and the drop seen in the price of telecommunications as a whole.

When it comes to the price of Pay TV services, this rose slightly, but by less than in the previous period. Internet services fell by 0.4%, in contrast to the average increase of 0.1% seen prior to the Reform (see Figure 1).

**Figure 1. Average change in prices
2013-2014 & 2014-2015.**



These price drops are, to a large extent, down to three regulatory measures, which had a significant impact on the markets and on the prices of services. The first measure was the requirement for the dominant operator to put an end to *traffic termination charges* on the América Móvil network.

The corresponding saving made by other operators was passed on to end users, with lower prices and improved competition between these operators.

The second regulatory measure, consisting of removing long distance charges within the country, has surely had a positive effect on end user tariffs. This measure also improves competition by decreasing the profits of the dominant operator.

An additional factor responsible for the reduction in prices is the end to roaming charges on the Telcel network, the mobile operator for América Móvil, irrespectively of whether users are outside their local area of service (IFT, 8 April 2014).

In the case of broadcasting services, it is too early for pro-competition measures to have had a noticeable effect on consumer pricing, especially given the recent switch-on of a third national TV channel which is yet to broadcast nationwide, and regulations which are now being enforced with respect to charges for advertising services.

With regard to service-specific regulation, and investigations into Pay TV in particular, the regulator, IFT, has issued a preliminary declaration that Televisa holds a dominant position in this

marketplace. The ruling is not yet final, as Televisa still has time to issue an appeal. Therefore, the outcome of this pro-competition measure, which would mean asymmetric regulation being imposed on Televisa, remains to be seen.

Future lowering of pricing as a result of increased competition

It is reasonable to expect that regulations regarding the *sharing of infrastructure* will have an effect on prices, given that non-dominant operators are thereby spared the need to build their own infrastructure.

The strengthening of institutions that has come out of the Reform has led to the emergence of a greater number of *virtual mobile operators*. The range of services provided by such operators has broadened in recent months and is likely to continue to expand. The following companies are currently operating: Megacable, Virgin Mobile, Tuenti, Ciertos, Maz Tiempo and Lycanmobile. Companies that have announced that they are interested in offering such services: Axtel, Televisa, Elektra, Chedraui. There are currently six virtual mobile operators in existence, with this number set to increase to 10 in 2016.

Investment flows in the telecommunications sector

As mentioned, our purpose is to identify whether there were any changes in investment flows on the part of existing operators and newcomers to the telecommunication services marketplace as a result of the new regulation, as well as determining whether these fluctuations are greater than trends observed over the past two decades (1997-2014).

The 2000s were marked by low investment in the telecommunications sector, in contrast to the previous decade (1997-2001). This fall in investment in the telecommunications sector may be due in part to América Móvil's desire to recover investments in digitization and network expansion made during the previous decade (1991-2000).

In the 2000s, new operators did not increase their investments in any significant way, and some abandoned the Mexican market. Such was the case of AT&T, who relinquished operations to their Mexican business partners, operating under the Alestra brand and providing services to the corporate sector, and MCI-WorldCom, who sold its business to Mexican company Axtel.

We may tentatively interpret this reduction in investment in the telecommunications sector as being a result of two events. The first of these is the regulatory standstill that had occurred since the 1990s. Specifically, after 16 years (1991-2010) of continued attempts to effectively implement regulation following declarations of substantial market power issued by the Federal Competition Commission [CFC for its acronym in Spanish] against Telmex-Telnor and Telcel (América Móvil), the evidence suggests that nothing was achieved in preventing the company's anticompetitive practices. The OECD (2012) report on Mexico's Telecommunications Regulations states that:

“Mexico’s weak institutional framework allows telecommunications operators to make constant use of the legal framework to challenge the authority of the CFC, [the extinct] Federal Telecommunications Commission [COFETEL] and the Secretariat of Communications and Transport [SCT], a process that usually results in the non-application of laws and regulations” (p 55).

From 2010 onwards, investment in the telecommunications sector picked up, possibly as a result of public tender processes for spectrum allocation (21 and 22) in which companies other than América Móvil were the only bidders. The rules of the corresponding bidding process stipulated that operators with a certain share of the spectrum were not allowed to bid (OECD, 2012)⁹.

A further factor which probably boosted investment was the expectation of deep regulatory change, as took place from 2013 onwards as a result of the Reform. América Móvil’s annual statements periodically reported to shareholders on the declarations of dominant market share and the *amparo* rulings designed to counteract the measures put in place by the regulators, meaning that those declarations had no effect (América Móvil, 2001-2015). Hence, the Supreme Court ruling in favour of regulating interconnection tariffs to the América Móvil network, in line with the costing model set out by regulator COFETEL, was a landmark decision which gave some credibility to the regulatory institutions in question, as we describe below.

After more than a decade of continual disputes over interconnection charges between Telmex-Telnor, Telcel and new entrants, with few results, significant regulatory measures were finally introduced with the aim of fostering competition in the telecommunications sector. COFETEL was to reduce interconnection rates, with the reduction applicable across fixed line and mobile networks.

During the first quarter of 2011, a controversy emerged surrounding interconnection charges between Telmex-Telnor-Telcel (América Móvil) and a group of more than 20 providers united under the self-declared title of United Together Against Telmex-Telcel (“Tucotel”). The controversy over interconnection tariffs was referred to Mexico’s Supreme Court, which, in May 2011, ruled that COFETEL had the power to set interconnection rates in the case of a dispute between operators. COFETEL started slashing interconnection charges in May 2011 to 0.39 pesos (around US\$0.034) per minute from the previous price of 0.95 pesos (US\$0.082) (Casanueva, 2015). Sector analysts state that the source of this investment shifted during the 2010s from the América Móvil conglomerate to new operators entering the marketplace (Piedras & Fernández, 2012). At the start of the decade, América Móvil’s total investment represented 62% of the telecommunications sector in Mexico, while over 2010 this amount dropped to only a quarter of the total amount invested, and by 2011 to 31%. For its part, in 2011, América Móvil reported that only one fifth of

⁹ For Tenders 20 and 21 (launched at the end of 2009), the Federal Competition Commission [Cofeco] set spectrum caps (70 MHz for auction 20 and 80 MHz for auction 21) at levels that avoid an accumulation of spectrum by a single market player, which would harm competition (OECD, 2012: 94).

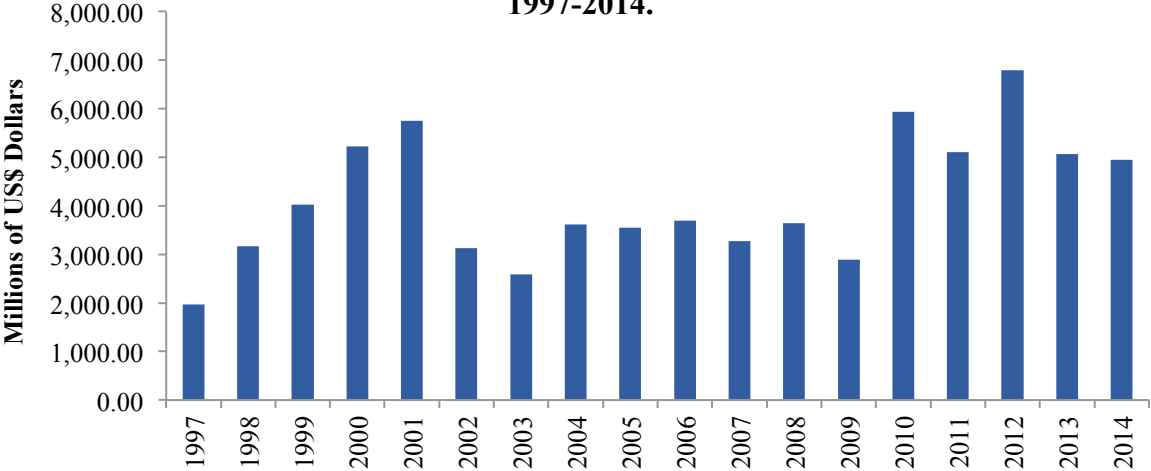
its investment would be directed toward the Mexican market, dedicating the remaining 80% to its foreign operations. Elsewhere, while investments from other operators barely accounted for 38% in 2001, this value has exceeded América Móvil’s investment since 2008, reaching a historic maximum of 75.3% during 2010 which, while it did drop slightly in 2011, accounted for two thirds of total investment. This marks a clear shift: while América Móvil has ceased to invest and is instead investing more outside the country, competitors are now the main investors in the telecommunications sector (Piedras & Fernández, 2012).

The Reform did not play a part in the increase in investment seen in 2012. While the first announcements of regulatory and institutional changes were made that year, they were not made until December.

The trend of increased investment which picked up in 2012 continued to rise over the following two years (2013 and 2014), albeit less buoyantly than in 2012 (see Figure 2).

The foregoing analysis suggests that this increase in investment, especially on the part of newcomers to the market, cannot be explained in its entirety by the Reform, but rather by a combination of regulatory processes which sent out a dual message. Firstly to América Móvil, warning of a potential threat to its dominance in the sector as a result of the successful implementation of regulation of interconnection charges from 2010. And secondly to investors other than América Móvil, who saw this successful intervention as a sign that the regulator was gaining institutional strength, which was to be subsequently bolstered by the Reform.

Figure 2. Annual Investment in Telecomm, US\$ Current Millions, 1997-2014.



Distributive effects of the Reform

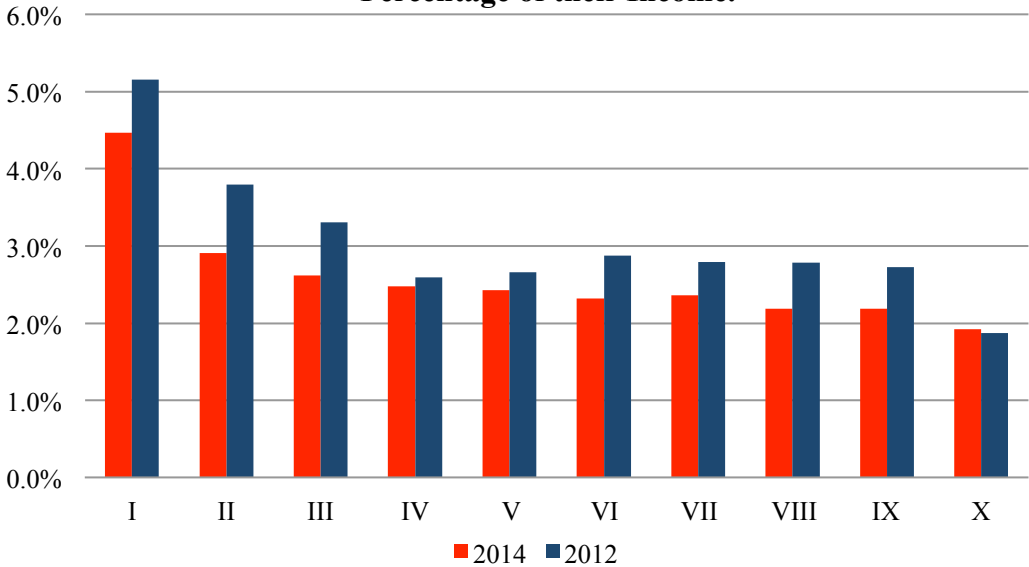
In this section, we analyze the distribution of telecommunications services as a function of different levels of household income in order to identify whether the drop in the prices of different telecommunications services has had an effect on specific sectors of the population with respect to income distribution. The starting point for this analysis is the per-decile distribution of households

by level of income, and their expenditure on telecommunications services as a proportion of their income.

The next step is to compare results for this financial year with two sources of information on household expenditure, firstly for 2012 and then for 2014. The source of information is the *Household Income and Expenditure Survey* for 2012 and the same Survey for 2014, based on a representative nationwide sample. Each decile comprises the same number of households, which are ranked from the lowest to highest income. Comparing the lowest income decile with the highest, the latter is 20 times higher.

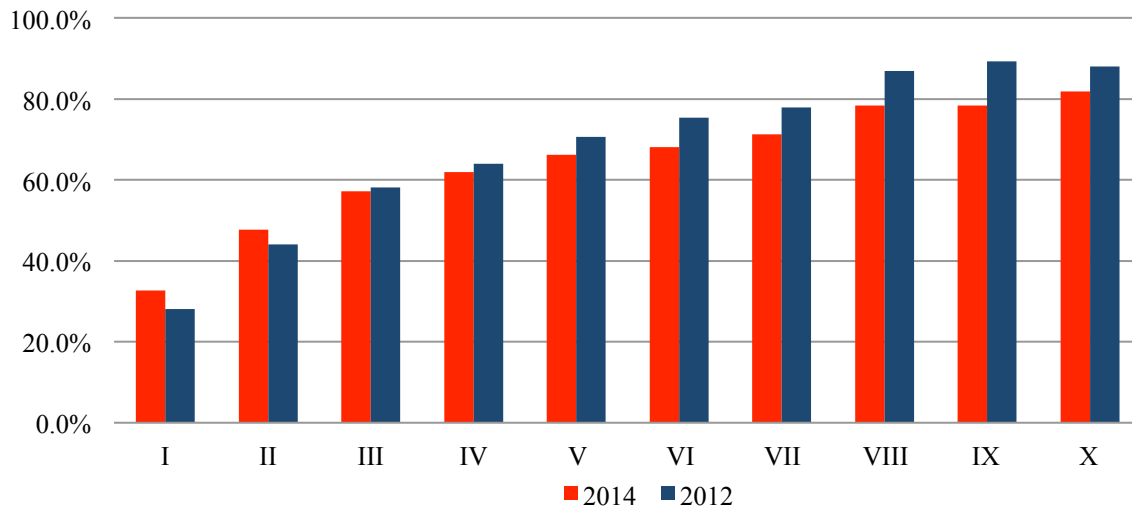
The most obvious distributive effect is seen in the case of mobile services. People in the first, second and third deciles (I, II and III), whose incomes are lowest, are those who benefit most from the drop in prices, especially decile II (see Figure 3).

Figure 3. Household Expenditure on Mobile Services as Percentage of their Income.



Of the effects brought about by the Reform, these are the ones to benefit low-income sectors of the population, given that mobile telephony is the service with most widespread adoption among the poorest two deciles, as shown in Figure 3, which lists the number of households spending money on the service. As can be seen, the figure is significantly higher than the number of households spending money on other services (see Figure 4).

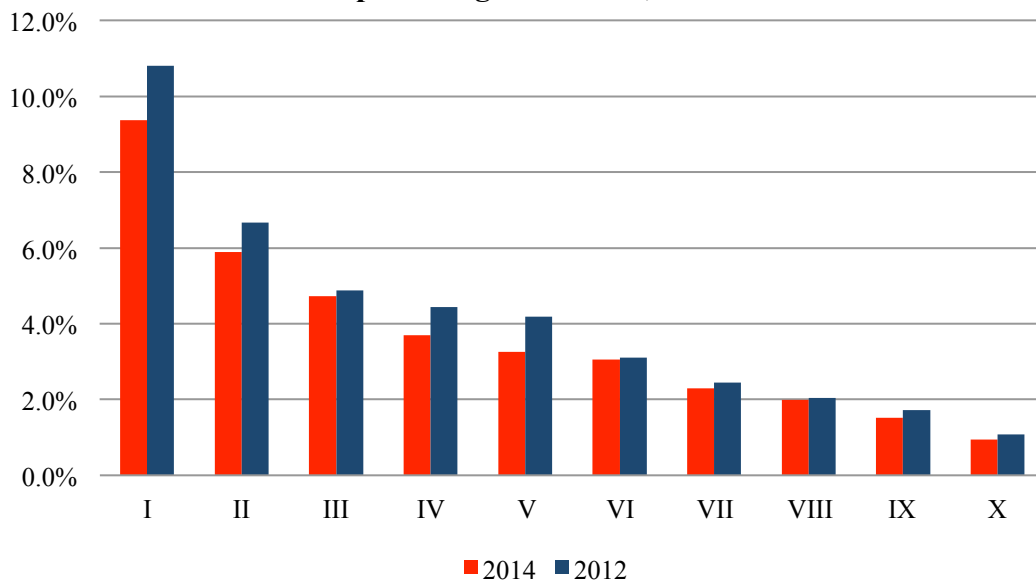
Figure 4. Percentage of Households Spending Money on Mobile Services, 2012-2014.



In the case of landline services, a more significant fall in expenditure is also seen among the poorest deciles, especially households falling within deciles I and II (see Figure 4).

This drop in expenditure on landline services among low-income households has less of an impact, given that fewer households subscribe to such a service (Figure 5).

Figure 5. Household expenditure on Fixed Telephony services as a percentage of income, 2012-2014.

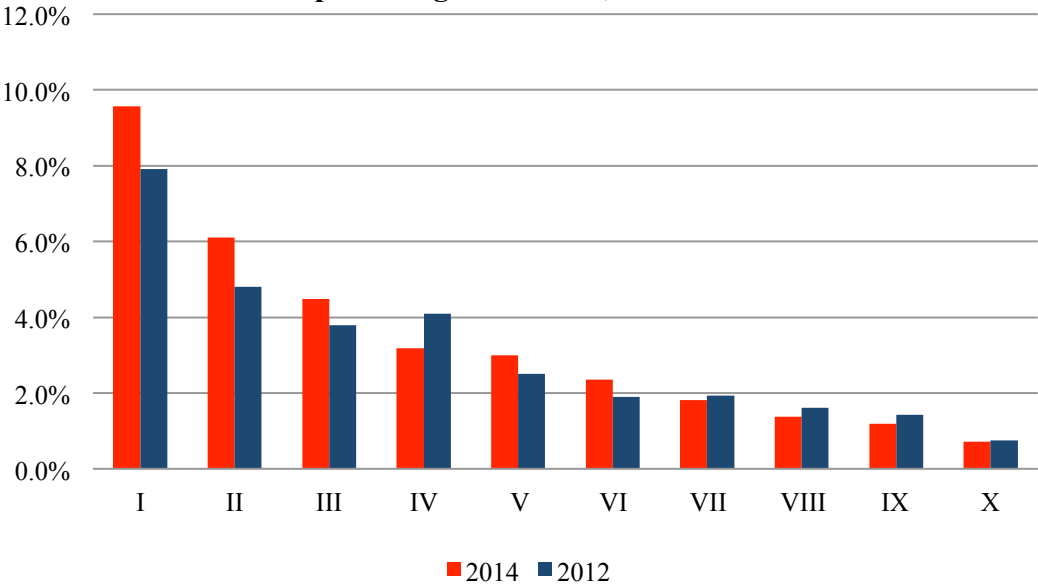


When it comes to Internet services, it is primarily residents in the higher income deciles who subscribe to or spend money on such services (deciles IX and X).

Our analysis of household expenditure on Internet services, including both home subscriptions and the use of such services in Internet cafes and similar establishments, shows that expenditure among various deciles including the poorest is considerably greater than corresponding expenditure among higher income households.

A further finding that comes to light from this data is that as a proportion of income, far from decreasing, this cost has risen for the poorest households. This may be due to the fact that the poorest citizens are purchasing such services more frequently in 2014 compared to 2012. Therefore, when it comes to Internet services specifically, any distributive effect of the Reform is yet to see the light of day (see Figure 6).

Figure 6. Household expenditure on Internet services as a percentage of income, 2012-2014.



Not only is this effect yet to be seen, but of countries in Latin America, Mexico is among those with the highest charges for pre-pay mobile broadband services, with an average price of 1.2 and 12 dollars for a 1-day and 30-day top-up respectively. According to data from the Federal Telecommunications Institute (IFT), 87% of Mexico’s 101.8 million mobile phone users are on pre-pay plans (Arias, 2015).

In addition, greater adoption of triple play services, thus far extremely low, is seen among lower income sectors of the population (see Figure 6). It may be that once regulation governing infrastructure sharing comes into effect, there will be more Internet and triple play services offered in regions thus far lacking service. Both increased competition, and hence greater incentive for the inclusion of low-income sectors, along with a lowering of prices, are likely to be the result of any asymmetric regulation that may be imposed on Televisa with respect to Pay TV, a key component in the provision of Triple Play services. As more subscribers turn to home Internet services, this will lower their expenditure elsewhere, in addition to providing them with extra services via the same infrastructure, meaning savings for households on lower incomes.

Finally, it should be emphasised that social coverage policy will play a role in the country's roll-out of a fibre optic backbone and shared (wholesale) wireless access network, to be deployed through a public-private partnership in 2018, along with the "Mexico Connected" Program, set up by the Ministry for Communications and Transport and designed to turn public places into network access points with links to the optic fiber network. The scheme will therefore promote universal access to broadband in schools, universities, clinics, hospitals, government buildings, public open spaces and any place providing public services¹⁰.

The foregoing analysis confirms the positive effects for lower income households in terms of a lowering of tariffs through asymmetric regulation of the dominant operator, especially with respect to mobile services, which are where the poorest sector of the population spends more money.

The effects of the Reform have not yet had an impact in the case of Internet access, which is a key service due to the social benefits associated with greater affordability and take-up. In the not too distant future, measures such as infrastructure sharing and local loop unbundling will assist in making this service available at competitive prices, and hence affordable to the poorest sectors of the population. When it comes to take-up of such services and making optimum use of them for social and economic development, one key part of the equation that is still missing is education and the acquisition of digital skills.

The Reform and economic activity in the telecommunications sector

For the purposes of estimating how much of an increase in economic activity in the telecommunications sector might be attributable to the Reform, we look at variation in annual Gross Domestic Product (GDP) in the telecommunications sector, listed in subsection 517 of the country's published GDP figures under the heading *other telecommunications*¹¹. These data include the following services. This source does not include Internet services¹²:

- Landline services: the associated indicator for Class 517111, Conventional Telephony, is the number of telephone lines in service for Class 517211,
- Mobile services: mobile telephone coverage of the population (number of users), Class 517510 in this case,
- Pay TV: Subscription TV broadcasting my means other than the Internet, as the number of subscribers per state.

¹⁰ An analysis of this social telecommunications policy, intended to close the access gap to such services, is beyond the scope of the present study, which is focussed primarily on the Reform and its effects on competition (Casanueva & Bacilio, 2014 & 2015).

¹¹ Based on indicators for conventional telephony, mobile telephony and subscription TV broadcasting, real volume indexes were calculated via which values could be extrapolated from the base year, giving constant values for gross product; current values were obtained by re-expressing those constants, factoring in the consumer price index per city published by the INEGI (2013).

¹² While the *National Accounts System* does not include Internet services under *other telecommunications*, the *other coverage indicator, density per state*, will provide information, which to some extent makes up for this omission.

In addition, our analysis of variation in the telecommunications sector GDP includes an analysis based on the Hodrick-Prescott (H-P) filter, frequently used for the decomposition of a GDP time series into its underlying components.

For the purposes of the present study, we are interested in identifying the cyclical components of GDP in the telecommunications sector over the period 1995 - 2015. Given fluctuations in GDP, trends are identified which may be attributable to the effect of regulation and they are tested to determine whether they are significant.

To arrive at an approximation of the potential (real) growth in the telecommunications sector and separate it from historical trends, we took the first differential of the natural logarithms of values in the series and passed them through a Hodrick-Prescott (H-P) filter. This statistical estimate is useful as the historical trend is not observable. It is arrived at with 95% confidence bands following the methodology of Giles (2013).

The difference between GDP for the telecommunications sector over time and the result of the H-P filter is analysed, taking the corresponding confidence intervals into account. In this way, it is possible to estimate whether the potential growth actually matches historic growth in the telecommunications sector with a 95% confidence interval.

The first graph-based analysis examines quarterly GDP for the telecommunications sector over the period 1995–2015 and the resulting trend estimate after the the H-P filter is applied (Figure 9).

The resulting curve shows an upward trend, despite the fact that sector GDP fell over some quarters. The overall trend has remained upward, due to the increased demand and technological change, despite frustrated attempts to regulate the dominant operators Telmex-Telnor-Telcel (América Móvil) throughout the period 1995 - 2010.

The period running from the first quarter of 2004 to the first quarter of 2015 is when more positive GDP figures are observed in the telecommunications sector, with a mean quarterly growth rate of 2.8%, equivalent to an annual rate of 11.8%. This compares favourably with growth rates leading up to the period (2.2% quarterly and 9.2% annually).

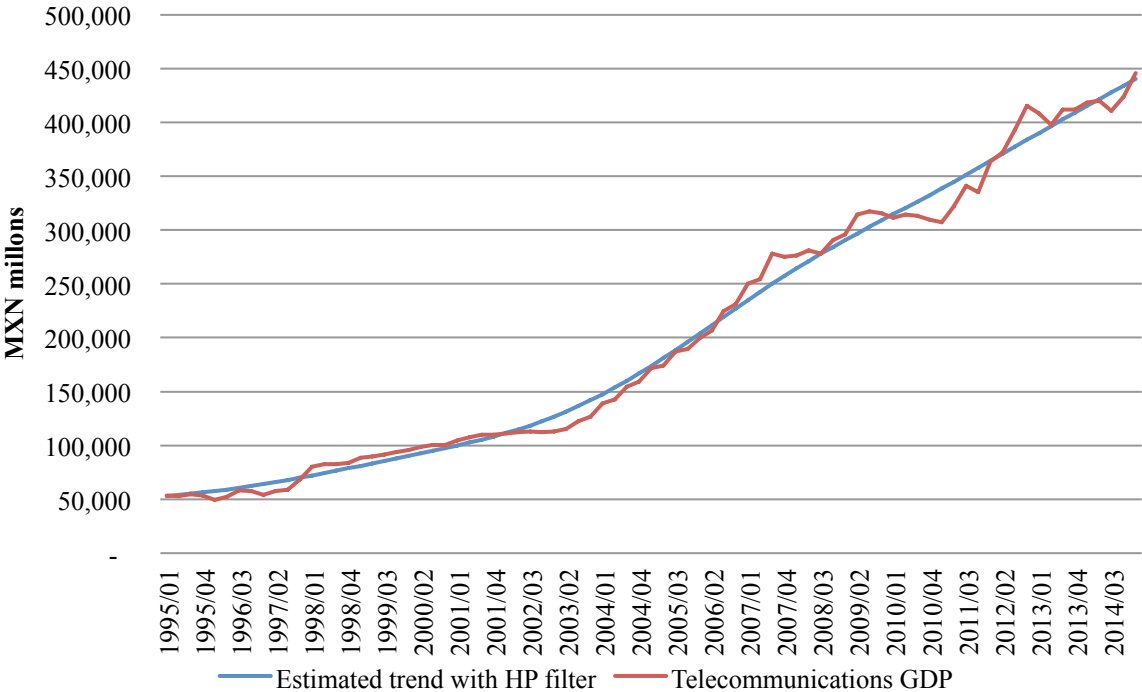
2012 is marked by notable growth in sector activity, with growth continuing to rise over subsequent years. This buoyancy goes hand in hand with the increased investment made by operators other than América Móvil from 2010 onwards and during 2010 itself, as explained in our analysis of investment above.

In terms of the potential impact of the Reform over the course of 2012, which marks a point of upward inflection, the behaviour of GDP in 2012 and the announcement of the Reform are more a coincidence than a result of the Reform. It is unlikely that the initial announcement of the Telecommunications Reform, which occurred during the change of administration on 1 December 2012, would have had an immediate and significant effect on investment and economic activity in the sector.

As had previously been the case, those factors with greatest impact on the sector’s economy in 2012 were increased investment on the part of new operators. As we saw above, they were probably encouraged by the successful intervention of the regulator in setting interconnection rates and the significant fall in rates that occurred, in addition to the guarantee that this regulatory measure would be sustainable over the coming years.

GDP data for the sector suggest that the effect of the Reform is observed subsequently, and appears to be a key factor in increased sector activity. One data point worthy of mention is that in the quarter immediately following the introduction of the Telecommunications and Broadcasting Reform, the sector grew by a rate of 3.2% and 5.2% per quarter in Q4 2014 and Q1 2015 respectively. This increase compares favourably with growth rates observed over the previous years: 2013 saw negative growth (-0.2%), with growth of just 0.7% in 2014 (see figure 7).

Figure 7. Telecommunications GDP and estimated trend.



Historic Trend vs. Potential trend

As suggested by the previous analysis of the behaviour of sector GDP, three key periods may be identified during which sector activity increases. The first of these occurs following the opening of long distance markets to competition (1997-1998); the second, an unprecedented rise in the number of mobile subscribers (2004-2007); and finally, a drop-- also unprecedented-- in interconnection traffic as a result of the regulator’s intervention in 2011 and the subsequent success in sustaining these measures over the subsequent years leading up to the Reform (2012-2013), thus bringing the expected result of the Reform forward.

The largest difference between the previous analysis of GDP and this one lies in the ability to determine whether the potential trend observed is significant.

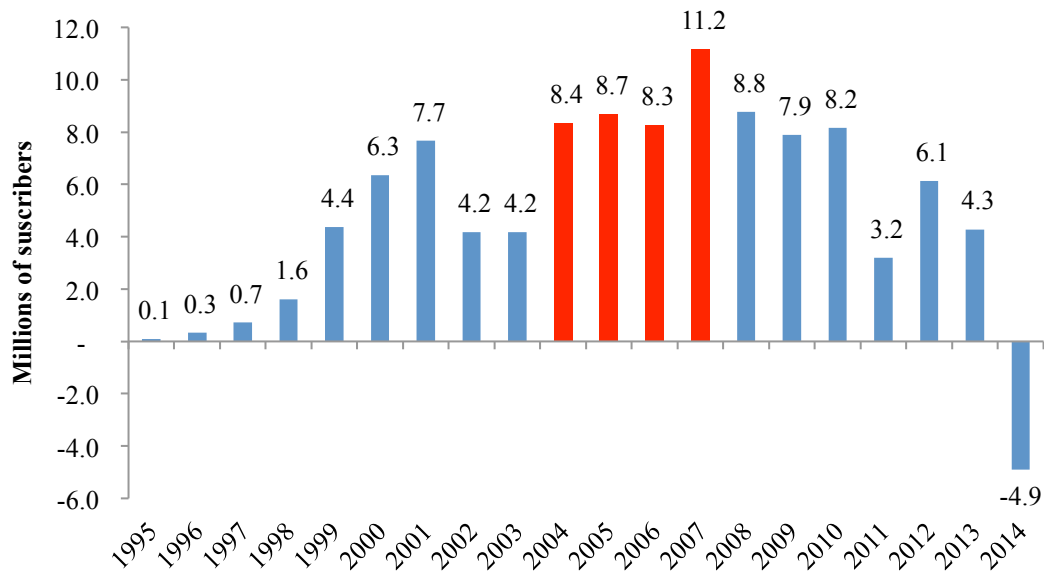
This analysis shows sector *output gap*, which is estimated on the basis of the difference between historic GDP and the estimate of that same GDP when passed through the Hodrick-Prescott filter (*potential GDP*). This process allows us to determine whether sector activity is experiencing a period of growth exceeds the historic trend, in which case the difference is positive. Similarly, where the difference between potential and historic GDP is negative, it shows that sector growth falls short of the historic trend.

As the graph in Figure 9 shows in relation to the *output gap* for the sector, a notable increase in sector economic activity is seen in 1998 and 1999. This significant increase is tied in with the increased investment that occurred over those years following the publication of the *Resolution on the Public Long Distance Interconnection Plan* (17 June 1994) in which rules were set out at the time promised to open the service up, under competition-friendly conditions (conditions such as interconnection and regulation of tariffs, interoperability of networks). That year, the Plan sent a positive signal, which led to investment from companies such as MCI, AT&T, Telefónica, Axtel and Nextel. The impact of this regulation was reflected during a period running from Q4 1997 to Q4 1998 (see Figure 9).

Following this period of growth of activity in the sector, there followed a period of regulatory paralysis (1999-2004) which created significant uncertainty with respect to regulation and future sustainability, especially when it came to regulating dominant market operators, something which had little success over those years, and the viability of competition in the marketplace for telecommunications services. Economic activity in the sector led to less investment overall, and to a withdrawal of foreign investors such as MCI-Worldcom and AT&T.

It is not until the period 2004 – 2007, when an increase in sector economic activity is witnessed, that the trend in economic activity outstrips *potential growth*, and this difference is significant. A possible reason is the rapid growth in the adoption of mobile services. Specifically, during this four-year period the number of subscribers rises by a further 36.4 million beyond the 30 million seen over the previous 9 years. This increase in the number of subscribers may have been due to technological changes that allowed costs to be lowered, meaning that the cost of devices was now more affordable (see Figure 8).

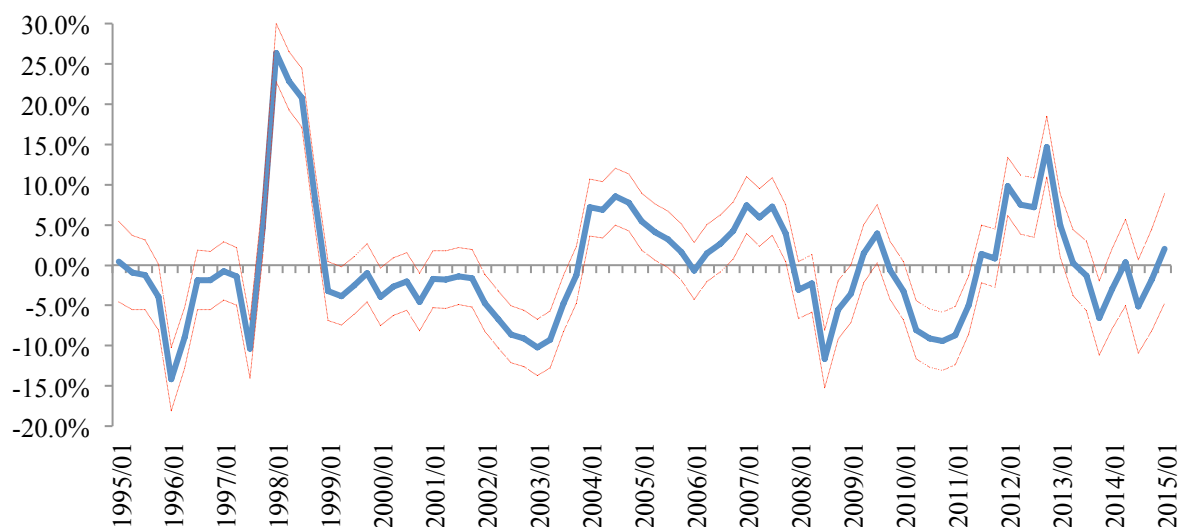
Figure 8. Net additions of mobile subscribers



Finally, (significant) historic growth in GDP beyond potential growth is seen from Q1 2012 up to Q1 2013. This increase in sector economic activity may be attributed not to the Reform but rather to a combination of factors (see Figure 9).

From a regulatory perspective, a key factor was effective intervention on the part of the regulator in setting interconnection tariffs from 2011 onwards, which provided certainty for investment over subsequent years: this intervention was made possible by the regulatory victory that occurred when the Supreme Court of Justice ruled in favour of regulating interconnection tariffs for connecting to the América Móvil network, on the basis of costs set out by regulator COFETEL. It was then possible for this regulation to remain in place over subsequent years leading up to the Reform, representing a turning point in restoring the credibility of regulatory institutions.

Figure 9. Telecom sector output gap with 95% confidence bands



A question raised by this analysis is whether such investment might have been much greater in the context of a sound and sustainable regulatory and institutional framework, something which had been lacking in Mexico for two decades (1991-2011). The consequences of having relatively little investment and hence less economic activity in the sector are seen in the patchy coverage observed when Mexico's performance is compared to that of other countries with similar levels of development, or in view of the delays in achieving coverage and adoption among the poorest sectors of the population described above.

In terms of assessing the impact of the Reform, GDP figures published for Q1 2015 show that the sector may be entering a phase of positive growth that potentially outstrips historic trends (the output gap is positive, although the difference is not significant: a situation which may change with figures for the second quarter of 2015).¹³

Conclusions

This paper has explored the effects of increased competition in the telecommunications and broadcasting sectors that has been brought about by Mexico's recent Telecommunications Reform, since its inception in 2013 up to July 2015.

We analysed the possible distributive effects of changes to the prices of telecommunications services by identifying expenditure on such services among the poorest sectors of the population

¹³ The present study includes data up to Q1 2015, given that data for Q2 have not yet been published.

and comparing this to expenditure between 2012 (prior to the implementation of the Reform) and 2015, with the Reform and associated regulatory changes and changes to public policy in place.

We examined changes in investment flows on the part of existing operators and newcomers to the market and determined whether these fluctuations were greater than trends observed over the past decade.

When it comes to the effect of the Reform on *prices of telecommunications and broadcasting services*, with the exception of Pay TV and Internet services, prices have dropped as a result of asymmetric regulation imposed on dominant operator América Móvil business decision on the part of operators which have led to a lowering of their costs and prices to the end user. In addition to asymmetric regulation, a measure that has allowed prices to fall, the elimination of long distance charges within the country has also reduced costs for end users.

There is little doubt that the greatest reduction in prices is seen in the case of mobile services, which are those with more frequent demand among the lowest income sectors. Hence, an indirect distributive effect is identified, as the poorest *deciles* of the population are those to have seen the greatest reduction in their expenditure on such services as a proportion of their income, with no lessening of demand.

In the not too distant future, measures such as infrastructure sharing and local loop unbundling will help to lead to the provision of these services at prices that are more affordable to the poorest. The missing factor in the equation when it comes to adoption and optimum use of such services for social and economic development lies in the provision of quality education and acquisition of digital skills. Education is an enabler when it comes to access and affordability of ICT and requires greater levels of quality education. A necessary condition for digital inclusion is for the country's Education Reform to succeed, as bridging the digital divide is dependent not only on the affordability of services but also on putting those services to good use.

In addition to the regulations mentioned, a number of other measures are due to be implemented which will have an effect on the costs of providing services, including notably the sharing of infrastructure and local loop unbundling, in addition to asymmetric regulation to be imposed on Televisa, specifically in the area of Pay TV services. Successful implementation of this set of regulations will likely have an effect on reducing prices for key services such as the Internet.

Considering the Reform's impact on *investment*, our analysis of data up to 2014 did not identify any increase in investment attributable to the Reform. The significant increases in investment seen occurred prior to the Reform, very likely as a result of regulation of interconnection rates (2010 and 2012).

That is not to say that the Reform will not contribute to significant flows of investment in the future, as it has created an environment conducive to investment. The regulatory measures implemented have had the effect of levelling the playing field in telecommunications markets in Mexico, encouraging operators who already had a stake in the market prior to the Reform but who faced difficulty surviving in a legally uncertain environment, with low margins and significant resources

diverted towards legal disputes whose outcome was uncertain. The new institutional setup is not only likely to enable them to survive, but also for their business to actually succeed.

The Reform has created an appropriate environment for companies making their first forays into the Mexican market after having abandoned attempts at doing business in the country on previous occasions. This is the case of AT&T, who has invested around seven billion dollars in Mexico (2015). The first four billion of this was for the purchase of Iusacell and Nextel México, and the remaining three billion for the roll-out of their network and the company's initial mobile Internet offering. AT&T claims that its competitive edge lies in the coverage and speed of its network, allowing the company to offer its full range of services via this infrastructure over mobile devices. AT&T promises to expand its investment over the coming years, reaching 100 million people by 2018 (Yuste, 2015).

Significant increase in sector economic activity occurs between 2004 and 2015, and 2012 is a crucial year for economic activity. These findings match trends observed in our analysis of investment, where the most significant periods of economic activity are tied in with increased investment: firstly, activity attributable to the auctioning 20 and 21 of frequency bands; and secondly, when traffic termination charges on the América Móvil network were reduced and with the Supreme Court of Justice ruling, providing assurance of the regulator's authority and ability to set tariffs in the future, thereby leading to significant price reductions over time.

It is too early to detect any *significant* effect of the Reform on *sector economic activity*. There is no doubt that such effects will be observable in the near future and will persist for as long as the Reform continues to have legal backing in its present form into the future.

We may also posit future scenarios for how the Reform might be implemented within the wider context of Mexico's setup. In the short term (2014-2015), it is possible to achieve successful implementation of the Reform. In the long term, however, two scenarios are foreseeable: optimistically, the Reform may see successful, long-term deployment; less optimistically, success may be limited, since it would require a far-reaching transformation of Mexico's overall institutional setup.

The long-term success of the Reform requires an appropriate institutional framework: high-quality institutions including the rule of law, well-functioning regulation and low levels of corruption. The implementation of other structural reforms, will also play a part, including the *education reform* and a more explicitly "bootstraps"-style social policy (Birdsall & Szekely, 2003), focused on enhancing productivity via improved distribution of assets: in which coverage and affordability of telecommunication services will play a major role.

References

- América Móvil (7 de marzo de 2013). América Móvil informa respecto a resolución del Instituto Federal de Telecomunicaciones.
<http://www.americamovil.com.mx/amx/es/cm/news/2014/07032014.pdf>
- América Móvil. (2001-2015). Reportes trimestrales [Quarter1 report]. Accessed August 7, 2015, <http://www.americamovil.com/amx/es/cm/investor/repQ.html?p=2>
- Arias, A. (August 6, 2015). Internet de prepago, el más caro en AL: CEPAL. La Crónica Newspaper. Accessed August 7, 2015,
<http://www.cronica.com.mx/notas/2015/913424.html>
- Birdsall, N. & Szekely, M. (2003). Bootstraps Not Band-Aids: Poverty, Equity and Social Policy in Latin America. Center for Global Development, February 2003. Accessed January 10, 2015,
http://www.cgdev.org/sites/default/files/2766_file_cgd_wp024.pdf
- Casanueva-Reguart, C. and Bacilio-Avila, E. (April 15, 2015). Telecommunications Reform in Mexico: Competition, Market Efficiency, Infrastructure Development and Digital Inclusion. 19th Annual Western Hemispheric Trade Conference Proceedings. Laredo, Texas: Texas A&M International University, pp. 64-85. Accessed May 15, 2015,
http://freetrade.tamui.edu/whtc_services/showPdf.asp?show=19Conf-Sessions&dMenu=1&mark=CNF
- Casanueva-Reguart, C. & Bacilio-Avila, E. (2016). La Reforma de las Telecomunicaciones en México, Competencia, Desarrollo de Infraestructura e Inclusión Digital. Revista Internacional de Tecnología, Conocimiento y Sociedad. Champaign Illinois: Common Ground Publishing. 16(1). ISSN 2174-8985.
- Casanueva-Reguart, Cristina and Bacilio-Avila, Erik, Telecommunications Reform in Mexico: Regulation, Market Structure and Social Coverage (February 27, 2014). 2014 TPRC Conference Paper. Available at SSRN:
<http://ssrn.com/abstract=2402542>
- Casanueva-Reguart, C. (2013). Mexico's universal telecommunications service policy and regulatory environment in an international context: A public policy assessment. Accessed June 15, 2015,
http://internet.coneval.gob.mx/Informes/Interactivo/interactivo_entidades.swf
Journal of Information Policy, 3, 267–303. doi:10.5325/jinfopoli.3.2013.0267

- Consejo Nacional de Evaluación de la Política de Desarrollo Social [CONEVAL] (2015). Informe de Evaluación de la Política de Desarrollo Social, 2014. Accessed July 19, 2015, http://www.coneval.gob.mx/Medicion/MP/Paginas/Pobreza_2014.aspx
- Deb, S. (2012). Distance learning in developing countries through multimedia technology using mobile devices. *International Journal of Education and Learning*, 1(1). Accessed June 15, 2013, http://www.sersc.org/journals/IJEL/vol1_no1/4.pdf
- Del Villar, R. (2009). Competition and Equity in Telecommunications. In *No Growth Without Equity? Inequality, Interests, and Competition in Mexico*, eds. Michael Walton and Santiago Levy, 321-364, Washington D.C.: Palgrave Macmillan and The World Bank.
- Esteve, G., & Machin, A. (2007). Devices to access Internet in developing countries. Vodafone. Accessed June 15, 2013, www2007.org/workshops/paper_106.pdf
- Giles, D. E. (2013). Constructing confidence bands for the Hodrick–Prescott filter. *Applied Economics Letters*, 20(5), 480-484. Accessed May 15, 2015. http://web.uvic.ca/~dgiles/downloads/working_papers/ewp1202.pdf
- Grönlund, A. & Islam, Y. M. (2010). A mobile e-learning environment for developing countries: the Bangladesh Virtual Interactive Classroom. *Information Technology for Development*, (16)4, pp. 244-259. Accessed May 16, 2015. http://www.tandfonline.com/doi/abs/10.1080/02681101003746490#.Vc0Y11N_NBc
- Hodrick, Robert J., and Edward C. Prescott, “Postwar U.S. Business Cycles: An Empirical Investigation,” Carnegie Mellon University discussion paper no. 451 (1980). Accessed June 8, 2015. http://www.jstor.org/stable/2953682?origin=JSTOR-pdf&seq=1#page_scan_tab_contents
- Organisation for Economic Co-operation and Development [OECD]. (2012). Review of telecommunication policy and regulation in Mexico. Paris, France: Ypsilanty, D. Accessed January, 15, 2013, <http://www.oecd.org/dataoecd/7/38/49536828.pdf>
- Instituto Nacional de Geografía y Estadística [INEGI] (2015). Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH). Nueva Construcción, [2014]. Accessed July 27, 2015. <http://www.inegi.org.mx/est/contenidos/Proyectos/encuestas/hogares/regulares/enigh/>

- INEGI (2013). Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) [2012]. Nueva Construcción. Accessed July 27, 2015.
<http://www.inegi.org.mx/est/contenidos/proyectos/encuestas/hogares/regulares/enigh/default.aspx>
- INEGI (20 August 2013) National Accounts System for Mexico: Sources and Methodologies. Accessed 8 de June 2015 from:
http://www.inegi.org.mx/est/contenidos/proyectos/cn/pibe/doc/SCNM_Metodologia_03.pdf
- Instituto Federal de Telecomunicaciones [IFT] (July 15th, 2015). Informe Estadístico 4 Trimestre 2014. Accessed July 20, 2015:
<http://www.ift.org.mx/sites/default/files/contenidogeneral/estadisticas/4ite14-vf-02.pdf>
- IFT (April 29th, 2015). 2015 Preliminary Report of The IFT Investigating Authority Concludes that Grupo Televisa has Substantial Power On The Pay TV Market with the Acquisition of Cablecom. IFT Press release: Mexico City, Number 31/2015.
- IFT (15 de diciembre de 2014). Anteproyecto de acuerdo mediante el cual el Pleno del Instituto Federal de Telecomunicaciones establece disposiciones que deberán cumplir los concesionarios que presten servicios públicos de telecomunicaciones a través de redes públicas de telecomunicaciones, para abstenerse de realizar cargos de larga distancia nacional a sus usuarios por las llamadas que realicen a cualquier destino nacional a partir del 1 de enero de 2015. Accessed January 12, 2015,
http://portalanterior.ift.org.mx/iftweb/wp-content/uploads/2014/12/AIR_eliminacion_LD.pdf
- IFT (2006-2015). Sistema de información estadística de mercados de telecomunicaciones (SIEMT). Fecha de consulta 5 de agosto de 2015, recuperado de
<http://siemt.ift.org.mx>
- IFT (2015). Inversión Anual en Telecomunicaciones (2015). Sistema de Información Estadística y de Mercado. Accessed 15th August, 2015, <http://siemt.ift.org.mx/>
- IFT (2015). Dictamen preliminar de la Autoridad Investigadora del IFT concluye que el grupo de interés económico encabezado por Grupo Televisa tiene poder sustancial en el mercado de TV de paga. Mexico D.F.: Comunicado 19/2015. Accessed April 4, <http://www.ift.org.mx/comunicacion-y-medios/comunicados-ift/es/dictamen-preliminar-de-la-autoridad-investigadora-del-ift-concluye-que-el-grupo-de-interes-economico#sthash.Bbm53z5f.dpuf>
- IFT (8 de abril de 2014). Mayores beneficios para los usuarios de servicios de telecomunicaciones. IFT: Comunicado de Prensa No. 15/2014. Accessed April 20, 2015, <http://portalanterior.ift.org.mx/iftweb/wp-content/uploads/2014/04/COMUNICADO-IFT-15-08-04-14.pdf>

- Instituto Nacional de Estadística y Geografía (2015). Índices de precios al consumidor (mayo 2013 a mayo de 2015) Accessed 15th August, 2015, <http://www.inegi.org.mx/est/contenidos/proyectos/inp/inpc.aspx>
- International Telecommunications Union [ITU] (2013). ITU's portal for key ICT data and statistics. Accessed January 15, 2015, <http://www.itu.int/net4/itu-d/icteye/>
- Marshall, J. (2007). Smartphones are the PCs of developing world. *New scientist*, 195(2615), 24–25. Accessed January 18, 2014, <http://www.ekgaon.com/files/newscientist.pdf>
- Mohsen Khalil, Philippe Dongier and Christine Zhen-Wei Qiang (2009) “Overview.” *Information and Communications for Development 2009*. Accessed February 20, 2010, <https://www.openknowledge.worldbank.org/handle/10986/2636>
- Kelly, T. & Rossotto, C. M. (2012). *Broadband Strategies Handbook*. Washington, D.C.: The World Bank. Accessed February 18, 2015, <http://broadbandtoolkit.org/Custom/Core/Documents/Broadband%20Strategies%20Handbook.pdf>
- Organisation for Economic Co-operation and Development [OECD] (2012). *Review of Telecommunication Policy and Regulation in Mexico*. Paris, France: Dimitri Ypsilati. Accessed May 16, 2012, <http://www.oecd.org/sti/broadband/50550219.pdf>
- Piedras, E. & Fernández del Campo, D. (2011). *Competencia Efectiva para la Inversión en Telecomunicaciones*. Mexico D.F.: Competitive Intelligence Unit. Accessed April 20th, 2012, http://www.the-ciu.net/nwsltr/002_1CompEfecTelecom.html
- Radiomóvil DIPSA (19 de noviembre de 2014). *Convenio marco de prestación de servicios para el acceso y uso compartido de infraestructura pasiva*. Recuperado el 2 de diciembre de 2014 de: http://www.telcel.com/portal/pdf/oferta_acceso/Convenio_de_Servicios_Mayoristas_de_Infraestructura_Pasiva.pdf
http://www.telcel.com/portal/pdf/oferta_acceso/Convenio_de_Servicios_Mayoristas_de_Infraestructura_Pasiva.pdf
- Solano, O., del Villar, R., García-Verdú, R. (2006). Challenges to the effective implementation of competition policy in regulated sectors: the case of telecommunications in Mexico. *Northwestern Journal of International Law & Business*. 26(257), 527-545. Accessed April 25, 2006, <http://scholarlycommons.law.northwestern.edu/do/search/?q=solano&start=0&context=2671255>

Teléfonos de México, S.A.B. DE C.V. (21 de noviembre de 2014). Oferta de Referencia para Compartición de Infraestructura Pasiva (ORCI). Recuperado el 2 de diciembre de 2014 de: <http://www.telmex.com/web/acerca-de-telmex/oferta-mayoristas>

Teléfonos de México, S.A.B. DE C.V. (21 de noviembre de 2014). Oferta de referencia para la prestación del servicio mayorista de arrendamiento de enlaces dedicados locales, de larga distancia nacional, de larga distancia internacional y de interconexión. Recuperado el 2 de diciembre de 2014 de: <http://www.telmex.com/web/acerca-de-telmex/oferta-de-enlaces>

Yuste, J. (June 26, 2015). AT&T invierte siete mil mdd en México. Dinero en Imagen (newspaper). <http://www.dineroenimagen.com/2015-06-26/57597>

[The] World Bank (2013). How we Classify Countries. Washington, D.C.: The World Bank. Retrieved from <http://data.worldbank.org/about/country-classifications>