OECD Telecommunication and Broadcasting Review of Mexico 2017

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Preface

Mexico's telecommunication reform illustrates how better policies can lead to better lives. Since 2013, this unprecedented structural reform has allowed the Mexican authorities to introduce important changes to modernise the telecommunication and broadcasting sectors, challenging a highly concentrated status quo and moving into a more competitive future. The results have been remarkable and demonstrate what can be achieved with evidence-based policy making.

Two key developments stand out from this reform. The first is Mexico's resolve to address long-standing inequalities in the access to telecommunication services. Not so long ago, many people in Mexico could not afford to use services their peers in other countries took for granted. Today, they can use voice and data services at a lower cost than in the past, both at home and when travelling abroad. Since the reform was introduced, for example, more than 50 million additional people in Mexico have subscribed to mobile broadband. This is a remarkable empowerment. The second development is the opening of the telecommunication and broadcasting sectors to greater competition and choice, thereby creating opportunities from connectivity for broader economic and social development.

This new *OECD Telecommunication and Broadcasting Review of Mexico 2017* documents these changes, but also sheds light on how the momentum following the initial reform can be maintained. The nature of the telecommunication and broadcasting sectors, which are converging, is one of constant change. Mexico needs to remain resolute and continue with the implementation and development of this reform. This is crucial to seize the many benefits from "going digital", from improving the business environment, productivity and competitiveness, to promoting inclusion and better outcomes in health, education and transport. In the 21st century, an efficient communication network benefits all sectors of the economy. At the same time, greater connectivity and better skills to use digital technologies are needed to empower people with tools for improved civic engagement, as well as for helping them to be both informed and entertained.

We know there are still challenges ahead, including in opening opportunities for more people to enjoy such services, and we commend this report as a contribution to making that possible.

Angel Gurría
Secretary-General
OECD

Foreword

In 2012, the OECD published an *OECD Review of Telecommunication Policy and Regulation in Mexico* as a contribution to what would become a broad constitutional, legal and regulatory reform in the telecommunication sector in Mexico. In 2016, Mexico, through the Mexican Ministry of Transport and Communications (Secretaría de Comunicaciones y Transportes, SCT) and the Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT), invited the OECD to conduct an implementation review. The objectives of this review are threefold: 1) to assess the implementation of the reform against the 2012 OECD recommendations; 2) to evaluate the market developments in telecommunication and broadcasting after the reform; and 3) to provide a set of recommendations to build on the momentum.

The *OECD Telecommunication and Broadcasting Review of Mexico 2017* draws on a wealth of information and consultation in Mexico. The review was carried out under the auspices of the Committee for Digital Economy Policy (CDEP) and the Working Party on Communication Infrastructures and Services Policy (CISP), and peer reviewed in a joint session of the two bodies on 17 May 2017, with Pamela Miller (Canada) and Vince Affleck (United Kingdom) as lead peer reviewers.

The report was drafted by a team which included the OECD Secretariat and the external experts Pablo Márquez and María Fernanda Arciniegas, both from the firm Márquez, Barrera, Castañeda & Ramírez and Chris Marsden, Professor at the University of Sussex. The OECD team included Sam Paltridge, Verena Weber, Lorrayne Porciuncula, Frédéric Bourassa and Jeremy West, all from the Digital Economy Policy Division, headed by Anne Carblanc, under the overall direction of Andrew Wyckoff, Director of Science, Technology and Innovation, OECD. This publication also benefited from contributions from Lauren Crean, Pedro Constantino-Echeverría, Alexia González Fanfalone, Santiago Parra, Sarah Ferguson and Yuki Yokomori. Editorial work was undertaken by Jennifer Allain, Janine Treves, Angela Gosmann and by the OECD Public Affairs and Communications Directorate. Acknowledgement is made to our delegates from the CDEP, chaired by Wonki Min (Korea), and the CISP, chaired by Tracey Weisler (United States), for their guidance and contributions.

This review was made possible by the institutional support of the SCT and the IFT and their staff who kindly replied to questionnaires, received the review team for meetings, organised an extensive series of interviews with major stakeholders and contributed their valuable comments on the draft of this publication. The OECD wishes to thank, in particular, Minister Ruiz Esparza; Under-Secretary for Communications in the SCT, Edgar Olvera; and the Chairman of IFT, Gabriel Contreras, together with his fellow IFT commissioners as well as Ezequiel Gil and Enrique Ruiz from the SCT and Aldo Sánchez and Juan Carlos Hernández Wocker from the IFT. Special thanks also go to Ambassador Mónica Aspe Bernal, current Permanent Representative of Mexico to the OECD and former Under-Secretary for Communications in the SCT, to Dionisio Pérez-Jácome F., the previous Permanent Representative of Mexico to the OECD, and to Carlos Tena, Third Secretary from the Permanent Delegation of Mexico to the OECD.

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Acronyms, abbreviations and units of measure

AI	Investigative Authority *Autoridad Investigadora*
APT	Asia Pacific Telecommunity
AWS	Advanced Wireless Service
BANOBRAS	National Bank of Public Works and Services *Banco Nacional de Obras y Servicios Públicos*
BIAC	Business and Industry Advisory Committee to the OECD
BIT	*Banco de Información de Telecomunicaciones*
CAF	Development Bank of Latin America *Banco de Desarrollo de América Latina*
CAPUFE	Federal Roads and Bridges Access *Caminos y Puentes Federales*
CEDN	National Digital Strategy Co-ordination *Coordinación de Estrategia Digital Nacional*
CFE	Federal Electricity Commission *Comisión Federal de Electricidad*
CIDGE	Interministerial Commission for the Development of Electronic Government *Comisión Intersecretarial para el Desarrollo del Gobierno Electrónico*
COFECE	Federal Economic Competition Commission *Comisión Federal de Competencia Económica*
COFECO	Federal Competition Commission *Comisión Federal de Competencia*
COFEMER	Federal Regulatory Improvement Commission *Comisión Federal de Mejora Regulatoria*
COFETEL	Federal Commission of Telecommunications *Comisión Federal de Telecomunicaciones*
CRE	Energy Regulatory Commission *Comisión Reguladora de Energía*
CRTC	Canadian Radio-Television and Telecommunications Commission
CSRE	Satellite Capacity Reserved to the State *Capacidad Satelital Reservada al Estado*
DSL	Digital subscriber line
DTT	Digital terrestrial television
EMS	Electronic Management System

FCC	Federal Communications Commission (United States)
FDI	Foreign direct investment
FTA	Free-to-air
FTP	File Transfer Protocol
FTTB	Fibre to the building
FTTC	Fibre to the curb
FTTH	Fibre to the home
FTTP	Fibre to the premises
GB	Gigabyte
Gbps	Gigabytes per second
GDP	Gross domestic product
GHz	Gigahertz
GTAC	*Grupo de Telecomunicaciones de Alta Capacidad*
HHI	Herfindahl-Hirschman Index
ICT	Information and communication technology
IEPS	Special tax on products and services *Impuesto Especial sobre Producción y Servicios*
IFT	Federal Telecommunications Institute *Instituto Federal de Telecomunicaciones*
IMEI	International Mobile Equipment Identity
IMT	International Mobile Telecommunications
INDAABIN	Institute for Administration and Appraisal of National Property *Instituto de Administración y Avaluos de Bienes Nacionales*
INEGI	National Institute of Statistics and Geography *Instituto Nacional de Estadística y Geografía*
IoT	Internet of Things
IP	Intellectual property
IPTV	Internet Protocol television
ISP	Internet service provider
IXP	Internet exchange point
kW	Kilowatt
LFCE	Federal Economic Competition Law *Ley Federal de Competencia Económica*
LFD	Federal Rights Law *Ley Federal de Derechos*
LFPC	Federal Consumer Protection Law *Ley Federal de Protección al Consumidor*
LFTR	Federal Telecommunications and Broadcasting Law *Ley Federal de Telecomunicaciones y Radiodifusión*

LGAHOTDU	General Law of Human Settlements, Territorial Order and Urban Development *Ley General de Asentamientos Humanos, Ordenamiento Territorial y Desarrollo Urbano*
LGAMVLV	General Law for Access by Women to a Life Free of Violence *Ley General de Acceso de las Mujeres a una Vida Libre de Violencia*
LRIC	Long-run incremental cost
LRIC+	Long-run incremental cost plus approach
LTE	Long-term Evolution
LTE-A	Advanced Long-term Evolution
LTE-M	Long-term Evolution for Machines
M2M	Machine-to-machine
MB	Megabyte
Mbps	Megabytes per second
MCMO	Must-carry must-offer
MNO	Mobile network operator
MVNO	Mobile virtual network operator
OPI	*Oferta Pública de Infraestructura*
OREDA	*Oferta de Referencia para la Desagregación del Bucle Local*
OTT	Over-the-top
PCS	Personal Communications Service
PIN	Personal identification number
PPP	Purchasing power parity
PROFECO	Federal Consumer Protection Agency *Procuraduría Federal del Consumidor*
PROMTEL	Organism for the Promotion of Investment in Telecommunications *Organismo Promotor de Inversiones en Telecomunicaciones*
PROSOFT	Programme for the Development of the Software and Innovation Industry
QoS	Quality of service
SCT	Ministry of Communications and Transports *Secretaría de Comunicaciones y Transportes*
SE	Ministry of Economy *Secretaría de Economía*
SEDATU	Ministry of Agrarian, Land and Urban Development *Secretaría de Desarrollo Agrario, Territorial y Urbano*
SEDESOL	Ministry of Social Development *Secretaría de Desarrollo Social*
SEGOB	Ministry of the Interior *Secretaría de Gobernación*

SEP	Ministry of Public Education *Secretaría de Educación Pública*
SFP	Ministry of Public Administration *Secretaría de la Función Pública*
SHCP	Ministry of Finance and Public Credit *Secretaría de Hacienda y Crédito Público*
SMP	Substantial market power
SMS	Short message system
SNII	National Infrastructure Information System *Sistema Nacional de Información de Infraestructura*
SPR	Public Broadcasting System *Sistema Público de Radiodifusión*
STIRA	Standard Terms for International Roaming Agreements
TIM	*Televisión Independiente de Mexico*
TSM	*Telesistema Mexicano*
UCE	Economic Competition Unit *Unidad de Competencia Económica*
UMA	Unit of measurement and adjustment
VAT	Value-added tax
VoLTE	Voice over LTE

Executive summary

The *OECD Telecommunication and Broadcasting Review of Mexico 2017* evaluates the implementation of the recommendations since the OECD 2012 review, assesses market developments in the telecommunication and broadcasting sectors since then, and provides recommendations for the future.

In the telecommunication sector, following the 2013 reform introduced by Mexico, new players have entered the market, prices for telecommunication services have substantially decreased, access has grown – particularly in mobile broadband subscriptions and data usage, and the quality of service has improved with respect to broadband speeds. Moreover, foreign investment has increased and the telecommunication and broadcasting sectors have grown faster than the overall Mexican economy. In broadcasting, Mexico completed the digital switchover and licensed a third national free-to-air television network, which began broadcasting in 2016. Still, competition challenges remain in the sector.

Progress since the 2013 reform

Mexico has achieved very positive developments and has significantly strengthened its constitutional, legal and regulatory frameworks. It has:

- Clarified divisions between public policy formulation and regulation by eliminating the "double window" whereby a regulatory process is conducted twice by two different authorities.
- Established two autonomous bodies, the Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) and Federal Economic Competition Commission (Comisión Federal de Competencia Económica, COFECE), with ample powers to enforce independent regulation based on evidence driven decision making, whose commissioners are subject to a transparent nomination and appointment procedure for fixed terms.
- Empowered the independent and converged regulator, the IFT, to declare preponderant agents and players with substantial market power and to impose specific remedies, such as mandating the sharing of passive infrastructure or functional separation, while strengthening the sanctions regime, hence promoting competition.
- Created specialised courts for indirect *amparo* (legal injunction) trials pertaining to the telecommunication and broadcasting sectors, which has stimulated efficiency within the judicial apparatus and increased the soundness of judicial decisions.
- Promoted investment by eliminating restrictions on foreign direct investment in all telecommunication and satellite communication services, which has allowed new entrants to join these markets, boosting competition and encouraging increased availability of advanced technologies and acquisition of specialised knowledge in these markets.

- Commenced the deployment of the Red Compartida project, a wholesale wireless network, which will offer data capacity to other network and virtual operators, potentially enable new business models taking advantage of a nationwide 4G infrastructure, and expand accessibility in underserved areas.
- Developed a measurement framework for telecommunication services, substantially improving the collection and publication of statistics on the development of the sector, both for supply and demand sides.

Main recommendations for the future

Further modifications to policies, regulation and the legal framework are needed to consolidate the success of the 2013 reform. One main objective of the reform was to increase access to high-quality telecommunication and broadcasting services for Mexico to create a vibrant digital economy. To maintain the momentum and move further towards achieving this objective, the report includes key recommendations related to competition, market conditions and national policies, all underpinned by the necessity to uphold sound legal and institutional frameworks.

To **promote competition**, following its 2017 preponderance review, Mexico strengthened most of the pre-existing measures levied in the telecommunication sector. The government imposed new remedies, including the crucial mandatory functional separation between the fixed service providers' (Telmex-Telnor) wholesale and retail operations. These measures address the primary bottleneck to the development of both fixed and mobile communication services: they open networks to access seekers, which will spur competition in the telecommunication sector. The measures also open the door for regulatory relief for Telmex-Telnor to address the high market concentration in pay TV and broadcasting. In light of these balanced and proportionate measures, the OECD recommendations focus on encouraging convergence to meet policy objectives in both telecommunication and broadcasting. Forward-looking, they point to issues that will increasingly arise due to convergence, such as the need for periodical revisions of sector definitions and the need to enable the IFT to carefully assess and prevent market concentration through evolving tools.

Through ongoing reforms, Mexico has been aiming to provide first-time access to citizens who were left behind and to improve existing telecommunication services to all others. Importantly, Mexico has also been aiming to establish the necessary conditions to increase economic competitiveness and social well-being in the country. The OECD recommendations, therefore, strive to support efforts to **improve market conditions**, such as encouraging further investment, improving spectrum management, eliminating the tax on telecommunication services and ensuring that market expansion benefits all stakeholders while reducing barriers.

The third set of recommendations is directed at the **implementation of national policies** to most effectively meet the targets of the reform. Overall, the OECD recommendations call for updating the National Digital Strategy in ways that harness the benefits brought by the development of the digital economy and society that is being embraced by Mexicans in their daily lives as evidenced by the take-up of services. In this regard, it is critical for Mexico to bring to successful fruition key national strategic objectives that aim to extend connectivity further, such as the Red Compartida, the national satellite programme and the México Conectado programme.

The final set of OECD recommendations points to a few weaknesses in the **legal and institutional framework** and the attribution of roles between some entities. Attributions among different authorities in formulating and implementing digital economy policies and regulation should be better aligned and some responsibilities should be rearranged to increase the efficiency of the government and maintain the post-reform momentum. Once the goals of the reform have taken hold, Mexico should consider providing more flexibility to the different institutions to effectively perform their mandate in light of technological change, and thus remove a number of detailed prescriptions from the Constitution.

Chapter 1.

The Mexican telecommunication and broadcasting reform: Building on the progress

This chapter provides the context of the OECD Telecommunication and Broadcasting Review of Mexico 2017*, by recalling the outcomes of the 2012 OECD review, assessing the measures implemented since the 2013 reform, and providing recommendations for the continued improvement of telecommunication and broadcasting in Mexico.*

The *OECD Review of Telecommunication Policy and Regulation in Mexico* published in 2012 (OECD, 2012) provided recommendations for policy makers to reform the legislative and regulatory framework. When requesting that review, Mexico recognised the potential role the telecommunication sector could play to increase productivity and economic growth while enabling governments to improve the provision of public services. At the time, the country had the lowest gross domestic product per capita in the OECD, a high inequality of income distribution, and a relatively high rural population, many of whom had limited communication services. The drivers for reform were, therefore, very clear.

Mexico needed the stimulus that stronger growth in the communication sector could provide to make its economy more competitive and address long-standing inequalities. In addition, the policy and regulatory settings at that time were not going to meet these goals and almost every effort for previous reforms had been frustrated under that framework. Mexicans who had access to telecommunication services had a lower quality of service (QoS) compared to their peers in other OECD countries and paid relatively high prices for these services. Furthermore, many were without service at all. Mexico needed the opportunities for social and economic development that could be provided by greater access to more efficient communication services, in particular high-speed broadband.

The "Pact for Mexico", a national political agreement signed in December 2012 by the country's leaders, underpinned subsequent reforms, including in the communication sector. Its commitment – to further the democratisation of civic engagement, address inequality and create opportunities, as well as to expand the effective implementation of social rights – had arisen from a consensus that widespread reforms were essential but would not be without challenges.

In the telecommunication sector, the subsequent constitutional reform of 2013 and other regulatory changes took bold steps to ensure these issues were addressed with closely targeted measures. For the purposes of this review, the constitutional reform together with telecommunication and broadcasting sector legislation of 2014, including the Federal Telecommunications and Broadcasting Law (Ley Federal de Telecomunicaciones y Radiodifusión, LFTR) and the Federal Economic Competition Law (Ley Federal de Competencia Económica, LFCE) are collectively referred to as "the reform", although it comprises several structural changes in the sector over a period of roughly three years. Among the key initiatives brought about with the reform were reduced barriers for market entry, including through foreign direct investment (FDI); the elimination of the systematic overturning of virtually every decision taken by regulatory authorities through the establishment of a specialised court; and the removal of the so-called "double window", whereby regulatory processes were conducted twice by two different authorities, through a clearer separation of responsibilities for policy formulation and regulatory and market monitoring functions. The establishment of two independent oversight authorities, one specifically responsible for the telecommunication and broadcasting sectors, was a critical step in this process.

Moreover, the reform aimed at fostering pro-competitive measures, so that a more efficient communication market could expand access, improve service quality and render communication services more affordable for the people of Mexico. In addition to these pro-competitive measures, the reform established clear public policy mandates that must be implemented by the government. The purpose of these mandates was to guarantee the implementation of a set of projects that, on the one hand, contribute to promoting competition in the sector, and on the other, expand access and use of communication services.

The reform in the telecommunication markets introduced in Mexico has gone beyond the telecommunication sector. In the area of broadcasting, it initiated changes to introduce more choice and more competition to meet goals related to democratisation, through greater plurality, and addressing, as in the telecommunication market, very high levels of market concentration. Such changes would have been needed irrespective of the convergence between the two sectors, which is increasingly evident around commercial and technological change, but in its light are even more essential.

The digital switchover, which in large part was completed in 2015, was a critical step for both the telecommunication and broadcasting sectors and was swiftly finalised after many years of slow progress.[1] During this time, Mexico prioritised this transition to enable the entry of new digital players in the broadcasting market and to free up spectrum to be used by the Red Compartida, a shared wholesale long-term evolution (4G) wireless network. Considered together, all these changes are aimed at improving service quality, coverage and choice in a more competitive market for both broadcasting and telecommunication services.

In 2017, Mexico stands again at a critical junction in terms of the contribution that improved communication services could make to its economic and social development. For this reason, the Mexican government invited the OECD to undertake this review with three objectives in mind:

1. to assess the implementation of the reform against the OECD's 2012 recommendations
2. to examine the evidence for the outcomes in terms of how Mexicans are being served by communication services compared to when the first review was undertaken
3. to make recommendations where the reform has not fully met the goals, to address new developments or, where progress has been made, to build on that momentum.

This report reviews the reform to the telecommunication and broadcasting sectors, which encompasses changes since 2012, in terms of policy and regulation in Mexico, and puts forward a number of further recommendations in both areas. These recommendations are not necessarily novel. They reflect to a large part good practice frameworks already in place in many OECD countries which have helped spur competition and meet goals such as media plurality. While evidence-based, the report is cognisant of the fact that the outcomes of the reform are nascent in nature or, where they are in place, still may require modifications or enforcement.

The objectives of policy and regulation evolve over time and nowhere more so than in communication services, which are critical for going digital and improving people's lives. The evidence examined here indicates the progress Mexico has made in delivering outcomes against its objectives. The challenge, as always, is to build on these achievements, to address shortfalls where they exist and to be forward looking.

Recalling the recommendations of the 2012 OECD review

The 2012 OECD review provided a comprehensive examination of the telecommunication sector in Mexico at the time. It assessed the strengths and weaknesses of the sector, and highlighted possible areas of reform. Those recommendations were based on the assessment of the Mexican market and were coupled with good practices compiled from OECD countries' experience. Some recommendations called for revisions in existing laws while others required only a change in procedural practices. Many of the recommendations

were directed at strengthening the telecommunication sector regulator – the Federal Telecommunications Commission (Comisión Federal de Telecomunicaciones, COFETEL), at the time – which has since been replaced by a new authority which is constitutionally autonomous – the Federal Institute of Telecommunications (Instituto Federal de Telecomunicaciones, IFT) – which has both regulatory and competition responsibility over the telecommunication and broadcasting sectors. Finally, while the focus of the 2012 review was on the telecommunication sector, it also touched on the broadcasting sector.

The first group of the 2012 recommendations aimed to ensure low barriers to entry and "contestable" telecommunication markets in order to exert pressure on existing operators and avoid monopolistic behaviour. A "contestable" market is one where the barriers to entry and exit are low enough to allow new entrants to enter the market and "contest" market share. In Mexico's case, the foreign investment and ownership restrictions in fixed-line networks were an obvious barrier to entry, especially with respect to network development. The OECD therefore recommended the elimination of all foreign investment restrictions on fixed-line telecommunication operators, with the eventual goal to eliminate all restrictions on foreign investment caps.

Another suggestion to facilitate lower barriers to entry was to abandon the individual concession system for licensing in favour of a class-licensing regime. The licensing regime in 2012 was time-consuming and an obvious barrier to entry. By reforming the framework, one license could be used for all companies, requiring only that the company subject itself to reporting requirements and COFETEL's regulation. Recommending a streamlined licensing regime sought to ease the obligations on licensees and thereby simplify entry procedures. It was also recommended that more information be required in areas where there are resource constraints, as in the case of spectrum for wireless licenses. The OECD review further recommended that the entry process for new players be simplified. This included the entry of mobile virtual network operators (MVNOs), which, the 2012 review said, should be facilitated by making national roaming obligatory among operators.

The second group of recommendations proposed by the OECD in 2012 was to ensure that regulations and regulatory processes are transparent, non-discriminatory and effectively applied, which is a key requirement for long-standing change. At the time of the 2012 review, there were many instances where operators abused the *amparo* process to challenge regulatory decisions which were suspended while under review. This gave operators an incentive to challenge regulation with which they did not wish to comply, undermining the timeliness and legal certainty of the regulation itself. Therefore, the OECD 2012 review put forward that the legal system needed to be reformed so that the regulator's decision remained in force until the appeal process had been resolved.

Prior to the reform, both COFETEL and the Mexican Ministry of Communications and Transport (Secretaría de Comunicaciones y Transportes, SCT) were involved in the decision-making process for policy making and regulation. This created a "double window" whereby COFETEL provided an opinion that the SCT did not have to accept, and then the SCT conducted its own investigation and reached a conclusion. The redundancy of efforts by the regulator and the SCT generated long delays and uncertainty in the regulatory process. The OECD recommended eliminating the "double window" by clearly separating responsibilities between the two entities: the SCT to set policy and the regulator to establish regulation and monitor the market.

Following this distinction, the OECD recommended reinforcing COFETEL's power to effectively carry out its mandate to supervise, review and promote competition in the

telecommunication sector by granting it greater autonomy to make and enforce decisions in order to carry out its responsibilities without the necessary oversight of the SCT. In conjunction, the recommendation included granting the regulator budgetary independence from the SCT. At the time of writing the previous review, COFETEL's budget was set by the SCT, with COFETEL having the right to 35% of annual fees paid by spectrum holders, as well as a percentage of the excess price paid in auction bids. Furthermore, the 2012 review suggested that COFETEL's mandate should also be clearly defined with respect to the other regulators in the government, so that there was not any ambiguity as to the competence for regulatory oversight in the telecommunication sector. However, the 2012 review recommended that co-operation between the various entities should remain, and indeed should be formalised into written rules and procedures to define the agreed interaction on both sides. For instance, the Federal Competition Commission (Comisión Federal de Competencia, COFECO), which was at that time Mexico's communication competition authority, should assist COFETEL to understand the competitive implications for regulations, but the power to enact regulation should lie with COFETEL. The 2012 review recommended that COFETEL's jurisdiction include the authority to declare an operator that has substantial market power (SMP) and be able to enforce asymmetric regulation against it.

The level of fines that COFETEL could impose on firms at the time of the 2012 review was low. It was recommended to increase the amount of these fines so that they could act effectively as a tool to enforce regulations and as a deterrent even for large companies. COFETEL should, the OECD review said, also have the right to request information from companies regarding QoS and performance in order to ensure they are meeting their obligations and conducting fair market practices. If firms failed to comply with the request for information, COFETEL should be allowed to sanction them appropriately. Additionally, the review recommended that the QoS information from existing market participants be expanded to include information regarding broadband quality (real vs. advertised speeds), in addition to wholesale and performance indicators. The OECD recommended the publication of these indicators on a regular basis to inform the public, and to share the incumbent's wholesale indicators, particularly with new entrants.

In order to make the decision-making process for regulation more clear and transparent, the OECD suggested that COFETEL establish and adhere to clear reporting procedures to give market participants and consumers more insight into the process. Along with information sharing, the review said that COFETEL should allow the relevant stakeholders the opportunity to comment on proposals within a given time frame, and make these comments public while upholding commercial confidentiality issues. Increased transparency, the review said, would reduce the risk of litigation and improve the overall quality of regulatory decisions. In conjunction, it was recommended that COFETEL employees uphold a code of ethics and establish rules on reporting personal interests and behaviour with respect to companies under its jurisdiction.

A third key strand of the proposed recommendations was to highlight necessary reforms to existing regulations that were needed to stimulate competition, but also to acknowledge the need to reduce regulation unless required by market conditions. At the time of the 2012 review, the OECD acknowledged that Mexico's regulatory framework was inadequate. Therefore, the emphasis at that point was to reform the policy and regulatory framework, as the streamlining of regulation would have to come at a more mature stage. In order to develop regulation in tune with the needs of the market, the review said that COFETEL should be able to regulate interconnection tariffs *ex ante* rather

than waiting for disputes to arise, which was the then *modus operandi*. Additionally, the review said that COFETEL should have the authority to require Telmex to consolidate local dialling areas according to the regulator's recommendations. It was said that this consolidation would help to decrease the calling costs within the country, as calls between two areas would be considered a local instead of a long-distance call. It also was noted that this would also have an effect on the interconnection rates charged to new entrants, who were required to pay significantly higher long-distance charges in so-called non-competitive areas, instead of local interconnection rates.

The 2012 review said that other rights that should be established within COFETEL's remit included the power to declare bottlenecks and essential facilities, and to establish non-discriminatory conditions for access to these facilities. Access to essential facilities, it was said, should include the unbundling of the incumbent's local loops, and co-location at cost-based pricing in order to help new entrants in the market. It was recommended that COFETEL also have the authority to undertake market reviews, declare that an operator has SMP and enact appropriate remedies, such as asymmetric regulation in order to promote competition. In order to fully enforce such decisions, the 2012 review recommended that COFETEL be able to impose functional, and if necessary, structural separation on an operator that continued to abuse its market power to ensure equal access and equivalence of inputs.

The 2012 review said the price regulation of a dominant operator is important and the responsibility of setting and administering the price-cap scheme should fall under the regulator's jurisdiction, including the determination of the "X factor" in the cap (i.e. the CPI-X formula used to ensure a fall in the real, inflation-adjusted, prices of telecommunication services). The framework of the cap itself, it was suggested, should also be restructured to include sub-caps, to avoid a drop in prices for some services resulting in an increase in others. However, it was noted that the practice of registering prices by telecommunication operators should be required only for wholesale prices of operators with SMP.

The 2012 review also observed that the market settings at that time would be unlikely to provide widespread geographical coverage of fixed broadband access. As such, it stated that it was important for the mobile broadband market to be developed into a competitive market, with no obvious single dominant firm. Mexico, it was said, should revise its rights of way framework to remove barriers facing new entrants, and release sufficient spectrum to meet the growing demand for mobile broadband services. The OECD also suggested that the government auction more of the Federal Electricity Commission's (Comisión Federal de Electricidad, CFE) "dark fibre", and provide incentives to promote efficient infrastructure sharing. In conjunction with encouraging growth for national coverage by mobile broadband operators, it was noted that the government should clarify its policy on universal service and articulate explicit plans on how to implement it.

Consumer protection and empowerment is another essential element to develop competitive markets. In order to accomplish this goal, the 2012 review recommended a clear division of roles and responsibilities between COFETEL and Mexico's Federal Consumer Protection Agency (Procudaría Federal del Consumidor, PROFECO). The 2012 review suggested that the actions that each could take to empower consumers should also be considered and clarified. For instance, to make it easier for consumers to switch providers, operators could be required to allow number portability and unblock mobile telephones after a set time period.

In the broadcasting sector, several recommendations were made in order to increase competition in this market. At the time of the 2012 review, there were only two free-to-air (FTA) television stations and many cross-ownership links with the pay TV industry. In an effort to have media plurality, the OECD suggested that the government award two additional FTA national television licenses on a fair, non-discriminatory basis. The 2012 review recommended lifting restrictions on foreign ownership of Mexican television broadcasters. Moreover, it was said that cable operators should be able to benefit from a simpler class-licensing framework which would allow them to have one national license in lieu of several regional licenses, as was the case in 2012.

Additionally, the 2012 review said "must-carry" obligations for all terrestrial broadcasting signals should apply to all pay TV carriers, while FTA broadcasters should be obliged to offer their signals ("must-offer"). In the absence of such reciprocal obligations, it was noted, each pay TV player had to negotiate for the right to offer FTA channels, giving large pay TV players a distinct advantage over small operators. Conversely, given Telmex's market power in the telecommunication sector, the 2012 review recommended to carefully assess whether Telmex should be provided a television license for pay TV or not. If it were granted a license, this should depend on the successful implementation of asymmetric regulation in the telecommunication market, such as access to passive infrastructure or the acceptance of full local-loop unbundling.

Finally, the OECD urged Mexico to continue its transition to digital terrestrial television (DTT), and phase-out analogue systems by 2016. In order to ensure that the transition was completed successfully, the 2012 review said coverage should be comparable across the country; TV receivers needed to be replaced at an acceptable rate, and public subsidies should only be relied upon where the market-only approach proved to be insufficient. The switchover plans, it was said, should also carefully consider the most inclusive way to achieve the switchover, given the high share of low-income population, who were historically terrestrial-only viewers. In this context, the 2012 review said, the licensing of new DTT broadcasters should move forward.

Measures implemented since the 2013 reform

The Mexican telecommunication sector has experienced substantial progress *vis-à-vis* the deficiencies identified in the 2012 OECD review, not only from a legal and regulatory perspective, but also in respect to current market dynamics, which have derived, to an important extent, from the public policy, legal and regulatory transformations that have taken place in Mexico since 2013. Many of these changes closely reflect the recommendations from the 2012 review.

The current review summarises the main recommendations and indicates the degree to which they have been implemented (Table 1.1). Some 28 of the 31 recommendations have been fully implemented. A further three recommendations have been implemented in part or are in the process of being implemented. Annex 1.A1 provides a detailed description of how these measures have been implemented and how the changes are reflected in the constitutional, legal and regulatory framework.

Table 1.1. **State of implementation of the 2012 OECD recommendations**

Telecommunication sector	State of implementation
Ensure low barriers to entry and "contestable" telecommunication markets	
Eliminate all foreign investment restrictions/caps on fixed-line telecommunication operators in Mexico.	✓
Reform the existing concession system to a simpler class-licensing regime (except for resource scarcity restraints, i.e. spectrum).	✓
Monitor and enforce existing obligations.	✓
Simplify and encourage entry of resellers to the market (including mobile virtual network operators).	✓
Ensure that regulations and regulatory processes are transparent, non-discriminatory and applied effectively	
Reform the current legal system to prohibit courts from suspending and overturning policy/regulatory decisions systematically, and provide protection for individuals acting on behalf of a public authority.	✓
Separate responsibilities for policy formulation (ministry) from regulatory/marketing functions (regulator) (e.g. granting concession process) in order to eliminate the "double window".	✓
The Federal Commission of Telecommunications (Comisión Federal de Telecomunicaciones, COFETEL) should have greater autonomy to carry out its mandate and should have the power to enforce/revoke concessions.	✓
COFETEL should have the authority to declare significant market power and subject that company to appropriate remedies.	✓
The jurisdictions of COFETEL and the Federal Competition Commission (Comisión Federal de Competencia, COFECO) and the various other regulatory bodies should be clearly defined and co-operation should be formalised.	✓[1]
The regulator should have greater budgetary independence and a clearly defined and sufficient source of funding.	✓
The regulator should have the power to impose fines high enough to ensure regulatory adherence.	✓
Quality of service indicators should be published regularly.	✓
Wholesale indicators from dominant firms should be available to new entrants (e.g. access to leased lines, etc.).	✓
Establish formal public consultations and transparency procedures for COFETEL to follow to ensure increased accountability and transparency.	✓
Reform regulations to stimulate competition and eliminate regulations, except where clear evidence demonstrates that they are the best way to serve the broad public interest	
COFETEL should be authorised to regulate interconnection tariffs *ex ante* to foster competition among operators.	✓
Telmex (fixed-line incumbent) should be required to consolidate local dialling areas as determined by COFETEL.	✓
COFETEL should be authorised to declare bottlenecks and essential facilities and to establish non-discriminatory conditions to access these facilities.	✓
COFETEL should be able to undertake market reviews, declare market powers, and apply remedies as appropriate, and impose regulations to protect consumers.	✓
COFETEL should have the authority to impose a functional and structural separation of an operator that abuses its dominate power.	✓
COFETEL should set the "X factor" and administer price caps to regulate Telmex's end-user prices, including the use of "sub-caps".	✓
Only operators with significant market power should have to register their wholesale prices.	✓
Sufficient spectrum should be released to meet the growing demand for mobile broadband data service, including releasing some of the Federal Electricity Commission's (Comisión Federal de Electricidad, CFE) dark fibre. Incentives also should be put in place to promote infrastructure sharing.	✓
Modify the legal framework to promote infrastructure sharing and to remove barriers to obtain rights of way, by making governmental facilities available for mobile operators to deploy their networks and accelerating procedures to grant permits for rights of way.	Partial/in progress
The government should clarify the policy of universal service and define plans on how to effectively implement it.	Partial/in progress
The Federal Consumer Protection Agency (Procudaría Federal del Consumidor, PROFECO) and COFETEL should clarify their roles and take action to facilitate consumers to switch service providers.	✓
Broadcasting sector	
Telmex should only be allowed to provide TV services when it's subject to asymmetric regulations and is in compliance with such regulations.	✓
The government should award a third and fourth free-to-air (FTA) national TV license on a fair, non-discriminatory and neutral process.	✓[2]
Must-carry obligations should apply to all pay TV providers, which should be obliged to carry all terrestrial broadcasting signals. Must-offer obligations should also apply to FTA broadcasters and the conditions (e.g. price, channel bundling) should be reassessed periodically.	✓[3]
Ensure the transition to digital terrestrial television progresses to meet completion date of 2016.	✓
Foreign ownership restrictions on Mexican TV broadcasters should be lifted.	Partial
Cable operators should be able to obtain one national license for the whole country, instead of multiple regional ones.	✓

1. A recent judicial decision to allow both regulatory bodies to work jointly on the same case may undermine the progress made to close the "double window" between the Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) and the Ministry of Communications and Transport (Secretaría de Comunicaciones y Transportes, SCT) by opening one between the IFT and COFECE.

2. A third national licence is operational and a 2017 auction process will grant the spectrum which was initially offered for the fourth national broadcasting network.

3. The IFT plans a forthcoming assessment of the guidelines and outcomes of the must-carry must-offer obligations.

As a consequence of regulatory reform, the relevant markets in the telecommunication industry have developed positively: increased penetration levels can be observed in broadband markets, new players have entered the mobile market and QoS has improved (the latter, particularly with respect to broadband speeds and data volumes, where investment in higher capacity mobile technologies and further availability of spectrum for mobile telecommunication services, including via the digital switchover, has led to an acceleration of gains). In the national economic context, between 2012 and 2016, prices for telecommunication services significantly decreased, leading to an important increase in subscriptions, especially in mobile markets: over 50 million new mobile subscriptions to the mobile Internet and, from a small base, the number of people using the Internet for online transactions has multiplied by a factor of four (INEGI, 2017). In addition, foreign investment increased and the telecommunication and broadcasting sectors grew faster than the overall Mexican economy. A third national FTA television network has been introduced and plans have been announced for a fourth set of licenses to be made available and awarded on a regional basis.

Therefore, many of the rules adopted in the 2013 constitutional reform (SEGOB, 2013), as well as a significant part of the secondary legislation and further regulation or policy implementation by institutions such as the IFT and the SCT, have made an essential contribution to fostering a more competitive telecommunication marketplace in Mexico, benefiting businesses and consumers through lower prices, higher quality service, and a wider array of service offerings. Furthermore, the increased legal certainty derived from a clear separation of policy formulation functions and regulatory duties, and the assurance that the regulatory bodies' decisions are not subject to unpredictable suspension recourse, has attracted new foreign and national investors, fostering dynamic efficiency in the sector.

Strengths of the reformed constitutional, legal and regulatory framework

Against this overall assessment, Mexico has undergone very positive developments and significantly strengthened its constitutional, legal and regulatory frameworks. This section discusses the main strengths of the current frameworks.

A clear division between public policy and regulation

The OECD welcomes Mexico's efforts in establishing a clear division between public policy formulation, which is assigned to the SCT, and the issuance and enforcement of sector-specific *ex ante* regulation, vested upon the IFT. By eliminating the "double window" issues that were identified in the 2012 review, decision-making procedures have become more expeditious and efficient (i.e. no administrative and financial resources are put to waste), ultimately bolstering legal certainty among the subjects to whom such rules are addressed. Furthermore, it can be noted that the risk that final determinations issued by the ministry or the regulator are contested decreases, considering that there are fewer procedural stages to be covered in the adoption of these determinations. Again, this streamlining of the regulatory process helps create an environment of regulatory certainty which supports longer term investments.

The creation of two autonomous bodies with ample powers

One of the main pillars of the reform was the establishment of two autonomous bodies: the IFT and the Federal Economic Competition Commission (Comisión Federal de Competencia Económica, COFECE). The IFT acts as an autonomous body, from a functional and budgetary standpoint, freed from political influence and now able to

provide independent regulation based on transparent processes and evidence-based decision making. Moreover, the procedure for nominating and appointing the IFT's commissioners is transparent and involves the participation of different public powers. This, coupled with the fact that said public servants have a fixed term in deploying their functions, ensures these can be, in effect, carried out autonomously.

At the same time, the constitution of COFECE as a fully autonomous competition agency with wide enforcement powers, whose commissioners are also subject to a transparent nomination and appointment procedure in which diverse public powers intervene, for fixed terms, further strengthens the entity's independence in performing its mandate.

The IFT's independence is one of the most significant breakthroughs of the reform, but so is the fact that the IFT has been endowed with ample powers to enforce both the regulations it issues and the LFTR generally, hence enabling the IFT's decisions to be adopted in an effective and timely manner, without the need for prior opinion or approval by a ministry or the executive branch. Among such powers, it is worth highlighting: the ability to issue asymmetric regulation on preponderant market players as well as those with SMP, in areas such as local-loop unbundling, compulsory access to active and passive infrastructure, interconnection, and the possibility of imposing accounting, functional or structural separation of such undertakings; the capacity to impose administrative fines and other sanctions on infringing parties; and its powers in the granting, reform and revocation of concessions pertaining to the radio spectrum. At the same time, other legal provisions relating to preponderant operators and those with SMP in voice calls and message termination markets, such as the prohibition to differentiate between on-net and off-net retail prices, were very much needed under the market dynamics observed before the reform.

Empowering the IFT to impose asymmetric regulations on preponderant firms as well as those with SMP was crucial in an environment that was, prior to the reform, characterised by the presence of substantial market failures, such as high concentration levels in most markets, high prices, deficient service quality, and insufficient investment and penetration levels (OECD, 2012). Furthermore, the fact that both the preponderance declaration and the imposition of specific remedies are carried out within the same administrative proceeding, by a single public institution, enhances administrative efficiency. Thus, broadly speaking, these provisions are adequate and were undeniably required in the Mexican context; however, some questions can be raised regarding the preponderance framework, particularly as it concerns the constitutional provisions that establish it and the balance between principles and detailed implementation.

Significant improvement has been made with respect to the sanctioning regime, considering that fines are currently set at levels that can effectively deter violations by market players, taking into account the thresholds enshrined in the LFTR, which imply that the amount of the sanctions are contingent on the seriousness of the infringement and the transgressor's specific financial circumstances. The latter aspect is particularly important, considering that tailoring fines to the situation of the infringer by establishing percentage thresholds, rather than a fixed maximum statutory amount, contributes to materialising the principle of proportionality. Nonetheless, some important recommendations can be made in order to further enhance the effectiveness and proportionality of these measures.

At the same time, concerning the fines applicable to antitrust violations, it can be noted that, in general terms, they are set at levels that are appropriate and congruent with the sanctions observed in other jurisdictions.[2] Pertaining to the criminalisation of some categories

of anticompetitive conduct, while this topic has been subject to extensive debate, it must be acknowledged that several countries have decided to apply these sanctions to what the literature has identified as hard-core cartels, i.e. horizontal price fixing, output limitations, market allocation and bid-rigging schemes.[3] Therefore, it is an additional deterrence tool that Mexican authorities may employ in their fight against cartels and other harmful anticompetitive practices.

As a result of the pertinent constitutional and legal provisions, the IFT must comply with transparency and information access principles, involving the mandatory publication of their decisions, all of which must be sufficiently motivated. This undoubtedly represents substantial progress regarding the previous legal framework, not only on the grounds of legal certainty for the subjects to whom the IFT's rules and regulations are addressed, but in accentuating its accountability *vis-à-vis* other public institutions. Additionally, the elimination of the obscure decision-making processes that existed during the COFETEL era decreases the likelihood that the regulator's determinations are subjected to constant judicial scrutiny, which would impede their effective implementation in practice.

Associated with the above, it is of pivotal importance that the attribution of greater powers to the regulators, namely, the IFT and COFECE, be complemented with accountability mechanisms before other branches of government. In this sense, it is appropriate that both regulators be obliged to present annual work plans and quarterly activity reports before the federal executive and legislative branches, and to appear before the Senate to account for their actions on an annual basis.

A further critical improvement is the fact that indirect *amparo* trials against the general rules, acts or omissions of the IFT and COFECE do not entail the suspension of such determinations while the respective judicial resolution is pending, save specific exceptions. Moreover, the 2013 constitutional reform (SEGOB, 2013) is explicit in determining that such decisions may only be disputed through an indirect *amparo* trial, hence excluding other forms of judicial redress, such as administrative action. In addition, the regime clarifies that an indirect *amparo* can only be invoked regarding final resolutions issued by the aforementioned authorities. Consequently, avoiding the complications that existed under the previous framework, where even intermediate determinations were suspended, further stalling pivotal decision-making procedures (i.e. dominance declarations and subsequent imposition of asymmetric regulations).

These rules are crucial in ensuring that regulatory provisions aimed at promoting a more competitive playing field are effectively applied, regardless of the expected resistance from market players that benefit from the *status quo*. That being said, in order to respect stakeholders' rights, it is of utmost importance that such regulations are issued in abidance with due process of law on the part of the regulator, which naturally involves adequate assessment of the factual and legal basis of the case, and ample motivation on the need to impose a specific measure. In any case, some pertinent recommendations follow later in this section.

The creation of the special courts

The establishment of specialised judges and courts for the substantiation of indirect *amparo* trials pertaining to the telecommunication and broadcasting sectors, and in general any conflict arising in relation to the application of the LFTR, is a further breakthrough in the regulatory reform in Mexico. This not only alleviates the workload of other judicial institutions, it also guarantees decision making by public servants with sufficient background on these highly complex and technical issues, stimulating greater

efficiency within the whole judicial apparatus, and increasing the soundness of judicial resolutions. Some recommendations are made in the second part of this section on how to further strengthen this area.

Measures to drive investment and extend connectivity

A measure to spur investment and enable substantial progress has been the elimination of the restrictions on FDI in all telecommunication and satellite communication services. This change not only allows new entrants to join these markets and thereby boost competition, but also encourages an increase in the availability of advanced technologies and the acquisition of specialised knowledge by national firms, all of which benefit users of telecommunication services.

In recognition of the growing convergence between telecommunication and broadcasting markets, it is appropriate that the current regime not only constitutes the IFT as the sole authority in charge of enacting sector-specific *ex ante* regulation, but also that it establishes a single licensing scheme, whereby operators are enabled to provide all types of services through their networks, and are only required to request additional spectrum licenses, should they need to use and exploit this scarce resource.

The Red Compartida, a wholesale wireless network with a target to cover 92.2% of the population and one of the cornerstones of the reform, is a significant development in the Mexican telecommunication market. A key objective of the project is to expand accessibility in underserved areas, thereby addressing entrenched inequalities derived from decades of deficiencies in policy and regulatory approaches (i.e. leading to insufficient availability of access, choice and investment in rural and remote areas [OECD, 2012]). The Red Compartida will offer data capacity to operators, mobile network operators (MNOs) and MVNOs, and has the potential to enable new business models that can take advantage of a nationwide 4G infrastructure. Red Compartida will not act as a retail operator in the market, but as a wholesale supplier.

While aspects of the project experienced delays, authorities are confident the roll-out of the network will proceed as scheduled. Success for the Red Compartida would place Mexico at the forefront of digital inclusion strategies and will be followed with tremendous interest around the world. Such a large and, in some ways pioneering, undertaking will, of course, not be without challenges. It is necessary to remember that at the close of 2016, some tens of millions people did not have a mobile broadband subscription in Mexico. This is by far the largest number of people without this service in the OECD area.

It is paramount, therefore, that the relationship between wholesale and retail roles and responsibilities promotes the efficient use of this resource. This will be critical to ensuring that the Red Compartida responds to rapidly evolving demand and promotes innovation in areas such as the Internet of Things (IoT). One of the key factors for future success is the access conditions for entities that will want to use this network; to this end, several recommendations are provided later in this section.

Furthermore, the continued focus on promoting an efficient use of existing telecommunication and broadcasting infrastructures, in particular through the passive infrastructure sharing between operators and the mandated access to public real estate and the availability of the CFE's energy transmission networks, is the key to enhancing competitive dynamics within the sector. Indeed, in high-cost industries such as the telecommunication sector, taking advantage of existing and underutilised infrastructure is

a means for reducing costs and thereby steering investment towards areas that are crucial in providing services of improved quality at lower prices.

An improved measurement framework

Finally, important progress has been made in collecting and publishing statistics on the development of the telecommunication sector, both on the supply and the demand side. In May 2017, the IFT launched a new statistics website called the Banco de Información de Telecomunicaciones (BIT). This new open data and interactive platform for telecommunication statistics was designed to improve knowledge on and monitoring of the sector and can be considered state-of-the-art in many ways. It includes data such as market shares and penetration of communication services as well as adoption and use of information and communication technologies (ICTs) at a granular level of localities in Mexico. In addition, both the SCT and the IFT have worked with the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI) to provide data on ICT take-up and usage since the reform, which is welcome for better informing policy makers.

Recommendations for the future

Notwithstanding substantial progress, a few weaknesses persist in the policy design of the reform as well as within the legal and regulatory framework. In particular, some elements in the framework have remained unaltered since the 2012 OECD review and raise concerns, such as some taxation and foreign investment provisions. In contrast, other elements that have emerged due to the evolution of market dynamics in recent years are not addressed, such as the high concentration of ownership in pay TV.

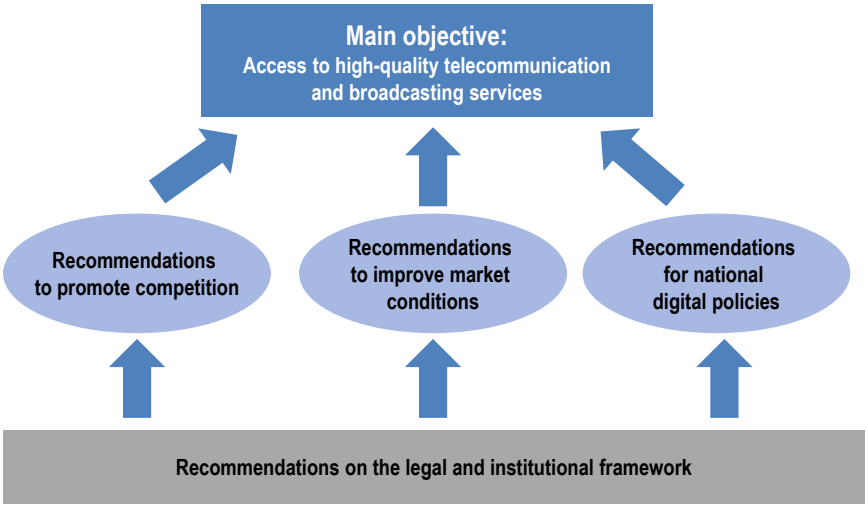
Further modifications to policies, regulation and the legal framework are important to consolidate the success of the 2013 reform. One of the main objectives of the reform was to increase access to high-quality telecommunication and broadcasting services for Mexico to build the foundation necessary for a vibrant digital economy. To sustain the momentum and move further towards achieving this objective, it is important to continue making progress (Figure 1.1):

- by further promoting competition in the Mexican market
- by further improving market conditions to set the right incentives for market players to grow their networks and innovate
- by further using national digital policies, such as through programmes to expand connectivity to underserved areas.

A sound and strong legal and institutional framework is essential to build a strong and sustainable foundation in these three key areas.

The following section provides specific recommendations in each of these three areas as well as recommendations to further improve the legal and institutional framework. The recommendations may differ in complexity of implementation. Some of the recommendations may require changes to the legal and regulatory framework, while others relate to changing or streamlining responsibilities between different entities, and still others only require changes in policies, approaches or practices.

Figure 1.1. **Overview of the new recommendations**



Recommendations to promote competition

Mexico took important steps to foster competition in its telecommunication market during the 2013 reform, ranging from the introduction of asymmetric regulation for preponderant players to eliminating FDI restrictions in the telecommunication sector. In February 2017, the IFT further undertook a biennial review of the preponderance remedies and strengthened the asymmetric regulation. This section provides a set of recommendations to further spur competition in the Mexican telecommunication and broadcasting market, starting with the preponderance review.

The 2017 preponderance review on telecommunication

The measures proposed by the IFT in its preponderance review of telecommunication services are found to be balanced and proportionate. The additional measures, namely the equivalence of input requirements and the functional separation of the preponderant agent, are suitable to fostering competition in the market. Access seekers need to have elements such as local loops and leased lines available to them, together with the use of an effective Electronic Management System. With respect to the composition of the separated wholesale company board, while it will be important that the industry as a whole is represented and heard by the members of the board, the IFT must be aware of the risk of collusion.

Although the changes to Mexico's legal and regulatory framework are admirable in light of the substantial deficiencies that were identified in the 2012 OECD review, there appears to be a gap in some areas between the formal establishment of the rules and their practical implementation. A particularly concerning gap is related to the wholesale regulation applicable to the preponderant agent in the telecommunication market.

Even though the regulator has been vested with sufficient tools to ensure access to the preponderant telecommunication operator's infrastructure (e.g. local-loop unbundling, compulsory infrastructure sharing and interconnection), there have been significant delays in América Móvil disclosing information about infrastructure to the market, specifically regarding the infrastructure-sharing offer for the fixed network (for the mobile network, an information mechanism was established consistent with Article 269 of the LFTR). There was also a delay in the implementation of the local-loop unbundling. In particular,

the Electronic Management System (EMS) required in the LFTR is yet to be fully operational for some wholesale services. Additionally, the unbundling reference offer was approved by the IFT only in December 2015. Finally, under the preponderance rules issued by the IFT, an extensive time frame was granted to América Móvil for disclosing the information on its infrastructure.

The 2017 preponderance review addresses deficiencies in this area by establishing the criterion of equivalence of inputs, determining that the preponderant undertaking must deliver all the relevant information and services to requesting third parties, including MVNOs, under the same conditions it applies to its own operations. In this regard, it is critical that the IFT ensures that the EMS is fully implemented and operational as soon as possible. Any further delays will hamper the effective attainment of the main goals of the reform, for they obstruct access seekers to essential productive inputs and impede the efficient exploitation of scarce resources by telecommunication operators.

The introduction of functional separation obligations where the wholesale provision of access products is separated from retail operations, through the creation of both a new wholesale undertaking and a retail division within Telmex and Telnor, is a suitable tool for attempting to increase competition in sectors with a preponderant agent, possibly forestalling anticompetitive practices that could derive from its fully vertically integrated structure. It will be essential that the governance provisions establish incentives to guarantee that managing directors' actions maximise each individual entity's interest, and not those of América Móvil's economic group as a whole.

In this respect, while it is commendable that the two entities will have two independent boards, it will be important that the industry as a whole is represented and heard by the members of the board. The IFT must, however, be vigilant to avoid any undue influence notably stemming from potential collusion among industry players.

Overall, the general measures proposed by the IFT in its preponderance review on telecommunication address the primary bottleneck to the development of both fixed and mobile communication services: opening fixed networks, in terms of backbone, backhaul and local loops to access seekers, at a time where there is still insufficient alternative infrastructure competition. Mexico, therefore, aims not only to provide access for the first time to some of its citizens and to improve existing telecommunication services to others, but also to establish the necessary conditions to increase economic competitiveness and social well-being in the country.

If the implementation of the functional separation of América Móvil is successful according to the terms outlined above, some of the existing remedies may become unnecessary and hence ought to be removed. Examples could include eliminating regulation pertaining to the preponderant operator's retail activities or harmonising zero termination rates for all operators.

The IFT should assess the entry of Telmex into pay TV as soon as possible, following the successful implementation of its functional separation. This change would prevent the current preponderant agent, América Móvil, from leveraging its existing power from bottleneck infrastructure while, at the same time, allowing América Móvil to compete with rivals by offering a full bundle of services including pay TV.

The effective implementation of functional separation could bring regulatory relief to the preponderant agent, not in the least with regard to allowing it to offer pay TV and broadcasting services should it so wish. Eliminating the current restrictions, after ensuring

access to bottleneck facilities, would allow all players to enter each other's markets. This could have several advantages.

First, it may provide increased incentives for the wholesale provider to invest in high-speed infrastructure in the knowledge that demand will increase if all retail providers can offer such services. Second, if the preponderant agent does enter these markets, it is likely to be a very effective participant, adding competition and improving choice for consumers in an otherwise concentrated market. Third, the concession title of Telmex provides for some universal service conditions, expansion and modernisation of the network, as well as an obligation to install and maintain coverage in urban and rural areas. As such, enabling the provision of a full range of services may assist in providing incentives for these activities and reaching agreements. Therefore, the flexibility to allow the people in these localities to access pay TV services offered by the preponderant agent through its own network is considered desirable.

If considered necessary, after a thorough assessment, a scheme could be initiated for granting a pay TV license to allow a gradual convergence (temporarily and geographically), replacing the restrictive rule which currently applies to América Móvil.

The 2017 preponderance review on broadcasting

It is too early to assess the success or failure of the current preponderance measures for broadcasting. Nonetheless, if market developments and the new preponderant measures do not increase competition over time, research and consultation should be carried out on options such as functional and structural separation of the preponderant agent as a last resort.

Mexico declared the Televisa Group to be the preponderant agent in the broadcasting sector in 2014, though that company has been the sector's leading firm for some 60 years. Notwithstanding recent developments (e.g. the third national FTA broadcaster launched in October 2016 and the IFT published revised preponderance measures published in March 2017), it remains to be seen how much new competition the preponderant agent, which also has SMP in the pay TV market, will actually face. Not only has the Televisa Group maintained elevated market shares in both FTA and pay TV markets, it has also been successful in having its pay TV operations cross-subsidising its broadcasting and programming arms (Televisa Group, 2016). Therefore, if the new measures to increase competition by encouraging market entry, along with enforcement through preponderance and SMP measures, prove ineffective, the IFT should consider a functional or structural separation rather than a behavioural solution (essentially an injunction that requires the performance or avoidance of certain conduct, e.g. must-carry must-offer [MCMO]) to foster meaningful competition.

Since the Televisa Group, along with its subsidiaries, has already been declared preponderant, if the IFT chooses further measures in the future, the next step would be to research the remedy that is most appropriate to the Mexican context. Several remedies beyond the 2014 and 2017 behavioural preponderance conditions exist. These remedies, from least to more interventionist regulatory approaches, can be deployed to separate the preponderant agent as a last resort, either functionally or structurally, in any of the existing points in the value chain. This could be done, for example, by separating upstream programming (production and premium rights) from transmission (spectrum ownership, broadcast transmission and channel advertising sales) or from carriage (on pay TV satellite and cable platforms).

While competition is expected to increase with Internet Protocol television (IPTV) and over-the-top (OTT) services, with the entrance of new digital broadcasting players and with the measures improving access to the preponderant agent's infrastructure, it may be that the position of the preponderant agent is too strongly entrenched for effective competition to take root. Any additional preponderance measure should be a topic of extensive research and consultation. Only then, given the evolution of competitive dynamics in the future, would authorities in Mexico need to consider further preponderance measures.

Transitory Article 9

Transitory Article 9 of the Federal Telecommunication and Broadcasting Law (Ley Federal de Telecomunicaciones y Radiodifusión, LFTR), which provides a fast track for non-preponderant agents to concentrate, should be eliminated.

Transitory Article 9 of the LFTR states that when there is a preponderant agent in either the telecommunication or broadcasting sectors, economic concentrations, concession transfers or control changes arising between non-preponderant concessionaires in that sector shall not require the IFT's prior approval provided that certain conditions are met. Due to the manner in which the sectors have been defined, however, those conditions have proven to be inadequate to protect competition, at least in the pay TV market. Nevertheless, the article strips the IFT of its *ex ante* merger review powers on the premise that doing so will not only lead to greater competition, but do so quickly. Given that the concentration has actually increased in the pay TV market and that the competition law already sets out an *ex ante* merger review process, Transitory Article 9 is an unnecessary and indeed anticompetitive measure that codifies a lack of confidence in the IFT. The legal framework should allow the IFT to exercise its authority in all cases, which includes clearing transactions quickly when they obviously pose no threat to competition, but also includes thoroughly reviewing and, when appropriate, blocking proposed concentrations before they have anticompetitive effects.

In short, this exemption to the law is not consistent with the overall goal of the Constitution and the law to promote competition in the telecommunication and broadcasting sectors. On the contrary, it facilitates concentration. Transitory Article 9 should therefore be eliminated.

Revision of sector definitions

The sector definitions of the telecommunication and broadcasting sectors should be revised periodically, taking the convergence of different communication services into account.

The infrastructure, applications and content ecosystem are evolving in the telecommunication and broadcasting sectors. This has important implications for the definitions of sectors and relevant markets, and thus for the preponderance and SMP concepts. In recent years, previously separate services and markets have begun to converge. Some commercial offers already include not only access and services, but also applications and content. In addition, although broadband penetration is still relatively low in Mexico, it is improving. Furthermore, the rise in mobile telephone subscriptions has made smartphones or similar devices much more prevalent; unsurprisingly, these devices are the most commonly used devices for consuming audiovisual content on line, the majority of which is consumed at home. OTTs are beginning to compete with television for audience attention as people increasingly view content on line instead of via broadcasts, satellite and cable. With growing broadband penetration and quality, the competitive landscape will be altered more and more, for instance through OTT services.

There is currently no specific regulation for these services, in part due to their nascent nature. OTTs are increasingly contributing to meeting policy objectives, for example by helping create demand for broadband access, improving users' choice and increasing competition, particularly for audiovisual services.

These trends beg the question of whether the preponderance and SMP provisions will remain fit for purpose. To do so, they will need to be adaptable. Therefore, it is recommended that Mexico periodically revisit the definitions of the telecommunication and broadcasting sectors that apply in the preponderance analysis, so as to ensure that they are realistic and up to date. For example, it is unclear as to why pay TV has been historically classified as a telecommunication service. This classification, along with Transitory Article 9 of the LFTR, have allowed the Televisa Group to gain high market shares in the pay TV market. By the same token, it is recommended that the IFT take a flexible and adaptable approach to market definition as broadband improves and convergence continues.

Interconnection

The IFT should continue to reduce termination rates, based on a thorough assessment of competition levels in the Mexican market. This can be done gradually over time at the discretion of the IFT. With respect to Internet interconnection, the functioning of the existing Internet exchange point (IXP) should be improved. Access to the IXP should be enhanced and additional IXPs developed across Mexico.

Notwithstanding the important initiatives on the part of the Mexican regulator aimed at lowering termination rates for fixed and mobile telephony services, the potential benefits that may derive from applying symmetrical zero termination rates to all operators, and not only to preponderant players and players with SMP, are manifold. The most relevant experience is from countries with calling party pays given that this is the system in place in Mexico.

The European experience, for example, demonstrates that lowering mobile termination rates tends to lead to decreased mobile retail prices for consumers, resulting in greater consumption of services, thereby benefiting consumers (Growitsch, Marcus and Wernick, 2010). Consumer welfare could further be enhanced through lower termination charges, as Ofcom, the communications regulator in the United Kingdom, has acknowledged. These lower charges may provide operators with greater retail pricing flexibility, thus enabling them to offer their users a wider range of packages and tariff structures (Ofcom, 2009).

Along these lines, the IFT should continue to reduce termination rates or determine a general rule on the subject matter, whereby all telecommunication operators charge zero interconnection rates for terminating traffic in their networks, and only allow, as an exceptional measure *vis-à-vis* new market entrants, higher termination fees, geared at guaranteeing that such entrants may be able to effectively recoup their costs and thus establish themselves within the market. The IFT can do this gradually over time based on an evidence-based assessment.

With respect to Internet interconnection, the functioning of the first IXP in Mexico should be improved, mainly through participation by América Móvil. Even though the LFTR levies on preponderant operators the obligation to have a physical presence in the country's IXPs, as well as to conclude agreements allowing Internet service providers (ISPs) to exchange local traffic in a more efficient and less costly manner, Telmex has yet to comply with this legal mandate (Martínez, 2016). In addition, it appears that Telmex still employs IPv4 connectivity in its traffic exchange agreements, and has not progressed IPv6 schemes, which is a potential barrier to market entry (Martínez, 2016).

Mandating the participation of the preponderant agent, however, is only one step to improving the functioning of the first IXP. A second policy goal is that new market entrants are physically able to reach the IXP and establish peering sessions with other networks, contributing to the growth of a local industry of service providers and other players. At the moment, there is one unique operating IXP in Mexico which has only ten participants, which represents less than 3% of the total possible networks as measured by autonomous systems. Attempts by any market player to not provide access to the IXP premises would have to be documented by the service provider and the IFT could be required to mediate in the conflict.

A broader high-level goal for traffic exchange could be encouraging that domestic traffic generated by any of the 347 autonomous systems registered in Mexico predominantly stays in the country. A further option could be that the government requires in its own procurement contracts with telecommunication operators that domestic traffic stays within the country. Gathering such information would be possible, as ISPs are able to trace the path that packets take between their network and any other given network using free and open source available tools. The IFT could act as a neutral party to monitor progress.

In addition, the IFT could play a facilitating role in promoting the development of IXPs in Mexico. Among other actions, the IFT could be involved in the following:

- Facilitate the creation of a task force leading the efforts in the development of new exchange points using existing neutral players for the industry, such as NIC Mexico and the Corporación Universitaria para el Desarrollo de Internet. A very successful example in the region is the IXP.br programme run by the Comitê Gestor da Internet no Brasil (CGI.br), the multidisciplinary governance body for Internet-related technologies in Brazil.
- Organise awareness sessions on the benefits of keeping the local traffic local with service providers in some of the major cities of the country. The Canadian Internet Registration Authority (CIRA) played a similar role to stimulate the creation of exchange points and reduce dependency on foreign infrastructure.
- Identify barriers to private national and foreign investment in the areas of neutral data centres and promote investment in urban and inter-city fibre optic networks.

Finally, the outcomes of the 2017 preponderance review, by addressing structural incentives and safeguards, may have positive implications for IXPs in Mexico. To take the example of the United Kingdom, which in some ways mirrors the changes proposed by the IFT in the area of functional separation, BT actively participates in LINX, a major IXP based in London, and in others in that country.[4] BT uses these locations for public and private peering in the United Kingdom. Meanwhile, in Mexico, if units of a functionally separated Telmex act to maximise their own interests and not those of the wider group as a whole, participation in the existing or new IXPs could improve. In addition, it is notable that Megacable, which is one of the founding industry players in Mexico's first IXP, is also a member of Altán Redes, the consortium developing the Red Compartida. To the extent that Megacable's backhaul is used by the Red Compartida, this may provide synergies for the IXP. In other words, direct connectivity could add momentum as traffic exchange grows over the shared network and thus may increase the attractiveness of the IXP to other ISPs.

The IFT should assess whether once Telmex is functionally separated, the company should be required to publish its peering policy principles applicable at Mexican ISPs.

Continue to foster the adoption of Internet Protocol version 6 (IPv6) standards throughout Mexico.

In order to deal with the exhaustion issues related to the IPv4 addressing system and to facilitate Internet interconnection within the IXP, all stakeholders in Mexico involved in the digital economy must foster the widespread adoption of IPv6 standards, so as to ensure scalability of the Internet, to enable innovative applications, to satisfy public procurement mandates and to support mobile data services (OECD, 2008). The National Digital Strategy contains a recommendation to entities of the federal public administration to consider requiring in their public procurement that equipment preferably support both IPv4 and IPv6. It is important that this recommendation is implemented throughout and at all levels of the government. In addition, the government, along with the regulator, should also promote the adoption of IPv6 among other stakeholders in the Mexican economy as the issue is becoming more pressing. In the United States, for example, one major fixed and mobile operator (Verizon) announced in March 2017 that it would no longer issue new public static IPv4 addresses due to a shortage of available addresses. If long-standing participants in such markets are acting similarly, it becomes even more critical that new entrants, such as the Red Compartida and its MVNOs, with no legacy networks, have a pathway towards IPv6.

Recent experience in India, associated with the entry of a 4G-only network similar to the Red Compartida, bears this out. Reliance Jio, the new 4G Indian entrant, added around 100 million subscriptions in its first six months of operation and relied on using IPv6 to the extent that 90% of its customers were enabled with around 80% of traffic being on IPv6 (Ghosh, 2017). Major content delivery networks and content providers, such as Akamai, Facebook and Google, only provide IPv6 on Jio's network. As a result, India's IPv6 traffic increased from 1% to 16%, indicating that the Red Compartida could act as a catalyst for this important development in Mexico; that it is in the commercial interests of the Red Compartida and its MVNOs to do so; and that connecting to IXPs in Mexico to enable its MVNOs to exchange public and private traffic could attract content providers to use such IXPs and create a mutually beneficial outcome.

Audiovisual content

Competition and plurality in audiovisual content should be enhanced through an evidence-based assessment of the provision of audiovisual services and of the diversity of media ownership, and a clarification of must-carry must-offer rules by the IFT.

In 2017, the IFT plans to carry out an objective exercise to expand its knowledge of audiovisual content plurality and explore ways to better measure it, which will be used as input to the formation of regulatory policies. Such an evidence-based analysis of media pluralism and ownership diversity is crucial to assess the current and future scenarios of audiovisual content in Mexico and to meet policy objectives. It should consider the changing nature of media consumption (e.g. increased IPTV offers) and the role played by public service broadcasting. The IFT's role in undertaking such a review should be strengthened to encompass the collection of information from new converged services.

Furthermore, MCMO rules should be reassessed, despite the complexity of achieving this under current frameworks. These rules are established in the Constitution (the LFTR merely reproduces them), so that clarifying them would imply a process of amending existing rulings and issuing complementary guidelines. Nevertheless, some considerations for future modifications include the following:

- Clarifying whether non-preponderant broadcasters and carriers could be enabled to charge pay TV operators a fair, reasonable and non-discriminatory price for must-offer transmission, with potential exceptions for specific local conditions (especially underdeveloped and geographically isolated communities). While current rules enforce the obligation for all carriers to retransmit all the local broadcasted signals, only preponderant agents and agents declared to have SMP lose the right to a free carry regime and are required to negotiate with their counterparts. Therefore, it would be favourable for the legal certainty of both broadcasters and carriers that the IFT publishes a ruling or guideline on how disagreements on the terms of broadcasting content or retransmission should be resolved in these cases. The IFT should consider evidence from other OECD countries that suggests that a non-payment regime from carriers with SMP can disadvantage certain broadcasters.
- The declaration of the Televisa Group as having SMP in pay TV services on MCMO should be monitored by the IFT and enforced accordingly. As defined in the Constitution, the mere declaration of the Televisa Group as an SMP agent in the pay TV market causes it to lose the right to not be charged for the retransmission of broadcast signals under MCMO, thus requiring it to negotiate retransmission terms with broadcasters. The implications for FTA operators, including public broadcasters, on prices and conditions regarding access to signals of the Televisa Group's pay TV subsidiaries, should receive due attention from the IFT.
- The MCMO guidelines state that pay TV operators must retransmit broadcast signals with the highest quality available on air, and forbid any signal degradation. In this respect, the IFT should monitor the QoS.

Competition in audiovisual content should also be promoted by moving forward with the round of regional licences for broadcasters. The entry into the market of national and local digital multiplex operators will further improve media plurality and ownership diversity in Mexico.

The IFT should strengthen its research into cross-ownership, production and programming agreements related to telecommunication services and broadcasting.

Increased convergence is shifting the competition dynamics in both telecommunication services and broadcasting. Internet video streaming and pay TV services will increasingly compete against traditional FTA services for viewer attention, with implications for advertising revenue. In this environment, broadcasters will need to attract new investment and find new markets. Some of this investment could come from the telecommunication sector, as has occurred in other countries. Players in different markets may have extensive foreign operations presenting opportunities for exports and economies of scale. Such a development may enhance the economic case for a fourth national digital FTA licence given that content could be used across different platforms and in different countries. However, this would be likely only in the longer term, as the government's current preference is to create opportunities for FTA market entry at the regional level instead of at the national one.

When considering pluralism, diversity, foreign ownership and market concentration in Mexico, the IFT needs to continue to strengthen its research into cross-ownership, production and programming agreements between Mexican and foreign television companies, as well as between broadcasting operators and print and video media companies, sporting clubs, stadiums and so forth.

Substantial market power

Substantial market power investigations could be improved by giving the Investigative Authority (Autoridad Investigadora, AI) of the IFT more time than currently allowed to conduct them and by adding to the list of factors to be considered, information on changes in market shares over time, profit margins, and the history of entry and exit in the market.

Under Article 96 of the LFCE, the AI of the IFT is allowed a maximum of 90 days to conduct an SMP investigation. Any extension of the initial 15-45 day period must be justified. Given the elements of proof that must be satisfied to establish SMP, and particularly given the IFT Board's rigorous expectations concerning the level of that proof, it is unclear why the AI is given such a short time frame to develop its evidence and analysis. That period is the same as the one for conducting a preponderance investigation, yet the burden of proof for SMP is far greater than it is for preponderance. In addition, considering that these proceedings may result in asymmetrical regulation, it would be reasonable to give the AI more time to conduct SMP investigations, both before and after a justification for an extension is required.

With respect to the determination of SMP, a number of additional factors could be added to the formal list of issues to consider when evaluating whether SMP exists in a relevant market. These include:

- Changes in market shares over time. If a firm's market share has steadily and significantly declined, that would weigh against a conclusion that the firm has SMP. In contrast, stable or growing shares could be consistent with the presence of SMP. Though not among the formal factors listed in the law (LFCE, 2014, Art. 59), the IFT Board took market share changes into account when it found that a decline in the Televisa Group's shares suggested an absence of SMP. However, it would be appropriate to interpret relatively small and brief declines conservatively, as well as to account for the accretive effects of acquisitions on a firm's market share over time.
- Profit margins. Persistently high margins tend to be consistent with SMP whereas persistently low margins or losses do not.
- The history of entry and exit in the market. If there are many more firms exiting the market than entering it, it may point to the presence of SMP. A track record of flourishing entrants, on the other hand, would clearly suggest an absence of SMP.

Mergers and acquisitions

The IFT should publish the commitments merging parties make to win approval for merger and acquisition transactions.

It is unclear why the IFT sometimes does not disclose information to the public about the commitments that merging parties make in order to win approval for their transaction. This is an unusual practice that should be eliminated (OECD, 2016a; 2016b). To be sure, sensitive business information or trade secrets can and should be withheld, but releasing redacted documents or at least a description of the nature of the remedies would greatly improve transparency in these cases.

Network neutrality

The IFT should analyse network neutrality and monitor potential breaches as well as the evolution of differential pricing (zero-rating) and specialised services.

The IFT should move forward with the plan to carry out a public consultation and undertake research on network neutrality. It should monitor market effects and QoS indicators for any potential breaches of the general network neutrality principles established in the LFTR. It should also track the development of differential pricing ("zero-rating") arrangements and the provision of specialised services. In particular, partnerships between the largest content providers and the largest ISPs should be carefully scrutinised for any anticompetitive practices. This should not, however, justify imposing regulation on services that complement but do not wholly substitute services supplied by telecommunication and broadcasting providers. These services have played a key role in fostering innovation and greater diversity in the products and information available to users.

The measures introduced to promote wholesale competition, and therefore increased retail choice (e.g. local-loop unbundling, Red Compartida), need to be taken into account to maximise competition as a tool to govern behaviour and promote innovation in services and tariffs that benefit users.

Recommendations to improve market conditions

The 2013 reform significantly improved market conditions, such as through lowering barriers for investment and opening the Mexican telecommunication market. In addition, significant efforts have been undertaken to make more spectrum available to the Mexican telecommunication and broadcasting markets. It is critical to further improve market conditions as well as to set the right incentives for telecommunication and broadcasting operators to expand services and innovate. The following section puts forward recommendations in this key area.

Investment barriers

Continue to lower barriers to investment in the telecommunication and broadcasting sectors: 1) abolish the remaining legal restrictions on foreign direct investment in the area of broadcasting; and 2) revise the reserved capacity requirements for satellites.

Mexico has made substantial progress in lowering the barriers to FDI, including the elimination of all such restrictions in the telecommunication sector and raising the permitted threshold in broadcasting from 0% to 49%. In the telecommunication sector, 100% foreign ownership is now permitted. The remaining restriction on FDI in the broadcasting sector (up to 49%), which stems from the legal framework, has no economic or public policy rationale and should be eliminated to allow for 100% FDI in broadcasting companies.

Furthermore, the legal framework includes an additional condition that only permits foreign ownership in broadcasting if there is reciprocity. This requirement, which allows residents of another country to invest in Mexico only under similar terms as those applied to potential Mexican investors looking to invest in that country, is not consistent with Article 9 of the OECD's Code of Liberalisation of Capital Movements. This article prohibits discrimination among OECD countries (OECD, 2016c).

As the broadcasting market is highly concentrated, it undeniably limits plurality and choice. While an important step has been taken with the licensing of a third commercial national broadcaster, with additional regional licences set to follow, the financial strength

and industry experience of these market entrants will be critical to challenge the two commercial broadcasting incumbents. Removing all barriers to foreign investment can therefore assist in meeting policy objectives in broadcasting (e.g. increased investment, employment, skills, competition, media plurality and opening foreign export avenues). As a result, it is in Mexico's interest to abolish its reciprocity rules with respect to FDI in broadcasting.

Should policy makers require specific measures to maintain national identity, promote local content or other objectives often associated with broadcasting, these can be implemented without foreign ownership restrictions and undertaken in ways that foster competitive neutrality and do not preclude the benefits that can arise from FDI.

A further issue that has raised concerns with respect to investments in the telecommunication sector is the requirement that satellite providers reserve capacity for the benefit of the Mexican state (Capacidad Satelital Reservada al Estado, CSRE). Especially when the satellite providers occupy national Mexican slots, the reserved capacity requirements appear to be very high.

Changing Mexico's approach regarding the CSRE is advisable. Such changes should be neutral in regards to the different satellite service operators in Mexico and, although beyond the scope of this review, should promote competitiveness in the space sector. While the current draft satellite policy raises this issue, it does not define any concrete alternative. The draft policy should promote a more efficient and competitive market, in which there is certainty for the concessionaires and licensees as to the CSRE required and the specific processes for their contribution.

As a first step, there should be an assessment of the amount of capacity that is needed for the state to meet current and future policy objectives. This should take into account what is currently available through the Mexsat system and what will become available in the future through a planned third state satellite. It could also assess the needs that could be met through other networks, in particular the Morelos 3 satellite capacity for mobile communication services and the Bicentenario's capacity for fixed satellite services if available. Together with calculating a value for the state reserved capacity, these could be viable next steps to make the policy more concrete. The overall objective should be to lower the reserved capacity or if possible to eliminate it.

Furthermore, no difference should be made between different satellites and satellite providers. With respect to the reserved capacity requirements for existing satellites, the government should take into account that these were priced in when establishing the conditions for the current operators of the satellites. In addition, where the reserved capacity is currently being used and cannot be eliminated without negative effects on the provision of social services or national security matters, these considerations would also need to be taken into account. If it is decided to lower the requirements and to establish neutral requirements across different orbital slots, existing operators could be given the choice to lower the requirements on their satellites through paying a fee, which reflects the value of the freed capacity.

Taxation

Eliminate the special tax on products and services levied on telecommunication services.

The 2012 OECD review suggested eliminating the special tax on products and services (Impuesto Especial sobre Producción y Servicios, IEPS) levied on fixed and mobile telephony and pay TV services. As the Constitution declared telecommunication

and broadcasting services to be a fundamental right of the Mexican people, and consistent with the previous OECD review, it is recommended to eliminate the IEPS to further foster access and adoption of communication services in line with policy objectives.

In effect, imposing such a tax has a direct influence on the total cost of these services for consumers, placing a higher burden on stakeholders in a sector that creates many positive spillovers throughout the economy, relative to other sectors without such a tax. Thus, it risks hampering levels of adoption, innovation and investment in the communication sector.

In an environment of fiscal stringency, eliminating any form of income from such a tax is challenging as it contributes to the public purse. In addition, to date, the tax has in absolute terms been raised in greater proportions from people in higher income groups. As communication services become more pervasive, however, the tax is more likely to have a disproportionate effect on people with lower incomes. This is because it could discourage the adoption of telecommunication services by the poorest users or by those that have not yet joined a network due to cost. For instance, in 2014, the average monthly expenditure of the 10% least well-off households in Mexico on fixed and mobile communications represented 10% and 6.2% of their monthly income, respectively, whereas this expenditure represented only 1.8 % and 1.2% of the monthly income of the wealthiest 10% of households in Mexico.

While the IEPS has already been excluded in some areas of telecommunication services, such as for data used to access the Internet, which is welcome and consistent with the aim to expand the availability and use of these services, the lack of technological neutrality can be noted. The potential for market distortion is, therefore, to the forefront in how people use such services. If wealthier users migrate to data services as a substitute for voice services, not only will this tend to lower receipts from voice services, but it will fall most heavily on those users of feature-phones and older mobile networks rather than smartphones. This is also likely to affect the less affluent people in Mexico.

Since the implementation of the IEPS, the amounts collected from this tax have not reached over 0.30% of the federal government's revenue. In addition, it has become more ineffective over time as Internet services have been exempted. As a consequence, tax revenues from the IEPS have been declining since 2013. At the same time, through the expansion of the telecommunication sector in recent years, value-added tax (VAT) revenues associated with increased consumption will continue to benefit government revenues (e.g. through the purchase of equipment such as mobile telephones or telecommunication services). While there is a valid budgetary concern with the elimination of the tax on telecommunication services, any such concern needs to be weighed against the VAT garnered from the ongoing growth in the sector since the reform. Although in practice the entirety of the IEPS may not be passed on to consumers (i.e. operators may decide to internalise a portion of it), under this scenario it would nonetheless influence the revenue of operators, hence affecting their incentives to make investments to improve quality and coverage for the services provided (e.g. infrastructure deployment and spectrum acquisition, among other investments).

In summary, an industry as crucial as telecommunication services, which has a decisive influence on a country's economic growth and development, should not be subject to unnecessary burdens, for they may bring about unintended spillover effects on the productivity of other economic sectors (OECD, 2014a). Finally, before imposing measures such as the IEPS, the Mexican authorities should also consider their implications on the ability of telecommunication services to facilitate relationships between the administration and the general public. To the extent that the additional cost would limit

access for the proportion of the population that remains unserved, it may place a limit on administrative efficiency, which has improved in recent years based on increased telecommunication access (Cave and Flores-Roux, 2017).

Annual spectrum fees for telecommunication operators

The way spectrum fees are divided between the auction fee and annual fees should be reconsidered and more analysis should be done on the fee structure to help guarantee that the auction process establishes a fair value for the use of spectrum. As a consequence, there might be a need to lower the current annual spectrum fees in future auctions to take into account the effects of these recurring fees on meeting policy objectives.

One of the reasons OECD countries introduced auctions for assigning spectrum was to have transparent and explainable outcomes. A second reason was to use this as a discovery tool given that, due to their knowledge and experience, industry players are better placed to assess market value. A third reason was that alternative mechanisms for assigning spectrum, such as comparative selection or lotteries, often led to suboptimal outcomes in terms of the value captured by successful parties relative to policy objectives.

In this respect, Mexico has benefited in relation to the process used for the Red Compartida, where the winner's bid (92.2%) well exceeded the threshold coverage needed to participate in the auction (85%). This suggests that the threshold was reasonable and players have made a market-based judgment on the costs and benefits of exceeding that threshold. The design of the auction was also well founded because it simply asked for participants to nominate the maximum population coverage they were prepared to meet, in a single sealed bid, an outcome closely aligned to the policy objective of expanding coverage to underserved areas. Thus, like many other OECD countries, Mexico uses auctions to determine the value of spectrum. With a well-designed auction, there is a strong tendency for the licenses to go to the parties that value them the most, and thus will make the best use of the spectrum (Cramton, 2002). However, the employment of annual fees in addition to the use of an auction to establish an up-front payment sets Mexico apart from the much more common practice in OECD countries where an auction determines the full amount for payment. The sums of annual fees over the lives of licenses granted under this practice have represented between 70% and 92% of the total cost of spectrum (IFT, 2017a).

According to a report undertaken for the GSMA, in most OECD countries, spectrum pricing is based on a one-time only, up-front payment levied upon winning bidders, whereas spectrum usage fees, if employed at all, are set at relatively low levels, or in some cases, at zero (Coleago Consulting, 2011). While some countries have annual spectrum fees related to the administrative costs of managing spectrum (or some other form of annual regulatory fee), when an auction mechanism is in place, annual fees beyond such cost recovery are not usually employed.

While most countries use an initial auction to determine the total price of spectrum, over the lifetime of a licence, some countries allow bidders to spread payments over a number of years. This method has some of the same benefits as Mexico's approach for operators. These benefits consist in lowering entry barriers to the auction, by reducing the amount that needs to be paid when the spectrum is auctioned, while taking on less debt, by aligning the payments of spectrum fees with the cash flow generated through the annual revenues of the operators. However, it has the important distinction of using the auction mechanism to set the total fee.

As the up-front payment determined through the auction mechanism has represented no more than 30% of the total amount in Mexico, with the present value of the annual fees being taken into account by the operators as a part of the reserve price, the question can be raised as to whether the market value is discovered under this method.

There seem to be two main potential drawbacks of using a hybrid model (i.e. a payment scheme consisting of an up-front auction fee and an annual fee) instead of an approach that relies entirely on an auction First, if the sum of annual fees plus the up-front reserve price set by the regulator in an auction is too high, it may deter participation in the auction by players that may have introduced more competition in the market. It may also cause spectrum blocks to go unsold.

Second, if auction participants are not certain of the levels of the annual fees during the lifetime of the license, it may dissuade them from properly revealing their value for spectrum during the auction, leading to a misallocation of this scarce resource (i.e. spectrum being allocated to a player that will not make the most efficient use of it). This effect of dissuading participants from properly revealing their valuation due to uncertainty is known as the "ratchet effect" (Laffont and Tirole, 1988), and results from the mere fact that bidders believe there is a risk of lack of commitment from the seller, in this case, the government. In fact, while the annual fees in Mexico have remained constant in real terms since 2003, the Business and Industry Advisory Committee to the OECD (BIAC) has expressed the view that annual fees cause uncertainty in the amounts operators will pay for licenses over their duration.

In the future, auctioning procedures should take into account the effect of annual fees on the capacity to meet other policy objectives, while maintaining current annual fees at the same level, given that these were priced in when setting the reserve price for the auction fee. It would thus be advisable to reconsider the design of spectrum fees in Mexico and to consider reducing the annual spectrum fee for future auctions to allow the market value of the spectrum to be determined mainly through the auction process. If it is considered beneficial for spectrum fees, which are derived from future auctions that set the total amount upfront, to be paid over several years, this could be part of the auction conditions. Such an approach would permit the market value to be discovered while at the same time enabling the attributes of deferred payments in the current system to be maintained.

Regulation on deployment of infrastructure

Barriers should be reduced for infrastructure deployment at the local and municipal levels. The Ministry of Communications and Transport (Secretaría de Comunicaciones y Transportes, SCT) should accelerate the elaboration of guidelines and co-ordination agreements for all levels of government and work with the different levels of government to implement them as soon as possible.

Mexico's federal structure has created a substantial obstacle: the high level of autonomy of local and regional authorities has resulted in a plethora of divergent regulations regarding infrastructure deployment and the use of land within the different jurisdictions. This creates barriers to entry for operators, especially those intending to access the market in those locations, who need to undertake construction, require use of land or rights of way permits for network deployment. This complexity creates legal uncertainty and consequently delays the adjustments that are necessary for enhancing QoS through increased coverage and capacity, something that is of critical importance in the digital economy.

In order to remove these barriers, the LFTR tasked the SCT to ensure co-ordination among all real estate management departments or agencies of the federal government and to issue binding recommendations to state and local governments. The SCT is in the process of issuing general guidelines and co-ordination agreements that can be observed by all levels of governments to reduce the administrative burden to a minimum. The guidelines will help companies to access rights of way in underutilised assets, and will define specific fees that must be both proportionate and have a direct relationship with the costs objectively generated by the granting of a permit (e.g. by authorising the use of electricity infrastructure, or the opportunity costs that arise from providing a different destination in a specific area). Besides these recommendations, further measures should be considered to ease infrastructure deployment at the local and municipal levels.

Broadcasting fees

Instead of providing airtime for official use, broadcasting concessionaires should pay an annual license and spectrum fees in cash.

In Mexico, rather than paying an annual or one-off fee, private FTA and radio station concessionaires provide a fixed amount of airtime for official use, as mandated by the law. The time management of the transmission of state official content is undertaken by the Ministry of Interior (Secretaría de Gobernación, SEGOB). In an historical environment with a relatively low penetration for other means of communication, including a large underserved rural population relative to other OECD countries, the existence of this system has provided a means for the dissemination of official information over FTA and radio (e.g. education, health, civil announcements and other matters of public policy).

Initially, the airtime for official use was set by a presidential decree in 1968, at 180 minutes/day (that is, 12.5% of the 24 hours available). As part of this system, broadcasters were given the alternative option of paying 12.5% of their total annual revenue. Since 2002, the required airtime for official use in FTA has been reduced to 48 minutes/day, composed of a mandated 30 minutes for official content by the state, daily and on every channel, as well as the 18 minutes/day commercial broadcasters can opt to provide for official use in lieu of the continuing alternative of paying 12.5% of their total revenue. In other words, notwithstanding a considerable reduction of required airtime for official use, from 12.5% to around 3.3% of broadcasting time (or 48 minutes/day), the alternative levy broadcasters could choose to pay has not been proportionally reduced. This situation reinforced the incentive for operators to provide airtime rather than make a payment in cash. As a result, the only FTA operator that has paid some type of cash amount (in the form of a spectrum fee in an auction) was the new entrant, Imagen TV, which commenced operations in 2016.

In Mexico, official time is given to the National Electoral Institute during federal and local electoral campaigns for the dissemination of political-electoral messages. This was set out by the 2007 constitutional reform, with the purpose of reducing the influence of funding on election campaigns and of ensuring equitable access to radio and television to the various political parties. While in many OECD countries airtime is reserved during periods such as elections to promote democratic pluralism, a system requiring airtime for official use from commercial broadcasters in lieu of license fees is far less common.

OECD countries and partner economies alike charge fees for broadcasting licenses. Countries charging such a fee include Australia, Austria, Canada, Ireland, Italy, Japan, New Zealand, Singapore and the United Kingdom. Broadcasters play a critical role in

OECD countries by informing and entertaining people, but they also use a scarce resource in the form of spectrum. This has generally been reflected in licence fees with those funds being returned to the public purse. Governments, such as those of the countries named above, then purchase airtime for official use or use the funds for other public expenditures. This approach allows greater flexibility for both governments (who purchase airtime according to their priorities) and for FTA broadcasters (who sell this airtime at a market price). It also has the benefit, increasingly important in a converging market for communication services, to ensure competitive neutrality between different players and more efficient allocation of this scarce resource.

There are further benefits in considering an annual licence fee instead of the provision of airtime for official use. For example, over time, the FTA and radio audiences are expected to fragment, as has occurred in many countries. As fixed and mobile broadband access increases, people will have more alternatives to linear FTA television and radio services, resulting in a decline in the effectiveness of mandated airtime. At the same time, in a converged environment, governments may find more value in using a range of media to meet their policy objectives and in being able to meet this cost from the revenue garnered by a licence fee or to use options that did not exist when the system was introduced (e.g. social media).

A licence fee system would enable FTA providers to use the time currently allocated to official use for commercial gain, putting them on a level playing field with other media. It would also eliminate any inequity between current and future licences. As convergence increases and commercial changes continue to disrupt media platforms, the effectiveness of the time allocated for official government use will reach an increasingly fragmented audience, and policy makers and regulators in Mexico will need to have the flexibility to respond to that development to more efficiently achieve policy objectives. Such a mechanism could be implemented following an assessment of evolving market conditions in Mexico and of the trade-off between the revenue generated and the costs levied on operators – especially smaller players or non-commercial concessionaires. The benefits that a change could offer for assigning an opportunity cost to spectrum used by broadcasters could also be considered.

Sanctions

The Federal Telecommunication and Broadcasting Law (Ley Federal de Telecomunicaciones y Radiodifusión, LFTR) should be amended to allow for a more flexible imposition of sanctions, taking into account the principle of proportionality, particularly regarding consumer protection regulations. The LFTR should also be reformed to allow the IFT to impose sanctions on any person or entity violating the provisions set out by the IFT in the exercise of its powers.

Strengthening the ability of the IFT to impose sanctions has been a major step forward in the reform. Nonetheless, the fairness of the sanctioning regime enshrined in the LFTR can be questioned, particularly with respect to the principle of proportionality between the fault and the punishment. Although the current levels of the statutory fines may have an important deterrent effect, it is important to stress that deterrence depends not only on the harshness of the sanction, but also on the probability of an infringement being detected and investigated by the authorities. Such levels may be excessive in relation to the seriousness of the fault and the specific situation of the infringer.

The principle of proportionality, as an integral element of the fundamental right to due process, dictates that both the fault and the corresponding punishment be consistent with the objectives inherent to the legal regime, hence the imperative need for the sanction to take account of the gravity of the conduct. Essentially, the principle of proportionality is aimed at avoiding excess and abuse of power on the part of the legislative branch and/or the administration in general, by providing a clear and precise framework for imposing a sanction in each specific case.

The LFTR has, however, grouped a series of sometimes dissimilar transgressions to which particular fine thresholds apply, that may lead the IFT to enforce disproportionate penalties, in light of the gravity of the conduct and the infringer's circumstances. An example concerns QoS violations, and in general non-compliance with the obligations stipulated in a license that do not constitute a just cause for revocation (e.g. delay in meeting a specific deadline): in such cases, applying even the minimum fine (e.g. where it ranges from 1% to 3% of the transgressor's revenue) may be excessive to sanction delays in the submission of information to the regulators, or a transitory QoS deficiency in a non-crucial service (e.g. short message system [SMS]).

In light of these examples, the LFTR should be reformed to provide for more flexibility by enabling the regulator to apply reduced fines, below the minimum threshold, when the severity of the breach and the situation of the infringer justify it (e.g. a small enterprise that has recently entered the market and is still in the process of acquiring a sustainable client base).

One advisable option would be to eliminate the minimum percentage of sanctions and only retain the maximum. As mentioned above, this would foster suitable applicability of the sanction in accordance with the criteria established in the law, and, in some cases, avoid the potential risk to ruin some firms. This latter point is also relevant for the IFT's responsibilities in a converging communication market.

Finally, a further area to consider for potential improvements regards the sanctions imposed by PROFECO. The amount that can be imposed, which is the same for all services and sectors, is MXN 150 000 (USD 8 000), albeit that amount is doubled if associated with transgressions against indigenous communities. The sanctions are very modest, especially when compared with those from the IFT. In some cases, the cost of initiating the process and collecting the fines through the representatives of the Ministry of Finance and Public Credit (Secretaría de Hacienda y Crédito Público, SHCP) and fiscal authorities in each state can be greater than the amount levied. Accordingly, PROFECO should be given the power to collect sanctions directly. The range of sanctions should be reviewed and increased to international standards.

The LFTR further provides that the IFT may regulate persons other than concessionaires and authorised persons who are directly involved in the telecommunication and broadcasting markets. Examples include OTT providers, providers of services to concessionaires, test laboratories and equipment manufacturers that connect to the telecommunication networks or make use of the radio spectrum. These players are subject to the resolutions or administrative provisions of a general nature issued by the IFT. In this respect, the LFTR only provides for two cases in which the IFT may impose sanctions on infringing persons other than concessionaires or authorised persons, namely those who provide telecommunication or broadcasting services without concession or authorisation, or those who interfere with or obstruct communication services. It is therefore advisable to amend the LFTR to allow the IFT to impose sanctions on any person who violates the provisions issued by the institute in the exercise of its powers.

Adhesion contracts

Federal Telecommunication and Broadcasting Law (Ley Federal de Telecomunicaciones y Radiodifusión, LFTR) rules requiring registration of adhesion contracts should be reoriented towards enabling the Federal Consumer Protection Agency (Procudaría Federal del Consumidor, PROFECO) to require operators and services to provide contractual information in a format useful for consumers, such as through use of standard and simplified contracts.

Even though, broadly speaking, the changes introduced to the consumer protection framework were among the positive aspects of the reform, a caveat must be made with regards to contract registration at PROFECO. Amendments to regulation should be made so PROFECO can implement alternative intervention approaches, such as contract standardisation and simplification applicable to all operators and services. Other tools aimed at ensuring service providers' compliance relate to information disclosure and price registration obligations (as in the IFT's Public Register of Contracts) and the establishment of minimum conditions to be forcefully included in contracts, without costly processes for reviewing each contract.

The rules on contract registration should therefore be reoriented towards other mechanisms that foster informed decision making by consumers.

Concessions

The elements that the Ministry of Communications and Transport (Secretaría de Comunicaciones y Transportes, SCT) should include in its technical opinion to the IFT for granting concessions should be clarified. Accordingly, the SCT should be able to request relevant information from other ministries and authorities to inform its technical opinions.

The telecommunication reform led to two important improvements with respect to concessions: A single concession was created, allowing operators to provide telecommunication and broadcasting services in a converged manner, and the IFT was designated as the competent authority to grant all concessions, eliminating the intervention of multiple institutions in the process. The role of the SCT under the new framework is to provide non-binding technical opinions.

Currently, the aspects to be addressed by the SCT in its technical opinions seem limited to making pronouncements regarding the suitability of possible concessionaires and the origin of the resources for investment. In addition, the SCT has faced challenges in obtaining relevant information from other ministries to establish a technical opinion, as there is no mechanism contained in a law or regulation that clearly indicates the topics on which the SCT must issue an opinion or that can enable the SCT to request relevant information from other ministries (e.g. security agencies and competent supervisory bodies).

Therefore, it would be desirable that the content of the technical opinions be defined through a joint IFT/SCT approach to ensure that these opinions have a concrete purpose and serve the IFT in the process of granting concessions. Accordingly, it would be beneficial to amend the LFTR and the related regulation to grant the SCT the ability to request relevant information from other departments or agencies of the public administration or from competent authorities to inform its technical opinions. In addition, it is desirable that the content of the technical opinions is defined in a joint approach of the IFT and the SCT to ensure that the technical opinions have a concrete purpose and that they serve the IFT in the process of granting concessions.

Recommendations for national policies

Most OECD countries have national digital strategies and policies that aim to seize the benefits of ICTs for economic and social development. These enable policy makers to set clear objectives, taking into account the level of the country's development, including existing coverage gaps by fixed and mobile broadband networks, and the level of competition in providing services. At the same time, such plans address the adoption of ICT services by addressing issues such as digital skills. The following section puts forward recommendations for the Mexican National Digital Strategy as well as other related policies.

Public policies to extend connectivity

The National Digital Strategy, the Red Troncal and México Conectado

The National Digital Strategy should be updated and revised, and milestones for the different elements of the strategy should be established.

Several programmes derived from the National Digital Strategy have expanded connectivity and spurred the use of ICTs. Further progress needs to be made, given that some programmes have not achieved their objectives due to factors such as budgetary constraints, a potential misalignment of functions or other deficiencies in implementation in the available time since their launch.

As the strategy dates from 2013, its objectives should be carefully assessed and the strategy should be updated to take into account the progress made to date. For the future, it is critical to build on advances made in supply-side policies (e.g. Red Compartida and Red Troncal) and maintain the momentum to promote demand. The surveys undertaken by INEGI, in co-operation with both the SCT and the IFT, are critical because they highlight differences in education, income levels, skills and geographical regions, which may explain low take-up and usage of newly available communication services. When revising the strategy, clear milestones and deadlines should be established for the different programmes in co-ordination with the different governmental and public entities involved. Furthermore, hosting stakeholder consultations and engaging with citizens on social media platforms could provide useful inputs to be considered when revising the strategy.

Promoting private sector involvement for the Red Troncal and México Conectado programmes can help overcome budget constraints and resolve other current implementation challenges.

As Mexico's public finances are constrained, programmes such as México Conectado and the Red Troncal are being affected. While it would be desirable to ensure the continuity of these programmes through public funding, the private sector (i.e. operators and service providers, content providers, and technological suppliers) can play a crucial role in complementing the government's efforts within a digital inclusion strategy to further grow the programmes.

Public institutions have a critical role to play in the definition of coherent policies and regulations, as well as in the sound enforcement of decisions. Actions by institutions can attract both national and foreign private investment by offering an environment of legal certainty. Moreover, they can create a robust business case in potentially attractive areas by clearly establishing the economic and social benefits that could emerge, such as satellite connectivity, educational platforms and so forth (OECD, 2014a).

Promoting private sector engagement through appropriate incentives could effectively contribute to addressing other difficulties, such as insufficient service quality and low connectivity. Public-private partnerships, as seen in the case of Colombia for the deployment of a fibre backbone network or the Red Compartida where the private sector provides the investment to build the wholesale network, are some exemplary cases where the private sector plays a considerable role to lower the financial burden for the government.

Co-operation needs to be improved between governmental entities and across the different levels of government (national, state and municipal) for the México Conectado programme. Furthermore, effective monitoring mechanisms should be put in place and satellite connections reduced once the Red Compartida is deployed. For the @prende 2.0 programme, local communities and local levels of government should become involved and the strategy should be revised with regards to devices in the coming years. A close assessment should be undertaken of the effects of the programme as outlined in its monitoring and evaluation section.

Some stakeholders have raised issues in relation to the execution of México Conectado that go beyond budgetary concerns. It is timely that the two agencies involved, the SCT and the Ministry of Public Education (Secretaría de Educación Pública, SEP), have recently engaged to jointly address concerns that have arisen and to build on their initial experiences. This is crucial to ensure appropriate co-ordination in the México Conectado and other digital inclusion programmes. For example, an inter-ministerial body devoted to developing a digital inclusion strategy could be created as an alternative to having a single ministerial body dealing with the digital economy.

The México Conectado programme could involve local levels of government to increase the take-up and use of the connected sites and to create co-funding options where municipalities pay a share of the costs. The shares of municipalities' contributions could be defined based on income levels. Although such an approach was ineffective in the initial year of México Conectado because the municipalities did not always have long-term resources available, mechanisms could be designed to enhance their involvement in infrastructure projects. This would enable the government to use federal resources in a more efficient manner and concentrate efforts in poorer areas to overcome significant regional disparities in the country.

In addition, effective mechanisms should be put in place to monitor and optimise the performance of devices and installed Internet connections in a more expeditious manner. This is critical to ensure that operators deliver the QoS levels specified in the contracts. Performance measures should be made public on the website of the México Conectado programme. Furthermore, enhanced consultation with communities would improve the location of the points of presence, and should be a requirement for suppliers when installing sites.

Following the roll-out of the Red Compartida, México Conectado should consider switching providers from satellite connections to those on the Red Compartida network, which could provide higher quality connections to schools in rural areas at lower costs. In some cases this will be a more cost-efficient way to provide connectivity to schools in the continuation of the project.

Finally, involving local communities in the @prende 2.0 programme from the start would help attain a higher level of acceptance of the programme and ensure that the technology and the devices are effectively used in classrooms. Over time, given the increasing penetration of devices such as smartphones and tablets, some students may wish to bring their own devices. This may allow funds to be redirected beyond the

3 000 pilot schools. In order to measure the success of the programme, it will be important to closely monitor and evaluate the programme. It is laudable that this evaluation component is built into the programme. Recording the baseline performance and skills levels of students at the start of the programme will allow the effects of the programme to be assessed at a later stage.

The development of digital skills should be furthered through the Puntos México Conectado programme and skill training in firms should be promoted.

The Puntos México Conectado is a sub-programme of the larger México Conectado programme which establishes special "*puntos*", which are centres that offer training to promote digital skills among Mexican citizens and firms. Its critics rightly highlight that 32 *puntos* are too few to accommodate the entire country and that more needs to be done to further develop advanced digital skills in Mexico. While extending the programme could be envisaged, it is equally important to ensure the long-term financial sustainability of the sub-programme which is currently based on government funding. Options include involving local communities or working jointly with companies that could, for example, donate or rent the sites at a lower rate to provide training programmes. In addition, incentives or initiatives to promote skills training in companies should also be considered.

The Red Compartida

The successful deployment of the Red Compartida needs to be a priority for Mexico. Mobile network operators and mobile virtual network operators must have an incentive to use the network via appealing access offers that give them maximum freedom to innovate and design their service offers to end users. Potential obstacles such as access to international mobile roaming agreements need to be addressed from the beginning. Effective oversight by the Organism for the Promotion of Investment in Telecommunications (Organismo Promotor de Inversiones en Telecomunicaciones, PROMTEL) is essential to ensure that milestones are met. The 2.5 GHz auction should be executed as soon as possible.

The Red Compartida initiative has the potential to be a major advancement in addressing deficiencies in Mexico's geographical and population coverage of communication services. Nevertheless, it is also indisputable that a bold, large and pioneering project of this nature will face challenges. Not meeting objectives will have a high opportunity cost and carry potential reputational damage. In this regard, the government has allocated 90 megahertz (MHz) of the 700 MHz band as its contribution towards the project, an extremely valuable input.

Accordingly, ensuring the project's success must be a priority for Mexico. It is of critical importance that the SCT, PROMTEL and the other sectoral public institutions, as well as Altán Redes, the winning bidder, actively promote and develop the use of the Red Compartida for its potential customers (i.e. MNOs and MVNOs). MNOs need to be encouraged to use the Red Compartida, something that initially may not be easy in areas where they already have facilities with sunk costs or plans to further develop their own networks. In time, competition is most likely to drive increased use. This will especially be the case if those MNOs using Red Compartida to supplement their own facilities have expanded coverage and improved performance at a lower cost than their rivals. One of the main advantages of the Red Compartida is that its business model is based on maximising the use of capacity and reducing costs by sharing resources, such as towers, links and fibre optics. However, further efforts should be made to ease the path for infrastructure sharing, including the growth of fibre capacity.

As a wholesale network, it is also critical that the Red Compartida be attractive to MVNOs. By the close of 2016, MVNOs had a 1% market share in Mexico. This percentage must be substantially increased for the Red Compartida to be successful. The growth of MVNOs and other new business models can be promoted by easing the process to obtain authorisations. A way to facilitate this could be for the IFT to authorise entities that may not fall within traditional definitions of MVNOs to use the Red Compartida's wholesale public offer. This could facilitate access for new users of the wholesale services which would not need to be network operators. It should be clearly noted that the latter does not imply that the Red Compartida will act as a retail operator, but as a supplier of wholesale services. For both MNOs and MVNOs, the properties of the 700 MHz band are considered very advantageous for mobile broadband wireless use and it is the largest contiguous assignment made to the Red Compartida. In order to make the best possible use of capacity, terminal equipment should be available in a timely fashion. Terminals especially designed for band 28 (Asia Pacific Telecommunity [APT] 700 MHz band plan) are new to the Mexican markets; these terminals are required to guarantee the rapid adoption of the services provided by the Red Compartida.

To leverage these advantages, however, it is critical that the customers of the Red Compartida have the maximum freedom possible to innovate, as this will likely be the main driver for others to use the network. One key to this will be for access arrangements to ensure that potential obstacles that may arise for MVNOs are promptly addressed (e.g. access to efficient international mobile roaming; ensuring the transition to use of IPv6). It is also essential that PROMTEL provide effective oversight of the Red Compartida to ensure targets are met and to prevent any anticompetitive practices.

Finally, the IFT should execute the public tender procedure for the 2.5 MHz band as soon as possible, which is crucial for providing next-generation mobile services. Altán Redes, the successful bidder for implementing the Red Compartida, can then assess whether this spectrum is advantageous for the project to complement the spectrum in the 700 MHz band in order to compete with other market actors. Overall, the auctioning of the 2.5 GHz band should be beneficial for the entire market.

Coverage obligations

A new social coverage scheme should be adopted that uses market mechanisms for achieving coverage obligations. The successful bidder should be required to indicate how it will monitor service quality, and these data should be made public for open review once available.

While the winning bidder of the Red Compartida pledged to cover 92.2% of the Mexican population, the SCT needs to put in place a strategy to expand and improve coverage in areas that will remain underserved. Any programme that aims to do so should apply an equitable burden between all affected firms and minimise possible distortions in the market.

Coverage obligations may be met in-kind through the provision of telecommunication services. In order for the market to determine the allocation of the sites in which each concessionaire must offer services, a competitive process will be carried out. Concessionaires who do not cover all of their obligations with the provision of services may fulfil them in cash through a universal service fund. The resources obtained in cash would be used, through public tenders, to fulfil the objectives of the programme.

The private sector is generally best placed to estimate the cost of extending services in-cash or in-kind. This is because they can often leverage their existing facilities in ways not necessarily open to a stand-alone project. Using competitive tenders may enable new players to bid to meet the demands of underserved areas. Other initiatives such as the Red Troncal may extend the range of players able to bid for such projects. Overall, these changes may increase coverage to underserved areas, potentially at a lower cost and with the benefit of more competition than was historically the case. Finally, any new programme should require successful bidders to explain how they will monitor service quality, with these data made available for open review.

Satellite policy

The demand for the Bicentario and Morelos 3 satellites should be assessed and their use should be revised.

As demand for communication services increases, multiple governmental agencies and public entities are requesting capacity on the Bicentenario and Morelos 3 satellites. Satellite capacity is also in high demand for commercial use and could thus generate revenues. The capacity of the different satellites should be analysed and, if feasible, be considered for further revenue generation for the government. This could provide a source of income to fund alternative connectivity for users under the México Conectado. For example, if the capacity currently being used for schools was made available at commercial rates to other users, this revenue could be used to connect schools to providers using the Red Compartida, at a more economic rate and higher capacity.

Public broadcasting

A more flexible framework for the funding of public broadcasters should be established to enable them to meet their mandate in a rapidly changing environment.

There is less financial support for public broadcasters in Mexico than in most OECD countries, which limits their effectiveness in carrying out their mandate. In order to preserve their financial stability and to strengthen their editorial independence relative to day-to-day political concerns, public broadcasters should be given more flexibility and more stable financial resources.

Public broadcasters, for example, would benefit from conditions guaranteeing their direct financing from general revenue and allowing them to have a more suitable and longer term financial settlement, regardless of the political situation. Additionally, the right granted to indigenous and community licensees, by the LFTR, to receive a percentage of the budget spent by public entities on social communication should be extended to public broadcasters as well. Moreover, public broadcasters could potentially charge for content under MCMO rules and could also be permitted to sell a limited amount of advertising that does not compromise the social, cultural and educational objectives for public broadcasting. If those mechanisms are put in place, there would need to be appropriate safeguards to limit unfair competition with the private sector (e.g. advertising airtime limitations). While public broadcasters are allowed to accept sponsorship, a combination of these additional measures could also be considered to lower the burden on the public purse. Enhanced funding and the possibility to sell advertising, accompanied with appropriate safeguards, should be extended to indigenous, rural and community television and radio broadcasters alike.

Further measures could include strengthening both the financial and managerial independence of public broadcasters, and introducing a formal system to disseminate FTA live broadcasts of "listed events" of national importance, as in many other OECD countries, until other platforms enable equally widespread availability. That being said, a careful consideration of the implications for competition between FTA, pay TV and IPTV is required. Finally, a national consultation should be conducted to decide which events of national importance should be included.

Statistics

Mexico should continue to improve the collection and analysis of statistical information in the broadcasting sector and with respect to connectivity coverage maps and the use of applications.

Official statistics on telecommunication services have been substantially improved in Mexico since the reform. Statistical information on telecommunication is systematically and electronically collected by the IFT to inform regulatory processes and made public on a state-of-the-art interactive platform, the BIT. In addition, the SCT's and the IFT's co-operation with INEGI has increased the amount of data available on the use of ICTs. However, some gaps remain in terms of data needed to inform analysis.

First, official data on broadcasting viewing, advertising and production investment are limited or absent. The availability of data on broadcasting is expected to be improved in 2018, with the IFT's planned "Electronic Formats to Capture Statistical Information on the Broadcasting Market Sector" project. Currently, however, there are no available metrics to monitor the entire viewership of Mexico's FTA broadcasting market. A programme for measuring both commercial and non-commercial television (e.g. public broadcasters or community and indigenous broadcasters) viewership, including the monitoring of reception for digital channels, should be instituted to improve transparency in the sector. An audience ratings system, independent of commercial broadcasters, would improve the accuracy of available information for all stakeholders of the advertising market and on media plurality and diversity.

In addition, stakeholders would benefit from having access to coverage maps and information on infrastructure availability. As well as geographic coverage, data on availability of household broadband access would also be useful to identify connectivity gaps and to promote competition.

In an effort to make forward-looking regulatory decisions, taking convergence into account, the IFT should assess the possibility of collecting official metrics on Internet-related services, such as those provided by OTTs. To date, there have been some advances in defining and collecting metrics on the IoT (i.e. machine-to-machine connectivity), but implementing a framework where certain information can be requested from Internet streaming video players above a certain threshold would be beneficial (e.g. number of subscriptions, time spent viewing). This would allow the regulation of communication services to be informed by real-time relevant metrics, an increasingly important insight in a converging market.

Recommendations on the legal and institutional framework

The result of the reform was a strong legal and institutional framework. Notwithstanding the progress made, some weaknesses still exist in the legal framework and the attribution of roles between different entities. The following section provides some recommendations on how to further strengthen the legal and institutional framework.

Constitutional provisions

From a long-term perspective, the Constitution should retain the key principles and goals pertaining to the telecommunication and broadcasting sectors, such as digital inclusion. The more detailed prescriptions, especially those included in transitory articles, should be removed and, as appropriate, otherwise addressed, once their initial purpose has been achieved, in order to provide more flexibility to the different institutions to effectively perform their mandate in light of technological change.

Prior to the reform, the Mexican telecommunication and broadcasting markets faced severe challenges and this was reflected by the inclusion of very detailed and descriptive provisions in the Constitution. Subsequently, the 2013 constitutional amendments paved the way for overall positive developments, both with respect to the new institutional frameworks and market developments.

However, in the long run, in light of the rapid technological change and the trend towards convergence observed in the telecommunication and broadcasting sectors, the detailed nature of some articles in the Constitution is likely to hamper the ability of the government, legislature and regulators to effectively execute their mandates and keep pace with change.

In the future, consideration could be given to retaining only the key principles and overall objectives for these two sectors, such as digital inclusion and promoting competition, once the reform has firmly taken hold. As significant parts of the detailed text related to telecommunication and broadcasting were set out in the transitory articles to address the challenges mentioned above, their timely elimination once their initial purpose has been achieved would provide the relevant institutions with the flexibility needed to further execute their mandate most effectively.

An example of constitutional rules that would be ideally under the purview of the law is the provision pertaining to foreign investment in the telecommunication and broadcasting sectors. Another example is the provisions for the Red Compartida. As these are defined in the Constitution, there may be less flexibility to act in the event that the initiative encounters difficulties during implementation. The fact that the project is mandated by the Constitution leaves the government with little alternative but to execute it, even if, for example, the shared wholesale network ultimately does not attract sufficient demand to fully cover its costs. Another possible scenario is that the operating conditions of the Red Compartida as defined in the Constitution (e.g. having the right to exploit at least 90 MHz of spectrum in the 700 MHz band) may, in practice, prove to preclude better alternatives as the market develops and technology evolves.

A further example is the provision requiring the federal executive's digital inclusion strategy to incorporate the following specific broadband penetration thresholds: 70% of all households and 85% of all micro, small and medium-sized enterprises, as well as download speeds consistent with the average speeds in OECD countries. While these are commendable objectives, such thresholds and requirements ought to be established by public policy instruments issued by the SCT under a programmatic but reasonably flexible framework, taking into account the existing market dynamics at a given time.

While it is crucial that the general rules, acts or omissions of the IFT and the Federal Economic Competition Commission (Comisión Federal de Competencia Económica, COFECE) may only be challenged by indirect amparo trials not subject to suspension, the exception rule for fine and divestiture decisions for COFECE should also apply to the IFT.

The current regime on indirect *amparo* trials has notably improved since the decision was implemented that any contested rule or regulation would still apply during the *amparo* trial. However, the scheme still bears some ambiguity with respect to which decisions from which authorities' determinations will not be suspended.

As per the Constitutional Reform Decree and the LFTR, it is clear that non-suspension operates relative to the general rules, acts and omissions of the IFT and COFECE, albeit with an explicit exception concerning the imposition of fines or divestiture orders issued by COFECE. Neither the constitutional nor the legal provisions define an exception rule regarding those same decisions when they are issued by the IFT, which was meant to address the problematic situation of persistent suspensions experienced by operators and service providers prior to the reform. Nevertheless, as the imposition of fines and the ordering of divestitures can be one of the most intrusive measures applied by a regulator, substantially affecting operators' and service providers' rights, it would be advisable that the pertinent constitutional and legal rules be modified so as to allow for the suspension of the IFT's decisions in those specific cases.

In the case where a trial is in favour of the challenging party or parties, the current *amparo* rules may not compensate for all the damages inflicted on said affected parties, even if the sanctioning determination is overturned. This is particularly relevant in the telecommunication and broadcasting context, where these decisions can only be subject to indirect *amparo* trials. Such a situation may be remedied if specific decisions taken by the regulator – only those pertaining to fines and divestitures, and not all of them, as was the case prior to the reform – can be suspended while the definitive judicial ruling is pending.

Institutional framework

Attribution of roles between government entities

Attributions among different governmental entities in formulating and implementing digital economy policy should be better aligned. Different options exist. Skilled personnel are crucial for designing effective digital economy policies; therefore staff should be carefully recruited.

Ensuring a clear delineation of responsibilities in digital economy policy making is a growing challenge. Following best practice, Mexico, along with an increasing number of OECD countries, has adopted a converged regulator for communication markets. However, as in other OECD countries, the government faces outstanding challenges in the governance of its digital economy strategy and policy. In Mexico, functions and responsibilities in digital economy policy and programme implementation are scattered across several entities and would benefit from a clearer mandating of tasks and responsibilities. As the digital economy grows, there is a need for a holistic and integrated government approach. While there is no single solution to this issue, regrouping responsibilities of closely related remits is likely to result in more coherent and effective outcomes. Different options should be considered on how to better delineate responsibilities between government entities. As such, responsibilities should be rearranged to increase the efficiency of the government in this area and build on post-reform momentum.

Improvements need to be made regarding the attributions between different entities, in particular regarding the overall digital strategy, digital inclusion, e-government and the use of ICTs in the public sector as well as the digitalisation of the economy between the SCT, the National Digital Strategy Coordination (Coordinación de Estrategia Digital

Nacional, CEDN), the Ministry of Economy (Secretaría de Economía, SE) and the Ministry of Public Administration (Secretaría de la Función Pública, SFP).[5] At this stage, the CEDN, located in the President's Office, is responsible for the elaboration of the National Digital Strategy and for the co-ordination of digital policies to promote the adoption of new technologies by individuals and within the government. The implementation of the policies lies within the respective ministries.

One option to address this challenge is to rearrange remits and to merge the different entities' units mentioned above that deal with the digital economy and ICT policies into a single body. This new body should be granted the attributions to not only develop and co-ordinate the overall digital strategy, but also to design, implement and evaluate all digital economy policies to promote the adoption of new technologies by individuals, households and firms, and to encourage the use of ICT by people and within the government with the purpose of increasing the transparency, accountability and efficiency of the public service. In addition, such a body should have a role to co-ordinate digital issues with other ministries such as the SEP, SEGOB or the Ministry of Health (Secretaría de Salud). This should be at a ministerial level with cabinet representation. In order to create an efficient entity, it is critical to evaluate the tasks and processes beforehand. This is to safeguard against a merger of different units from different parts of government that would retain any administrative inefficiencies (e.g. centralising "red tape" instead of streamlining processes).

A further option is the creation of a single department that not only develops the National Digital Strategy, but that also develops the major programmes and policies for the digital economy, such as to encourage digital inclusion, to increase connectivity or to promote the adoption of ICTs, and that integrates rather than just co-ordinates the different activities of several ministries. This body, in addition, could act as an advisory unit for other ministries in order to help them adapt their policies for a digital economy and use digital tools in their daily operations, and thus increase transparency and efficiency. In order to guarantee the continuity and periodic update of a cross-sector National Digital Strategy, the new department could either be located within a ministry or in the President's Office. While both options are possible and have been used in OECD countries, the advantage of locating it within a ministry may provide the department with a certain continuity and stability and keep it closer to the technical expertise.

Due to the wide range of converging and complex topics, it is crucial to have the right leadership and skilled staff to enact any of these or other options. The leadership of this entity or department should be committed to promoting the digital economy in Mexico in an inclusive manner. The person leading the efforts should see him or herself as a facilitator for promoting the digital economy in the country and in supporting other ministries in their digital transformation. At the same time, the staff working in the department should be carefully recruited to ensure that various backgrounds and expertise are represented. Finally, it is important to involve different stakeholders in the work, especially when designing the national strategy and new digital policies.

Division of functions between COFECE and the IFT

The attributions of the Federal Economic Competition Commission (Comisión Federal de Competencia Económica, COFECE) and the IFT should be very clear. Parallel procedures should be avoided as should re-opening a double window.

The 2017 court decision in the AT&T and Time Warner Case, which allowed both COFECE and the IFT to work jointly on the case, must be monitored closely since it has

the potential to recreate a double window between the two entities. The decision did not consider the implications of convergence between voice, video and data. In the future, and given the fact that convergence will only increase, it is suggested that the IFT has the mandate to deal with these competition cases.

PROFECO and the division of functions between PROFECO and the IFT

There should be a clearer definition of roles between the Federal Consumer Protection Agency (Procuraduría Federal del Consumidor, PROFECO) and the IFT on the operators' compliance regarding the provision of advertising, which should be entrusted to PROFECO. PROFECO could benefit from having a head with a fixed-term appointment.

The LFTR establishes, in general terms, clear divisions between the functions assigned to the different public institutions; this bolsters legal certainty among users and eliminates the inefficiencies related to "double windows". However, the rules about operators' compliance with advertising provisions are ambiguous.

Merely clarifying the legal rules for the IFT and PROFECO, however, may not be enough to increase consumer awareness of which authority is responsible for enforcing consumer protection regulations regarding the provision of advertising. Therefore, these efforts should be coupled with educational campaigns on the part of both public entities, informing users not only of their rights *vis-à-vis* operators' and service providers' advertising, but of the competent authority to whom they can address their complaints. In addition to the platform Soy Usuario implemented by the IFT and PROFECO, effective protocols for collaboration must be concluded between the two institutions regarding the provision of advertisement, covering, for instance, procedures to be followed when a complaint is mistakenly directed to the IFT.

PROFECO plays a key role in communication markets by protecting and promoting consumer rights and has a mandate to empower consumers through improved information and education. There has been a large turnover of leadership in recent years and although there may be legal constraints, the ideal solution may be to establish a fixed-term appointment for the head of PROFECO.

Institutional roles on audiovisual content regulation

Audiovisual content regulation could benefit from strengthening the IFT's role, especially to guarantee the rights of children and people with disabilities. The adoption of an approach that encourages co-regulatory and consumer empowerment mechanisms would also improve current audiovisual content.

Under the current legal framework, several institutions are responsible for audiovisual content regulation in Mexico, notably SEGOB, the Ministry of Health (Secretaría de Salud) and the IFT. These institutional arrangements cause disputes, such as in relation to the rights of audiences which are only defined in a general manner. Disputes of this nature should be resolved and the role of the IFT in informing and instructing the audiovisual content market in the areas of broadcasting and telecommunication should be strengthened as part of its general mission as a converged regulator, while maintaining the contribution of other entities in charge of specific issues, such as health, copyright and so forth.

Moreover, technological developments are expected to make traditional approaches to monitoring audiovisual content more challenging, in terms of classification of breaches to the rights of audiences. Legal instruments addressing this issue may need to be reviewed

in the future. The best way forward may be to develop co-regulatory mechanisms (e.g. industry-driven codes of conduct) and to promote tools to enhance consumer empowerment (e.g. parental control); some of these are already foreseen in the LFTR provisions, but have not yet been implemented. That being said, issues around the protection of children and accessibility have not been given the importance they deserve. Left to self-regulatory mechanisms, they may in the future need the development of specific regulatory measures that consider international best practices. Good practices include the adoption of co-regulatory schemes as a way to balance and respect the rights of audiences, particularly for children and people with disabilities, and at the same time protect and respect human rights, including freedom of speech.

The specialised courts

The specialised courts would benefit from a modicum of in-house technical support. The budget assigned to the courts should allow judges and their staff to receive specific training in their areas of competence. The terms of appointment for the specialised judges should be extended to at least five years, and their appointments should be made in a manner that ensures continuity of expertise.

The creation of specialised courts in highly technical and specialised matters such as telecommunication services, broadcasting and economic competition is a positive outcome of the reform. However, their practical establishment has encountered some obstacles with respect to human resources and their expertise in and experience of such specialised topics. It appears that the training for judicial officials, to date, has primarily relied on academia and contacts with foreign judicial institutions, while the contributions provided by the Mexican state have been limited.

The current situation is therefore less effective than it might otherwise be and could ultimately lead to counterproductive outcomes. The rationale for forming such courts was to create a setting in which judges specialised by subject would be more effective. Certainly, the legal changes regarding the non-suspension of the regulators' determinations have significantly contributed to improving the efficiency of the judicial apparatus in the telecommunication and broadcasting sectors: decisions that in the past took approximately eight years of appeal are examined today within a one-year time frame. However, adequate training for judges is now instrumental to maximise procedural efficiency.

To this end, the specialised courts and judges would benefit from having a modicum of in-house economic and technical expertise (economists, engineers). This would provide them with permanent support in their assessments, including consultations with any external experts and consultants that the parties hire on a case-by-case basis which is optional under the current system. Moreover, the budget assigned to these judicial institutions should allow judges and justices to receive specific training in their areas of competence, be it through in-house courses or by attending diverse events or conferences to gain technical knowledge and insight.

A related issue is the excessively short term of appointment for the judges of the specialised courts, which ranges from two to three years, depending on the appointment order adopted by the Superior Council of the Judiciary. These terms are insufficient for the judicial officials to build up an adequate base of knowledge, especially when considering the steep learning curves associated with acquiring expertise. In this regard, a minimum of five-year appointment would foster the effectiveness of the courts' human capital and ensure greater stability and autonomy in the execution of their functions. Concomitantly, however, just causes for removal should be clearly defined to ensure the

continued suitability of the judges to carry out their mandate. Furthermore, the appointment of specialised judges should be made in a sliding manner to ensure a smooth transition and continuity of expertise.

The composition of the Boards of the IFT and COFECE and the IFT's Advisory Council

The number of Board members of the IFT and the Federal Economic Competition Commission (Comisión Federal de Competencia Económica, COFECE) could be reduced, as should the number of members on the IFT's Advisory Council.

The size and composition of the IFT's and COFECE's Boards could result in delays in the decision-making processes. Although the commission structure is consistent with good practice principles aimed to promote more comprehensive decision making and include individuals with diverse backgrounds, which in turn reduces the risk of industry capture, many regulators around the world, including telecommunication regulators in OECD countries, have adopted smaller board structures. Most have three- to five-member boards, making the seven-member boards of the IFT and COFECE an exception rather than the norm.[6] There are also regulatory institutions in other industries that have boards with no more than five members (e.g. energy and postal services).[7]

Consequently, in order to reduce bureaucracy and bolster efficient and timely decision-making processes within the IFT and COFECE, the current governance structure could be set at five board members.[8] In this configuration, the benefits of grouping professionals from different backgrounds and with diverse knowledge may be preserved. At the same time, this would provide enough members to guard against industry capture, while countering the stalling of decisions due to disagreements of the members of the Board.

Another aspect worth reviewing is the current configuration of the IFT's Advisory Council of 15 members, which seems excessive *vis-à-vis* other jurisdictions and considering the needs of the regulator. Although the role of the advisory council can be valuable to generate more robust discussions within the regulator and provide different positions from knowledgeable professionals from varied backgrounds, the combination of such a sizeable advisory council with a rather large board (*pleno*) could seriously delay the adoption of key decisions by the regulator. While there is no "golden rule" on the matter, reducing the number of advisory council members by at least half could preserve the benefits derived from the council's input while decreasing the costs associated with less efficient decision making. An alternative could also be to have different advisory groups for different topics. For instance, there could be three advisory groups on different issues, such as competition, media and content, and telecommunication, each group formed by three or five people. By doing this, the specialised advice could be more useful to the work of the regulator.

Tasks of the IFT Board and contact rules for the Board

The responsibilities of the IFT Board could be reviewed and the Board should be able to delegate some of its responsibilities to the IFT's internal departments. The obligation to electronically record meetings between regulated entities and IFT commissioners could be simplified so as to retain only the publication of the dates of the meeting and the regulated entities with whom the commissioners are meeting.

The IFT Board is currently confronted with a very high number of tasks and responsibilities as the LFTR established a substantial range of activities that cannot be

delegated. This range of responsibilities could be reduced and the Board could be able to delegate some of the tasks to different departments within the IFT. This would allow the Board to focus on the major decisions that require collegial discussions and resolutions.

The LFTR determines that outside of hearings, the commissioners of the IFT Board can only discuss matters with industry through interviews that are electronically recorded and stored. Yet this procedure prevents agents from regulated entities from revealing sensitive information that the Board might need to take well-founded decisions.

It is common practice for regulators in OECD countries to publish with which entities the commissioners are meeting as well as the dates of the meeting, but most do not make an electronic recording of such meetings. The LFTR could be amended to eliminate the obligation to record and store the recordings of the meetings with industry. However, if such changes are made, a record should be kept of the date/time, the participants as well as their affiliations, and the duration of such meetings. Additionally, these records should be published periodically (e.g. monthly).

Notes

1. The final low-power analogue stations remaining in service were switched off in December 2016.
2. For instance, the fines in the European Union may be up to 10% of the total income – that is, worldwide – obtained by the infringing company during the previous fiscal year, a rule that also exists in Germany and the United Kingdom; Australia provides for an alternative fine of up to 10% of the income earned in the 12 months prior to the occurrence of the breach, if the specific benefit perceived by the infringer cannot be determined; in Switzerland, the cap on the fines equals 10% of the income earned in the Swiss market during the preceding 3 fiscal years.
3. Among which the following countries can be mentioned: Australia, Canada, Ireland, Israel, Japan, Korea, Mexico, Norway, the United Kingdom and the United States, as well as Brazil, Indonesia and the Russian Federation.
4. BT's peering policy can be found at: www.bt.net/info/peering.shtml.
5. It is worth noting that the co-ordination on matters such as e-government and ICT procurement across the public sector is undertaken by the Interministerial Commission for the Development of Electronic Government (CIDGE), which was created by an Executive Order from 9 December 2005.
6. Notable exceptions include the Canadian Radio-television and Telecommunications Commission (whose board can be eventually composed of over ten members), the Swedish Post and Telecom Authority (which has seven board members), Ofcom in the United Kingdom (whose board is integrated by nine members), as well as its Competition and Markets Authority, and the Spanish National Commission on Markets and Competition (which, to date, has an eight-counsellor board), which carries out both *ex ante* and *ex post* intervention in telecommunication and other economic sectors. Nevertheless, several telecommunication and broadcasting regulators have three-member (e.g. the German Bundesnetzagentur and the Colombian Communications Regulation Commission), four-member (e.g. the Belgian Institute for Postal Services and Telecommunications) or five-member boards (e.g. the US Federal Communications Commission, the Czech Telecommunication Office and Luxembourg's Institut luxembourgeois de régulation). Furthermore, several competition agencies in OECD jurisdictions have no more than five board members: the Belgian Collège de la concurrence and the Italian Autorità Garante della Concorrenza e del Mercato have three-member boards; Luxembourg's Conseil de la concurrence and Ireland's Competition and Consumer Protection Commission have four commissioners; while the Japanese Fair Trade Commission and Brazil's CADE have five-member bodies in charge of ruling on competition cases.
7. Such is the case of the German Bundesnetzagentur, whose board is composed of three members, and is in charge of regulating energy, telecommunication, postal and rail industries. Another example is the Belgian Institute for Postal Services and Telecommunications, with a four-member board charged with regulating not only telecommunication, but also media, radio and postal services. Lastly, one may mention Luxembourg's Institut luxembourgeois de régulation, which has a five-member board and is competent for regulating energy, natural gas, postal services, railroads and airports.
8. An odd number of members should be employed, in any case.

References

Cave, M. and E. Flores-Roux (2017), "How can Mexico benefit from the digital economy", Working paper prepared for Consejo Ejecutivo de Empresas Globales (CEEG), 25 January 2017, Mexico City, http://ceeg.mx/new/wp-content/uploads/2017/01/CEEG-Final-Version-25-jan-2017.pdf.

COFECE (Comisión Federal de Competencia Económica) (2015), *Federal Economic Competition Law*, Comisión Federal de Competencia Económica, https://www.cofece.mx/cofece/images/Documentos_Micrositios/Federal_Economic_Competition_Law.pdf.

Coleago Consulting (2011), "Best practice spectrum renewal and pricing: A review of international best practice and the lessons for the government of Bangladesh", prepared for the World Bank, Washington, DC, http://documents.worldbank.org/curated/en/908691468210579972/text/832430WP0P122200Box379886B00PUBLIC0.txt.

Cramton, P. (2002), "Spectrum auctions", Chapter 14 in: Cave, M., S. Majumdar and I. Vogelsang (eds.), *Handbook of Telecommunications Economics*, Vol. 1, pp. 605-639, Elsevier Science, Amsterdam.

Ghosh, M. (2017), "Reliance Jio boosts India past 20% IPv6 capability", *APNIC Blog*, 7 February, https://blog.apnic.net/2017/02/07/reliance-jio-boosts-india-past-20-ipv6-capability.

Government of Mexico (2013), *Plan Nacional de Desarrollo 2013-2018* [National Development Plan 2013-2018], Secretaría de Comunicaciones y Transportes, www.sct.gob.mx/fileadmin/banners/Programa_Sectorial_de_Comunicaciones_y_Transportes.pdf.

Government of Mexico (1917), *Constitución Política de los Estados Unidos Mexicanos* [Political Constitution of the United Mexican States], last reformed 19 July 2013, http://oig.cepal.org/sites/default/files/1917_constitucion_politica_de_los_estados_unidos_de_mexico.pdf.

Growitsch, C., J. Marcus and C. Wernick (2010), "The effects of lower mobile termination rates (MTRs) on retail price and demand", *Communications and Strategies*, No. 80, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1586464.

GSMA and Coleago Consulting (2014), "The cost of spectrum auction distortions: Review of spectrum auction policies and economic assessment of the impact of inefficient outcomes", GSMA and Coleago Consulting, www.gsma.com/spectrum/wp-content/uploads/2014/11/The-Cost-of-Spectrum-Auction-Distortions.-GSMA-Coleago-report.-Nov14.pdf (accessed 10 February 2017).

IFT (Instituto Federal de Telecomunicaciones) (2017a), "Spectrum fees for telecommunication services", unpublished material provided by the Instituto Federal de Telecomunicaciones.

IFT (2017b), "Ofertas de referencia 2016-2017" [Reference offers 2016-2017], Instituto Federal de Telecomunicaciones, www.ift.org.mx/politica-regulatoria/ofertas-de-referencia-2016-2017.

IFT (2016a), "Licitación No. IFT-4 (Radiodifusión AM y FM)" [Bid No. IFT-4 AM/FM Broadcasting], Instituto Federal de Telecomunicaciones, April, www.ift.org.mx/industria/espectro-radioelectrico/radiodifusion/2016/licitacion-no-ift-4-radiodifusion-am-y-fm.

IFT (2016b), "El IFT anuncia los resultados de la tercera etapa de la Licitación para el concesionamiento de hasta 80 Mhz en la Banda AWS (1.7/2.1 GHz)" [The IFT announces the results of the third stage of the tender for the concession of up to 80 Mhz in the AWS band (1.7/2.1 GHz)], press release, 18 February, Instituto Federal de Telecomunicaciones, www.ift.org.mx/comunicacion-y-medios/comunicados-ift/es/el-ift-anuncia-los-resultados-de-la-tercera-etapa-de-la-licitacion-para-el-concesionamiento-de-hasta.

IFT (2016c), "Oferta de referencia para la desagregación del bucle local" [Reference offer for the local loop unbundling], Instituto Federal de Telecomunicaciones, 7 January, www.ift.org.mx/industria/politica-regulatoria/preponderancia-telecom/oferta-referencia-desagregacion-bucle-local.

IFT (2016d), "Acuerdo mediante el cual el pleno del Instituto Federal de Telecomunicaciones emite los Lineamientos para la comercialización de servicios móviles por parte de operadores móviles virtuales" [Agreement through which the plenary of the Federal Telecommunications Institute issues the guidelines for the commercialisation of mobile services by virtual mobile operators], Instituto Federal de Telecomunicaciones, 16 February, www.ift.org.mx/sites/default/files/industria/temasrelevantes/4722/documentos/proyectoacuerdooperadoresmovilesvirtualesversionfinal16022016.pdf.

IFT (2015), "El IFT somete a opinion pública luneamientos para crear el Sistema Nacional de Información de Infraestructura" [The IFT submits public opinion guidelines for creating the national infrastructure information system], press release, 25 November, Instituto Federal de Telecomunicaciones, www.ift.org.mx/sites/default/files/comunicacion-y-medios/comunicados-ift/comunicadoift102.pdf.

IFT (2014a), "Oferta pública de infraestructura pasiva" [Public offer of passive infrastructure], public offer, Instituto Federal de Telecomunicaciones, www.ift.org.mx/sites/default/files/oferta_publica_infra_pasiva.pdf.

IFT (2014b), *Versión Pública del Acuerdo P/IFT/EXT/060314/76* [Public version of the agreement P/IFT/EXT/060314/76], 6 March, Instituto Federal de Telecomunicaciones, www.ift.org.mx/sites/default/files/conocenos/pleno/sesiones/acuerdoliga/piftext06031476versionpublicahoja.pdf.

INEGI (Instituto de Nacional de Estadística y Geografía) (2017), *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2016* [National Survey on Availability and Use of Information and Communication Technologies in Households 2016], Instituto de Nacional de Estadística y Geografía, Mexico City, www.beta.inegi.org.mx/proyectos/enchogares/regulares/dutih/2016/default.html.

Laffont, J.-J. and J. Tirole (1988), "The dynamics of incentive contracts", *Econometrica*, Vol. 56/5, pp. 1 153-1 175, www.jstor.org/stable/1911362.

LFCE (2014), Ley Federal de Competencia Económica (Federal Economic Competition Law), *Diario Oficial de la Federación*, Mexico City, 23 May (last reform published on 27 January 2017), www.diputados.gob.mx/LeyesBiblio/pdf/LFCE_270117.pdf.

Martínez, C. (2016), "Regular a Telmex como proveedor de internet, piden a IFT" [Regulating Telmex as an Internet provider, ask IFT], El Universal, 27 July, www.eluniversal.com.mx/articulo/cartera/finanzas/2016/07/27/regular-telmex-como-proveedor-de-internet-piden-ift (accessed 6 February 2017).

OECD (Organisation for Economic Co-operation and Development) (2016a), "Commitment decisions in antitrust cases", OECD, Paris, www.oecd.org/daf/competition/commitment-decisions-in-antitrust-cases.htm.

OECD (2016b), "Sanctions in antitrust cases", OECD, Paris.

OECD (2016c), "OECD Code of Liberalisation of Capital Movements", OECD, Paris, www.oecd.org/daf/inv/investment-policy/CapitalMovements_WebEnglish.pdf.

OECD (2014a), *OECD Review of Telecommunication Policy and Regulation in Colombia*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264208131-en.

OECD (2014b), *Recommendation of the Council on Digital Government Strategies*, OECD Publishing, Paris, www.oecd.org/gov/digital-government/Recommendation-digital-government-strategies.pdf.

OECD (2012), *OECD Review of Telecommunication Policy and Regulation in Mexico*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264060111-en.

OECD (2008), "Economic considerations in the managements of IPv4 and in the deployment of IPv6", Ministerial background report, OECD, Paris, www.oecd.org/sti/ieconomy/40605942.pdf.

Ofcom (2010), "SRSP: The revised framework for spectrum pricing: Our policy and practice of setting AIP spectrum fees", Ofcom, London, https://www.ofcom.org.uk/__data/assets/pdf_file/0024/42909/srsp-statement.pdf.

Ofcom (2009), "Wholesale mobile voice call termination: Consultation", 22 April, Ofcom, London, www.ofcom.org.uk/consultations-and-statements/category-1/mobilecallterm/summary (accessed 6 February 2017).

SCT (Secretaría de Comunicaciones y Transportes) (2016), *Federal Telecommunications and Broadcasting Law*, 1 February, Secretaría de Comunicaciones y Transportes, www.gob.mx/cms/uploads/attachment/file/61238/LFTR_english.pdf.

SEGOB (Secretaría de Gobernación) (2014a), "Acuerdo mediante el cual el Pleno del Instituto Federal de Telecomunicaciones emite los Lineamientos generales que establecen los requisitos, términos y condiciones que los actuales concesionarios de radiodifusión, telecomunicaciones y telefonía deberán cumplir para que se les autorice la prestación de servicios adicionales a los que son objeto de su concesión" [Agreement by which the plenary of the Federal Telecommunications Institute will issue the general guidelines to set the requirements, terms and conditions as the current licenses for broadcasting, telecommunication and telephony must meet in order to be allowed the provision of additional services that are the subject granted], *Diario Oficial de la Federación*, 28 May, Secretaría de Gobernación, www.dof.gob.mx/nota_detalle.php?codigo=5346486&fecha=28/05/2014.

SEGOB (2014b), "Acuerdo mediante el cual el Pleno del Instituto Federal de Telecomunicaciones emite la metodología para el cálculo de costos de interconexión de conformidad con la Ley Federal de Telecomunicaciones y Radiodifusión" [Agreement whereby the plenary of the Federal Institute of Telecommunications issues the methodology for the calculation of interconnection costs in accordance with the Federal Law of Telecommunications and Broadcasting], *Diario Oficial de la Federación*, Secretaría de Gobernación, www.dof.gob.mx/nota_detalle.php?codigo=5376422&fecha=18/12/2014.

SEGOB (2013), "Decreto por el que se reforman y adicionan diversas disposiciones de los artículos 6o., 7o., 27, 28, 73, 78, 94 y 105 de la Constitución Política de los Estados Unidos Mexicanos, en materia de telecomunicaciones" [Decree by which amending and supplementing various provisions of Articles 6, 7, 27, 28, 73, 78, 94 and 105 of the Constitution of the United Mexican States, in telecommunication], *Diario Oficial de la Federación*, 11 June, Secretaría de Gobernación, www.dof.gob.mx/nota_detalle.php?codigo=5301941&fecha=11/06/2013.

Televisa Group (2016), "FORM 20-F/A Amendment No. 2", Commission file number 1-12610, United States Securities and Exchange Commission, Washington, DC, https://www.sec.gov/Archives/edgar/data/912892/000110465916131615/a16-14470_120fa.htm.

Annex 1.A1.
State of implementation of the 2012 OECD recommendations

	Implementation by 2016	Level of implementation	Legal basis
Telecommunication sector			
Ensure low barriers to entry and "contestable" telecommunication markets			
Eliminate all foreign investment restrictions/caps on fixed-line telecommunication operators in Mexico.	Through the constitutional reform,[1] foreign direct investment (FDI) is now allowed in Mexico up to 100% in telecommunication. Additionally, due to the Sole Concession Scheme, concessions for telecommunication or broadcasting may only be granted to Mexican individuals or companies legally incorporated in Mexico. For global companies looking to expand operations to Mexico, a new legal Mexican entity is often created, which is subject to Mexican law, but meets the criteria to be able to request a concession to provide services in the country.	Implemented	– FDI (Mexican Constitution, Transitory Article 5) – Sole Concession Scheme (LFTR, Art. 66; LFTR, Art. 71)
Reform the existing concession system to a simpler class-licensing regime (except for resource scarcity restraints, i.e. spectrum).	The reform mandates a convergent legal system to eliminate regulatory barriers and to allow concessionaires to provide all services under a single or "sole" licensing scheme. The new concessions regime differentiates between a single concession that allows the provision of all telecommunication and broadcasting services and radio spectrum concessions that grant the right to use frequency bands of the radio spectrum for determined use (commercial, public, social use). In order to exploit a spectrum concession, the licensee must also obtain a sole concession.	Implemented	– (Mexican Constitution, Art. 27)
Monitor and enforce existing obligations.	The constitutional reform refers to the Federal Telecommunications Institute's (Instituto Federal de Telecomunicaciones, IFT) role to monitor and enforce current obligations, and established that the IFT had 180 calendar days after its creation to implement this review. This was done on time. The IFT also must review the enforcement of the measures imposed upon dominant ("preponderant") operators every two years. Such review shall be made in terms of the resolutions by which the IFT determined the economic agents as preponderant and to enforce measures necessary to keep them from affecting free competition and entry, and thus, from harming end users.	Implemented	– (Mexican Constitution, Transitory Article 8, Numerals III and V)

State of implementation of the 2012 OECD recommendations (*continued*)

	Implementation by 2016	Level of implementation	Legal basis
Simplify and encourage the entry of resellers to the market (including mobile virtual network operators, MVNOs).	Several measures have been implemented to encourage the entry of resellers to the market, including: a. The executive branch must guarantee the deployment of a wholesale mobile telecommunication network (Red Compartida) that will sell its capacities and services in an unbundled and non-discriminatory manner, only to infrastructure and virtual operators. b. The IFT has regulation on infrastructure sharing (e.g. national infrastructure information system), interconnection, local loop unbundling, and has issued rules for the commercialisation of mobile services by MVNOs. c. The law makes it possible to provide mobile services without being a holder of spectrum frequency nor deploying any network infrastructure. d. MVNOs may obtain their own numbers and an authorisation for a reseller, regardless of the concession.	Implemented	– Shared network (Red Compartida): (Mexican Constitution, Transitory Article 16) – Organism for the Promotion of Investment in Telecommunications (Organismo Promotor de Inversiones en Telecomunicaciones, PROMTEL) responsibilities (PROMTEL's Decree of Creation, Art. 1) – Articles related to entry of MVNOs (LFTR, Art. 170; Art. 173, Numeral III) – IFT MVNO guidelines
Ensure that regulations and regulatory processes are transparent, non-discriminatory and applied effectively			
Reform the current legal system to prohibit courts from suspending and overturning policy/regulatory decisions systematically, and provide protection for individuals acting on behalf of a public authority.	The reform establishes that the general rules, acts or omissions of the IFT can only be contested through indirect writ of *amparo* and will not be subjected to suspension, restricting the ability of operators to block the application of regulatory measures by means of "suspensions" and "*amparo* actions". Suspensions are no longer allowed, so that decisions are implemented before the final decision on the *amparo* action is reached. In addition, *amparo* actions for intra-procedural acts are prohibited. Furthermore, the constitutional reform established a specialised court for the judicial review of cases in telecommunication, broadcasting and competition.	Implemented	– *Amparo* contestations (Mexican Constitution, Transitory Article 9) – Specialised courts (Mexican Constitution, Transitory Article 12)
Separate responsibilities for policy formulation (ministry) from regulatory/marketing functions (regulator) (e.g. granting concession process) in order to eliminate the "double window".	The IFT became responsible to grant/modify/extend concessions, revoke concessions or permits, and impose fines. The Ministry of Communications and Transport (Secretaría de Comunicaciones y Transportes, SCT) makes policy (universal coverage, digital inclusion, public site coverage, etc.) and is entrusted to undertake the necessary actions and measures to guarantee the continuity of telecommunication and broadcasting services when the IFT gives notice of the existence of concession termination causes due to revocation concessions, dissolutions or bankruptcy of operators. The constitutional reform ended the "double window" between the regulatory and competition authorities, as the IFT no longer has to ask for an opinion regarding auctions, which are now processed internally by the Economic Competition Unit (Unidad de Competencia Económica, UCE) among other instances.	Implemented	– Responsibilities of the IFT (LFTR, Articles 7 and 8) – Responsibilities of the SCT (LFTR, Art. 9)

State of implementation of the 2012 OECD recommendations (*continued*)

	Implementation by 2016	Level of implementation	Legal basis
The Federal Telecommunications Commission (Comisión Federal de Telecomunicaciones, COFETEL [now IFT]) should have greater autonomy to carry out its mandate and should have the power to enforce/revoke concessions.	The reform established the IFT as an autonomous body responsible for regulating spectrum, networks, services and competition in the telecommunication and broadcasting sectors. The IFT became responsible to grant/modify/extend concessions, revoke concessions or permits and impose fines. In this regard, by constitutional controversy 117/2014, the Supreme Court established that Article 28 of the Constitution gives broad regulatory powers on matters within its competence, while not exceeding the limits set by the Constitution and statutory law.	Implemented	– IFT competences (Mexican Constitution, Art. 28 and LFTR, Articles 7 and 8)
COFETEL (IFT) should have the authority to declare significant market power and subject that company to appropriate remedies.	The IFT has the mandate to determine the existence of dominant operators in broadcasting and telecommunication, and to enforce the necessary measures to keep those operators from affecting free competition and entry, and thus, from harming end users. The measures imposed upon dominant operators should be reviewed every two years.	Implemented	– (Mexican Constitution, Transitory Article 8, Numeral III)
The jurisdictions of COFETEL (IFT) and the Federal Competition Commission (Comisión Federal de Competencia, COFECO [now Comisión Federal de Competencia Económica, COFECE]) and the various other regulatory bodies should be clearly defined and co-operation should be formalised.	The IFT is the competent authority for economic competition matters in the telecommunication and broadcasting sectors, whereas COFECE is the competition authority in other sectors of the market. Under the IFT's mandate to declare preponderant market agents or agents who hold significant power in any of the relevant markets in the telecommunication and broadcasting sectors, the IFT will inform COFECE of its rulings so that it can proceed in accordance with the law in that matter. In the case of a jurisdictional dispute between the two regulatory bodies, a designated tribunal will decide who the relevant competent authority is. There have been two such disputes: one in 2015 in which the IFT was determined to have jurisdiction and one recently which allowed both authorities to work jointly on the case. The IFT's co-operation with the Federal Consumer Protection Agency (Procuraduría Federal del Consumidor, PROFECO), is detailed below.	Implemented[2]	– COFECE's responsibilities (Federal Economic Law, Articles 10-12) – IFT's responsibilities (Federal Economic Law, Art. 5; LFTR, Articles 7 and 8) – IFT and COFECE co-operation (LFTR, Art. 264) – IFT and PROFECO responsibilities and co-operation (LFTR, Articles 191-193)
The regulator should have greater budgetary independence and a clearly defined and sufficient source of funding.	The IFT's Board shall annually approve the pre-proposal of the institute's budget submitted by the President Commissioner. Once approved, it shall be sent to the Ministry of Finance and Public Credit (Secretaría de Hacienda y Crédito Público, SHCP) in order for it to be included in the proposed expenditure budget of the federation to be sent to Congress. Additionally, the reform asserted that the Chamber of Deputies in the federal budget of expenditures will make necessary funds available to ensure the proper functioning of regulatory bodies, including the IFT. The IFT's budget has been around MXN 2 000 million since the institute was created; for 2017 the IFT has requested a budget of MXN 1 980 million.	Implemented	– (Mexican Constitution, Transitory Article 13 and LFTR, Art. 7, Numeral VI)
The regulator should have the power to impose fines high enough to ensure regulatory adherence.	The IFT was granted the power to issue sanctions against concessionaires that have undermined legal or administrative provisions or failed to comply with the obligations established in their respective concessions titles. For not meeting quality of service (QoS) standards, the IFT can fine 1% to 3% of total revenue. Firms guilty of collusion/abuse of dominance in the broadcasting sector can be fined up to 10% of their annual revenue, or twice that amount for repeat offenders. In the case of a repeat offender, the IFT may implement the divestiture of assets it deems necessary to eliminate anticompetitive effects.	Implemented	– (Mexican Constitution, Art. 28 and Federal Law of Economic Competition, Articles 5 and 127; LFTR, Art. 298)

State of implementation of the 2012 OECD recommendations (*continued*)

	Implementation by 2016	Level of implementation	Legal basis
QoS indicators should be published regularly.	There are quality guidelines for fixed and mobile services in place but which are currently being revised; guidelines for fixed broadband digital terrestrial television (DTT) broadcasting and pay TV are also being developed. Some specific entities (e.g. preponderant agents) are subject to stricter quality indices and information reporting obligations (higher than the rest). For mobile operators, the IFT measures the quality of telephony, SMS and Internet access. The Fundamental Technical Plan for Quality of Local Mobile Services of 2011 is operational and all data collected during the measurements performed by the IFT are published on the institute's website on a quarterly basis.	Implemented	– (LFTR, Art. 15, Numerals XLVII and L)
Wholesale indicators from dominant firms should be available to new entrants (e.g. access to leased lines, etc.).	Dominant firms' reference offers for the provision of these wholesale services include QoS parameters as well as service level agreements, which may be updated during each annual review. At present, there are two reference offers under analysis (i.e. Oferta de Referencia para la Desagregación del Bucle Local, OREDA, and Oferta Pública de Infraestructura, OPI) by the IFT. OREDA relates to local-loop unbundling and OPI is concerned with passive infrastructure in the broadcasting sector.	Implemented	– (Preponderance measures for the telecommunication and broadcasting sectors)
Establish formal public consultations and transparency procedures for COFETEL (IFT) to follow to ensure increased accountability and transparency.	All regulatory provisions of general scope of applicability must go through a public consultation process. In any spectrum auction, a formal public consultation is held in which all the procedures and rules are displayed, so all interested parties can give an opinion and make suggestions that could improve the rules and scheme of the tender process. The IFT publishes a time frame to receive all formal opinions and a document that states which comments were taken into account and which were not, as well as the reasons behind the decision.	Implemented	– (LFTR, Art. 51)
Reform regulations to stimulate competition and eliminate regulations, except where clear evidence demonstrates that they are the best way to serve the broad public interest			
COFETEL (IFT) should be authorised to regulate interconnection tariffs *ex ante* to foster competition among operators.	In addition, according to Article 125 of the Federal Telecommunications and Broadcasting Law (Ley Federal de Telecomunicaciones y Radiodifusión, LFTR), the IFT issued a cost methodology whose main characteristic is the use of pure long-run incremental cost (LRIC). In 2014, a cost model based on pure costs was elaborated, which allowed for determining interconnection rates for 2015-17. The cost model, which will be subject to public consultation, will determine interconnection rates for 2018-20, whose main characteristic is the use of 4G technologies. Tariffs offered by one concessionaire to another one must be granted to a third concessionaire in a non-discriminatory and transparent way. Preponderant agents have an asymmetric rate, which is zero for calls terminated in its network and cost-based for termination in any other network. This asymmetric regime will continue as long as there is a preponderant agent or an agent with more than 50% of the telecommunication sector, and it may continue as long as the agent has substantial market power (SMP) in the termination of calls. Under the new regulatory framework, interconnection rates are first negotiated by the operators and, in case of disagreement on specific conditions, the IFT may decide on those conditions based on a costing model. However, the interconnection rate to be applied each year is updated and made public by the IFT. The IFT has established the minimum technical conditions of interconnection, a set of interconnection sites and unbundling obligations.	Implemented	– Interconnection regulation (LFTR, Art. 125 and 126) – Interconnection with preponderant agents (LFTR, Articles 131 and 269)

State of implementation of the 2012 OECD recommendations (*continued*)

	Implementation by 2016	Level of implementation	Legal basis
Telmex (fixed-line incumbent) should be required to consolidate local dialling areas as determined by COFETEL (IFT).	The elimination of national long-distance charges was implemented on 1 January 2015. Therefore, consolidation of local dialling areas became irrelevant for consumers. Additionally, the IFT determined that the preponderant agent's interconnection points were national, which means that they can deliver any destination traffic, independent of where the traffic is received.	Implemented	– National long-distance charges (LFTR, Art. 118) – Preponderant economic agent (PEA) interconnection points (PEA Interconnection Points Agreement, Art. 6)
COFETEL (IFT) should be authorised to declare bottlenecks and essential facilities and to establish non-discriminatory conditions to access these facilities.	The IFT is the authority to determine essential facilities and can therefore require any concessionaire to share infrastructure when it is essential to provide services, there are no substitutes and there is available capacity. In the event that no agreement can be reached among the interested parties, the IFT can also solve any dispute based on an LRIC methodology. In the case that a PEA is one of the parties in the dispute, it must offer any condition agreed with a third party or issued by the IFT to other concessionaires under the non-discriminatory principle. The IFT determines the cost models to apply tariffs in unbundling and the access and share usage of passive infrastructure for the dominant telecommunication player. PEAs must submit their terms/conditions for unbundled services, which must be approved by the IFT. One of the main elements of the asymmetric regulation imposed on Telmex-Telnor as the PEA is the unbundling measures, which state that concessionaires would require some technical and operative conditions that Telmex-Telnor would have to consider in their first local-loop unbundling reference offer (OREDA). The IFT accepted this offer on 9 December 2015. OREDA includes guidelines and obligations for the PEA to grant its competitors non-discriminatory access to its essential facilities through different services: wholesale line rental (voice and Internet) and bitstream access services (at a local, regional and national level), as well as full and shared local-loop unbundling and collocation services. Rates were determined by the IFT through cost models. The Reference Offers for Passive Infrastructure Access, Fixed and Mobile were approved by the IFT in November 2015 and will be in force from 2016-17. These reference offers include terms and conditions that Telmex, Telnor, Telcel and Telesites have to observe to provide concessionaires access to their infrastructure.	Implemented	– IFT authorisation to declare essential facilities (Mexican Constitution, Art. 28; LFTR, Art. 139; Federal Economic Competition Law, Art. 60) – Unbundling measures imposed on PEAs of the telecommunication sector (Preponderant Measures for the Telecommunication Sector, Annex 3; LFTR, Art. 269) – Local-loop unbundling reference offers (OREDA, Telnor and Telmex) – Requirement to issue reference offers to the IFT (LFTR, Art. 267, Numeral I) – Passive infrastructure access reference offers (example) (Telnor, Telmex, Telcel) – IFT dispute mediation/cost methodology (LFTR, Articles 129 and 137)

State of implementation of the 2012 OECD recommendations (*continued*)

	Implementation by 2016	Level of implementation	Legal basis
COFETEL (IFT) should be able to undertake market reviews, declare market powers and apply remedies as appropriate, and impose regulations to protect consumers.	The IFT has the ability to impose asymmetric measures upon dominant players in telecommunication and broadcasting (regulation, functional or structural accounting separation, effective unbundling of network resources and services). The measures may include regulation of information, quality, exclusive agreements, equipment, asymmetric tariffs, as well as access, unbundling and the possibility of functional, structural or accounting separation. The IFT has two relevant internal bodies which are in charge of performing the activities discussed under this recommendation: the UCEand the Investigation Authority (Autoridad Investigadora, AI). Violations with regard to the rights of users and customer protection are enforced by PROFECO. The IFT enforces the Federal Economic Competition Law (Ley Federal de Competencia Económica, LFCE) in the telecommunication and broadcasting sectors.	Implemented	– Declare preponderance (Mexican Constitution, Transitory Article 8, Numeral III and Federal Economic Competition Law, Art. 59) – Establish sanctions (Federal Economic Competition Law, Art. 127) – PROFECO's and the IFT's jurisdiction (LFTR, Art. 297)
COFETEL (IFT) should have the authority to impose a functional and structural separation of an operator that abuses its dominate power.	The IFT can impose asymmetric measures upon dominant/preponderant players in telecommunication and broadcasting, including the possibility of functional, structural or accounting separation, when necessary to prevent anticompetitive effects. In general, the measure must be proportional to the objectives, and justified in an economic analysis of the benefits to consumers. Under the competition law, the IFT may impose functional, structural or accounting separation to an agent with SMP as long as it is a recidivist (at least its second offence).	Implemented	– Establish sanctions (Federal Economic Competition Law, Art. 127) – Function or structural separation (Mexican Constitution, Transitory Article 8, Numeral III and LFTR, Art. 262)
COFETEL (IFT) should set the "X factor" and administer price caps to regulate Telmex's end-user prices, including the use of "sub-caps".	The IFT set the price-cap system parameters applicable to the basket of regulated services by Teléfonos de México in accordance with the established conditions of its concession title and the Preponderance Resolution Agreement.	Implemented	– Price cap (Preponderant Resolution Telmex, Annex 2, Art. 40)
Only operators with significant market power should have to register their wholesale prices.	Dominant agents are required to submit their public reference offers to the IFT, which should include the terms and conditions by which wholesale services will be provided. This procedure to approve wholesale reference offers is defined in the Preponderant Resolution. As a best practice, the IFT makes the reference offers open to the public and accepts comments in the context of a public consultation, though this is not required by the established procedure. For the particular case of the 2015 proposal of Effective Unbundling of the Local Network presented by Telmex-Telnor, the procedure did not allow sufficient time for a public consultation. However, subsequent proposals in 2016 by preponderant agents were submitted for public consultation, along with other reference offers.	Implemented	– (Preponderant Resolution, Annexes 1, 2 and 3)

State of implementation of the 2012 OECD recommendations (*continued*)

	Implementation by 2016	Level of implementation	Legal basis
Sufficient spectrum should be released to meet the growing demand for mobile broadband data service, including releasing some of the Federal Electricity Commission's (Comisión Federal de Electricidad, CFE) dark fibre. Incentives also should be put in place to promote infrastructure sharing.	Since 2013, available spectrum has increased more than 40%: – 222 MHz (allocated for International Mobile Telecommunications [IMT] bands, before the reform) – 80 MHz (made available in the Advanced Wireless Services [AWS] band in 2016) – 90 MHz will be made available in the 700 MHz band (Red Compartida) – 190 MHz (in 2.5 gigahertz [GHz]: 130 MHz auctioned and up to 60 MHz from MVS Comunicaciones). By mid-2018 Mexico will reach almost 600 MHz for international mobile telecommunication services, more than double the spectrum in 2013. The deployment of Red Compartida has allocated 90 MHz of premium unencumbered contiguous spectrum on the 700 MHz band, which is available due to freed spectrum following the transition to DTT. The National Radio Spectrum Programme was established to promote the efficient use of the 700 MHz and 2.5 GHz bands. The Red Troncal project also released the CFE's "dark" or unused fibre in order for the resource to be better used. The IFT planned to auction 80 MHz of spectrum in the AWS (1.7/2.1 GHz) and allocated 70 MHz in the 2016 auction. (In addition, a block of 10 MHz was made available from previously allocated regional blocks in the AWS band). The IFT is currently auctioning 257 frequencies for AM/FM radio and is planning to auction 148 DTT channels and 190 MHz of the 2.5 GHz band.	Implemented	– Red Compartida and Red Troncal (Mexican Constitution, Transitory Article 16) – National Radio Spectrum Programme (Mexican Constitution, Transitory Article 17, Numeral V)
Modify the legal framework to promote infrastructure sharing and to remove barriers to obtain rights of way, by making governmental facilities available for mobile operators to deploy their networks and accelerating procedures to grant permits for rights of way.	Under the passive infrastructure project and the National Infrastructure Information System (Sistema Nacional de Información de Infraestructura, SNII), the government will make available to all operators, under equal-access conditions, federal real estate and rights of way that can be used for the deployment of telecommunication networks and equipment. The projects include recommendations to states/municipalities to standardise and simplify requirements, lease of government real estate for telecom infrastructure, and authorisations needed to expedite the deployment of infrastructure. The IFT has the power to declare bottlenecks and essential facilities and to mandate the sharing of that infrastructure or access regulation as necessary. Under the asymmetric regulation framework, the IFT has established measures for the preponderant agents in telecommunication and broadcasting regarding unbundling, infrastructure sharing, as well as resale and access, respect to the local loop, transport infrastructure, dedicated links, transmission towers, passive infrastructure, among others. The dominant carrier also must share its rights of way and no restrictions may be placed on other concessionaires to install/access telecommunication infrastructure in any shared-use real estate, though there is no regulation on inside wiring. The SCT has an important role to determine the infrastructure deployment policy and establish guidelines to access public infrastructure, jointly with other government agencies. For example, access to public buildings is determined in co-ordination with the Institute for Administration and Appraisal of National Property (Instituto de Administración y Avaluos de Bienes Nacionales, INDAABIN). However, the Energy Regulatory Commission (Comisión Reguladora de Energía, CRE) has the legal authority to determine terms and conditions, including rates, to access the CFE's infrastructure. The SCT can also issue recommendations to state and local governments in order to reduce bottlenecks for infrastructure deployment, such as unnecessary procedures, fair access to rights of ways, unjustified charges, etc.	Partial/in progress	– IFT authorisation to declare essential facilities (Mexican Constitution, Art. 28; LFTR, Art. 139; Federal Economic Competition Law, Art. 60) – Unbundling measures/infrastructure sharing imposed on PEAs (Preponderant Resolution, Annex 3; LFTR, Art. 269) – SCT responsibilities, infrastructure deployment policy (LFTR, Art. 9)

State of implementation of the 2012 OECD recommendations (*continued*)

	Implementation by 2016	Level of implementation	Legal basis
The government should clarify the policy of universal service and define plans on how to effectively implement it.	The government has put in place several projects in order to meet the objective of universal coverage with quality at an affordable price: – Red Compartida, a shared wholesale wireless network with Long-term Evolution (LTE) mobile telecommunication technology (also known as "4G" fourth-generation), to promote the efficient use of infrastructure through sharing. The winner, Altán Redes, won with a bid to reach 92.2% national coverage. – The passive infrastructure project (with its four components). – Red Troncal (backbone network). – México Conectado, a project to connect rural and remote public sites to provide Internet connectivity via Wi-Fi hotspots (in schools, public buildings).[3] The SCT's National Development Plan (2013-2018) outlines steps to reach universal coverage in radio, television, and telephony and data services. Additionally, the SCT must publish the social coverage programme every two to four years to detail how to increase coverage and penetration of telecommunication services. This must be validated by the IFT. The Institute works to implement the universal coverage goals established by the federal government, including the National Digital Strategy.	Partial/in progress	– Red Compartida and Red Troncal (Mexican Constitution, Transitory Article 16) – SCT plan (National Development Plan 2013-2018, Section 1.2) – IFT's support for the federal government's digital strategy (LFTR, Art. 15, Numeral XXXI)
PROFECO and COFETEL (IFT) should clarify their roles and take action to facilitate consumers to switch service providers.	PROFECO is the agency mandated by law to protect the rights of consumers against concessionaires, which include verifying that operators charge reasonable and proportionate penalties to customers for contractual obligations (early suspension of contract, unpaid balance or equipment). Concessionaires must register the standard customer contracts of adhesion with PROFECO. The IFT is mandated with the regulation, monitoring and oversight of the quality of telecommunication public services. It establishes the conditions under which the concessionaires have to publish transparent, comparable and updated information on prices and applicable rates, any charges related to the termination of the contract, and information on access and use of services provided to users. Adherence contracts must also be registered in the Public Registry of Concessions administered by the IFT. The IFT established number portability rules in 2014 which state that the operator must unlock a phone immediately without charge in the case of pre-paid, and should unlock in post-pay subscriptions: – once the term of the contract has expired – once the penalty charge has been paid in the case of anticipated termination – at the moment of the purchase of the equipment if it has been paid in full. The IFT and PROFECO shall exchange information related to user complaints and systematic users' rights violations by concessionaires and authorised entities. On 6 July 2015, the IFT and PROFECO jointly issued the Charter of Minimum Rights of Telecommunications Public Services Users.	Implemented	– PROFECO and IFT responsibilities and co-operation (LFTR, Articles 191-193) – IFT and Ministry of Economy (Secretaría de Economía, SE) co-operation (LFTR, Art. 194)

State of implementation of the 2012 OECD recommendations (*continued*)

	Implementation by 2016	Level of implementation	Legal basis
Broadcasting sector			
Telmex should only be allowed to provide television services when it is subject to asymmetric regulations and is in compliance with such regulations.	Telmex was determined to be a preponderant economic agent in telecommunication by the IFT, and as such is subject to asymmetric regulation. Telmex's concession contains a provision which prohibits the company from offering pay TV on its network; however, it may be able to transition to a sole concession under the new concessionary scheme. In this case, Telmex would be able to offer TV services, but would be subject to meeting certain conditions, such as being in compliance with its asymmetric regulation for 18 months and having no risk of adverse effects on competition should Telmex begin offering TV services.	Implemented	– Conditions for the PEA to request a sole concession (General Guidelines to Provide Additional Services, Art. 6) – Sole concessionaire scheme (LFTR, Articles 66-74)
Government should award a third and fourth free-to-air (FTA) national TV license in a fair, non-discriminatory and neutral process.	In 2014, Imagen TV (Channel 3) was granted a concession to establish a new national network with 35 stations and 123 television broadcast coverage areas that can reach up to 106 302 186 people in the country. It started FTA transmission on 17 October 2016 and has three years after receiving the concession to deploy the minimum number of stations to comply with the concept of "national coverage" (30% of the population of each federal entity). In addition to its own network, it currently uses infrastructure from the Public Broadcasting System (Sistema Público de Radiodifusión, SPR). Another concession was scheduled to be awarded in 2014, but was not granted due to a failure to honour the price offered during the auction on the part of the winning company. The IFT is planning to award 148 DTT stations during 2017, including the stations that were not awarded in 2014. The IFT is also granting local concessions for broadcast radio and television services to non-commercial agents (for public and social use). With these actions, the IFT is increasing media plurality; however no active policy, guideline or regulation has been established to increase media plurality.	Implemented	– FTA national TV licenses (Mexican Constitution, Transitory Article 8, Numeral II) – Concessions to non-commercial agents (LFTR, Art. 67, Numeral IV)
Must-carry obligations should apply to all pay TV providers, which should be obliged to carry all terrestrial broadcasting signals. Must-offer obligations should also apply to FTA broadcasters and the conditions (e.g. price, channel bundling) should be reassessed periodically.	The constitutional reform establishes that FTA TV operators must allow pay TV providers to rebroadcast their signals free of charge and without discrimination, with the same quality as it is broadcasted ("must-offer"). Similarly, pay TV providers must carry FTA TV stations free of charge and without discrimination with the same quality as the broadcasted signal ("must carry"). Preponderant or dominant players do not have the right to a zero tariff for must-carry or must-offer. In both cases the preponderant must negotiate rates with the other operator. Satellite operators must only carry signals with more than 50% of coverage nationwide. The rules established impose that FTA operators (even non-preponderant ones) offer their content without any fair and reasonable price compensation. Price and conditions and the situation should be reviewed periodically. The IFT is planning a forthcoming assessment of the guidelines and outcomes of the MCMO obligations. This review should take into account the effects on MCMO of the declaration of a SMP agent in the pay TV market.	Implemented	– Must-carry must-offer requirements (Decree, 2013, Transitory Art. 8; LFTR, 2014, Articles 164-169)
Ensure the transition to DTT progresses to meet the completion date of 2016.	The DTT and analogue switch-off was accomplished to meet the 2016 deadline, with the original deadline established in the LFTR and in the constitutional reform being 31 December 2016. After the switch was complete, only a little over 1% of the population (approximately 1 185 434 inhabitants), was left without DTT coverage.	Implemented	– Transition to DTT (Mexican Constitution, Transitory Art.5; LFTR, Transitory Article 19)

State of implementation of the 2012 OECD recommendations (*continued*)

	Implementation by 2016	Level of implementation	Legal basis
Foreign ownership restrictions on Mexican TV broadcasters should be lifted.	Through the constitutional reform, in Mexico FDI is now allowed up to 49% in broadcasting. However, FDI in broadcasting is subject to reciprocity by the country of origin of the foreign investor/entity. Additionally, due to the Sole Concession Scheme, concessions for telecommunication or broadcasting may only be granted to Mexican individuals or companies legally incorporated in Mexico. For global companies looking to expand operations to Mexico, a new legal Mexican entity is often created, which is subject to Mexican law, but meets the criteria to be able to request a concession to provide services in the country.	Partial	– FDI (Mexican Constitution, Transitory Article 5) – Sole Concession Scheme (LFTR, Articles 66 and 71)
Cable operators should be able to obtain one national license for the whole country, instead of multiple regional ones.	Under the Sole Concession Scheme, any broadcaster can obtain a single concession to offer services for the whole country.	Implemented	– Sole Concession Scheme (LFTR, Articles 66-71)

1. The reform of the Constitution with reference to the telecommunication and broadcasting sectors relate to Articles 6o, 7o, 27, 28, 73, 78, 94 and 105 of the Political Constitution of the United States of Mexico. These articles related to the reform of these sectors are also referenced as the Telecommunication Constitutional Reform Decree.

2. The recent judiciary decision to allow both regulatory bodies to work jointly on the same case may undermine the progress made to close the "double window" between the IFT and the SCT by opening one between the IFT and COFECE.

3. For more information, please see www.pmc.gob.mx.

Sources: OECD, based on SEGOB (2013), "Decreto por el que se reforman y adicionan diversas disposiciones de los artículos 6o., 7o., 27, 28, 73, 78, 94 y 105 de la Constitución Política de los Estados Unidos Mexicanos, en materia de telecomunicaciones" [Decree by which amending and supplementing various provisions of Articles 6o, 7o, 27, 28, 73, 78, 94 and 105 of the Constitution of the United Mexican States, in telecommunication], www.dof.gob.mx/nota_detalle.php?codigo=5301941&fecha=11/06/2013; Government of Mexico (1917), *Constitución Política de los Estados Unidos Mexicanos* [Political Constitution of the United Mexican States], last reformed 19 July 2013, http://oig.cepal.org/sites/default/files/1917_constitucion_politica_de_los_estados_unidos_de_mexico.pdf; COFECE (2015), *Federal Economic Competition Law*, https://www.cofece.mx/cofece/images/Documentos_Micrositios/Federal_Economic_Competition_Law.pdf; SCT (2016), *Federal Telecommunications and Broadcasting Law*, www.gob.mx/cms/uploads/attachment/file/61238/LFTR_english.pdf; SEGOB (2014a), "Acuerdo mediante el cual el Pleno del Instituto Federal de Telecomunicaciones emite los Lineamientos generales que establecen los requisitos, términos y condiciones que los actuales concesionarios de radiodifusión, telecomunicaciones y telefonía deberán cumplir para que se les autorice la prestación de servicios adicionales a los que son objeto de su concesión" [Agreement by which the plenary of the Federal Telecommunications Institute will issue the general guidelines to set the requirements, terms and conditions as the current licenses for broadcasting, telecommunication and telephony must meet in order to be allowed the provision of additional services that are the subject granted], www.dof.gob.mx/nota_detalle.php?codigo=5346486&fecha=28/05/2014; Government of Mexico (2013), *Plan Nacional de Desarrollo 2013-2018* [National Development Plan 2013-2018], www.sct.gob.mx/fileadmin/banners/Programa_Sectorial_de_Comunicaciones_y_Transportes.pdf; IFT (2015), "El IFT somete a opinion pública luneamientos para crear el Sistema Nacional de Información de Infraestructura" [The IFT submits public opinion guidelines for creating the national infrastructure information system], www.ift.org.mx/sites/default/files/comunicacion-y-medios/comunicados-ift/comunicadoift102.pdf; IFT (2014a), "Oferta pública de infraestructura pasiva" [Public offer of passive infrastructure], www.ift.org.mx/sites/default/files/oferta_publica_infra_pasiva.pdf; IFT (2016a), "Licitación No. IFT-4 (Radiodifusión AM y FM)" [Bid No. IFT-4 AM/FM Broadcasting], www.ift.org.mx/industria/espectro-radioelectrico/radiodifusion/2016/licitacion-no-ift-4-radiodifusion-am-y-fm; IFT (2016b), "El IFT anuncia los resultados de la tercera etapa de la Licitación para el concesionamiento de hasta 80 Mhz en la Banda AWS

(1.7/2.1 GHz)" [The IFT announces the results of the third stage of the tender for the concession of up to 80 Mhz in the AWS band (1.7/2.1 GHz)], www.ift.org.mx/comunicacion-y-medios/comunicados-ift/es/el-ift-anuncia-los-resultados-de-la-tercera-etapa-de-la-licitacion-para-el-concesionamiento-de-hasta; IFT (2014b), *Versión Pública del acuerdo P/IFT/EXT/060314/76* [Public versión of the agreement P/IFT/EXT/060314/76], www.ift.org.mx/sites/default/files/conocenos/pleno/sesiones/acuerdoliga/piftext06031476versionpublicahoja.pdf; SEGOB (2014b), "Acuerdo mediante el cual el Pleno del Instituto Federal de Telecomunicaciones emite la metodología para el cálculo de costos de interconexión de conformidad con la Ley Federal de Telecomunicaciones y Radiodifusión" [Agreement whereby the plenary of the Federal Institute of Telecommunications issues the methodology for the calculation of interconnection costs in accordance with the Federal Law of Telecommunications and Broadcasting], www.dof.gob.mx/nota_detalle.php?codigo=5376422&fecha=18/12/2014; IFT (2017b), "Ofertas de Referencia 2016-2017" [Reference offers 2016-2017], www.ift.org.mx/politica-regulatoria/ofertas-de-referencia-2016-2017; IFT (2016c), "Oferta de Referencia para la Desagregación del Bucle Local" [Reference offer for the local-loop unbundling], www.ift.org.mx/industria/politica-regulatoria/preponderancia-telecom/oferta-referencia-desagregacion-bucle-local; IFT (2016d), "Acuerdo mediante el cual el pleno del Instituto Federal de Telecomunicaciones emite los Lineamientos para la comercialización de servicios móviles por parte de operadores móviles virtuales" [Agreement through which the plenary of the Federal Telecommunications Institute issues the guidelines for the commercialisation of mobile services by virtual mobile operators], www.ift.org.mx/sites/default/files/industria/temasrelevantes/4722/documentos/proyectoacuerdooperadoresmovilesvirtualesversionfinal16022016.pdf.

Chapter 2.

Market developments in telecommunication and broadcasting in Mexico

This chapter reviews changes in the telecommunication and broadcasting sectors in Mexico as well as market developments, particularly since the 2013 reform. It reviews market performance, market participation and the competitive environment in both the telecommunication and broadcasting sectors and concludes with developments in convergence.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Five years after the *OECD Review of Telecommunication Policy and Regulation in Mexico* (OECD, 2012), and four years after the reform in the area was initiated, substantial changes can be observed in the Mexican telecommunication and broadcasting markets. The number of people with a mobile broadband subscription, for example, increased from 24 million in 2012 to over 74 million in 2016. Prices have decreased for mobile telecommunication services. Significant growth in revenues in the telecommunication and broadcasting sectors can be observed and foreign investors have entered the telecommunication and satellite markets. The availability of spectrum for mobile services has improved and is expected to increase further in the coming two years. Investment in telecommunication increased and the Red Compartida – a shared wholesale wireless network with Long-term Evolution (LTE) mobile telecommunication technology (also known as "4G" fourth-generation) – will likely continue to spur investments in the mobile market.

The telecommunication and broadcasting sectors in context

Following the 2012 OECD review, the constitutional reform and subsequent legislation, including the Federal Telecommunications and Broadcasting Law (Ley Federal de Telecomunicaciones y Radiodifusión, LFTR) and the Federal Economic Competition Law (Ley Federal de Competencia Económica, LFCE), have changed the legislative and regulatory frameworks significantly (see Chapter 4). The constitutional reform mandated the Ministry of Communications and Transports (Secretaría de Comunicaciones y Transportes, SCT) with the responsibility for Mexico's telecommunication and broadcasting policy. Most notably, these services were declared as a fundamental right for the Mexican population and fostering competition was put at the forefront of the reform agenda. As a result, the constitutional reform granted the SCT with the responsibility to establish the policies to achieve these goals as well as the formation of a number of strategic projects. In addition, two independent bodies – the Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) and the Federal Economic Competition Commission (Comisión Federal de Competencia Económica, COFECE) – were created (see Chapter 4) while the SCT undertook several important actions and programmes aimed at the transition to digital terrestrial television (DTT), a critical step in moving forward on a range of further changes to address policy objectives. All of these changes raise the question of how the evolving markets have performed under the new frameworks.

A range of indicators can be examined to assess progress in meeting policy objectives in Mexico. While indexes containing multiple indicators compared across countries can be informative, the implementation review rather considers individual indicators to closely track targeted policy and regulatory actions. Considered together, these individual indicators can be used to assess outcomes and highlight areas that deserve closer attention. By way of example, trends in sector revenue, the number of Mexicans who can access services, the price and quality of these services, as well as the choices consumers have in selecting service providers are all relevant. Moreover, indicators that measure enabling factors such as the amount of spectrum available to meet growing demand or the efficiency with which consumers can change service providers can all assist in assessing progress in meeting objectives.

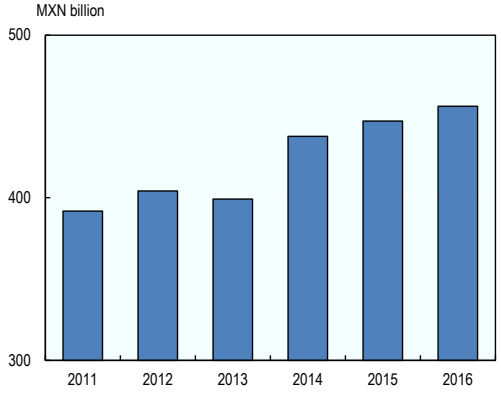
A key starting point is the size of the telecommunication and broadcasting sectors in terms of revenue and contribution to gross domestic product (GDP). From the time of the 2012 OECD review to the close of 2016, both the telecommunication and broadcasting sectors had enjoyed an increase in revenue. Revenues in the Mexican telecommunication and broadcasting sectors increased from MXN 392 billion in 2011 to MXN 456 billion

in 2016, which is equal to a growth rate of 16% over that period (Figures 2.1A and 2.1C). This high growth rate can be partly explained by the fact that revenues in the two sectors were below the OECD average. Still, it represents a remarkable growth in a relatively short amount of time.

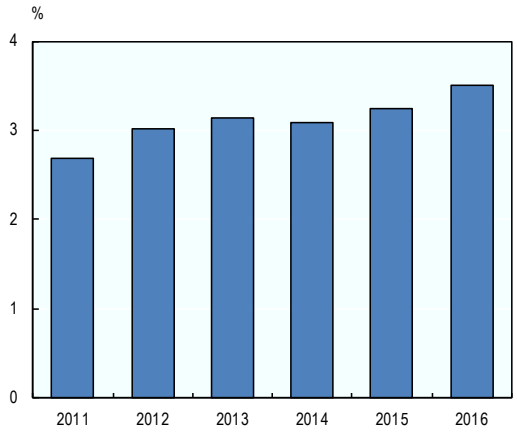
Figure 2.1. **Developments in the Mexican telecommunication and broadcasting sectors**

A. Telecommunication and broadcasting revenues in Mexico

Current MXN

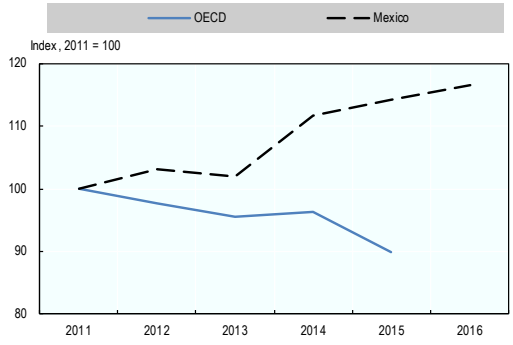


B. Contribution of telecommunication and broadcasting to Mexican GDP



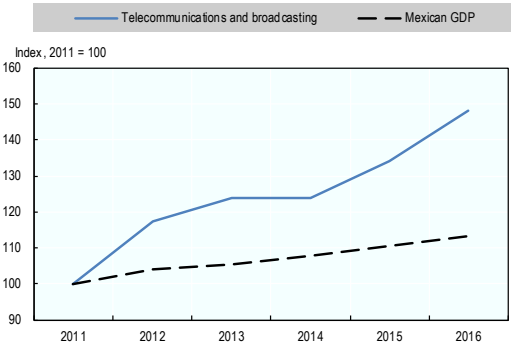
C. Revenue growth in the Mexican telecommunication and broadcasting sectors compared to the OECD average

Current MXN



D. Revenue growth of the telecommunication and broadcasting sectors compared to GDP growth in Mexico

Constant 2008 MXN



Sources: Calculations based on OECD (2017a), *OECD Telecommunications* (database), http://dx.doi.org/10.1787/tel_int-data-en (accessed in June 2017); and IFT (2017a) "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

The observed growth rate is in contrast to flattening or lower revenues for the OECD as a whole, with an average negative growth rate across the OECD area of -10% between 2011 and 2015 (Figure 2.1C). Notwithstanding the slight negative growth in OECD-wide industry revenue, the number of subscriptions to telecommunication services continued to grow in the OECD area, as it did in Mexico, though from lower penetration rates in that country. The differences in the revenue trends between Mexico and the OECD are likely to be in part due to Mexico meeting unmet demand. This was a key objective of the

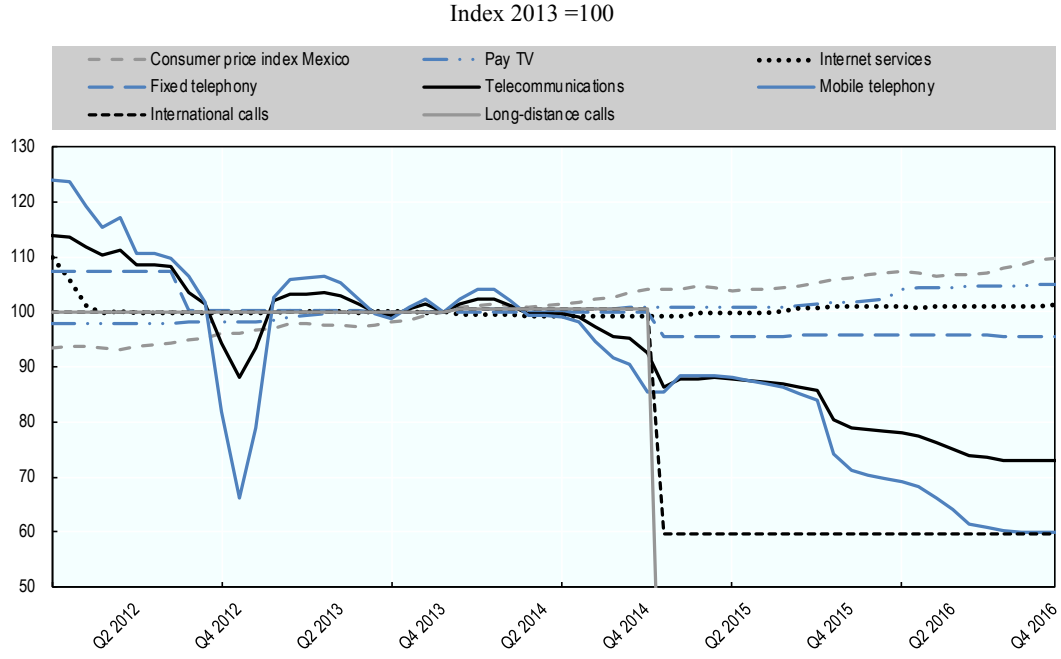
reform in terms of improving productivity and addressing inequality: offering existing users improved services or providing new users with service for the first time.

Improved sector performance since the 2012 review can also be observed when comparing the growth of the telecommunication and broadcasting sectors in Mexico to overall GDP growth. From 2011 to 2016, Mexican GDP grew from MXN 12 774 billion to MXN 14 461 billion (in constant 2008 MXN), with a growth rate of 13.2% over that period (Figure 2.1D). The share of the telecommunication and broadcasting sectors in the Mexican economy outperformed this measure, with a rise in its share of total GDP from 2.7% in 2011 to 3.5% in 2016.

Some key indicators to be set against revenue growth – which is one of the ways to reflect competition in the market – are the prices Mexicans pay for communication services. A wealth of data is available from official sources, such as consumer price indexes and the OECD's telecommunication baskets.

Several price indexes for telecommunication and broadcasting services are part of the Mexican consumer price index, including national and international calls to mobile telephony; this national price index is tracked by the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI). From June 2013, the year of the reform, to 2016, the overall consumer price index increased from 97.4 points to 109.9 points, which represents a growth of 12.8% during this period (Figure 2.2). This contrasts with the developments of the communication price indexes.

Figure 2.2. **Evolution of the Consumer Price Index and the communication services price indexes in Mexico**



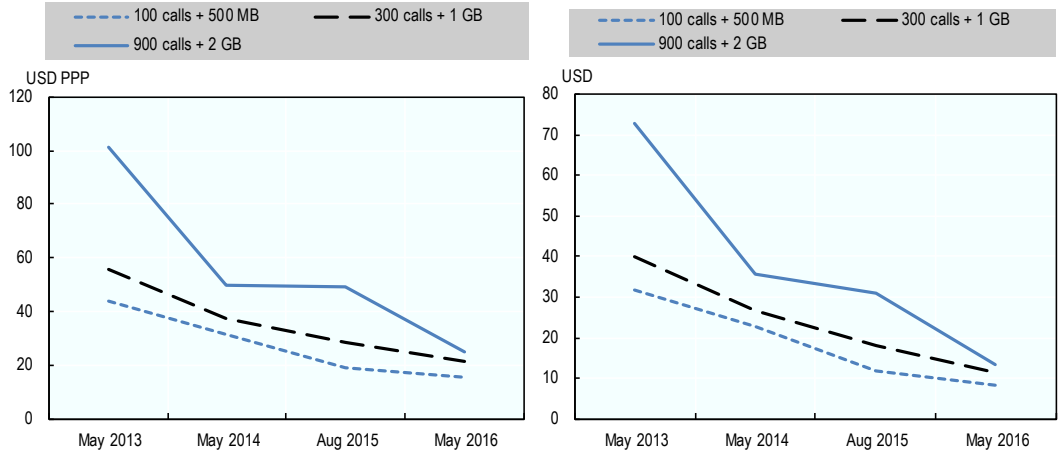
Source: Based on data provided by INEGI (2017b), "Indice nacional de precios al consumidor" [National consumer price index], www.inegi.org.mx/est/contenidos/proyectos/inp/inpc.aspx.

There were sharp drops in the price indexes on mobile services, long-distance international calls and charges for long-distance calls. The drop in mobile prices reflects

an increase in competition in this market. The index for national long-distance calls reflects the elimination of charges for such calls which was introduced by the LFTR. This had an indirect effect on the price index for international calls as operators started at that time to include additional minutes for international calls in their fixed telecommunication bundles, which translated into a price decline of 40% over three years (IFT, 2015). By way of example, several fixed-line operators offer unlimited international calls to most regions of the world today.[1] Finally, the price index for pay TV services increased by 5%. This was lower than the increase of the overall consumer price index, although it was the only communication service that increased.

The OECD's telecommunication baskets provide more detailed information on how Mexico's prices have changed for fixed and mobile communication services in recent years. The gains have been the strongest in mobile services, reflecting greater competition in this market. Between 2013 and 2016, the prices for three different mobile broadband baskets witnessed a sharp decrease. The price for the low-usage basket of 100 calls and 500 Megabytes (MB) declined by 65%, from 44.05 USD PPP (purchasing power parity) to 15.39 USD PPP. Price declines for the medium-usage basket are at a similar level (-61%). The high-usage basket saw the sharpest drop in prices, from 101 USD PPP to 24.93 USD PPP, which represents a decline of over three quarters of the original price (Figure 2.3).

Figure 2.3. **Trends in mobile broadband prices in Mexico, USD PPP and USD**



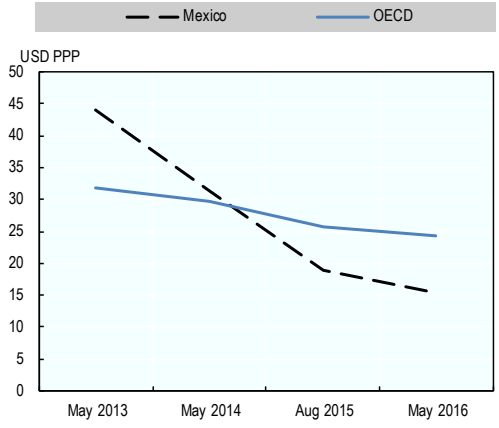
Note: Data for 900 calls + 2GB are for Nov. 2014 instead of May 2014.

Source: Calculations based on Strategy Analytics (2017), "Teligen tariff & benchmarking market data using the OECD methodology", https://www.strategyanalytics.com/access-services/networks/tariffs---mobile-and-fixed#.WUfZ7m997IU.

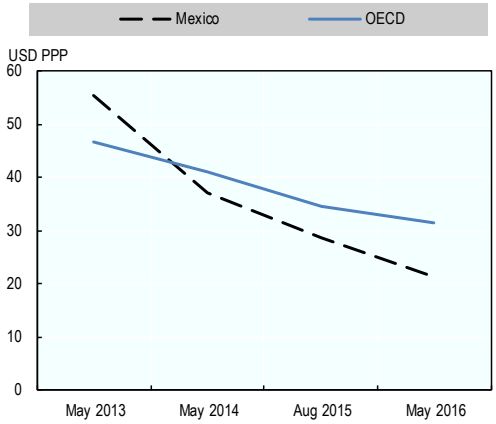
These levels can be compared to the averages from the same baskets across the OECD (Figure 2.4). Departing from higher price levels than the OECD average in 2013, the price decline in Mexico was greater than for the OECD average for all three mobile baskets. In addition, for the three mobile baskets, prices in USD PPP are now lower than the OECD average. What these data confirm is that mobile prices have evolved from being relatively high before the reform to being among the lowest in the OECD after the reform.

Figure 2.4. **Trends in mobile broadband prices in Mexico compared to the OECD average**

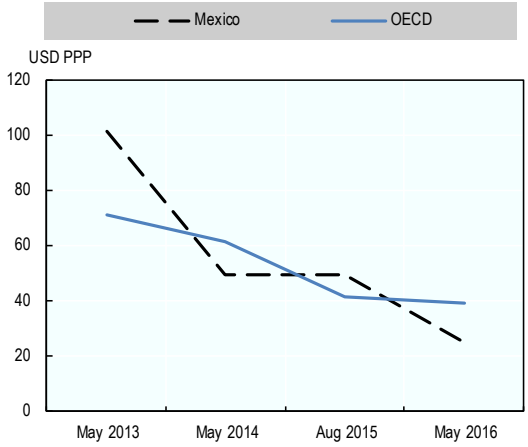
A. Low-usage basket: 100 calls + 500 MB



B. Medium-usage basket: 300 calls + 1 GB



C. High-usage basket: 900 calls + 2 GB

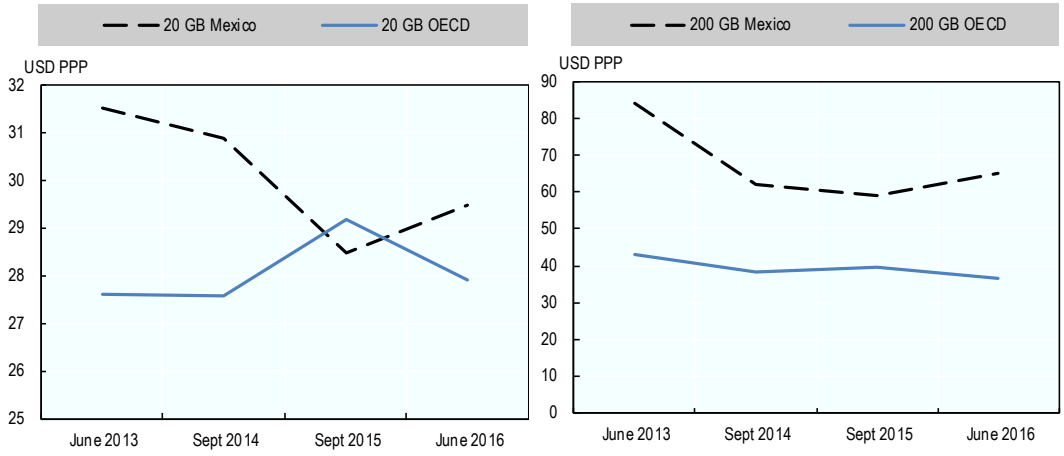


Note: Data for 900 calls + 2GB are for Nov. 2014 instead of May 2014.

Source: Calculations based on Strategy Analytics (2017), "Teligen tariff & benchmarking market data using the OECD methodology", https://www.strategyanalytics.com/access-services/networks/tariffs---mobile-and-fixed#.WUfZ7m997IU.

The gains are less evident for fixed telecommunication services, likely reflecting less progress in introducing competition in this market either via alternative infrastructure providers or local-loop unbundling. Between 2013 and 2016, although the price for the low-usage (20 Gigabytes [GB]), fixed broadband basket decreased from 31.52 USD PPP to 29.47 USD PPP, it is still higher than the OECD average (Figure 2.5). The price for the higher usage basket of 200 GB declined more than the price for the low-usage basket (-22.6%), a trend that is commonly observed across the OECD. As mentioned above, prices for long-distance calls were eliminated, which partly explains the decline in prices for fixed services. Furthermore, competition, particularly from online service providers, has resulted in some elements being added to bundles without any additional charge, such as on-demand video or increased speed. Again, these changes reflect different levels of competition in these bundled services.

Figure 2.5. **Trends in fixed broadband prices in Mexico compared to the OECD average**



Source: Calculations based on Strategy Analytics (2017), "Teligen tariff & benchmarking market data using the OECD methodology", www.strategyanalytics.com/access-services/networks/tariffs---mobile-and-fixed#.WUfZ7m997IU.

The decrease in mobile prices has undoubtedly helped address one source of inequality in access to telecommunication services in Mexico. At the same time, lower prices are opening up opportunities for existing and new users to make greater use of telecommunication services in their daily life, but also to expand businesses, which is critical for both economic and social development. In this regard, two price changes are particularly worthy to note. The elimination, by regulation, of domestic long-distance pricing and the removal, through competition, of stand-alone prices on calls to some international destinations or while users were roaming in selected countries. These two services exhibit significant changes in what were historically very high prices.

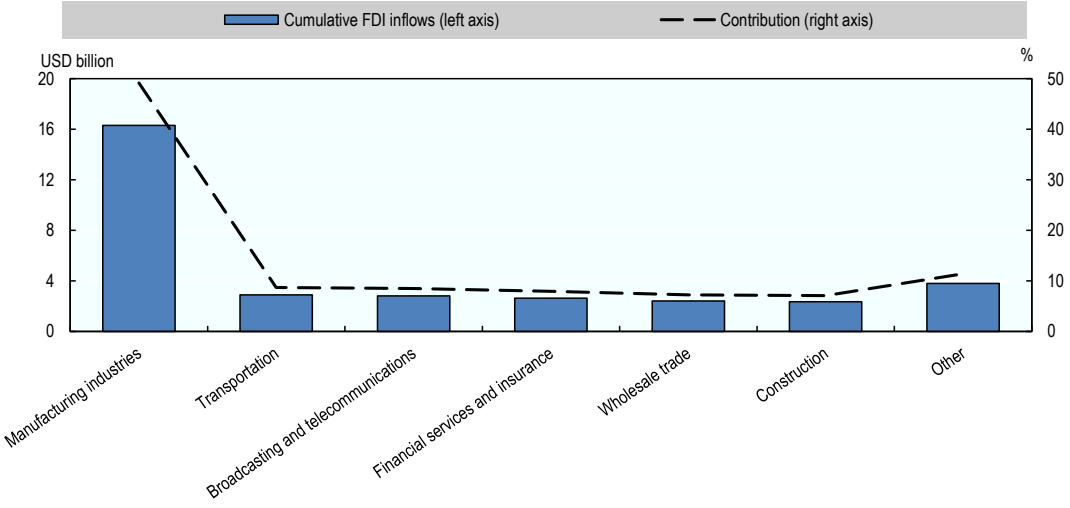
In 2011, when the OECD surveyed the price of data roaming across all of its member countries, Mexico had the third-highest average price for the use of 1 MB, at USD 19.85 (Bourassa et al., 2016). Since mid-2015, however, all Mexican mobile operators now offer a growing number of "roam like at home" plans, enabling users travelling to countries in North and South America to use 1 MB of data at the same price as if they were in Mexico. Such changes are highly advantageous for both business and consumers. Overall changes in mobile pricing make it possible for some to afford a subscription for the first time, for others to increase their use of services such as Internet access or international telephone calls, as well as for those travelling to other countries to use their service in the same way they would if they were still in Mexico.

As might be expected, price and quality changes in the Mexican market reflect the level of competition in a service, or in anticipation of future changes brought about by the reform. A critical change was the elimination of restrictions for foreign direct investment (FDI) in telecommunication and satellite services (while the restriction in broadcasting was reduced but not eliminated, see Chapter 4). In both the telecommunication and satellite markets, the entrance of foreign companies was allowed and important investments have been made by these companies: AT&T entered the Mexican telecommunication market through acquisitions of Iusacell-Unefon and Nextel in 2014 and 2015, respectively, and Eutelsat entered the satellite market through the acquisition of SATMEX in 2014.

The entry of both of these companies is reflected in the growth of FDI in these sectors since 2015. Before the reform, FDI in the telecommunication and broadcasting sectors amounted to USD 1.2 billion, or 6% of total FDI in 2012. In 2015, FDI grew to USD 2.813 billion, representing 8.5% of total FDI (Secretaría de Economía, 2017). Of this, USD 2.5 billion and USD 1.9 billion were due to AT&T's acquisition of Iusacell-Unefon and Nextel, respectively.

In 2015, the telecommunication and broadcasting sectors ranked third in the FDI share by sector, behind the manufacturing industries sector (Figure 2.6). Increased FDI not only represents greater confidence in the governance of the market, but also an important channel for meeting policy objectives, such as stronger competitors and increased investment to expand and improve networks. It is noteworthy that the two markets that have attracted the most FDI – mobile and satellite services (pay TV) – are also the ones that have experienced the highest increases in subscriptions following market reforms.

Figure 2.6. **Foreign direct investment by sector, Mexico, 2015**



Note: For comparative purposes, the Broadcasting and Telecommunications sectors were kept separate from the Massive Media Information sector, as per the North American Industry Classification System. These are preliminary figures and may therefore vary from information published subsequently by the IFT.

Source: Secretaría de Economía (2017), "Datos abiertos: Inversión extranjera directa" [Open data: Foreign direct investment], https://datos.gob.mx/busca/dataset/inversion-extranjera-directa.

Developments in telecommunication

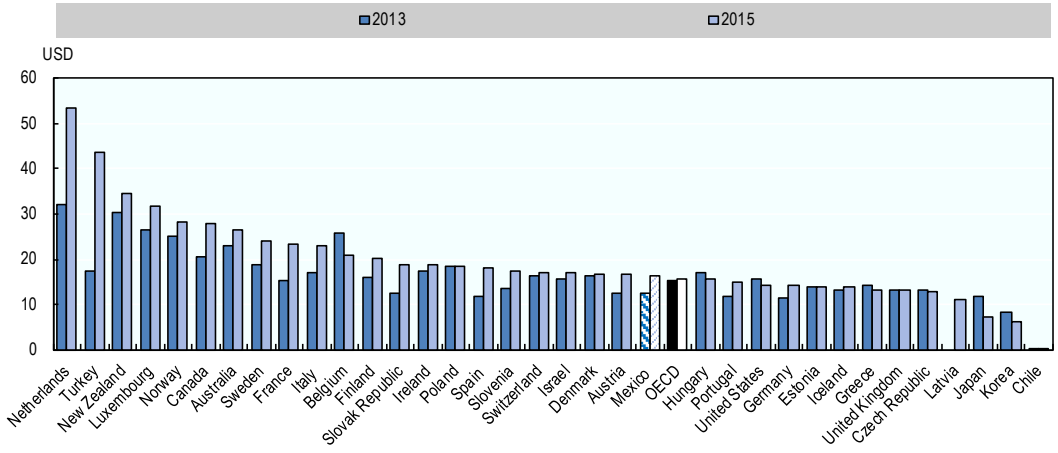
Market performance

The Mexican telecommunication sector has undergone significant changes and developments in terms of investments, number of subscriptions, quality of service (QoS), innovation in the form of new services and industry composition, and has seen changes in market structures and shares, although at different levels across telecommunication services.

As with FDI, investments in the telecommunication sector have risen since the reform (Figure 2.7). In 2013, telecommunication investment per capita was USD 12.33, which was lower than the OECD average of USD 15.13. This number rose to USD 16.28 by the end of 2015, slightly higher than the OECD average of USD 15.81, but well below that of

the Netherlands, which was the leading OECD country with USD 53.28 per capita at the end of 2015. While progress has been made since the reform, it will be important to foster further investments. Red Compartida, which has already attracted additional FDI, is expected to spur investments in the mobile market with the deployment of a shared wholesale network and a coverage target of 92.2% of the Mexican population by January 2024. In light of increased convergence, it will be equally important to foster investments in the fixed telecommunication markets in order to bring fibre closer to customers, irrespective of whether the final connections are fixed or wireless.

Figure 2.7. **Telecommunication investment per capita in OECD countries**



Source: Calculations based on OECD (2017a), *OECD Telecommunications and Internet Statistics* (database), http://dx.doi.org/10.1787/tel_int-data-en (accessed June 2017).

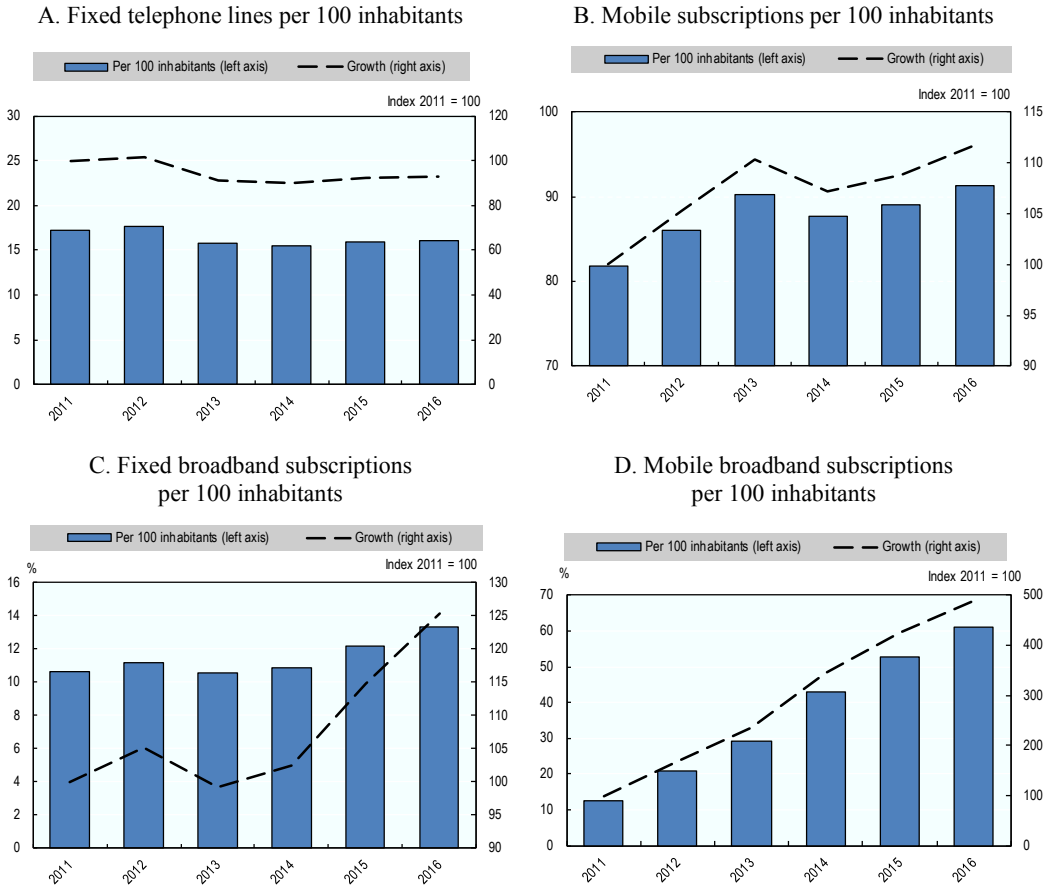
In terms of access, the most substantial changes in the telecommunication market have been the increase in mobile subscriptions, and particularly the transition to mobile broadband. Between 2011 and 2016, the penetration rate for (all) mobile subscriptions went from 81.8 to 91.4 per 100 inhabitants (Figure 2.8B), which equals an additional 17 million subscriptions. Over the same time, the number of mobile broadband subscriptions went from 12.4 to 60.9 per 100 inhabitants, which is a total growth of just less than 390% (Figure 2.8D). The majority of Mexico's mobile broadband is made up of voice and data subscriptions (around 99% of subscriptions), with very few data-only plans.

Average data use has increased as a consequence of higher mobile broadband penetration and lower prices. Between 2015 and 2016, the average mobile data use per mobile subscription increased from 388 MB to 740 MB at a growth rate of 91%. The higher usage reflects business users and consumers making greater use of their mobile services in their daily activities and lives.

Fixed telephony subscriptions have slightly decreased, which is a trend that can be observed across the OECD, as some users replace traditional voice services with mobile telephony. In 2016, fixed telephony penetration in Mexico was 16 per 100 inhabitants, compared to 17.3 in 2011 (Figure 2.8A). Fixed broadband subscriptions[2] increased from 10.6 subscriptions per 100 inhabitants to 13.3 in 2016 (Figure 2.8C). Despite the increase of 32% in the number of fixed broadband subscriptions since 2011, Mexico had the lowest penetration among OECD countries in December 2016. That being said, the growth rate from 2013 to 2016 of fixed broadband penetration in the three years following the

reforms is easily double that of the OECD (26% for Mexico and only 10% for the OECD). This marks a positive trend towards closing the gap with other OECD countries in terms of penetration. In addition, as in other countries, fixed telephony services are being incorporated into broadband bundles.

Figure 2.8. **Fixed and mobile subscriptions in Mexico**



Note: The fixed broadband figures for Mexico are the number of connections as the technology disaggregation is not available for subscriptions, which by definition refers to contracts between operators and customers.

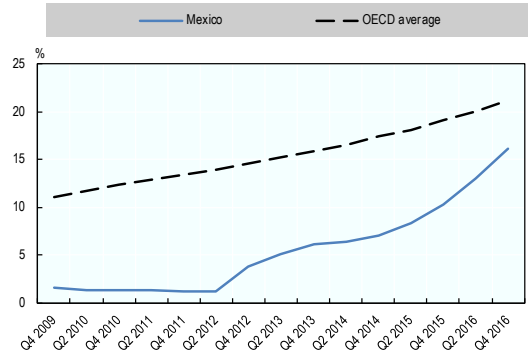
Sources: Calculations based on OECD (2017b), *OECD Broadband Portal* (database), www.oecd.org/sti/broadband/oecdbroadbandportal.htm (accessed July 2017); and unpublished material provided by the IFT.

Fibre connections in total fixed broadband subscriptions rose from 3.8% to 16.1% between 2012 and 2016 (Figure 2.9A), growth which is significantly higher than the OECD average growth rate: in 2016, Mexico had the third-highest growth rate (from December 2015 to December 2016) across the OECD (Figure 2.9B), of 73%. Despite this progress, Mexico still lags far behind the OECD average (14.5% in 2012 and 21.2% in 2016) and needs to make further progress in overall fibre connections.

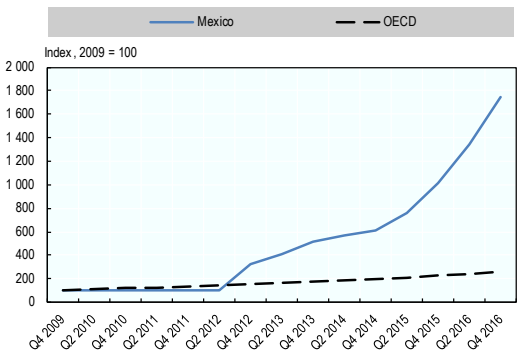
The geographical locations where fibre has been deployed and where there is infrastructure competition remain limited. Some cable networks have not been upgraded to compete in the provision of Internet access. These cable networks seemingly reflect more a consolidation of the pay TV market rather than a strategy to compete for Internet access.

Figure 2.9. **Fibre connections in Mexico compared to the OECD average**

A. Fibre as a percentage of total fixed broadband subscriptions



B. Indexed growth of fibre subscriptions



Notes: Fibre subscriptions data include fibre to the home (FTTH), fibre to the premises (FTTP) and fibre to the building (FTTB), and excludes fibre to the curb (FTTC). The fixed broadband figures for Mexico are the number of connections as the technology disaggregation is not available for subscriptions, which by definition refers to contracts between operators and customers.

Source: Calculations based on OECD (2017b), *OECD Broadband Portal* (database), www.oecd.org/sti/broadband/oecdbroadbandportal.htm (accessed July 2017).

In addition, the delay between the first reference offer for local-loop unbundling in the fixed broadband market and a subsequently improved offer by the end of 2016 means that the market did not receive a boost from the commencement of local-loop unbundling, as occurred in other OECD countries that lacked sufficient alternative infrastructure competition. This contributes to the low rate of fixed broadband subscriptions in Mexico compared to other OECD countries.

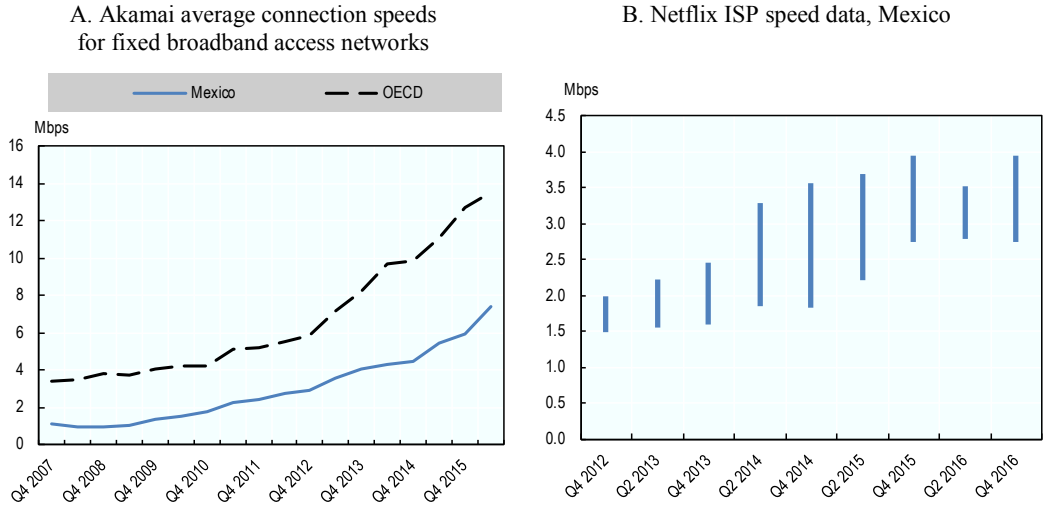
A key indicator in relation to fixed and mobile broadband is the increased quality associated with higher speeds. For fixed broadband access networks, Akamai, a major content distribution network, provides indicators for speeds available in all OECD countries. For Mexico, Akamai's data reveal an increase in average peak speeds from 11.5 Megabytes per second (Mbps) in the last quarter of 2011 to 35.2 Mbps in the second quarter of 2016 (Akamai, 2017). While average peak speeds were below those of other regional peers such as Brazil (12.11 Mbps) and Colombia (12.13 Mbps) in 2011, Mexico caught up and reached higher speeds than both countries by the second quarter of 2016 (Brazil: 33.7 Mbps, Colombia: 23.5 Mbps) (Akamai, 2017).

Meanwhile, Mexico's average connection speeds have tripled, from 2.4 Mbps at the end of 2011 to 7.4 Mbps in the second quarter of 2016 (Figure 2.10A). This compares to an OECD average of 13.6 Mbps for the second quarter of 2016. Despite substantial improvement, Mexico's goal of attaining the average OECD speed in the fixed broadband market will require further progress as other OECD countries are rapidly progressing.

Internet speeds can reflect many factors and represent the perspective of the network that undertakes the measurement. For example, since 2012, Netflix has provided time series on its experience delivering services during prime-time periods in Mexico (Figure 2.10B). Over this time, speeds have increased for all broadband access networks and Netflix breaks down these data by company and network technology (i.e. FTTH, cable, fixed wireless or a combination of these). Between 2012 and 2016, the three fastest networks increased their speeds from 1.78 Mbps, 1.91 Mbps and 1.95 Mbps to 3.17 Mbps,

3.36 Mbps and 3.9 Mbps respectively (Netflix, 2016). Over that same period, the number of Internet service providers (ISPs) tracked by Netflix grew from five in 2012 to ten at the end of 2016. As might be expected, the three fastest networks are Totalplay, Axtel Xtremo and Izzi, which are FTTH, followed by networks that use a mix of both fibre and cable (or just cable), then digital subscriber line (DSL) and finally fixed wireless.

Figure 2.10. **Internet connection speeds in Mexico compared to the OECD average**



Source: Netflix (2016), "ISP Speed Index: Mexico", https://ispspeedindex.netflix.com/country/mexico (accessed 14 February 2017).

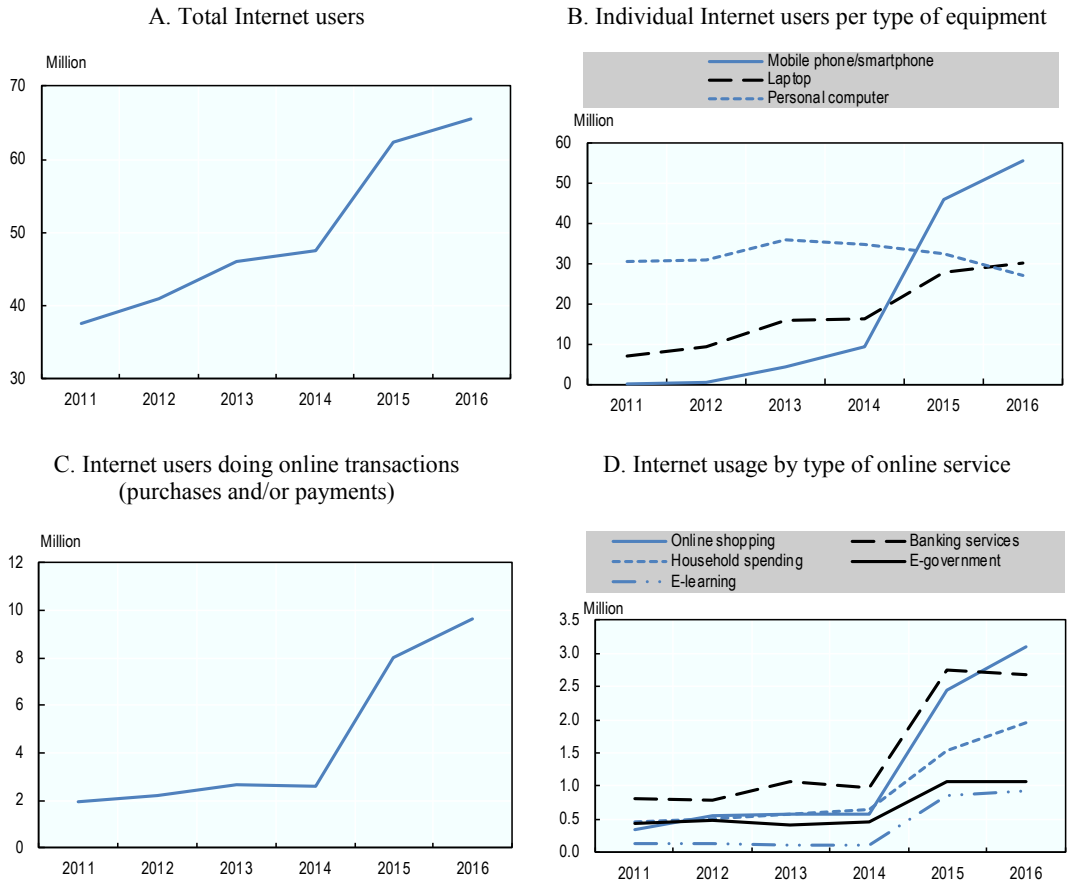
Aside from improving the QoS, such as access speeds, the Mexican telecommunication market is also benefiting from increased innovation. Some of this has come from operators upgrading their networks, such as investment in 4G networks, enabling a new range of services to be offered. That being said, time to market for new developments is notably shorter. Though this may sometimes be challenging to quantify, examples can be given. In the case of Long-term Evolution for Machines (LTE-M), a mobile service aimed at machine-to-machine (M2M) communication, at least one provider expects to have its entire network upgraded by the close of 2017. This is roughly less than a year since the first such network was launched in an OECD country, and ahead of many. At the same time, Mexico was one of the first countries to experience mobile "roam like at home" offers, which is still the exception rather than the rule in many countries. Moreover, a critical thread that links both these developments is their ability to stimulate further innovation in international communication services, with all the associated benefits for trade and travel. The Red Compartida is a further major development in Mexico and, in many ways, a first among OECD countries. While there are many structurally separate wholesale and retail providers, be it through regulatory or voluntary approaches in the fixed telecommunication market, the Red Compartida will be the first purely wholesale mobile network in the OECD.

Usage indicators

Between 2013 and 2016, the number of individuals accessing the Internet in Mexico increased by 20 million people (Figure 2.11A), driven in large part by the increased use of mobile devices with Internet access (Figure 2.11B).[3] The influence in people's daily lives is also evident. Whereas just over 2 million people made online transactions

in 2014, this number has begun to rapidly accelerate, reaching around 10 million by 2016 (Figure 2.11C). The most used areas for transactions include e-shopping and banking services as well as household spending, e-government and e-learning (Figure 2.11D). In many ways, all of these services are nascent; however, they signal the potential stemming from the reform as suppliers begin to respond to the growing demand and more users gain the skills to access services.

Figure 2.11. **Internet users and usage in Mexico**



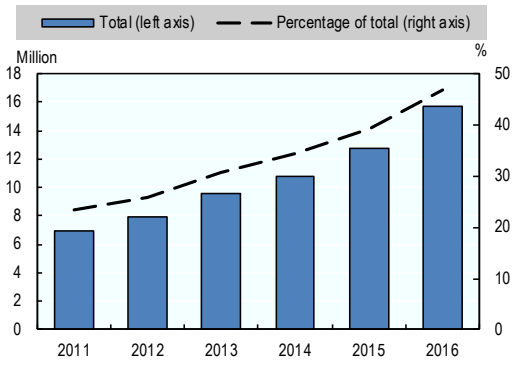
Source: INEGI (2017a), *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2016* [National Survey on Availability and Use of Information and Communication Technologies in Households 2016], www.beta.inegi.org.mx/proyectos/enchogares/regulares/dutih/2016/default.html.

Some key indicators for assessing progress both on supply and demand policies are the penetration of Internet access by households; the availability of computers in households; the take-up and use of devices such as smartphones; and the use of Wi-Fi and access to the Internet across different geographical regions. In terms of Internet access, including narrow band and broadband, fixed and mobile, the number of Mexican households reporting that they had some type of access to the Internet rose from 7 million in 2011 to 15.7 million in 2016 (Figure 2.12A). This represented an increase from 23% of households reporting access to 47% of the total number of households. This is a remarkable achievement with the pace accelerating post-reform.

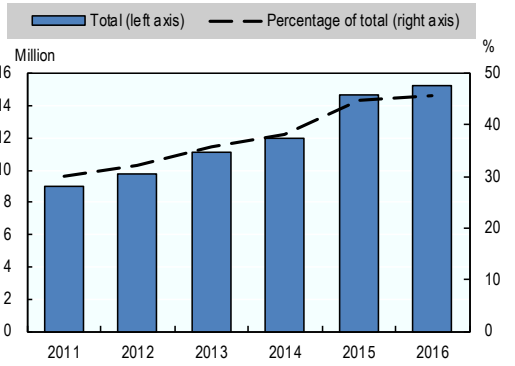
The types of devices Mexican households use to access the Internet are also changing. In 2011, 9 million households, or 30% of the total, had a computer (Figure 2.12B). By 2016, this had increased to 15.2 million households, the equivalent of 45.6% of total households. While this number experienced a surge following the reform, it levelled out between 2015 and 2016, and when looking at the individual use, the number of people using a computer decreased by 4.3%. By way of contrast, however, the level of smartphone ownership experienced a surge in 2016.

Figure 2.12. **Households with access to Internet, computers and mobile phone equipment in Mexico**

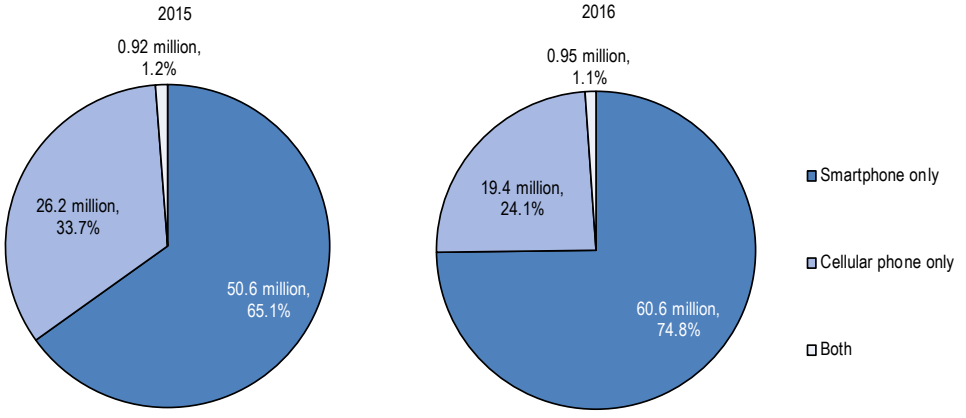
A. Households with access to the Internet, 2011-16



B. Households with a computer, 2011-16



C. Mobile phone ownership

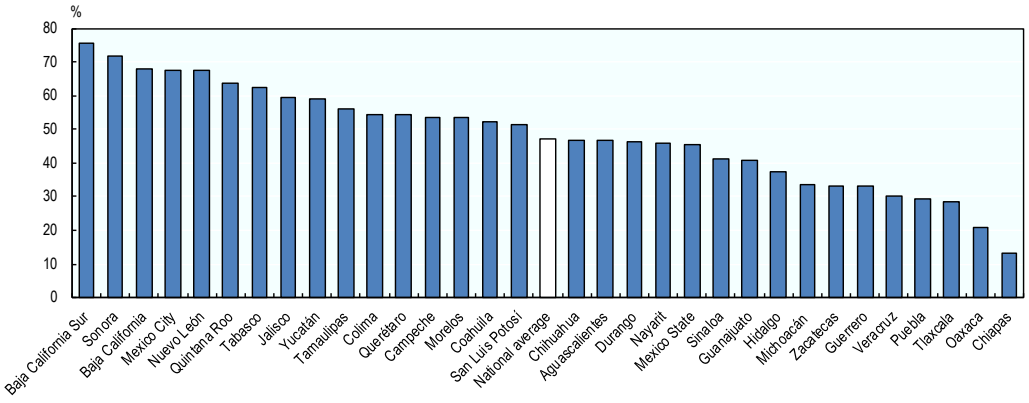


Source: INEGI (2017a), *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2016* [National Survey on Availability and Use of Information and Communication Technologies in Households 2016], www.beta.inegi.org.mx/proyectos/enchogares/regulares/dutih/2016/default.html.

Between 2015 and 2016, the number of smartphones in Mexico increased from 50.6 million to 60.6 million (Figure 2.12C). This means that roughly three in four mobile users had a smartphone. The increase in the use of smartphones owes a great deal to the increased competition in the mobile broadband market. More people can afford for the first time a service that provides them with Internet access, which is reflected in the increased take-up and use of smartphones. In addition, the ability of some users to use Wi-Fi without a subscription also allows some to access the Internet with a smartphone or other device. Indeed, in 2016, 10.4 million people with a smartphone solely used it with Wi-Fi.

Despite remarkable progress, the distribution of household access to the Internet is very uneven across Mexico. From a high of over 70% of households with access, this falls to below 30% in some Mexican states (Figure 2.13). These differences underline the need for policies that promote competition to expand commercial services to the maximum extent possible while leveraging programmes such as the Red Compartida to both assist in developing competition and to address challenges in underserved areas.

Figure 2.13. **Percentage of households with Internet access, by state, Mexico**



Source: INEGI (2017a), *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2016* [National Survey on Availability and Use of Information and Communication Technologies in Households 2016], www.beta.inegi.org.mx/proyectos/enchogares/regulares/dutih/2016/default.html.

Market participants

The composition of the telecommunication sector has changed over the past five years, most notably in the mobile communication market with the entry of AT&T and of several mobile virtual network operators (MVNOs) providing mobile telephony and mobile broadband. The number and type of MVNOs is expected to further increase once the Red Compartida is operational, including in areas such as M2M and for the Internet of Things.

AT&T has entered the Mexican mobile market through the acquisition of Iusacell and Nextel. Iusacell operated both the Iusacell and Unefon brand names and was jointly owned by the Televisa Group and Grupo Salinas. The Televisa Group sold its ownership to Grupo Salinas, who then sold the company to AT&T for USD 2.5 billion in January 2015. Later that year AT&T closed a deal to acquire Nextel from the bankrupt NII Holdings for USD 1.875 billion, minus approximately USD 427 million of the company's existing debt. AT&T has combined the two companies and plans to expand the existing networks for greater national coverage and to challenge the existing players in the mobile market. The company cited Mexico's 2013 reform to encourage competition and foreign investment as a key determinant in the company's decision to expand into Mexico (AT&T, 2014).

The other major change in the mobile market is the entrance of MVNOs over the past few years. Large players include Flash Mobile, Maz Tiempo, Qbo Cel, Cierto (Teligentia), Virgin Mobile and Weex, all of whom operate using Telefónica's Movistar network. Maxcom and Megatel recently entered the market and use Telcel's network. The entry of MVNOs not only allows for more competition and gives customers more choice, it is also a vehicle for service plan innovation in the market. Weex, for example, gives prepaid customers greater flexibility to create their own "plans" according to how much they are

willing to spend. This type of choice can be extremely useful for low-income users. Such changes, alongside lower prices and new services such as mobile money transfer, assist in meeting the goal to increase access to and use of communication services as a tool to address inequalities.

In Mexico, the largest player in the telecommunication market is América Móvil. It is made up of Telcel, a mobile telephony and mobile broadband provider, and two fixed telephony and broadband providers, which together constitute the only fixed network with national coverage. The company is owned by Grupo Carso, with the Slim family being the main shareholder. Given their ownership ties, for the purposes of the following analysis of market shares, it is grouped together. In other areas of América Móvil's activities in recent years, the company divested some of its businesses through the spin-off of Telesites into a new business unit. The Slim family holds 61% of Telesites' capital stock, making them effectively the principal shareholders. Regarding the preponderance resolution (see Chapter 3), a number of measures are applicable to Telesites, which include, but are not limited to, infrastructure sharing. Opsimex is a subsidiary of Telesites, therefore the company must uphold the IFT's preponderant resolution of infrastructure sharing. A more complete overview of the current market players is given in Table 2.1.

A further important entrant into the mobile market is the Indigenous Communities Telecommunications (Telecomunicaciones Indígenas Comunitarias, TIC), which was granted concessions by the IFT to connect indigenous groups, many of whom live in sparsely populated areas. The TIC has been empowered by this regulatory change and been able to provide telephony to some previously unserved or underserved areas. For example, a village that may have had no connection or only a payphone can now offer a 2G mobile telephony service at a lower price than a payphone and untimed local calls, with all the concomitant social and economic benefits.

In the fixed market, Alestra and Axtel merged together under the name of Axtel at the end of 2015. The combined company offers fixed telephony, fixed broadband and pay TV, including through FTTH. The merged company serves the consumer market through its Axtel side, while Alestra focuses on the corporate and government market. Totalplay, which positions itself in the premium segment relying on fibre infrastructure and providing FTTH access, invested USD 400 million for the expansion and improvement of its fibre infrastructure in 2015-16 (Prensario Internacional, 2016). Another important development in the fixed telecommunication market is the acquisition of several cable companies by the Televisa Group. Acquisitions of Cablecom, Cablevisión, Telecable and the remaining 50% of Televisión Internacional have been undertaken by the Televisa Group since 2013. These acquisitions were facilitated through Transitory Article 9 of the LFTR, which did not require the authorisation of the IFT for market concentration, rather only a post-merger notification, as well as an impact analysis at the sectoral level – not at the level of relevant markets – and compliance with certain conditions at the sectoral level, all conditions rather easy to fulfil as long as there is a preponderant agent in the sector.

Table 2.1. **Overview of key market participants**

Company name	Ownership	Telecommunication services
Mobile network operators (MNOs)		
América Móvil (Telmex, Telcel, Teléfonos del Noroeste or "Telnor")	**Owned by**: Grupo Carso **Owns**: Telcel (100%); Telmex (98.7%); Telnor (100%)	Fixed telephony; fixed-wired broadband; mobile telephony; mobile broadband; dedicated links
AT&T Mexico (Unefon and Iusacell "GSF Telecom", Nextel Mexico)	**Owned by**: Publicly traded, stockholders with > 5% of outstanding common stock: BlackRock Inc. (5.5%); Vanguard Group (5.83%) **Owns**: GSF Telecom (Unefon and Iusacell) (100%) and Nextel Mexico (100%)	Mobile telephony; mobile broadband
Axtel	**Owned by**: Alfa (51%); existing Axtel shareholders (49%)	Fixed telephony; fixed-wired broadband; pay TV; dedicated links
Dish Mexico	**Owned by**: MVS Comunicaciones (51%); EchoStar Corporation (49%)	Pay TV
Megacable Group (Megacable, MCM)	**Owned by**: Mazon family through trust managed by Nacional Financiera S.N.C. Institución de Banca de Desarrollo (99%) **Owns**: MCM and Megacable	Fixed telephony; fixed-wired broadband; pay TV; dedicated links
Televisa Group (Bestphone, Cablecom, Cablemás, Cablevisión, Cablevisión Red, Sky,TVI)	**Owns**: Bestphone (subsidiary of Bestel) (100%); Cablecom (100%, acquisition in 2014); Cablemás (100%, acquisition in 2011); Empresas Cablevisión (51%); Sky (58.7%); Telecable ("Cablevisión Red") (100%, acquisition in 2015); TV Internacional (TVI) (100%, acquisitions in 2006 and 2016)	Fixed telephony; fixed-wired broadband; pay TV
Indigenous Communities Telecommunications (Telecomunicaciones Indígenas Comunitarias, TIC)[1]	**Owned by:** 16 local community non-profits	Mobile telephony; mobile broadband
Telefónica (Grupo de Telecomunicaciones Mexicanas, Movistar)	**Owned by**: Grupo Telefónica **Owns**: Movistar (100%); Grupo de Telecomunicaciones Mexicanas (GTM) (100%)	Fixed telephony; mobile telephony; mobile broadband
Totalplay	**Owned by**: Grupo Salinas	Fixed telephony; fixed-wired broadband; pay TV; dedicated links through its subsidiary Enlace TPE
Mobile virtual network operators (MVNOs)		
Maz Tiempo[2]	**Owned by**: Zonda Telecom (100%)	Mobile telephony; mobile broadband
Maxcom[3]	**Owned by**: Maxcom Telecomunicaciones S.A.B. de C.V.	Mobile telephony; fixed broadband; fixed telephony; pay TV; dedicated links
Qbo Cel[2]	**Owned by**: Canaliza Software S.L. (100%)	Mobile telephony; mobile broadband
Teligentia (Cierto)[2]	**Owned by**: Teligentia	Mobile telephony; mobile broadband
Virgin Mobile Latin America[2]	**Owned by**: Privately held; in partnership with Virgin Group; key investors: Temasek Holding, IFC and CAMIF	Mobile telephony; mobile broadband
Weex[2]	**Key investors**: Coca-Cola; Antoni Lelo de Larrea Venture Partner	Mobile telephony; mobile broadband
Flash Mobile[2]	**Owned by**: Logística ACN México, S. de R.L. de C.V	Mobile telephony; mobile broadband
Megatel[3]	**Owned by**: Quickly Phone S.A. de C.V.	Mobile telephony; mobile broadband

1. Granted two concessions from the Federal Telecommunications Institute to connect indigenous groups.

2. Operating on the Telefónica-Movistar mobile network.

3. Operating on Telcel's network.

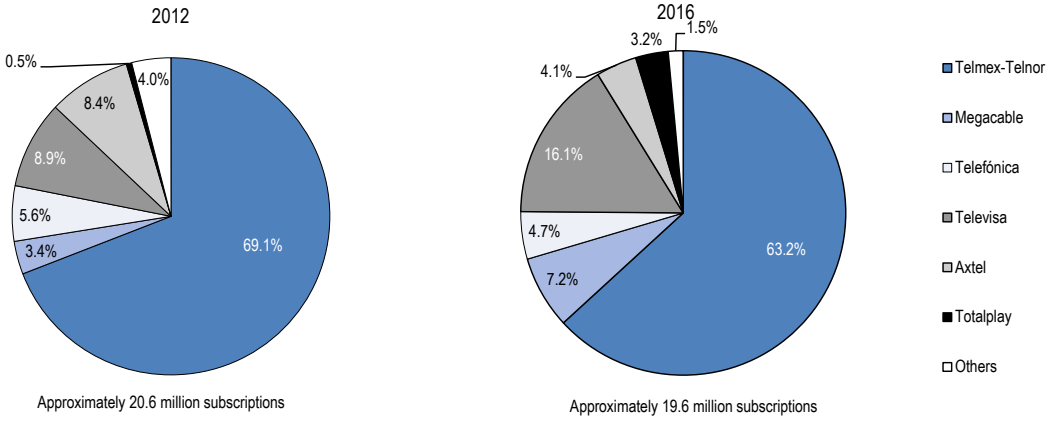
Source: Company data.

Competition

Aside from pricing, which was discussed earlier in this chapter, changes in market shares are a further indicator of the level of competition in the market. When the first OECD review was undertaken in 2012, both fixed and mobile markets were dominated by one large company owned by the same group. Since the reform, the concentration in the fixed and mobile markets has been reduced to a certain extent, although at a different pace across different markets. The biggest changes can be observed in the mobile broadband market.

In fixed telephony, Telmex-Telnor, América Móvil's branch operating in this market, held 69.1% of the market in 2012, which had decreased to 63.2% in 2016 (Figure 2.14). Over the same period, the Televisa Group increased its market share from 8.9% to 16.1% as did Megacable, who saw a rise in its share from 3.4% to 7.2%. Telefónica, Axtel and some other small players had incremental decreases in market share over the five-year period with the exception of Totalplay. This should, however, be taken in the context that the size of the market itself decreased from 20.6 million fixed telephony subscriptions in 2012 to 19.6 million subscriptions in 2016. The lower change in the market share since 2012 for this service compared to others may reflect less competition in the geographical areas only served by the historical telecommunication network, with less choice for uses from alternative networks, or the fact that unbundling or access to other essential inputs are only nascent.

Figure 2.14. **Fixed telephony market shares, Mexico**

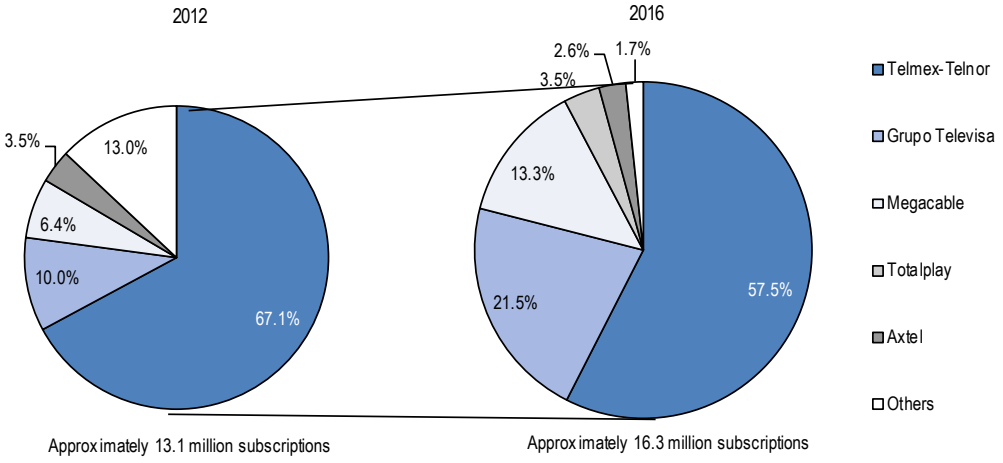


Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

Since the reform was introduced in Mexico, Telmex-Telnor's market share of 67.1% of the fixed broadband market in 2012 fell to 57.5% in 2016 (Figure 2.15). Megacable and the Televisa Group both increased their market shares, from 6.4% and 10% to 13.3% and 21.5% respectively. Totalplay garnered a 3.5% market share from 2013 to 2016. Axtel and other smaller players collectively lost market shares over the period, while the market itself grew significantly by 23%, from 13 million to 16 million fixed broadband subscriptions. Some of the shift in market shares reflects the increased quality of new offerings in the market that are based on faster fibre connections as well as an increasing amount of bundled offers. Once local-loop unbundling is in effective operation, further changes in the composition of market shares can be expected, especially in areas where

there is insufficient alternative network provision. The real benefit of unbundling, however, will be for the competitive stimulus it supplies to further expand take-up in areas that currently only have a single provider.

Figure 2.15. **Fixed broadband market shares, Mexico**



Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

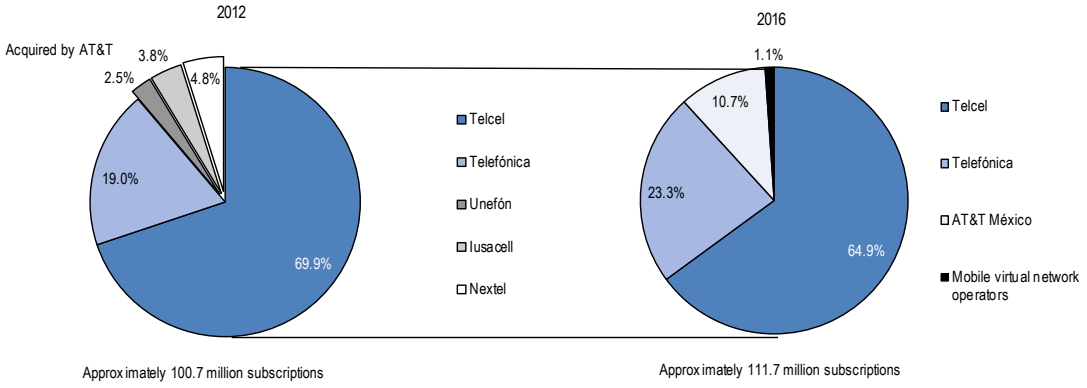
Telcel, América Móvil's branch operating in the mobile telephony market, held 69.9% of the market in 2012. This share fell slightly, to 64.9%, in 2016 (Figure 2.16). Telefónica saw an increase from 19% to 23.3% over the same period. A number of MVNOs entered the market between 2014 and 2016, including Virgin Mobile, QboCel, Weex, Maz Tiempo, Flash Mobile, Megatel, Teligentia (Cierto) and Maxcom. Virgin Mobile is the largest of the group, with an increase from 0.1% to 0.75% of the market since its entry in 2014. In total, the MVNOs' market share increased from 0.14% in 2014 to 1.1% in 2016. Iusacell, Unefon and Nextel held collectively 11.2% of the market share in 2012; AT&T acquired the three brands in 2014-15 under the AT&T Mexico name. In 2016, AT&T Mexico claimed 10.7% of the market, up from 8.1% the year before. Finally, the number of mobile telephony subscriptions outstrips the fixed markets by a fair margin, with an increase of almost 11 million subscriptions from 2012 to 2016. A more competitive environment with more players in the mobile market as well as a decline in prices has contributed to this positive development.

While the changes to the overall mobile market shares have been modest to date, the same cannot be said for mobile broadband, which has witnessed the largest shifts in market shares and has been a dramatically growing market since the reform. The number of subscriptions over the four-year period since the reform has almost tripled, from 24.5 million to 74.5 million mobile broadband subscriptions (Figure 2.17). In other words, from 2012 to 2016, over 50 million new subscribers were connected to the mobile Internet, with many exercising their new choice from more competitive providers.

Since the reform, AT&T, through its acquisition of Grupo Iusacell and Nextel, entered the market along with several MVNOs. Telcel still had the largest market share in both 2012 and 2016, but it dropped by 12%, from 83.8% to 71.8%, over that period (Figure 2.17). Telefónica almost doubled its market share, from 8.8% to 14.2% over the same period, maintaining the second-largest market share in both instances. In 2012,

Grupo Iusacell and Nextel combined had a market share of 7.4%; AT&T closed deals to acquire the two companies in 2015, and posted a market share in the mobile broadband market of 12.4% a year later (Figure 2.17).

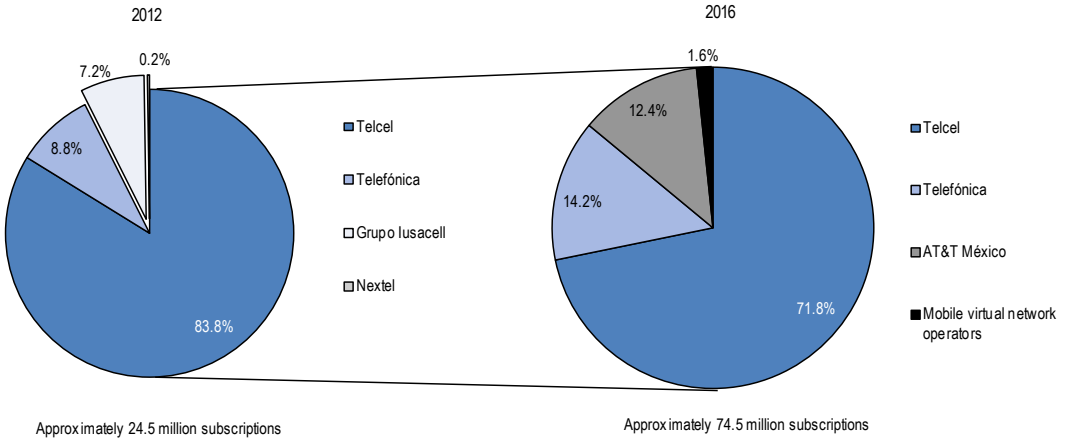
Figure 2.16. **Mobile telephony market shares, Mexico**



Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

The MVNOs listed for the mobile telephony market all operate in the mobile broadband market as well. The MVNO Maxcom was the first operator to introduce a quadruple-play bundle in Mexico (IFT, 2017b). Virgin Mobile is the largest MVNO, with 1.1% of the market. Total market share combined from all MVNOs went from 0.08% in 2014 with only two MVNO operators to 1.6% in 2016 with eight MVNO operators. As for the mobile telephony market, driving factors have certainly been the sharp decline in prices, which made mobile broadband services more affordable to a larger part of the population, as well as an increased number of competitors in the market.

Figure 2.17. **Mobile broadband market shares, Mexico**



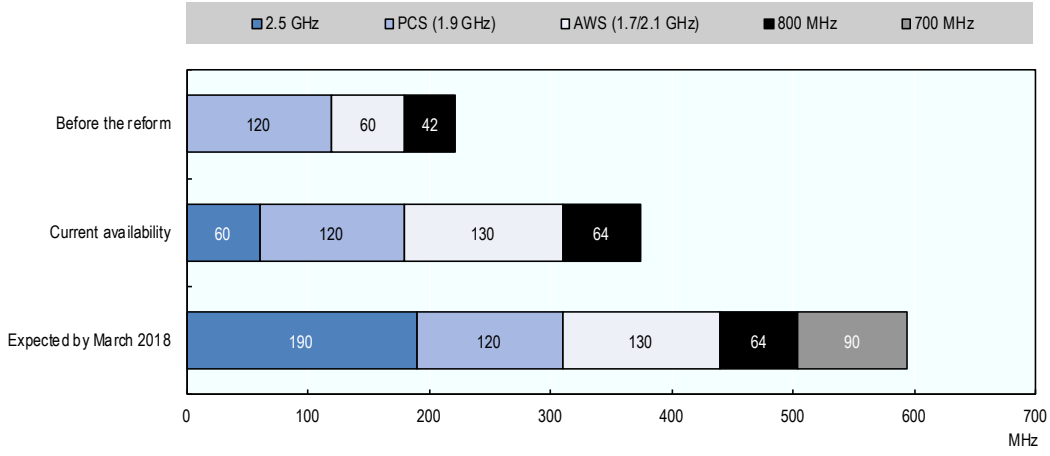
Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

Another important factor and underlying condition for the growth of the mobile market is the availability of spectrum. Since its creation as the new independent regulator, a major objective of the IFT has been to increase the amount of spectrum as well as the efficiency of the existing available spectrum to allow mobile operators to improve the connectivity in the country and foster the introduction of new services.

Before the reform, the spectrum that was available for operators amounted to a total of 222 MHz, the majority of which was in the 1900 MHz Personal Communications Service (PCS) band, followed by 60 MHz in the Advanced Wireless Service (AWS) band (1.7/2.1 Gigahertz [GHz]). Since the reform was introduced, the IFT has put out a spectrum auction for the AWS band. Out of the 80 MHz offered during the auction, 70 MHz of the AWS band were allocated, doubling the availability of spectrum in this band for operators (Figure 2.18). Furthermore, by the end of April 2017, the IFT Board approved a transaction by which América Móvil acquired a subsidiary of MVS, which held 60 MHz of the 2.5 MHz band and were unused.

A further increase of available spectrum is planned for the near future. The Mexican government made 90 MHz of continuous spectrum available for the shared wholesale network, the Red Compartida, in the 700 MHz band, which is especially suited to extend coverage in rural areas. This spectrum was freed from the transition to DTT. The first operations of the network are scheduled to start at the end of March 2018 at the latest. In addition, the IFT is planning a spectrum auction of 130 MHz in the 2.5 GHz band in 2017, which is well suited for the deployment of LTE services. The bidding process, planned for 2016, was delayed to enable the participation of the winning bidder of the Red Compartida, as this spectrum is well suited to complement the spectrum in the 700 MHz band. Finally, the IFT has initiated actions to refarm and reband the 800 MHz band with the aim of increasing available spectrum in this band.

Figure 2.18. **Developments in spectrum availability in Mexico**



Source: Author's calculations based on unpublished material provided by the IFT.

Developments in broadcasting and pay TV

Market performance

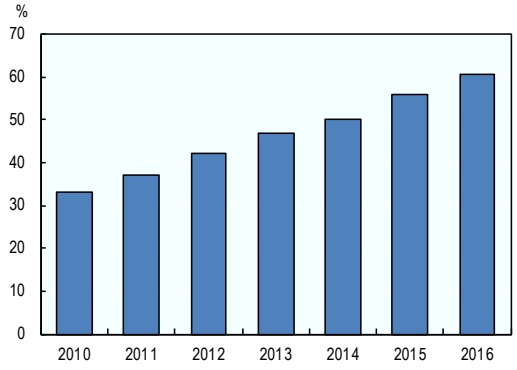
Free-to-air (FTA) television remains the video medium with the most substantial reach in Mexico. In 2016, some 93% of households had a television set (INEGI, 2017a). This penetration rate is consistent with regional averages: 94% in Latin America and 98%

in North America. The high reach of FTA in a country that had lower penetration rates for other communication services was one of the reasons why the 2012 OECD review highlighted the necessity to increase the choice made available from the then commercial national duopoly. The launch of a third commercial FTA provider with a national licence in the latter part of 2016 commenced that process and has expanded viewer choice. Multiprogramming is also now available for the FTA market, providing a more efficient way to use spectrum, and enabling FTA operators to diversify their business models without having to acquire new spectrum. This is especially noteworthy for those people that do not have access to a wide range of alternative sources of information and video entertainment.

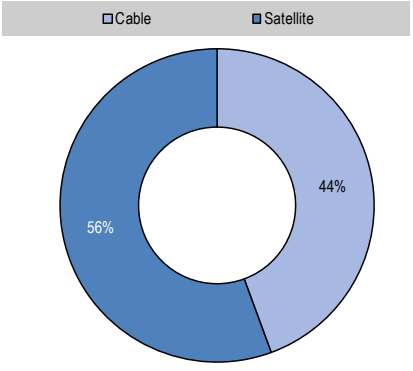
The time devoted by Mexicans to viewing different video media, however, is rapidly changing. Between 2013 and 2016, the take-up of subscriptions for pay TV service increased from 47% to 61% of households (Figure 2.19A). In 2016, pay TV subscriptions were split between 56% for satellite television subscriptions and 44% for cable networks (Figure 2.19B). Disparities across regions, however, remain. In 2016, while 83% of households in Quintana Roo stated having pay TV services, only 34% in Chiapas did. Mexico City comes in eighth position at 74% of households with a pay TV subscription, i.e. 13% above the national average (Figure 2.19C).

Figure 2.19. **Pay TV penetration and subscriptions in Mexico**

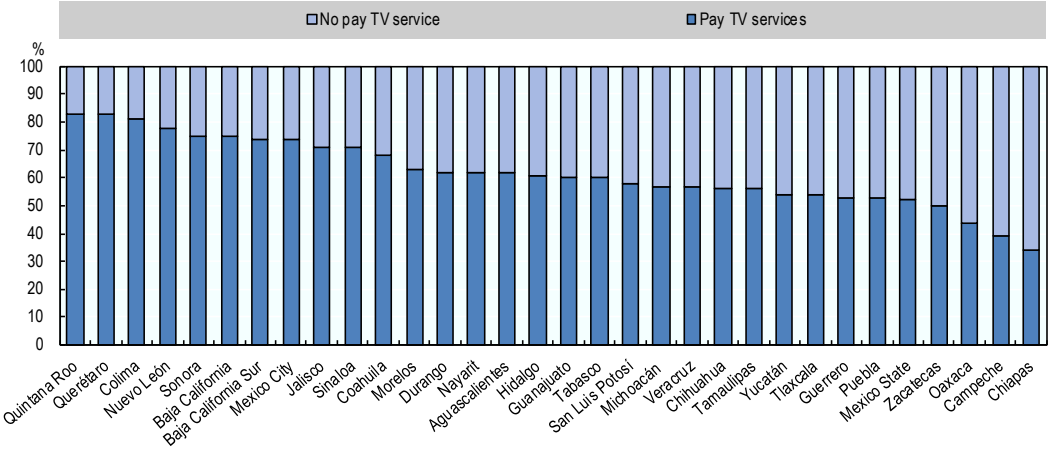
A. Pay TV penetration rate



B. Pay TV subscriptions by technology, 2016



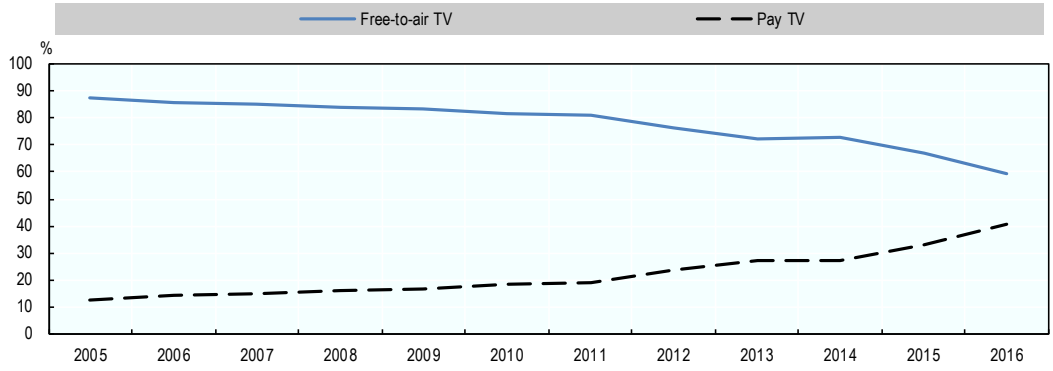
C. Pay TV penetration by state, 2016



Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

Leading up to the reform, pay TV struggled to gain the attention of viewers. Between 2005 and 2011, pay TV's share of airtime viewed increased from just 12% to 19%. Between 2012 and 2016, however, the share shifted from 24% to 41%, with the largest gains of audience made in 2015 and 2016. As a consequence, FTA's share of viewers' attention declined from over 80% to less than 60% (Figure 2.20).

Figure 2.20. **Pay TV and free-to-air broadcast market shares in Mexico**



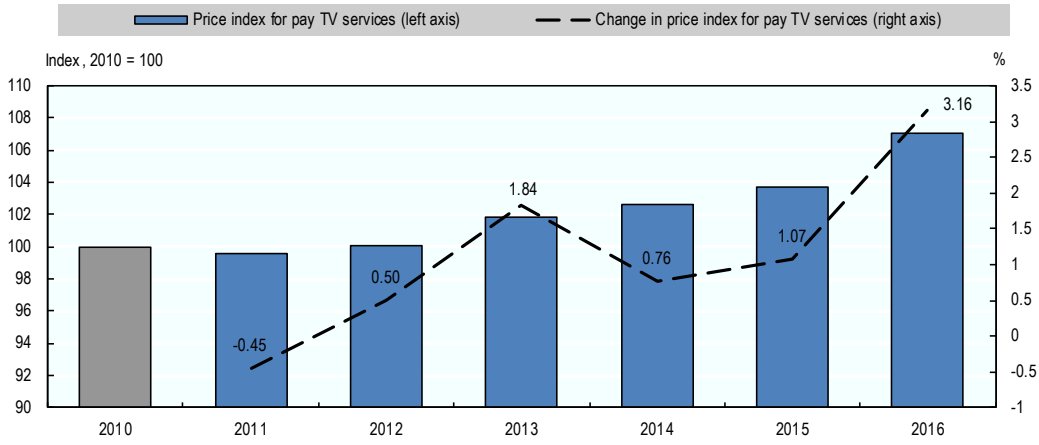
Source: Latin American Multichannel Advertising Council (2016), "Métricas de TV paga: Métricas México", www.lamac.org/mexico.

After many years of slow growth, the surge in pay TV take-up is undoubtedly associated with several interrelated factors. The existence of a clear unmet demand for choice of video services and the changing market conditions around the reform have prompted different players to increase the attractiveness of their offers or to launch new services and bundles. However, on average, prices have not followed the decline seen in other "telecommunication services".[4]

The consumer price index for pay TV services increased from 100 points in 2010 to 107 points in 2016. From 2013 to 2016, prices for these services increased by 5%, up 3.2% in 2016 alone (Figure 2.21). The falling value of the Mexican peso may have contributed to this price increase, through an appreciation of the cost of foreign programming, although all telecommunication markets faced this devaluation and did not transfer (all) the increase in costs to end users. If the exchange rate explains the increase in costs to acquire and produce content, the "part" of that increase that is transferred to prices for final users depends on market competition conditions and demand responsiveness. In this respect, the pay TV market has experienced substantial consolidation of ownership in recent years. In some geographical locations, especially with limited broadband access and the greater choice it provides, this has likely reduced competition.

Along with subscribers and prices, the revenues of pay TV operators have also continued to increase, reaching MXN 85 billion in 2016 (Figure 2.22A). From 2013 to 2014, investments in infrastructure and intangibles by these players grew by 18%, from 2014 to 2015 by 27%, and from 2015 to 2016 by 7%. In 2016, these investments represented 24.7% of pay TV operators' revenue and 4.6% of total telecommunication revenue (Figure 2.22B).

Figure 2.21. **Consumer price index for pay TV services in Mexico**



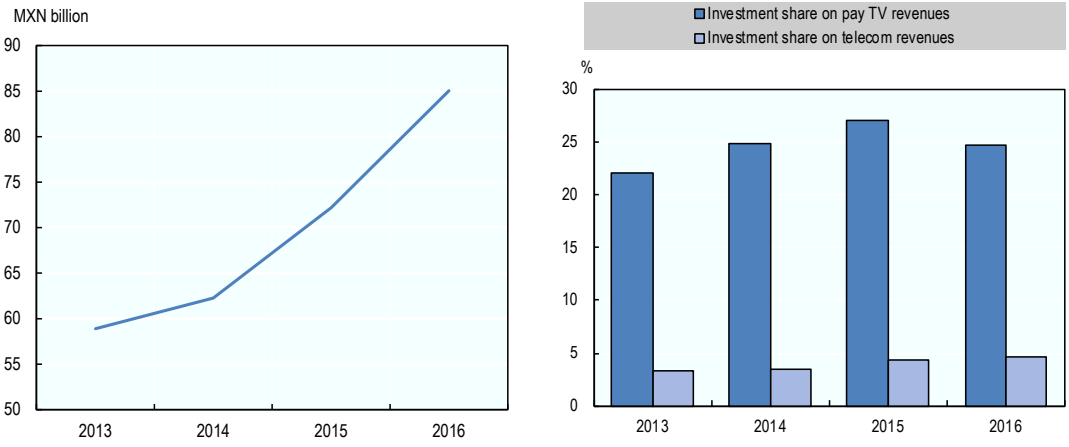
Note: The baseline period is December 2010.

Source: Unpublished material provided by the IFT.

Figure 2.22. **Pay TV operators in Mexico**

A. Total revenue

B. Investment shares



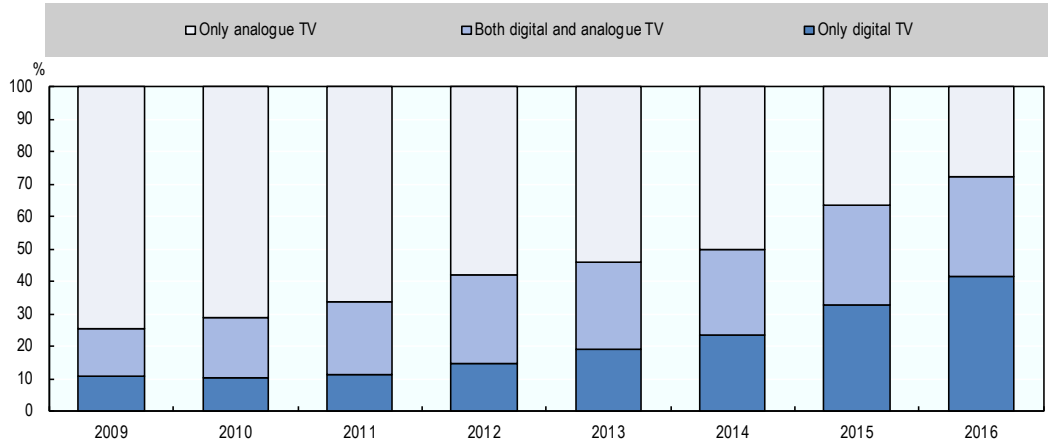
Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

While pay TV is rapidly growing, the commercial FTA market is feeling the effects of changing demand and the loss of its nationwide duopoly status. The DTT transition, completed in December 2016, has enabled the entry of new market players. Some also suggest that the lower quality of FTA broadcasting during the simulcast period of DTT could have benefited pay TV operators (IFT, ITAM and CEC, 2016), although this is challenging to assess given the many concomitant changes in the industry.

Certainly, the analogue to digital transition has affected the way in which people consume video services. Since 2011, when some 83% of Mexican households had an analogue set as their primary television, the share of households with a digital television set dramatically increased, from 16% in 2011 to 68% in 2016 (INEGI, 2017a). The changeover

is also reflected in data for households with a pay TV subscription. The proportion of households owning only an analogue device while having pay TV decreased from 75% in 2009 to 36% in 2015. In contrast, the proportion of households with pay TV services and owning a digital TV set almost tripled from 2009 to 2016, from 25% to 72% (Figure 2.23).

Figure 2.23. **Share of households with pay TV, by type of television set, Mexico**



Note: Between 2009 and 2014, the data are based on INEGI (2014). Data for 2015 and 2016 are from INEGI (2017a).

Sources: INEGI (2017a), *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2016* [National Survey on Availability and Use of Information and Communication Technologies in Households 2016], www.beta.inegi.org.mx/proyectos/enchogares/regulares/dutih/2016/default.html; INEGI (2014), *El Módulo sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (MODUTIH) 2014* [Survey Module on Availability and Use of Information and Communication Technologies in Households 2014], www.beta.inegi.org.mx/proyectos/enchogares/modulos/modutih/2014.

The changes in Mexican's viewing habits are reflected in advertising revenue. FTA advertising revenues, for both the Televisa Group and Azteca, fell 10% in 2015 (Castano, 2016). Although they rebounded in 2016, this can be set against a longer term trend of declining market share as Mexican FTA revenues historically had the highest share of the overall advertising market in the OECD. Some have attributed this in part to a preference in Mexico for broadcasting over print media (such as newspapers and magazines), which may have enabled the two commercial FTA players to extract higher rents (Noam and the International Media Concentration Collaboration, 2015).

FTA broadcasters are facing challenges in all OECD countries, as people shift consumption away from traditional linear television to on-demand services. This is most conspicuous in countries with the highest broadband penetration, faster speeds, and generous data allowances or unlimited services. As broadband access increases in Mexico, the expectation is that more people will take-up pay TV and so-called over-the-top (OTT) services, as illustrated by recent changes in consumption patterns in the country (IFT, 2017b). Increased access to broadband at higher speeds, whether fixed or mobile, can assist in meeting this demand and provide increased choice to viewers of video services.

For the moment, however, the still-pervasive nature of FTA and the increasing take-up of pay TV mean that they will remain the media with the most influence among Mexican audiences. This recognises current consumption time (an average of 4 hours 10 minutes per day of FTA and 3 hours 47 minutes per day of pay TV in comparison to

1 hour 20 minutes per day of digital media), as well as coverage, marketing efficiency and ability to create brand loyalty (Ernst & Young, 2015).

Market players

Free-to-air television

Leading up to the communication reform, the Mexican national commercial FTA market was characterised by a duopoly with one of the two parties having the "lion's share". The duopoly market structure had existed for more than two decades (Box 2.1). Between the Televisa Group's Channel 2, with the largest network producing a combination of telenovelas, sports and news; TV Azteca's Channels 13 and 7 (the latter showing many imported foreign dramas and children's television, the former telenovelas); and the Televisa Group's Channels 5 and 9, the split in advertising revenues has been roughly 70/30 in the Televisa Group's favour.

Box 2.1. **The origin of the Mexican free-to-air commercial duopoly**

Mexican free-to-air (FTA) television began broadcasting in 1950 when Channels 2 and 4 were granted broadcasting licences by presidential decree, followed by a third license for Channel 5 in 1952 (Sinclair, 1986). By 1955, however, the three channels merged into Telesistema Mexicano (TSM). Ten years later, in 1965, a new licence was granted to the Monterrey Group, who created Channel 8 under Televisión Independiente de Mexico (TIM). In 1969, TSM was granted a licence for cable subsidiary Cablevisión. Despite the introduction of new licenses, the broadcasting sector again witnessed new concentration when in 1972 the Television Via Satelite (Televisa), covering the totality of the country, was created by the merger of TSM and TIM, who shared a 75% to 25% ownership, until 1982, when TSM bought out the Monterrey Group (Sánchez Ruiz, 1991).

Since 1972, the Televisa Group has dominated the FTA market in Mexico, with a continuing 60% to 70% market share and the most popular national channels (OECD, 2012). The Televisa Group's Channel 2 (branded *Las Estrellas*, since 2017; formerly, *Canal de las Estrellas*) has been the most popular channel for over 60 years. The only competitor to the Televisa Group, which has maintained 20% to 30% of the FTA market for many years, has been TV Azteca with its Channels 13 and 7, although now its share has dropped below 20%. TV Azteca was founded with the privatisation in 1993 of Channel 13, which after being expropriated for bankruptcy by the federal government in 1972, had been broadcast nationally as a public channel, along with Channel 7, by Televisión Rural Mexicana (Mexican Rural Television) and then the Instituto Mexicano de la Televisión or Imévisión (Toussaint Alcaráz, 2009; Sánchez Ruiz, 2009).

Sources: Sinclair, J. (1986), "Dependent development and broadcasting: The Mexican formula", http://journals.sagepub.com/doi/abs/10.1177/016344386008001005, Sánchez Ruiz, E.E. (1991), "Hacia una cronología de la televisión Mexicana, www.publicaciones.cucsh.udg.mx/pperiod/comsoc/pdf/10-11_1991/235-262.pdf; Sánchez Ruiz, E.E. (2009), "Poderes fácticos y gobernabilidad autoritaria: La 'ley televisa' como caso de estudio", www.academia.edu/821353/Poderes_f%C3%A1cticos_y_gobernabilidad_autoritaria._La_Ley_Televisa_como_estudio_de_caso._2009; and Toussaint Alcaráz, F. (2009), "Historia y políticas de televisión pública en México" [History and policy of public television in Mexico], www.redalyc.org/articulo.oa?id=42115999006.

As might be expected with an FTA duopoly, this was a highly profitable market for the two companies. In addition, there were not any licences or spectrum fees for many years. Rather, from 1968 onwards, by presidential decree, a 12.5% ratio of programming time was to be made available for use by the government (i.e. 180 minutes/day). As a

result there was little incentive for reform, which could have led to greater plurality and a strengthening of the democratic role played by FTA television. That being said, in 2002, the official requirements for government time were reduced to 48 minutes/day for FTA and 65 minutes/day for radio (private concessionaries), and 30 minutes/day for public or social concessionaries (SEGOB, 2002). During elections some of the time is allocated to the different political parties but is otherwise available for the sole use by the government of the day.

Public free-to-air broadcasters

The largest national public FTA networks – that is, those of the Public Broadcasting System (Sistema Público de Radiodifusión, SPR) and Canal Once – have relatively low audience shares compared to commercial players. The most successful in terms of audience is Canal Once, run by the Politécnico Nacional since 1959, with 9% of the audience (IFT, 2016a). Additionally, there are 23 state broadcasting networks which operate under a private licence and 2 other public television channels that operate on pay TV platforms, Canal Judicial and @prende TV. As in many countries, public broadcasters face challenges in increasing their audience share due to the limited resources available to meet demand (e.g. expenditure on infrastructure deployment, operational budgets, employees and content production). In Mexico, they are not permitted, as in some countries, to offer advertising, or as in others to be funded through a television license model. However, they are permitted to obtain revenues by selling their own productions and from offering services. They can also be sponsored. Their annual budgets are set by the Congress, dependent on either state or municipal governments if not exclusively under the federal budget, and therefore compete for available public revenue. For a sense of scale, Canal Once has an annual budget of about USD 100 million, while the federal government itself spends USD 400 million for advertising on commercial broadcasters, which is in addition to the mandated time available to it (Brambila, 2016).

Given their limited resources compared to commercial players, the 9% audience share indicates relatively strong demand for the service offered by some FTA public broadcasters. The third national commercial network owned by successful bidder Imagen TV (Channel 3) started operations in October 2016. To the extent that the public broadcasters are meeting demand unmet by commercial players, they may be less susceptible to audience fragmentation for linear television. On the other hand, to the degree they face the same increased competition for audience attention, they may have less flexibility to adapt than the commercial players. The FTA audience share, for both commercial and public broadcasters, is expected to decrease in audience share as the use of pay TV and digital media grow.

Pay TV

The largest national pay TV operator in Mexico is Sky Mexico. Sky was launched in 1996 as a Ku-band direct-to-home satellite service, originally as a joint venture between the Televisa Group, Liberty Media, News Corporation and the UK direct-to-home operator BskyB. The Televisa Group remains the majority stakeholder with 58.7% and DirecTV (a subsidiary of AT&T) holds the other 41.3% (Sky, 2017). AT&T acquired its stakes in Sky Mexico as a result of a merger carried out in the United States with effects in Mexico, by which AT&T acquired DirecTV. This concentration was authorised in Mexico by the IFT in November 2014, subject to compliance with some conditions. In Mexico, DirecTV and Sky were competitors from 1996 to 2004 but after the entities merged in 2005, only Sky subsisted. Sky faces satellite service competition from Dish, launched in December 2008, and owned 51% by MVS Communications and 49% by the US investor Echostar. Telmex

and Dish signed a series of contracts by which Telmex participated in sales and distribution activities for Dish. In January 2015, the IFT ruled that a series of contracts between the two parties in 2008 constituted a merger and should have been notified. While this was not deemed to be anticompetitive, the IFT imposed a fine of USD 4.6 million for the merger not being notified and for the provision of false information to the authority. To this day, the IFT has yet to rule if Telmex benefited from the must-offer condition by its merger with Dish.

Apart from Sky, Dish and Megacable, the other actors in the Mexican pay TV market are Cablemás, Cablevisión, Televisión Internacional, Cablevisión Red and Cablecom – all subsidiaries of the Televisa Group, in addition to the new network operators Totalplay and Axtel, which started operation in 2013, and the new satellite entrant StarTV, which started operations in 2016. The remaining portion of the market is split among several small cable systems, some of which emerged historically in locations where FTA could not be received via aerial signals.

As noted, pay TV was relatively underdeveloped in Mexico, even after Dish entered the market in 2008. While the initial competition between Sky and Dish brought down prices for satellites and for some of the areas with cable network coverage, albeit tempered by cable network consolidation, the largest increases in subscription growth have occurred since 2012, coinciding with the reform and its anticipation by different players. In those markets where there is greater competition, such as Mexico City, penetration for households had reached 74% by 2016 while in Chiapas it was 34% (IFT, 2017a).

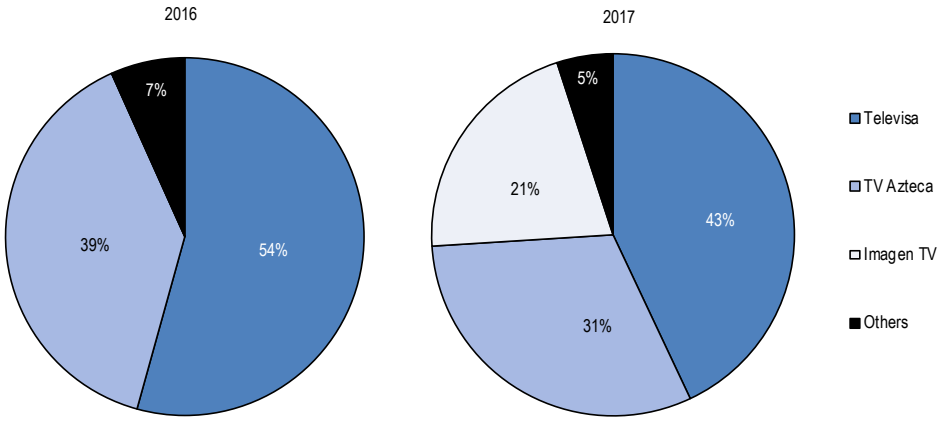
Competition

In October 2016, an important landmark was achieved in the reform of the broadcasting market in Mexico with the launch of a third commercial FTA channel, Imagen TV. As might be expected, it will take time for this player to achieve a wider reach as it builds its own facilities or gains access to existing ones. Competition in the FTA market is expected to be further improved through the awarding of regional broadcasting licences. In addition, further choice can be introduced by increased access to broadband from different pay TV players and OTT services. For the moment, however, the FTA and pay TV markets remain highly concentrated.

The process to introduce new players in the FTA market revealed differences in treatment between new entrants and incumbents. The existing FTA channels were awarded their new spectrum licences without charge. On the other hand, the new third channel paid a fee, following an auction (MXN 1.8 billion). The fourth potential entrant did not proceed, after unsuccessfully endeavouring to raise the necessary capital. Some believe that this player bid too highly for the license (MXN 3.1 billion).

As there are no official data for FTA and commercial sources exclude public broadcasters, a precise analysis of market shares in the sector can be challenging. In 2013, the preponderant decision on the broadcasting sector was based on a commercial estimation of the Televisa Group holding 67% of the FTA ratings (which exclude public broadcasting). In terms of spectrum, in 2016, the Televisa Group held 54.3% of commercial FTA channels, followed by TV Azteca with 39%. In 2017, the estimation is that, as soon the new third national channel finishes deploying its network, it will hold 21% of the commercial FTA channels, lowering the Televisa Group's share of spectrum to 43% and TV Azteca to 31% (Figure 2.24).

Figure 2.24. **Share of commercial free-to-air channels, by national broadcaster, Mexico**



Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

For pay TV, the concentration in the market remains elevated. Since 2006, the pay TV market has seen increasing consolidation, with the Televisa Group acquiring the first 50% of Televisión Internacional (2006), then Cablemás (2008), Cablecom (2014), Cablevisión Red (2015) and, lastly, the remaining 50% of Televisión Internacional (2016).

The series of pay TV purchases by the Televisa Group have witnessed its market share increase. In 2010, the Televisa Group had 46% of the market, due to its ownership of Sky, Cablevisión, VDT Comunicaciones, Cablemás and its partial ownership of Televisión Internacional (50%), making further acquisitions in the following years. By 2016, its market share had increased to 61%. Dish follows with 16.7% and Megacable with 14.6% (Figure 2.25).

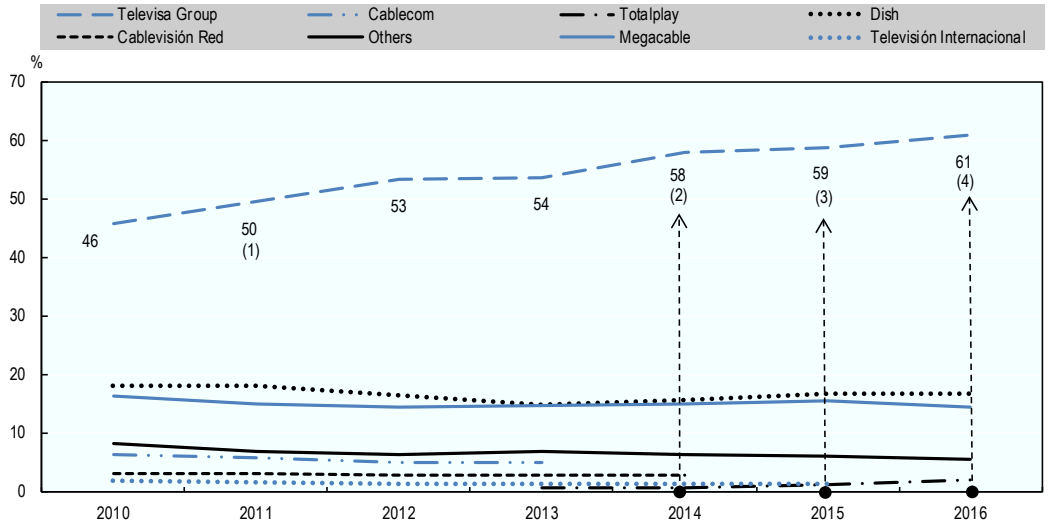
The consolidation observed is reflected in increasing concentration in the pay TV market and elevated Herfindahl-Hirschman Indexes (HHIs).[5] In 2011, the HHI for pay TV services passed the 3 000 threshold and continued to increase, reaching 4 241 points in 2016 (Figure 2.26).

Although the Televisa Group has come to dominate the pay TV market through acquisitions in recent years, there has been only a slight decline since the reform was introduced in terms of its overall market share. If the Televisa Group is assumed to have controlled the same companies in previous years that it owned as of 2016, then the group would have the same share in 2016 that it had between 2011 and 2012 (61%) (Figure 2.27). Notably, however, from a peak in 2013, the Televisa Group's share has declined, from 63.1% to 61% in 2016. This approach to examining changes in market share is a way of assessing the performance over time of several market players, by filtering out acquisitions.

The consolidation of the Mexican pay TV market has been associated with increases in service prices, though as noted, the rising cost of foreign content due to the falling value of the peso is also a factor. The regional nature of some pay TV provision, such as via cable networks, means consumers have fewer choices in those locations without competing providers following consolidation. Wider take-up of broadband, including the use of unbundled local loops or additional entry of competitors in both FTA and pay TV

markets, would improve choice for consumers. In its absence, however, the challenge remains of how to increase plurality and provide greater choice of service providers.

Figure 2.25. **Market shares in pay TV, Mexico**



1. The Televisa Group acquired full ownership of Cablemás in 2011 (majority ownership was acquired in 2008).

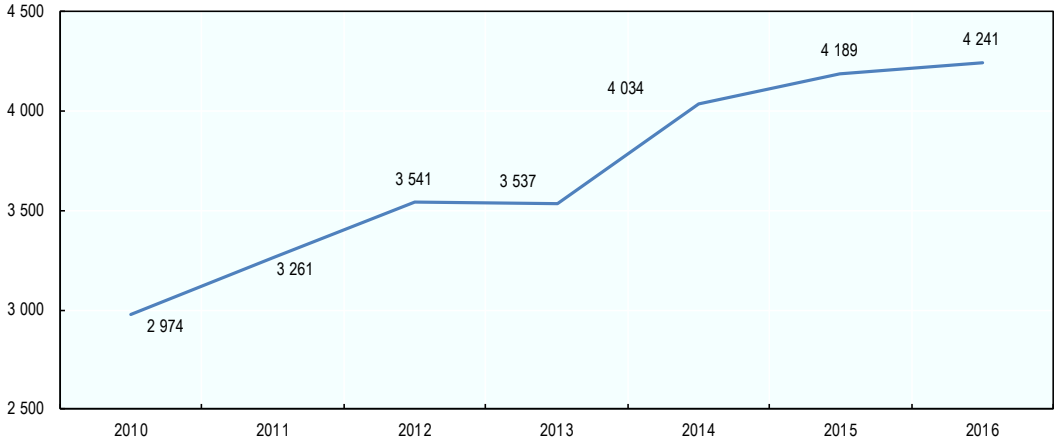
2. The Televisa Group acquired Cablecom in 2014.

3. The Televisa Group acquired Cablevisión Red in 2015.

4. The Televisa Group acquired majority ownership of Televisión Internacional in 2016 (the initial 50% were acquired by the Televisa Group in 2006). For the 2010-15 market share calculations of the Televisa Group, only 50% of the subscriptions of Televisión Internacional were added; in 2016, market shares of the Televisa Group included the totality of subscriptions from Televisón Internacional.

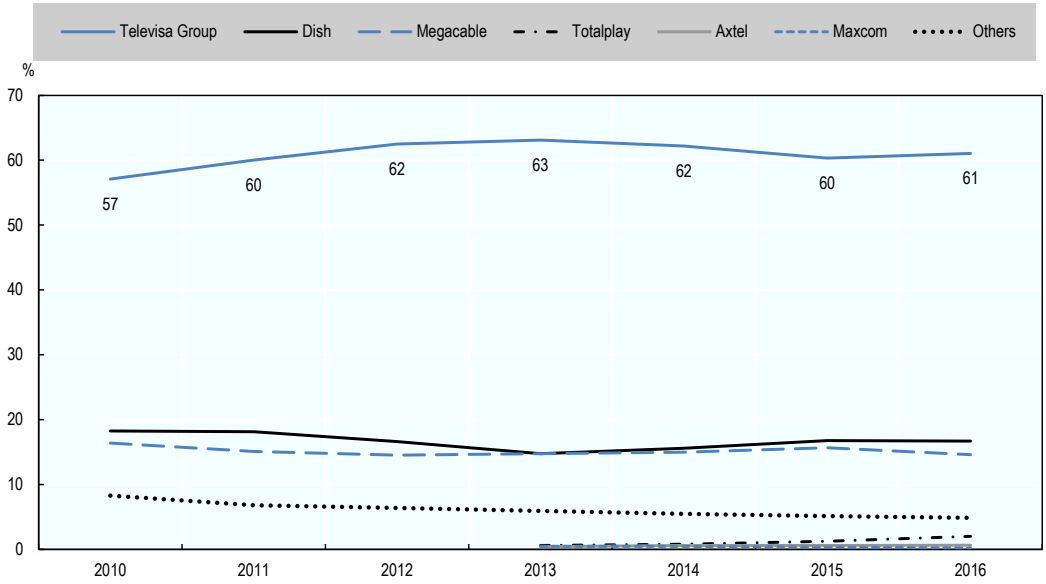
Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

Figure 2.26. **Market concentration in pay TV services, Herfindahl-Hirschman Index, Mexico**



Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

Figure 2.27. **Market shares in pay TV services in Mexico, with subsidiaries of the Televisa Group as of 2016 made constant**



Note: Shares of the Televisa Group were calculated for each year based on a constant composition of their group as it was in 2016, regardless of the date of the real acquisition.

Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

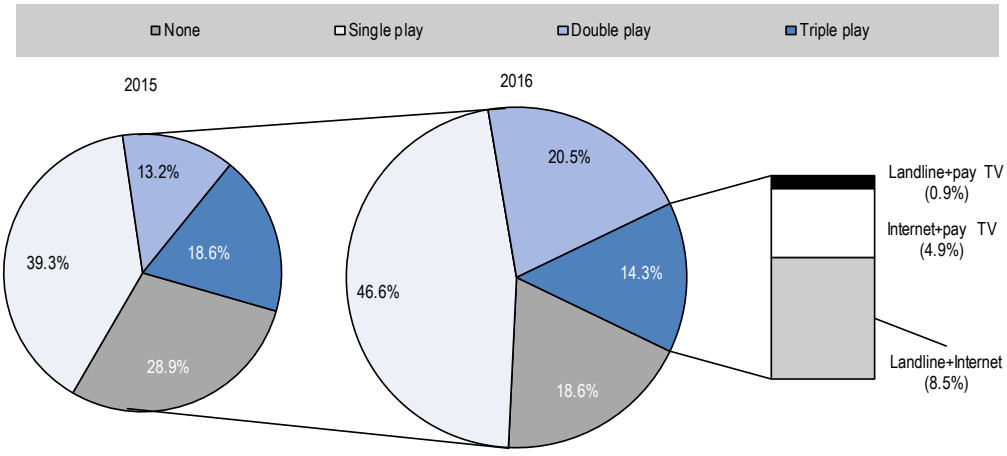
Developments in convergence

Bundled offers

One of the most important objectives of the reform for the Mexican market has been to expand access and take-up of communication services. The subscription data for mobile services, particularly mobile broadband, have shown gains and, more importantly, the higher speed subscriptions provide access to multiple services (e.g. telephony, Internet access, OTT video).

Household surveys such as those undertaken by INEGI provide indicators of progress in the consumption of a variety of communication services. One such survey covers household use of traditional landline telephony service, Internet access and pay TV, whether taken as a single subscription or in a bundle. These data exclude mobile services to better assess progress in these areas. Between 2015 and 2016, the proportion of households without any of these services declined from 28.9% to 18.6% (Figure 2.28). In addition, the proportion of households taking two or three services also increased. For those with a single subscription, pay TV is the most common, Internet access is increasing and landline (i.e. fixed telecommunication lines) subscriptions falling. When these data are considered against mobile broadband increases they can point to where there is substitution and complementarity. The data can also be broken out such as for households subscribing to two services, either by bundles provided by the same operator or by two stand-alone services by different operators (the largest proportion among these being of households that have a traditional landline telephony connection and also an Internet access subscription, with 8.5%), and for households subscribing to all three fixed services. Overall, the data reflect increased take-up of different communication services and a reduction in the number of households with no service in these categories.

Figure 2.28. **Proportion of type of communication service offers taken by households, Mexico**



Source: IFT based on INEGI (2017a), *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2016* [National Survey on Availability and Use of Information and Communication Technologies in Households 2016], www.beta.inegi.org.mx/proyectos/enchogares/regulares/dutih/2016/default.html.

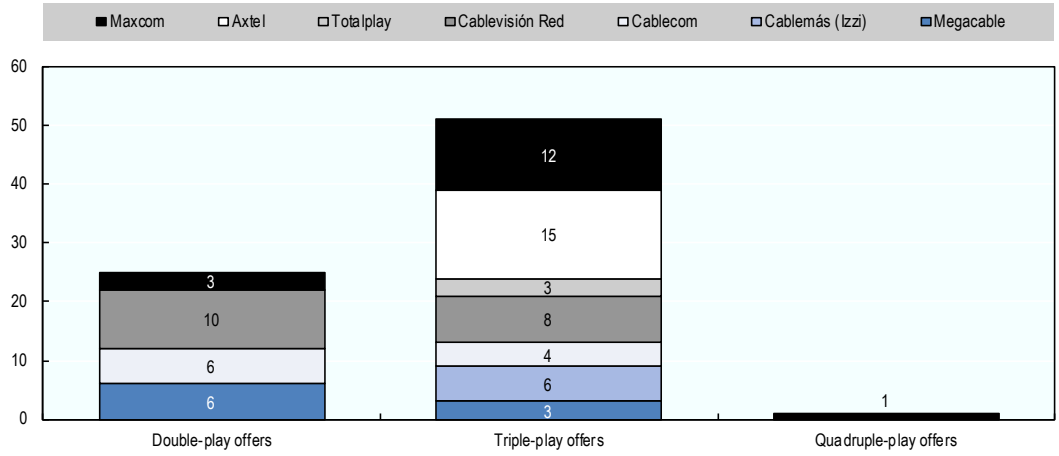
All seven of the largest cable operators offer triple-play services (Figure 2.29). A few offer double play and, although there have been announcements of future offers by Axtel and Megacable, as of June 2017 only one operator, Maxcom, was found to offer quadruple play (i.e. telephony, pay TV, Internet access and mobile services). Integrated quadruple-play offers are still an exception in many OECD countries, with the differentiation mostly being as to whether a triple-play service is delivered via a fixed or mobile subscription. In other words, both fixed and mobile operators offer triple-play bundles, with some offering a discount on a fourth service. However, it is less common in OECD countries to have all four services on the same bill (OECD, 2015). Nonetheless, while triple-play services are prevalent in the Mexican market, not all cable television networks have been upgraded to provide broadband access and remain television-only facilities in some locations.

Video and television services via IP platforms

Internet Protocol television (IPTV) is the delivery of television content using signals based on the Internet Protocol (IP), rather than through traditional methods such as FTA broadcasting, satellite services or cable television. IPTV and video carriage services via IP platforms are unregulated in Mexico, whether offered by cable pay TV operators on upgraded broadband networks (such as the Televisa Group's Izzi), fixed or mobile telecommunication operators (such as Telmex or Telcel), or by service providers that do not provide the "middle mile and last mile" paths to the user (such as Netflix). Both of the preponderant economic agents (the Televisa Group and Telmex) have proprietary video carriage services via IP platforms called Blim and Claro Video, respectively.

Mexico is one of the largest markets for platform-independent (so-called OTT) video services in Latin America. The bundling of services by some mobile networks as well as increasing access speeds in some locations with fixed broadband access are also factors at play. In addition, the profile of the users of these services is younger, more affluent and more exposed to foreign programming than a traditional FTA channel offering of telenovelas.

Figure 2.29. **Bundled offers for network operators offering pay TV, Mexico**



Notes: Data as of March 2017. Double- and triple-play offers are not listed if the bundle does not include pay TV.

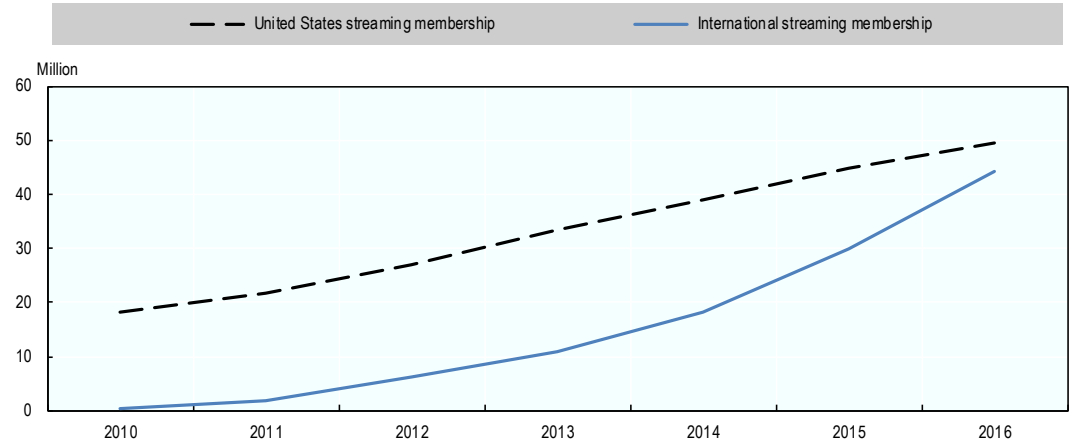
While there are no official data for video carriage services via IP platforms, Telmex (Claro/UnoTV), the Televisa Group (Blim) and Netflix seem to be the leading providers. In 2016, Televisa ended a five-year partnership with Netflix, announcing Televisa's new streaming service Blim. The new platform offers the Televisa Group's programming, such as telenovelas and their comedy shows, and competes in Mexico and Latin America with Netflix and Claro/América Móvil/Telcel.

The growth of the use of these services has been one of the major changes since the reform opened the Mexican market to more competition around convergence. Subscriptions to IPTV and video carriage services via IP platforms are widely believed to be growing rapidly, driven by increased access to fixed and mobile broadband services. In 2011, for example, Netflix launched its streaming service in Mexico as part of a wider roll-out in Latin America and the Caribbean, second only to Canada in 2010 and ahead of the United Kingdom and Ireland in 2012.

Netflix does not break out data for subscriptions to its streaming service beyond a split for those in the United States and internationally (Figure 2.30). One notable feature of the Mexican market, however, was that Netflix chose it to be the first location for a Spanish-language Netflix original series (Club de Cuervos, which had its premiere in August 2015). This would suggest that it regards Mexico as an important market and one where it needs to produce some local content to attract customers when up against players that produce such content for local and international consumption. A second season of Club de Cuervos has been commissioned, suggesting that the initiative was successful.

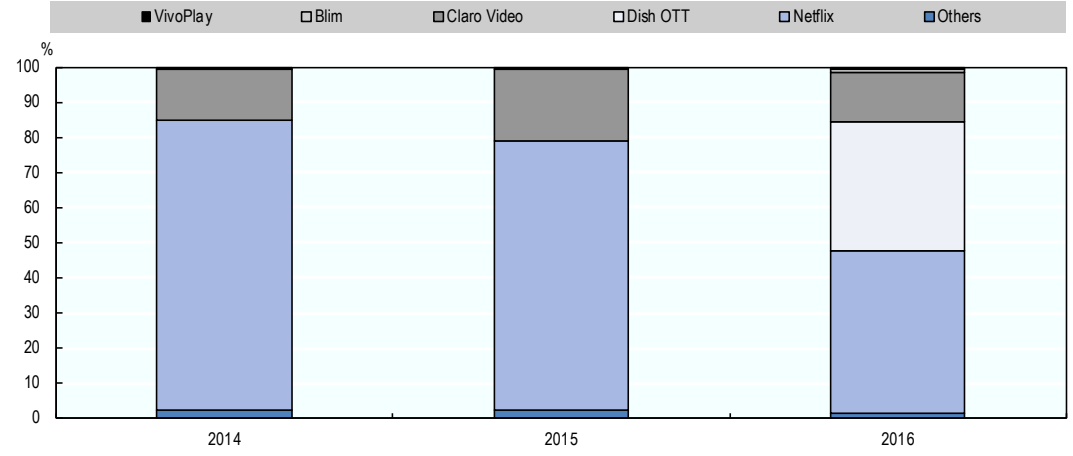
Household surveys also show that in 2016, 12.5% of the Mexican population had used the Internet to access paid video content (INEGI, 2017a). Furthermore, estimates suggest that the OTT market reached 5 million subscribers in 2016, with Netflix and Dish OTT having the largest shares, 46% and 36%, respectively, and with Claro Video following with 14%, Blim with 1.2% and VivoPlay with 0.5% (Figure 2.31). Netflix costs MXN 99 per month, with approximately 610 titles, Dish OTT costs MXN 139 with 2 500 titles and HBO GO, Claro Video costs MXN 69 per month with 2 091 titles while Blim was launched at MXN 109 per month with 760 titles. Notably, the OTT players, including the foreign-owned ones, have started producing local content or international content aimed at Mexican users.

Figure 2.30. **Netflix subscribers**



Source: Netflix (2017), *Netflix 2016 Quarterly Earnings*, https://ir.netflix.com/results.cfm.

Figure 2.31. **Estimates on subscription to video on-demand services in Mexico**



Note: Based on OVUM estimates.

Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

The on-demand and linear video market will continue to rapidly evolve around new technological possibilities and commercial strategies. While the pay TV, broadband IPTV and FTA markets are all unique in some ways, they are converging in ways that create new opportunities to meet the policy objectives set out when the reform was introduced to the Mexican communication market. OTT audiovisual services, such as YouTube, Netflix and Spotify, are competing for attention and subscription with the traditional FTA and pay TV players. As a result, the traditional players are diversifying their content and aiming to serve a more connected audience. While the various services use platforms that have different levels of reach (i.e. FTA has greater coverage than broadband), all indications are that OTT players are becoming more significant actors in the market.

Notes

1. One of these offers unlimited international calls in general, the other offers unlimited calls to Canada, the United States, Europe and Latin America.
2. The fixed broadband figures for Mexico are the number of connections as the technology disaggregation is not available for subscriptions, which by definition refers to contracts between operators and customers.
3. Between 2001 and 2014, the data for individuals and households came from the National Survey Module on the Availability and Use of Information and Communication Technologies in Households (MODUTIH). Data for 2015 and 2016 are from the National Survey on Availability and Use of Information and Communication Technologies in Households (ENDUTIH).
4. For historical reasons in Mexico, pay TV services have been classified as telecommunication services.
5. The HHI is a commonly accepted measure of market concentration calculated by squaring the market share of each competing firm in the market and summing up the resulting numbers. The index ranges from 0 to 10 000, where it is close to 0 it would indicate perfect competition, and if it were equal to 10 000 it would indicate a monopoly in the market. The US Department of Justice uses the HHI to evaluate merger cases, and considers an HHI lower than 1 500 to be a competitive market, an HHI between 1 000 to 2 500 to be a moderately concentrated market, and an HHI greater than 2 500 to be a highly concentrated market. As a general rule, a merger case that increases the HHI by more than 200 points raises antitrust concerns and would be scrutinised.

References

Akamai (2017), "State of the Internet connectivity visualization", Akamai Technologies, www.akamai.com/us/en/our-thinking/state-of-the-internet-report/state-of-the-internet-connectivity-visualization.jsp (accessed 10 March 2017).

AT&T (2014), "AT&T to acquire Mexico wireless provider Iusacell", AT&T Newsroom, http://about.att.com/story/att_to_acquire_mexico_wireless_provider_iusacell.html (accessed 15 February 2017).

Bourassa, F. et al. (2016), "Developments in international mobile roaming", *OECD Digital Economy Papers*, No. 249, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jm0lsq78vmx-en.

Brambila, J. (2016), "Public service media in Mexico and Latin America: Recent improvements and future challenges", *Public Service Media Initiatives in the Global South*, SFU Library Publishing, Vancouver, Canada, http://monographs.lib.sfu.ca/index.php/sfulibrary/catalog/book/1.

Castano, I. (2016), "Mexico's TV Azteca struggles to keep up with changing media landscape", US Edition, Variety Media, 8 January, http://variety.com/2016/tv/global/tv-azteca-mexico-media-landscape-1201671893.

Ernst & Young (2015), "¿La estrategia de medios de tu compañía tiene la dirección adecuada? Estudio de la publicidad en los medios de comunicación masiva en México: Eficiencia, alcance, impacto y experiencia" [Does your company's media strategy have the right direction? A study of advertising in the mass media in Mexico: Efficiency, scope, impact and experience], Ernst & Young Mexico, www.ey.com/Publication/vwLUAssets/ey-estudio-publicidad-medios-comunicacion-masiva-mexico-2015/$FILE/ey-estudio-publicidad-medios-comunicacion-masiva-mexico-2015.pdf.

IFT (Instituto Federal de Telecomunicaciones) (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth quarter], Instituto Federal de Telecomunicaciones, Mexico City, https://bit.ift.org.mx.

IFT (2017b), "Tercer informe trimestral estadístico 2016" [Statistical report of the third quarter], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/sites/default/files/contenidogeneral/estadisticas/3ite16v4.pdf.

IFT (2017c), "Versión pública del Acuerdo P/IFT/EXT/ 270217/119" [Public version of Agreement P/IFT/EXT/270217/119], Resolution, Instituto Federal de Telecomunicaciones, Mexico City.

IFT (2016a), "Encuesta Nacional de Consumo de Contenidos Audiovisuales 2015" [National Survey of Audiovisual Content Consumption 2015], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/sites/default/files/contenidogeneral/comunicacion-y-medios/encca2015-vf-compressed_2.pdf.

IFT (2016b), "Tenencia de espectro en México" internal document, Instituto Federal de Telecomunicaciones, Mexico City.

IFT (2015), "Bajan precios de servicios de telecomunicaciones por la aplicación de medidas regulatorias y nuevos paquetes de concesionarios (Comunicado de prensa No. 17/2015)" [Telecommunication services prices drop for the application of regulatory measures and new packages of concessionaires (Press release No. 17/2015)], Instituto Federal de Telecomunicaciones, Mexico City, www.anatel.org.mx/boletines/COMUNICADO-17-IFT.pdf (accessed 7 March 2017).

IFT, ITAM (Instituto Tecnológico Autónomo de México) and CEC (Centro de Estudios de Competitividad) (2016), "Estudio sobre las barreras a la competencia y a la neutralidad competitiva causadas por reglamentaciones y trámites de entidades públicas en los mercados de telecomunicaciones y radiodifusión" [Study on barriers to competition and competitive neutrality caused by regulations and procedures of public entities in the telecommunication and broadcasting markets], Instituto Federal de Telecomunicaciones, Instituto Tecnológico Autónomo de México and Centro de Estudios de Competitividad, http://despliegueinfra.ift.org.mx/docs/estudios/IFT-Barreras-Documento-Final.pdf (accessed 13 December 2016).

INEGI (Instituto de Nacional de Estadística y Geografía) (2017a), *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2016* [National Survey on Availability and Use of Information and Communication Technologies in Households 2016], Instituto de Nacional de Estadística y Geografía, Mexico City, www.beta.inegi.org.mx/proyectos/enchogares/regulares/dutih/2016/default.html.

INEGI (2017b), "Indice nacional de precios al consumidor" [National consumer price index], www.inegi.org.mx/est/contenidos/proyectos/inp/inpc.aspx.

INEGI (2014), *El Módulo sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (MODUTIH)* 2014 [Survey Module on Availability and Use of Information and Communication Technologies in Households 2014], www.beta.inegi.org.mx/proyectos/enchogares/modulos/modutih/2014.

Latin American Multichannel Advertising Council (2016), "Métricas de TV paga: Métricas México", www.lamac.org/mexico.

Netflix (2017), *Netflix 2016 Quarterly Earnings*, Netflix Inc., https://ir.netflix.com/results.cfm.

Netflix (2016), "ISP speed index: Mexico", Netflix Inc., https://ispspeedindex.netflix.com/country/mexico (accessed 14 February 2017).

Noam, E.M. and the International Media Concentration Collaboration (2015), *Who Owns the World's Media?: Media Concentration and Ownership around the World*, Oxford University Press, Oxford, http://dx.doi.org/10.1093/acprof:oso/9780199987238.001.0001.

OECD (Organisation for Economic Co-operation and Development) (2017a), *OECD Telecommunications and Internet Statistics* (database), http://dx.doi.org/10.1787/tel_int-data-en (accessed in June 2017).

OECD (2017b), *OECD Broadband Portal* (database), www.oecd.org/sti/broadband/oecdbroadbandportal.htm (accessed June 2017).

OECD (2015), "Triple and quadruple-play bundles of communication services", *OECD Science, Technology and Industry Policy Papers*, No. 23, OECD Publishing, Paris, http://dx.doi.org/10.1787/5js04dp2q1jc-en.

OECD (2012), *OECD Review of Telecommunication Policy and Regulation in Mexico*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264060111-en.

Prensario Internacional (2016), "México: Totalplay alcanzó los 6 millones de hogares pasados con fibra" [Mexico: Totalplay reached 6 million homes last with fibre], Prensario Internacional, 13 July, www.prensario.net/16694-Mexico-Totalplay-alcanzo-los-6-millones-de-hogares-pasados-con-fibra.note.aspx (accessed 7 March 2017).

Sánchez Ruiz, E.E. (2009), "Poderes fácticos y gobernabilidad autoritaria: La 'ley televisa' como caso de estudio" [Powers and authoritarian governance: The "television law" as a case study], *La Ley Televisa y la Lucha por el Poder en México*, Universidad Autónoma Metropolitana, Unidad Xochimilco, www.academia.edu/821353/Poderes_f%C3%A1cticos_y_gobernabilidad_autoritaria._La_Ley_Televisa_como_estudio_de_caso._2009.

Sánchez Ruiz, E.E. (1991), "Hacia una cronología de la televisión Mexicana" [Towards a chronology of Mexican television], *Comunicación y Sociedad*, Vol. 10-11, Centro de Estudios de la Información y la Comunicaciones, Universidad de Guadalajara, Guadalajara, Mexico, www.revistascientificas.udg.mx/index.php/comsoc/article/view/1667.

Secretaría de Economía (2017), "Datos abiertos: Inversión extranjera directa" [Open data: Foreign direct investment], Secretaría de Economía, Mexico City, https://datos.gob.mx/busca/dataset/inversion-extranjera-directa.

SEGOB (Secretaría de Gobernación) (2002), "Decreto por el que se autoriza a la Secretaría de Hacienda y Crédito Público a recibir de los concesionarios de estaciones de radio y televisión el pago del impuesto que se indica" [Decree authorizing the Ministry of Finance and Public Credit to receive from the concessionaires of radio and television stations the payment of the indicated tax], *Diario Oficial de la Federación*, 10 October, Secretaría de Gobernación, Mexico City, www.dof.gob.mx/nota_detalle.php?codigo=719697&fecha=10/10/2002.

Sinclair, J. (1986), "Dependent development and broadcasting: The Mexican formula", *Media, Culture & Society*, Vol. 8/1, pp. 81-101, http://journals.sagepub.com/doi/abs/10.1177/016344386008001005.

Sky (2017), "Acerca de Sky" [About Sky], webpage, Sky Internacional AG, www.sky.com.mx/acerca-de (accessed 10 January 2017).

Strategy Analytics (2017), "Teligen tariff & benchmarking market data using the OECD methodology", *Supply Side Research and Consulting*, https://www.strategyanalytics.com/access-services/networks/tariffs---mobile-and-fixed#.WUfZ7m997IU.

Toussaint Alcaráz, F. (2009), "Historia y políticas de televisión pública en México" [History and policy of public television in Mexico], *Revista Mexicana de Ciencias Políticas y Sociales*, Vol. LI/2016, Universidad Nacional Autónoma de México, Mexico City, www.redalyc.org/articulo.oa?id=42115999006.

Chapter 3.

Changes to the telecommunication and broadcasting legal framework in Mexico

This chapter examines the main aspects of the constitutional and legal provisions by which the telecommunication and broadcasting reform was implemented in Mexico. It further discusses changes to the institutional framework and with respect to regulatory, governmental and judicial institutions.

The legal regime

One of the commitments President Enrique Peña Nieto delivered to the Mexican electorate after assuming office in December 2012 was to reform the telecommunication and broadcasting markets. The goal was to foster benefits for consumers and businesses by means of lower prices, increased quality and choice, including for those without service. A key aspect of the reform designed to achieve these goals was to enable regulatory institutions to apply pro-competitive frameworks in relation to dominant firms (Avelar, 2013). The Pact for Mexico, a political agreement between the three leading political parties in Mexico (the Institutional Revolutionary Party, the National Action Party and the Democratic Revolution Party) was signed in December 2012, and aimed at transforming key economic and social sectors, including information and communication technologies (ICTs), telecommunication and broadcasting services.[1]

Guided by the commitments enshrined in the Pact for Mexico, in 2013 President Peña Nieto submitted a proposal to amend the Federal Constitution of the United States of Mexico, which was approved by the Mexican Congress, and enacted as a decree on 11 June 2013. The constitutional reform establishes the pillars of the telecommunication and broadcasting reform in Mexico, and represents the basis of the subsequent secondary legislation that was enforced, namely, the Federal Telecommunication and Broadcasting Law (Ley Federal de Telecomunicaciones y Radiodifusión, LFTR) and the Federal Economic Competition Law (Ley Federal de Competencia Económica, LFCE). In this regard, the LFTR – issued on 14 July 2014 – abrogated the previous legislation on this subject matter, which consisted of the Federal Telecommunications Law dating back to 1995 and the Federal Radio and Television Law dating back to 1960. The LFCE, enacted on 23 May 2014, abrogated the previous Law on Competition, which dated back to 1993.

Constitutional provisions

Telecommunication and broadcasting services as fundamental rights

According to the current constitutional provisions, access to ICTs, telecommunication and broadcasting services, including broadband and Internet, is considered a fundamental right for the Mexican population (SEGOB, 2013, Art. 6). In addition, it emphasises the Mexican people's right to access plural and timely information and it is therefore the state's mandate to guarantee the population's access to an information and knowledge-based society through the elaboration of a universal digital inclusion policy encompassing annual and sexennial objectives.

Furthermore, telecommunication and broadcasting services were considered public services of general interest by the Constitution, establishing a duty for the Mexican government to ensure that they are provided under conditions of competition, quality, plurality, universal coverage, interconnection, convergence, continuity, free access and without arbitrary interferences (SEGOB, 2013, Art. 6). The state has the obligation to ensure that they are provided under conditions of competition and quality, and that these services render the benefits of culture to the entire population, preserving the plurality and veracity of information, as well as fostering the values of national identity (SEGOB, 2013, Art. 6).

Freedom of expression and information

Article 7 ascertains that freedom of expression shall not be restricted by indirect methods or means, such as the abuse of government or private controls, newsprint, radio

broadcasting frequencies or equipment used in the dissemination of information, or by any other means or ICTs aimed at impeding the transmission and circulation of ideas and opinions.

Ensuring competitive conditions in the telecommunication and broadcasting sectors

The cornerstone of the reform, Article 28, establishes the constitutional framework aimed at ensuring adequate competitive conditions in the telecommunication and broadcasting sectors. The 2013 reform appends the pre-existing prohibition on monopolies and monopolistic practices, by determining that the law shall severely punish, and the authorities shall prosecute efficiently, any conduct restricting free market participation and competition in detriment to the general public.

In order to guarantee such effective prosecution, the Constitution creates two autonomous regulatory bodies: the Federal Economic Competition Commission (Comisión Federal de Competencia Económica, COFECE), and the Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT). These entities are autonomous from the executive branch and the ministries. This, without a doubt, constitutes the main breakthrough of the reform, due to the fact that independence enables the authority with the required discretion to adopt decisions in an effective and timely manner, without the pressures resulting from day-to-day political concerns.

COFECE is an autonomous body, financially independent, with a mandate to ensure free competition and market participation, as well as investigating and combating monopolies, monopolistic practices, concentrations and other restrictions to the efficient functioning of markets. COFECE was given a wide set of powers to allow it to effectively fulfil its purpose, including the ability to issue orders directed at eliminating barriers to competition and free market participation; regulate access to essential inputs; and command the divestiture of assets, rights, partnership interests or shares of economic agents, required to eliminate anticompetitive effects.

The IFT is an autonomous and independent body which has as its mission the efficient development of telecommunication and broadcasting services. To this end, the Constitution determined that the IFT would be in charge of the regulation, promotion and supervision of the use, development and exploitation of the radio spectrum, of networks and of the provision of telecommunication and broadcasting services, as well as of the access to active and passive infrastructure and other essential inputs. Furthermore, the IFT is enshrined as the sole competition authority in the telecommunication and broadcasting sector and can impose limitations on concentration of spectrum frequencies, cross-ownership of media outlets in the same market or geographic coverage area, among other issues.

Transparency and accountability of regulators

The IFT's and COFECE's acts, according to the Constitution, shall be guided by independence in their decisions and functioning; professionality in their performance; and impartiality in their actions, by granting financial independence, due separation between the Investigative Authority (Autoridad Investigadora, AI) and the public servants in charge of issuing final decisions, transparency and access to information, limitation on the use and effects of an indirect writ of *amparo* (legal injunction) trial. The institutions' decisions are controlled by specialised judges and courts, and there is a strict process of appointment of commissioners by proposal of the federal executive with Senate ratification, for one nine-year non-renewable period and a very clear system of rules to avoid regulatory capture. The Commissioner President is appointed by the Senate, with a vote

of two thirds of present members, who shall be in office for a four-year period, which may be renewed only once.

Convergence in communication markets

The Constitution also mandates that the Mexican Congress issue a legal system regulating in a converged manner the use, development and exploitation of the radio spectrum, telecommunication networks, and the provision of broadcasting and telecommunication services. At the same time, the Mexican Congress shall define the mechanisms aimed at harmonising the regime of permits and concessions in broadcasting, so as to ensure that there will only be a single concession regime, allowing operators to provide all types of services through their networks.

Digital switchover and must-carry must-offer obligations

The constitutional reform also determined that the transition to digital terrestrial television (DTT) should end on 31 December 2015. Therefore, licensees and permit holders were required to return, upon completion of the transition process, the frequencies that were originally awarded to them by the state, to ensure the efficient use of the radio spectrum, competition and the optimal use of the 700 MHz band. Similarly, the constitutional reform considered that broadcasting television service providers must allow pay TV service providers to retransmit their signals, free of charge and in a non-discriminatory manner, within the same geographic coverage area, in full, simultaneously and unaltered, including advertising, and with the same quality employed in the broadcast signal. By the same token, pay TV concessionaires are obliged to retransmit broadcast television signals, free of charge and under non-discriminatory conditions, within the same geographical area, in full, simultaneously and unaltered, including advertising, and with the same quality employed in the broadcast signal.

Preponderance in the telecommunication and broadcasting sectors

The constitutional reform stipulates that the IFT should determine the existence of preponderant operators in the broadcasting and telecommunication sectors, and impose the necessary measures to prevent that competition and free market participation, and thus benefits to users, are not undermined. An economic agent shall be deemed to be preponderant when, taking into account its national participation in the provision of broadcasting or telecommunication services, it has directly or indirectly a national market share of over 50%, measured either by the number of users, subscribers, audience, traffic on their networks or capacity utilisation of such networks.

The aforementioned preponderance measures were to be issued within 180 calendar days after the regulator's integration, and were to include rules relating to information, supply and quality of services; exclusive agreements; limitations on the use of terminal equipment between networks; asymmetric regulation on prices and network infrastructure, including the unbundling of its essential elements; and, where appropriate, accounting, functional or structural separation of such agents. Furthermore, during the same period, the IFT was obliged to establish measures for the effective unbundling of the local loop of the preponderant agent in the telecommunication sector, so as to grant other telecommunication operators access to the physical, technical and logical connection means between any terminal point of the public telecommunication network and the access point to the local network belonging to said agent.

Once the IFT defined the preponderant operator in each sector, it was obliged to issue, within 60 calendar days, the general guidelines, requirements, terms and conditions that current licensees in telecommunication and broadcasting services must comply with in order to receive authorisation to provide additional services or to migrate to the single concessions regime, provided they are in compliance with the obligations set forth in the law and in their concession titles. In the specific case of preponderant operators, they must also be in compliance with the obligations enshrined in the asymmetric regulations imposed on them.

Universal Digital Inclusion Strategy

The reform specified the lead for the Universal Digital Inclusion Strategy to the federal executive in order to achieve specific goals in infrastructure, accessibility, connectivity, increase of digital skills, digital government and open data, and the promotion of public and private investment in telehealth applications, telemedicine and electronic health records, among many others, including very specific goals such as having at least 70% of all households and 85% of all micro, small and medium-sized enterprises nationwide provided with access to actual data download speeds consistent with the average ones recorded in OECD countries. In addition, further specific provisions in Transitory Article 17 oblige the government to include a broadband initiative for public sites in its National Development Plan, until such universal coverage is attained.

Wholesale infrastructure

Regarding the development of infrastructure, the constitutional reform mandates that the Federal Electricity Commission (Comisión Federal de Electricidad, CFE) transfer to Telecomunicaciones de México, a state-owned enterprise with operations in the energy and telecommunication sectors, its concession to install, operate and exploit a public telecommunication network, and that it is CFE's role to guarantee Telecomunicaciones de México's effective and shared access to such infrastructure in order to ensure its efficient use.

One of the most important and innovative provisions of the reform is Transitory Article 16, which obliges the federal executive, in co-ordination with the IFT, to deploy a wholesale wireless infrastructure (Red Compartida). Specifications include the use and exploitation of at least 90 MHz of spectrum released by the DTT transition (700 MHz band), of the fibre optic backbone network pertaining to the CFE and of any other state assets that may be used in the installation and operation of the shared network. It is further specified that the shared network will be operated by public or private investment with no telecommunication service provider having any influence on its operation of the shared network and open access to the assets required for its installation and operation. The fulfilment of its objectives and coverage, quality and non-discriminatory services' provision obligations, must be guaranteed and operate under non-discriminatory and competitive price conditions.

Satellite services

Regarding satellite services, the reform gave the Ministry of Communications and Transports (Secretaría de Comunicaciones y Transportes, SCT) the obligation to define satellite policies; to administer and monitor the use of satellite capacity, and to co-ordinate with other agencies on satellite capacity for national security use; to determine the scheme of use of the Satellite Capacity Reserved to the State; and to procure continuity in the provision of satellite services.

Concessions and spectrum management

As concerns the awarding of concessions related to the radio spectrum, the Constitution makes public tenders mandatory, so as to ensure maximum market participation, prevent market concentration and guarantee the lowest price for retail services. These principles should be guaranteed by secondary legislation that establishes a sanctioning regime that includes as a cause for revocation of the concession title, among others, non-compliance with the final resolutions ushered in cases associated with monopolistic practices.

Under the current constitutional framework, the rights to use, develop and exploit the radio spectrum by private parties or incorporated companies in abidance with Mexican laws may only be acquired through concessions, considering that the nation's domain on this scarce resource is inalienable and imprescriptible (SEGOB, 2013, Art. 27). It also falls within the IFT's mandate to set the monetary considerations that are to be paid for the granting of telecommunication and broadcasting concessions, as well as those related to the authorisation of services linked to such concessions, with a previous non-binding opinion from the public credit authority.

Finally, under the reform, the federal executive must include a National Radio Spectrum Programme in its National Development Plan and programmes, which shall include a work programme to guarantee optimal use of the 700 MHz and 2.5 GHz bands and a reorganisation of its work programme for radio spectrum and television stations.

Conclusions on the constitutional provisions

The preceding subsections show, in contrast to most constitutional texts, that the rules pertaining to the telecommunication and broadcasting sectors in the Mexican Constitution are extremely detailed and descriptive. Some have noted this approach stems from the ineffectiveness derived from the previous legal and regulatory frameworks, which, as stated in previous chapters, were, in practice, ineffectively applied, unreasonably delayed or completely thwarted, leading to market concentrations that even today remain the highest among OECD countries.

Proponents of the approach adopted in Mexico say that providing very detailed measures as part of the Constitution intended to give the reform the necessary strength to address severe inadequacies of the past and provide a pillar for long-term stability in meeting policy goals, regardless of future day-to-day political concerns. Nonetheless, the question can be raised as to whether the constitutional framework will enable Mexico to make the necessary adjustments that may be encountered over time in its actual implementation and whether this level of detail allows for enough flexibility to set the right legal and regulatory frameworks in the future.

Legal provisions

The current constitutional norms are notably detailed; that is why much of the secondary legislation derived from them reiterates the mandates established therein. The institutional framework – also regulated by the LFTR and the LFCE – will be discussed in the following section.

Federal Telecommunications and Broadcasting Law

The LFTR reaffirms that telecommunication and broadcasting services are public services of general interest. In this context, the state must ensure the efficient supply thereof, establishing, to this end, conditions for effective competition. The law expressly

prohibits all kinds of discrimination in the provision of these services. Furthermore, it outlines regulation concerning issues from concessions and scarce resources, to audiovisual content regulation and competition.

Concessions and spectrum management

The IFT is responsible for the management of the radio spectrum, and its functions range from the elaboration and approval of plans and programmes referring to its use to the awarding of concessions, controlling radio emissions and applying the sanctioning regime enshrined in the law.[2] Under the current regime, a single concession is required to provide all types of telecommunication and broadcasting services but, should the service provider require the use of spectrum or orbital resources, it must obtain an additional concession related to such resources.[3] In sum, when the exploitation of the services comprised in the spectrum concession title demands a single concession, the latter shall be conferred within the same administrative act (LFTR, 2014, Art. 75).

According to the law, for the purpose of awarding concessions in telecommunication services, the IFT may consider, among others: the economic proposal; coverage, quality and innovation; favouring lower prices for services offered to end users; preventing concentration phenomena that undermine the public interest; and possible entry of new competitors to the market (LFTR, 2014, Art.78). As per Transitory Article 8, current concessionaires may obtain an authorisation from the IFT, aimed at supplying additional services to those contained in their concession titles, or to transit to a single license regime provided they are in compliance with their obligations. However, this rule shall not apply to preponderant agents, or to those who have explicit prohibitions to provide specific services pursuant to their concession titles, unless they demonstrate before the IFT they have abided by the LFTR and other applicable legislation, and the asymmetric regulations or measures imposed on them, and the IFT approves it (LFTR, 2014, Transitory Articles 10 and 11). Specifically, preponderants must prove that they have effectively complied with such measures, at least during 18 months, in a continuous manner (LFTR, 2014, Transitory Articles 10 and 11).

Single concessions entitling their beneficiaries to provide multiple telecommunication and broadcasting services in a converged manner shall be awarded by the IFT for a period of up to 30 years, although they may be extended for equal terms (LFTR, 2014, Art. 72). Radio spectrum concessions shall be granted for up to 20 years, with the possibility of extensions of up to an equal period (LFTR, 2014, Art. 75). Furthermore, radio spectrum concessions for public or social use are awarded for periods of up to 15 years, and may also be extended for equal terms (LFTR, 2014, Articles 83 and 114).

A notable rule enshrined in the LFTR pertains to the creation of a secondary market for licenced spectrum frequency bands. On this subject, Article 104 allows concessionaires of commercial- or private-use concessions to lease the frequency bands they have received, with prior authorisation from the IFT. This entity has the mandate to foster such a market, in accordance with the principles of competition, removal of barriers to entry and the efficient use of spectrum, avoiding concentration, hoarding or cross-ownership.

The assurance of competitive conditions in the telecommunication and broadcasting sectors

With reference to the installation and operation of public telecommunication networks, the LFTR imposes obligations on concessionaires, including interconnection obligations,

network quality of service (QoS) obligations, allowing number portability, providing non-discriminatory services to the general public, and refraining from imposing contractual barriers, or barriers of any other nature, that hinder other concessionaires' ability to install or access telecommunication infrastructures. It also mandates concessionaires with public telecommunication networks offering mobile services to freely engage in agreements pertaining to roaming services (LFTR, 2014, Art. 119), being mandatory for the preponderant agent in the telecommunication sector, as well as for agents determined to enjoy substantial market power (SMP).

Wholesale services

Pursuant to Article 124 of the LFTR, concessionaires operating public telecommunication networks must adopt open network architecture so as to ensure the interconnection and interoperability of their networks. The IFT is therefore empowered to develop, update and administer the basic technical plans on numbering, switching, signalling, transmission, measuring, synchronisation and interconnection, among others. It is relevant to note that preponderant operators, or those enjoying SMP, shall be obliged to obtain a previous authorisation from the IFT should they intend to adopt a new technology or carry out modifications in the design of their networks.

Furthermore, Article 125 of the LFTR determines that concessionaires must interconnect their networks under non-discriminatory, transparent and objective conditions, and in abidance with the abovementioned plans that must be issued by the IFT. In fact, the law expressly established that interconnection of public telecommunication networks, as well as the respective prices, terms and conditions, are of public order and social importance. Accordingly, the terms and conditions that a concessionaire offers to another concessionaire shall be made available to any other concessionaire that requests the service.

Resource issues

Regarding infrastructure sharing and rights of way, it is the IFT's responsibility to encourage the conclusion of agreements between concessionaires for purposes of co-location and infrastructure sharing (LFTR, 2014, Art. 139). These shall be entered into through free negotiation, with the possibility of the IFT intervening in the event of disputes, when such an agreement is essential and there are no substitutes for it (LFTR, 2014, Art. 139). Under such circumstances, the IFT may establish the conditions for its use, the sharing of physical space, as well as the corresponding fee, provided there is capacity for such infrastructure sharing (LFTR, 2014, Art. 139).

Furthermore, the agreements on co-location and infrastructure sharing shall be recorded in the Public Telecommunications Register. It is also relevant to note that the IFT may, at any time, verify the conditions stipulated in infrastructure-sharing arrangements, so as to guarantee that the sharing is available to any concessionaire under non-discriminatory conditions (LFTR, 2014, Art. 139). Additionally, concessionaires and authorised entities must deliver to the IFT information on their active infrastructure and transmission means, passive infrastructure and rights of way, for their registration in the National Information System on Telecommunications Infrastructure (LFTR, 2014, Articles 183 and 185).

Pursuant to Article 147 of the LFTR, the federal executive, through the Institute of Administration and Valuation of National Assets, establishes the economic, technical, security and operative conditions allowing real estate pertaining to the federal public administration; rights of way related to the general communication pathways; infrastructure associated with broadcasting stations, energy and radio communications transmission

towers; posts in which energy distribution wiring is installed; as well as poles and ducts, among others, to be available for the use and benefit of all concessionaires on non-discriminatory terms, and under monetary considerations to be established by the competent authorities in each case. Article 149 of the LFTR emphasises that any concessionaire may install infrastructure on public assets, under a non-exclusive exploitation.

In this context, the SCT is empowered to make recommendations to state, district and municipal governments, aimed at deploying infrastructure, public works, territorial development and real estate, promoting competition and coverage in telecommunication services. The LFTR has limitations, however, in terms of federal authorities prevailing over state and municipal authorities.

Furthermore, the LFTR also establishes specific rules concerning mobile virtual network operators (MVNOs), determining that these undertakings shall be able to: access wholesale services offered by concessionaires; commercialise their own services or resell the services and capacity they have previously contracted; and have their own numbering schemes, or acquire them through other concessionaires of public telecommunication networks (LFTR, 2014, Art. 173). On the other hand, MVNOs must allow their users to port their numbers, shall be liable to their customers for the provision of their services, and must comply with obligations on users' rights (LFTR, 2014, Art. 174).

Audiovisual content

The LFTR establishes that all broadcasting concessionaries are subject to the same content rules and that concessionaries of pay TV services are mandated to retransmit free-of-charge signals of public federal institutions and to allow users to block any undesirable channel or programme (LFTR, 2014, Articles 224 and 225). Moreover, it instructs all concessionaries to promote values to protect and develop children's education and to adopt measures to inform audiences on programming classification.

The LFTR also determines that commercial concessionaires that cover at least 20% of their programming with national content be allowed to increase advertising time up to 2%, and those with at least 20% with national independent content be allowed to increase advertising time up to 5%, while establishing that the executive will be responsible for setting measures to finance national and national independent content (LFTR, 2014, Articles 247-250). Furthermore, Article 251 mandates all broadcasting concessionaries to transmit, free of charge, up to 30 minutes of official content by the state, daily and on every channel. This excludes the additional 18 minutes (television) and 35 minutes (radio) that commercial broadcasters can opt to provide for official use, in lieu of paying a tax for services of "public interest" (SEGOB, 2002). The time management of the transmission of state official content is done by the Ministry of Interior (Secretaría de Gobernación, SEGOB).

Audiences' rights

Article 259 of the LFTR determines that all broadcasting concessionaries have an ombudsman responsible for receiving, documenting, processing and following up with observations, complaints, suggestions, petitions or remarks by members of audiences. The ombudsman has 20 working days to respond to any petition and its recommended corrective action shall be publicised. The IFT is required to publish general guidelines to establish the minimum requirements of the ombudsmen for the adequate protection of the rights of audiences.

Preponderance regulation

As per Article 262 of the LFTR, the IFT shall determine the existence of preponderant operators in broadcasting and telecommunication services (over 50% sector share), and impose the necessary measures to ensure that competition and free market participation and thus, end users, are not affected.

Consequently, as declared by several public institutions, preponderance provides a means to expedite implementing asymmetric regulations without the need to engage in detailed and complex analyses that are commonly used when assessing market dominance (e.g. barriers to entry and exit, market concentration and asymmetries, countervailing buyer power). Furthermore, the preponderance status is defined on a strictly sectoral basis, which is why, in practice, there can only be one preponderant agent in the telecommunication sector and one preponderant agent in the broadcasting sector.

Among the measures that can be levied upon preponderant operators, the law explicitly mentions: information; supply and QoS; exclusive agreements; limitations on the use of terminal equipment between networks; asymmetric regulation on prices and network infrastructure, including the unbundling of its essential elements; and, where appropriate, the accounting, functional or structural separation of such agents.

The imposition of specific or asymmetric measures can be carried out in a proceeding parallel to the one concerning the attribution of preponderant status to an economic agent (LFTR, 2014, Art. 265). In this sense, in the definitive resolution, the IFT can simultaneously declare an undertaking preponderant, as well as impose the asymmetric or specific regulation it deems necessary. Additionally, such measures shall be registered within the Public Register of Telecommunications, and publicised (LFTR, 2014, Art. 267).

In addition, as a consequence of being the sole public entity in charge of exercising *ex ante* and *ex post* competition intervention, the IFT is empowered to declare that certain economic agent(s) enjoy SMP in any of the relevant markets in the telecommunication and broadcasting sectors, in accordance with the rules established in the LFCE (LFTR, 2014, Articles 264 and 279).

As per Article 267, the IFT may impose on preponderant enterprises the following non-exhaustive measures (among others):

- To submit to the IFT for its approval, on an annual basis, public reference offers concerning interconnection; roaming; passive infrastructure sharing; effective unbundling of the local public telecommunication network; accesses (including links); and wholesale resale offers concerning retail services. These offers shall be subject to public consultation (LFTR, 2014, Art. 268).
- To submit to the IFT for its authorisation, the prices it applies in relation to: 1) retail services; 2) intermediate services provided to other concessionaires (which must be equal to or inferior to those imputed to its own operation); and 3) the prices regarding its operation in an unbundled and individual basis. In this regard, the IFT must ensure that the retail rates applied by the preponderant agents can be replicated by the other concessionaires.
- To annually submit detailed information concerning the topology and elements of its networks, including their location.
- To allow the interconnection and interoperability between public telecommunication networks.

- The preponderant agent is banned from favouring its own operations by discriminating on the commercial, price or quality conditions offered to its users (on-net vs. off-net differentials), and from providing dissimilar treatment to its competitors in network traffic management. In tending to its competitors' requests, it shall abide by the "first to request, first to be served" principle.
- To comply with the minimum QoS standards determined by the IFT.
- To refrain from hindering consumers' ability to choose another provider through its contracts and from impeding number portability.
- To provide the IFT with separate accounts, segregated by service, in a detailed manner.
- To grant end users the possibility to utilise any terminal device that complies with the standards set forth by the IFT, who shall issue rules aimed at ensuring their non-exclusivity, portability and interoperability. Moreover, the preponderant operator must avoid terminal device blocking.

Consistent with Article 277 of the LFTR, preponderant agents may participate in spectrum auctions, subject to the IFT's acquiescence and to their compliance with the spectrum accumulation limits established thereby for such purposes.

Furthermore, the LFTR enables the IFT to introduce obligations on:

- Unbundling of the local telecommunication network: obligation to unbundle the local public telecommunication network (active and passive infrastructure, as well as the services, capabilities and functions of the networks, including to the local loop) at non-discriminatory, individualised rates, not exceeding those set by the IFT.[4] Moreover, the preponderant operator must carry out, at its own expense, the creation, development and implementation of processes, systems and installations necessary to enable the efficient delivery, in competitive conditions, of the unbundled elements and services to other concessionaires (e.g. fault reporting, co-location, QoS standards, invoicing processes, devices and operational standards, and maintenance procedures) (LFTR, 2014, Art. 269).
- Access and interconnection: preponderant operators, or agents with SMP, shall be subject to additional specific obligations on access and interconnection requiring them to publish a list of the unbundled interconnection services and the corresponding public interconnection offer, to submit separate accounting and costing information on interconnection services, as defined by the IFT, to respond to interconnection requests in the same manner and timeframes applied to its own operations, to co-locate and share its infrastructure, including rights of way; and to have a physical presence in the country's Internet traffic exchange points (LFTR, 2014, Art. 138).
- Call termination rates: in one of the key provisions of the reform, the LFTR dictates that preponderant operators shall not be able to charge other concessionaires for traffic terminating in their networks (i.e. a zero termination rate). Moreover, call termination rates related to traffic ending in non-preponderant concessionaires' networks shall be subject to free negotiation among the parties involved. Nonetheless, in the event of a dispute, the IFT shall intervene by setting the prices according to the cost methodology it shall determine, and taking into account, among other factors, the natural asymmetries between the networks to be interconnected and

the market share of the respective concessionaires. The rates set by the IFT shall be transparent, reasonable, sufficiently unbundled and, where appropriate, asymmetric (LFTR, 2014, Art. 133).

- Commercialisation of services: the preponderant agent in the telecommunication sector shall grant concessionaires and commercialisers the possibility to supply their users, under the same payment terms and under competitive conditions, the mobile services that the preponderant agent provides its own users (e.g. airtime, SMS, data, roaming), allowing requesting parties to attain a reasonable and equitable margin, at least similar to those obtained by the preponderant firm. It shall also allow said entities to select the infrastructure and platform to support their business model, and facilitate their integration to its own platforms and systems. The rules on the provision of wholesale services also apply to agents with SMP (LFTR, 2014, Articles 270 and 271). The prices, conditions and terms for the commercialisation on the preponderant agent's services shall be authorised by the IFT and the preponderant operators are banned from participating, be it directly or indirectly, in any enterprise dedicated to the commercialisation of services (LFTR, 2014, Articles 173 and 174).
- Retail regulation: retail rates offered by preponderant firms and/or by firms enjoying SMP must be subject to the IFT's approval, which, in addition, must carry a register thereto, in order to provide them with publicity. Agents declared to be preponderant or to have SMP in the call and short message termination market, are banned from certain practices, aimed at preventing discrimination and market foreclosure, such as differentiating on-net and off-net pricing, quality and other commercial conditions offered to their end users, charging other concessionaires wholesale prices that are higher than those applied to its end users in the retail market, and entering into exclusive arrangements on the purchase and sale of terminal equipment, or on points of sale or distribution (LFTR, 2014, Art. 208).

The IFT is required to verify the preponderant operator's compliance with the asymmetric regulations imposed on it on a quarterly basis (LFTR, 2014, Art. 275). The obligations imposed on the preponderant operators shall cease to exist once the IFT ascertains that there are effective competition conditions in the market (LFTR, 2014, Art. 262), and when their sector participation is reduced below the 50% threshold (LFTR, 2014, Art. 276). Moreover, consistent with Article 131 of the LFTR, the IFT must previously determine whether the undertaking has substantial power in the relevant market for call termination and short messages. If it does possess such power, the IFT shall decide whether it continues to apply the zero interconnection rates.

The LFTR specifically provides that the preponderant operator may, at any time, propose before the IFT a plan comprising, as applicable, structural separation, divestment of assets, rights, partnership interests or stock, aimed at diminishing its national share in the corresponding sector (LFTR, 2014, Art. 276). However, a precondition for its approval is that effective conditions for competition are generated within the telecommunication or broadcasting sector, and that social coverage is not reduced or affected.

Substantial market power regulation

It is relevant to note that agents that have been declared preponderant may also be declared as possessing substantial power in particular relevant market(s) (LFTR, 2014, Art. 284). In accordance with Article 282, the IFT may levy upon such agents specific obligations pertaining to, among others: information, quality, pricing, commercial offers

and invoicing. It should also be noted that the IFT may impose all the measures that were analysed when covering preponderance (LFTR, 2014, Art. 283).

Cross-ownership concerning preponderant agents, and agents with substantial market power

As regards broadcasting and telecommunication concessionaires that serve one same market or geographic coverage area that restricts access to plural information within such a market or area, the IFT must indicate pay TV concessionaires which news channels or which public interest channels are to be imperatively incorporated in their service offers (LFTR, 2014, Art. 285). Further, said concessionaire must include at least three channels whose content is predominantly self-produced by independent national programmers whose funding is mostly of Mexican origin (LFTR, 2014, Art. 285).

In the event of non-compliance by the concessionaire, the IFT may impose limits on: the concentration of national or regional spectrum frequency bands; the granting of new spectrum concessions; and cross-ownership of telecommunication or broadcasting controlling several media outlets, and that tend to a same market or geographic coverage area (LFTR, 2014, Art. 286). Should neither of the aforementioned measures prove to be effective, as a last resort measure, the IFT may ordain the concessionaire to divest assets, rights or partnership interests.

Essential inputs

Article 3 of the LFTR defines essential inputs as those network elements or services provided by a single concessionaire – or a small number of them – whose duplication is not feasible from a technical, legal or economic standpoint, and that constitute indispensable inputs for the provision of telecommunication and broadcasting services. In any event, the IFT is entitled to determine the existence of essential inputs, and regulate access thereto, under the conditions defined in the LFCE (LFCE, Art. 60).[5]

Shared wholesale network: Red Compartida

According to Article 142 of the LFTR, the IFT is empowered to directly allocate 90 MHz of the 700 MHz "digital dividend" for the operation and exploitation of a shared wholesale-only network, through a commercial use concession. Transitory Article 13 also refers to this initiative, mandating the SCT to perform all the necessary actions to install such a network. In addition, it empowers the IFT to directly assign the spectrum frequency bands liberated by the DTT transition (700 MHz band) to the shared network, should it be required to expand and strengthen the network, provided that it remains under the control of a public entity or agency, or it operates under a public-private partnership.

As might be expected, concessionaires with public participation operating under commercial purposes must abide by competitive neutrality and accounting separation principles, and non-discriminatory infrastructure sharing and unbundling of their services and capabilities (LFTR, 2014, Articles 141 and 144). Additionally, as stated in the Constitution, the resale of the services supplied by the shared network shall be made available under the same conditions as they were acquired (except as concerns economic compensation) (LFTR, 2014, Art. 144). Finally, the concession titles concerning the shared network shall incorporate coverage, quality and pricing obligations, as well as those determined by the IFT (LFTR, 2014, Art. 143).

Digital inclusion strategy

Universal service is explicitly defined in the LFTR as the access of the general population to the telecommunication services determined by the SCT, under conditions of availability, affordability and accessibility (LFTR, 2014, Art. 3). By the same token, the Universal Digital Inclusion Strategy is defined as the set of programmes and strategies issued by the federal executive aimed at providing access to ICTs, including broadband Internet for the entire population with a particular emphasis on its most vulnerable sectors, in the interest of closing the digital divide between individuals, households, businesses and geographical areas of different socio-economic levels (LFTR, 2014, Art. 3).

International aspects: Foreign ownership of telecommunication and broadcasting operators

Foreign direct investment (FDI) in the telecommunication sector, including satellite-based services, is currently admitted without limitation (100%). Meanwhile, FDI in broadcasting services, also previously forbidden, is now permitted at a maximum percentage of 49%, subject to reciprocity requirements with the country in which the foreign investor is incorporated, and, as expressly determined by the LFTR, a previous favourable opinion issued by the National Commission on Foreign Investments (Comisión Nacional de Inversiones Extranjeras) (LFTR, 2014, Articles 71 and 77).

Sanctioning regime

The IFT is empowered to impose sanctions in relation to most violations of the LFTR, to administrative provisions, and to concession or authorisation titles, as well as to violations of the LFCE by regulated subjects participating in telecommunication and broadcasting markets (LFTR, 2014, Art. 297). On the other hand, transgressions of the rules pertaining to users' rights shall be sanctioned by the Federal Consumer Protection Agency (Procuraduría Federal del Consumidor, PROFECO), and in some cases the IFT. Moreover, SEGOB shall sanction the breach of the provisions concerning content, state times, national channels, bulletins, the national anthem, competitions, as well as the reservation of pay TV channels.

Article 298 of the LFTR delineates various criteria for enforcing fines related to infringements to the telecommunication and broadcasting regime, whose amounts are apparently established in accordance to the seriousness of the fault, are based on the offender's revenue, and divided into five tiers. In addition, and in case the infringer does not declare or has not determined its accumulated revenue as regards income tax, or has refrained from providing the pertinent fiscal information, statutory fines related to the unit of measurement and adjustment (UMA) defined yearly by the National Institute of Statistics and Geography (Instituto Nacional de Estadística y Geografía, INEGI), are established (LFTR, 2014, Art. 299; SEGOB, 2016).[6]

In this sense, the lowest fines that may be enforced range from 0.01% to 0.75% of the concessionaire's or authorised entity's revenue, and may apply, for instance, to the breach of the registration obligations enshrined by the law. Second-tier sanctions range from 1% to 3% of the operator's revenue, and may derive from conducts such as: exclusive arrangements for the installation of infrastructure; arbitrarily blocking users' rights to access Internet services; and non-compliance with the concession or authorisation titles' obligations.

Fines ranging from 1.1% to 4.0% of the concessionaire or authorised entity's revenue shall be imposed for infringements such as: creating barriers that impede users' terminal devices to connect to other concessionaires' networks; discriminating in the provision of advertising spaces and services; and celebrating agreements that curb possibilities to offer advertising spaces and services to third parties.

Within the category of sanctions, which range from 2.01% to 6.0% of the infringer's revenue, the law applies to the following behaviour, including by way of example: contravening obligations regarding the operation and interconnection of telecommunication networks; breaching the rules on price regulation issued by the IFT; non-compliance with the compulsory efficiency levels in spectrum usage defined by the IFT; and introducing modifications to the network without prior authorisation of the IFT that affect the functioning and interoperability of equipment and devices.

Finally, the harshest penalties are imposed for providing telecommunication or broadcasting services without a concession or authorisation, or for interrupting without just cause or absent permission by the IFT, the supply of such services in those areas where the infringing party is the sole service provider. Under these circumstances, fines may range from 6.01% to 10.0% of the offender's revenue.

In any case, if the economic agent is a recidivist, the IFT may impose a sanction equivalent to double the abovementioned amounts (LFTR, 2014, Art. 300). Moreover, the factors to be taken into account by the IFT when defining such sanctions are: the gravity of the infringement; the offender's economic capacity; recidivism; and, as applicable, spontaneous compliance with the obligations that motivated the initiation of the administrative proceedings.

Concessions and authorisations may be revoked on the basis of any of the causes stipulated in Article 303 of the LFTR, such as: refusing or obstructing interconnection with other concessionaires; violation of must-carry must-offer obligations; to benefit from the gratuity rule regarding retransmission of broadcast signals through other concessionaires, in the case of preponderant operators, or firms with SMP; transgressing the IFT's resolutions on accounting, functional or structural separation, and on local-loop unbundling and divestitures; and in general, asymmetric regulations.

Means of judicial redress

Article 312 of the LFTR emphasises that the IFT's general rules, acts or omissions may only be challenged by indirect *amparo* and shall not be suspended. Furthermore, as regards resolutions issued by the IFT during "trial-form" proceedings, recourse shall only be admitted concerning the final decision (even if the reasons invoked refer to intermediate procedural acts) (LFTR, 2014, Art. 313).

As per the federal Constitution, indirect *amparo* trials shall be substantiated by specialised judges and courts in competition, telecommunication services and broadcasting (LFTR, 2014, Art. 314). Finally, the aforementioned specialised courts are the competent authorities to substantiate disputes that arise in connection with the application of the LFTR (LFTR, 2014, Art. 315).

Digital switchover

Transitory Article 19 reaffirms that the DTT transition be implemented by 31 December 2015 and carried out through programmes by the SCT and through investments by concessionaires and broadcast television licensees. Consequently, the transmission of

analogue broadcasting signals was to be concluded across Mexico no later than 31 December 2015, once receivers or decoders delivered by the SCT capable of receiving digital signals installed in low-income households – as defined by the Ministry of Social Development (Secretaría de Desarrollo Social, SEDESOL) – allow for a penetration of 90% thereof. To this end, the IFT shall progressively terminate analogue broadcast television signals – even before the aforementioned deadline – by area of coverage.

On 18 December 2015, these provisions were updated to extend the deadline to 31 December 2016 for public and social concessionaires, including community and indigenous, as well as low-power analogue stations (under 1 kilowatt [kW] for very high frequency and 10 kW for ultra high frequency), which needed additional time to enable the transition.

Net neutrality

As per Article 145 of the LFTR, concessionaires and authorised entities providing Internet access services shall abide by the general guidelines established by the IFT, which shall consider principles such as: users' ability to freely choose among contents, applications or services; non-discrimination between contents, applications or services; the respect for users' right to privacy; transparency and information regarding the conditions of the service offerings; provision of services under the minimum quality standards; and sustained growth of telecommunication infrastructures. Although only generally defined in the law, the IFT plans to consult on the implementation of these principles in 2017.

Retail regulation

In accordance with Article 118 (V) of the LFTR, Transitory Article 20 determines that, starting on 1 January 2015, concessionaires of public telecommunication networks providing fixed or mobile services shall not charge their end users long-distance rates for any calls made to a national destination.

Notwithstanding the above, concessionaires must consolidate all existing local service areas in the country, bearing the costs originated in such consolidation. In this regard, commercial or social use concessionaires of telecommunication services shall, as a general rule, freely set their retail prices (LFTR, 2014, Art. 204). Nonetheless, it is mandatory that such concessionaires register such prices before the IFT prior to their effective implementation (LFTR, 2014, Art. 205). In this sense, it is the IFT's duty to establish an electronic registration mechanism for such rates; these shall be applicable from the date of the filing of the registration request (LFTR, 2014, Art. 205). As underscored when analysing the preponderance and SMP framework, there is an exception concerning these agents as to the freedom of defining their retail prices.

On number portability, pursuant to Transitory Article 38, the IFT is obliged to issue rules ensuring effective number portability for users, to be carried out in a period not exceeding 24 hours from the filing of the request. In order to be able to port their numbers, users shall only be required to identify themselves, and express their will to switch operators, and it shall imply no charge for end users (LFTR, 2014, Art. 209).

Consumer protection and empowerment

PROFECO is in charge of promoting, protecting, advising, defending, reconciling and representing users and consumers before telecommunication operators and consultative

standardisation committees (LFTR, 2014, Art. 191). The IFT has a mandate to regulate, monitor and oversee the quality of telecommunication services in accordance with the indicators, parameters and procedures established thereto (LFTR, 2014, Art. 191), and to collaborate in the elaboration of Mexican official standards for the effective protection of users' rights (LFTR, 2014, Art. 194). Furthermore, the IFT has a mandate to establish conditions for operators to publish transparent, comparable, adequate and up-to-date information on their services (LFTR, 2014, Art. 195).

The LFTR expressly provides for the co-operation between these two institutions, in the exchange of information pertaining to users' complaints; concessionaires' or authorised entities' commercial behaviour; compliance verification procedures in reference to said parties; as well as the sanctions imposed within their powers (which shall be recorded in the Public Concessions Register) (LFTR, 2014, Art. 191).

In this regard, Article 191 of the LFTR expressly determines that users of telecommunication services shall enjoy the rights enshrined in said law, as well as those established in the Federal Consumer Protection Law, determining, among such rights: the protection of their personal data; free of charge, expeditious number portability; to freely choose their service provider and access Internet services, under non-discriminatory terms;[7] to contract and to be aware of the commercial conditions stipulated in the model contracts of adhesion, registered before PROFECO; to access telecommunication services conforming to QoS standards;[8] to have their devices unlocked upon conclusion of the contract with a service provider, or when the cost thereof has already been covered; to receive a bonus or discount in relation to service failure or improper charges; to be ensured that contracts of adhesion may only be modified by bilateral agreement between the parties; and transparency measures in the invoicing of mobile services. It can also be noted that an entire chapter of the LFTR is devoted to the protection of users with disabilities (LFTR, 2014, Articles 199-203).

In addition, concessionaires and authorised entities must provide their users with a letter containing all the rights users are entitled to, consistent with the minimum rights that are of compulsory inclusion within those letters, determined by the IFT and PROFECO. Moreover, pursuant to Article 192, there are a number of clauses which, if included in the contracts subscribed between users and concessionaires or authorised entities, are to be considered null and void. Both PROFECO and the IFT are empowered to record and to publish model contracts of adhesion, in accordance with the rules enshrined in the LFTR and the Federal Consumer Protection Law (Ley Federal de Protección al Consumidor, LFPC) (LFTR, 2014, Articles 177 and 191).

Universal coverage

Consistent with Article 210, in order to achieve universal coverage, the SCT has the duty to prepare an annual programme on social coverage and connectivity in public places, in priority areas it has defined (LFTR, 2014, Art. 211). The programme, elaborated by the SCT in co-ordination with state and municipal governments, as well as with the IFT, shall define the telecommunication and broadcasting services to be included in it – prioritising Internet access and voice services – and shall design and promote incentives for concessionaires' involvement therein (LFTR, 2014, Art. 211).[9]

In this context, concessionaires participating in social coverage programmes are required to report to the SCT all the data to quantify the progress made in the implementation of such programmes and, where applicable, compliance with their obligations thereto (LFTR, 2014, Art. 212). In particular, the SCT is in charge of overseeing concessionaires'

abidance to their commitments, and the IFT is empowered to sanction their non-compliance with their social or universal coverage obligations (LFTR, 2014, Art. 212).

Federal Economic Competition Law

Institutional design

As noted when examining the constitutional provisions, one of the main aspects of the telecommunication and broadcasting reform relates to the fact that the IFT, a newly created autonomous constitutional entity, is empowered to carry out both *ex ante* and *ex post* competition intervention in the aforementioned sectors (LFCE, 2014, Art. 5). In addition, COFECE – an autonomous institution created by the 2013 Constitutional Reform Decree – is entitled to carry out *ex post* competition intervention in all other sectors of the economy (LFCE, 2014, Art. 5). In this context, should positive or negative conflicts of jurisdiction arise, the competent authority for resolving them shall be the circuit court specialised in economic competition, broadcasting and telecommunication services (LFCE, 2014, Art. 5).[10]

Among the functions and procedures the competition authorities are empowered to perform, are:

- *Ex ante* control on economic concentrations. However, non-preponderant economic agents are not obliged to request an authorisation thereof, pursuant to Transitory Article 9 of the LFTR.
- The imposition of administrative fines, related to absolute or relative monopolistic practices (LFCE, 2014, Art. 127), to impose the ineligibility to act as an undertaking's director for a period of up to five years (LFCE, 2014, Art. 127) or to order the divestiture of assets, whether as a sanction to monopolistic practices or as a remedy steered at reducing the anticompetitive effects of an essential facility, or of an agent which has been declared preponderant (LFCE, 2014, Art. 94).[11]
- The ability to declare, through special administrative proceedings: an essential facility or input, as well as regulating access thereto aimed at producing efficiency gains (LFCE, 2014, Art. 127); the existence of barriers to competition and free market access (LFCE, 2014, Art. 94); and to declare that an undertaking enjoys SMP (LFCE, 2014, Art. 96).
- The possibility to participate *ex ante*, issuing its opinion or authorisation – as appropriate – in the awarding of licenses, concessions, permits, transfers, sale of shares or other analogous operations, pertaining to concessionaires or permit holders (LFCE, 2014, Art. 98).
- In any of the proceedings it carries out, precautionary injunctions may be requested to the governing body (the Board) by the AI, aimed at avoiding irreparable harm or ensuring the effectiveness of the proceeding's results (LFCE, 2014, Art. 135).

Notably Article 137 defines a ten-year statute of limitations on investigations related to violations of the LFCE, computed from the date of the unlawful concentration, or when the conduct ceased to exist.

Anticompetitive practices

In the prosecution of anticompetitive conduct, the LFCE distinguishes between two categories of restrictive behaviours: absolute monopolistic practices and relative monopolistic practices (LFCE, 2014, Articles 53 and 54). The former pertain to horizontal contracts, agreements, arrangements or combinations that have as their object or their effect: fixing prices; restricting output; market allocation; bid rigging; and the exchange of information carried out with either of the aforesaid purposes (LFCE, 2014, Art. 53). Such absolute practices are deemed to be null and void, hence shall not produce any legal effect (LFCE, 2014, Art. 53).

On the other hand, relative monopolistic practices allude to any act, contract, agreement, procedure or combination specifically carried out by one or several economic agents individually or jointly possessing substantial power in the relevant market, that has or may have as its object or effect to unduly displace other economic agents, substantially impeding their access, or to establish exclusive advantages in favour of one or more economic agents, in the relevant market or in related ones (LFCE, 2014, Art. 54). Although the list is extensive, among these practices one can find: exclusive distribution or commercialisation; resale price maintenance; tie-in sales; refusal to deal; group boycotts; predatory pricing; discrimination in purchasing or selling; cross-subsidisation; denial of access to an essential input, or providing access to it under discriminatory conditions; and margin squeezing (LFCE, 2014, Art. 56). In contrast, relative monopolistic practices are deemed illegal unless the defendant demonstrates they produce efficiency gains, favourably impact the competitive process and free market participation, and improve consumer welfare (LFCE, 2014, Art. 55).

Finally, the LFCE establishes an *ex ante* control of economic concentrations that may have significant effects in the relevant market, as in related markets, pursuant to specific thresholds established in the LFCE (LFCE, 2014, Art. 86). Further, it considers illegal those mergers that have as their object or effect to obstruct, diminish, harm or impede free market participation or economic competition (LFCE, 2014, Articles 61 and 62).

Sanctioning regime

With respect to absolute monopolistic practices, the administrative fine may be of up to 10% of the infringer's revenue, without prejudice to additional civil and criminal liabilities (LFCE, 2014, Art. 127). On the other hand, relative monopolistic practices and unlawful economic concentrations shall be subject to fines of up to 8% of the transgressor's revenue, regardless of additional civil liability (LFCE, 2014, Art. 127). With respect to the innovative essential facilities regulation, the competition authority may impose fines equivalent of up to 10% of the revenue of the economic agent in control of such a facility, in the event of non-compliance with the regulations issued thereto (LFCE, 2014, Art. 127).

Any of the abovementioned fines may be doubled in cases of recidivism (LFCE, 2014, Art. 127).[12] However, Article 131 of the LFCE explicitly determines that, when the transgression is carried out by agents who have been previously penalised for deploying monopolistic practices or illicit concentrations, the competition authority may impose – as an alternative to administrative fines – the divestiture or sale of assets, rights, partnership interests or shares pertaining to the infringer. In any case, it should be noted that fines may eventually correspond to statutory amounts linked to the UMA, when the infringer does not declare income tax or has not had its cumulative revenues defined for purposes related to said contribution (LFCE, 2014, Art. 128).

To conclude, the fines established by the competition authority must necessarily consider numerous elements related to the gravity of the infringement, to wit: the damage caused; indications of intentionality; the offender's share in the affected market(s); the size of the market(s) concerned; the duration of the anticompetitive practice or concentration; the transgressor's economic capacity; and, where relevant, how the execution of the competition agency's attributions have been affected (LFCE, Art. 130).

Substantial market power regulation

The declaration related to SMP necessarily entails pondering the criteria that have been traditionally examined when assessing market dominance. Hence, the factors to be considered are (among others) (LFCE, 2014, Art. 59): the undertaking's market share and its ability to act independently of other market participants; barriers to entry; competitors' market power; availability of access to input sources; and the recent behaviour of economic agents participating in the market.

Essential facilities and the declaration of barriers to competition

Pursuant to Article 60 of the LFCE, the competition agency must consider, when determining the existence of an essential input (among other aspects) (LFCE, 2014, Art. 60): if the input is controlled by preponderant agents, or agents that have been declared to have SMP; if its duplication is not technically, legally or economically feasible; if it is indispensable for the provision of goods and services in one or more relevant markets, and it possesses no close substitutes; and the circumstances by which the economic agent came to control it.

To sum up, the final determination ushered by the governing Board, may establish the following measures, provided that they increase efficiency in the market: recommendations to public authorities; orders to the specific undertaking; the issuance of guidelines for the regulation of access modalities, prices, and technical and quality conditions; the divestment of assets.

Other legal instruments related to broadcasting

Public Broadcasting System Law

Published in July 2014 and based on the provisions contained in Article 6 of the Constitution, the Public Broadcasting System Law (Ley del Sistema Público de Radiodifusión del Estado Mexicano), creates the decentralised Public Broadcasting System (Sistema Público de Radiodifusión, SPR) to co-ordinate the public broadcasters and to promote the preservation, production and diffusion of not-for-profit audiovisual content. The SPR is mandated to devote 30% of its programming to independent productions that contribute to promoting the rights of women and the pluralistic and diverse expression of ideas. The President of the SPR is appointed by the federal government and must present annual reports of activities to the executive and legislative powers. The SPR's budget is defined by the Congress and a Citizens Counsel voted by the Senate shall be composed to propose projects and ensure the editorial and political independence of the SPR. SEGOB is responsible for overseeing the SPR's implementation of its attributions.

General Law for Access by Women to a Life Free of Violence

Published in February 2007 and reformed in December 2015, the General Law for Access by Women to a Life Free of Violence (Ley General de Acceso de las Mujeres a

una Vida Libre de Violencia, LGAMVLV), establishes among several other mechanisms of women's protection, that SEGOB is responsible for sanctioning media that do not have a conduct towards eradicating all types of violence against women.

General Law to the Protection of Rights of Children and Teenagers

Published in 2014, the General Law to the Protection of Rights of Children and Teenagers (Ley General para la Protección de los Derechos de Niñas, Niños y Adolescentes), establishes several initiatives to promote a transversal protection of children and teenagers. In its Article 43 it mandates the competent federal authorities to oversee if harmful content for children is being broadcast during time periods classified as suitable for children. That general responsibility, which excludes the monitoring of publicity suitable for children, falls under the realm of SEGOB.

Institutional framework

Regulatory institutions

Federal Institute of Telecommunications

The IFT's mandate is to regulate and promote competition and the efficient development of telecommunication and broadcasting services, thus being charged with regulating, promoting and overseeing: the use, development and exploitation of the radio spectrum; orbital resources; satellite services; public telecommunication networks and the provision of broadcasting and telecommunication services; as well as access to active and passive infrastructure, and other essential inputs (LFTR, 2014, Art. 7). In addition, the IFT is the sole competition authority and the only entity in charge of issuing sector-specific *ex ante* regulation in the telecommunication and broadcasting sectors (LFTR, 2014, Art. 7).

Although its attributions are vast, it is relevant to refer to the following (LFTR, 2014, Art. 15):

- To issue general administrative provisions; fundamental technical plans; guidelines; cost models; conformity assessment procedures; and accreditation and certification procedures in telecommunication services and broadcasting.
- To grant concessions and decide on their extension, amendment or termination, as well as to authorise transfers or changes in shareholder control, ownership or operation of concessionaires.
- To publish the frequency band programmes concerning the radio spectrum, derived from the National Radio Spectrum Programme issued by the SCT and to carry out public tenders for the allocation of spectrum frequency bands.
- To set the amount of the monetary consideration for the awarding of concessions and authorisations to provide additional services within the former, subject to a previous non-binding opinion sent forth by the Ministry of Finance and Public Credit (Secretaría de Hacienda y Crédito Público, SHCP).
- To solve and establish the terms and conditions under which interconnection is to be developed, in the event of a dispute between concessionaires.
- To exercise competition-related powers in telecommunication services and broadcasting, including the declaration of preponderant agents and undertakings with SMP;

issuing asymmetric regulations thereto; and imposing limits to the concentration of frequencies.

- To approve, register and publish the prices for telecommunication and broadcasting services, in the cases established by the LFTR.
- To formulate information requests.
- To impose sanctions motivated on infringements to the laws, regulations, administrative provisions or concession titles, as well as to adopt precautionary measures and to declare, where appropriate, the loss of assets, installations and equipment to the nation's benefit.
- To carry out non-binding public consultation procedures in matters related to its attributions, should it ponder it necessary for the execution of its functions.
- To carry and keep up-to-date the Public Telecommunication Register.
- To impose on concessionaires, geographic, demographic or social coverage obligations; obligations concerning connectivity in public sites; and those related to their contribution to universal coverage objectives, taking into account the SCT's proposals.
- To issue guidelines on infrastructure deployment in the telecommunication and broadcasting sector, and to develop, issue and keep up-to-date a national geo-referenced database pertaining to the existing telecommunication and broadcasting infrastructure.
- To define service quality indicators and to publish the results obtained while monitoring compliance thereof.
- To publish statistical information and metrics referring to the telecommunication and broadcasting sectors on a quarterly basis.
- To resolve any disputes relating to content retransmission, excepting electoral content.
- To monitor and sanction the obligations regarding the protection of audiences.

Considering the ample tasks assigned to the IFT, it has a complex structure comprised of numerous departments, each of them in charge of performing different functions. Apart from the Board of Commissioners, which is its governing body, the IFT has a Commissioner President, the Board's Technical Secretariat and an Executive Co-ordination. The IFT has the following directorates (*unidades administrativas*): Regulatory Policy, Radio Spectrum, Concessions and Services, Audiovisual Media and Content, Compliance (a sub-unit within the Compliance Directorate has recently been created to deal with the specifics on asymmetric regulation), Economic Competition, Legal Affairs, and Management. Also, the IFT has an Investigative Authority and a Study Center. In addition, the IFT has the following bureaus (*coordinaciones generales*): Interinstitutional Affairs, User Policy, Strategic Planning; Regulatory Improvement, International Affairs, and Social Communication.

The Economic Competition Unit (Unidad de Competencia Económica, UCE) and the AI are responsible for undertaking the functions enshrined in the LFCE (LFTR, 2014, Art. 26). The AI is autonomous and independent from the UCE and with respect to the Board (Constitution, Art. 28, paragraph 20, Section V). Pertaining to the formal initiation of proceedings (such as trial-form proceedings linked to violations of legal statute, the

declaration of essential facilities and/or barriers to competition, and the determination of market conditions), the AI is in charge of substantiating the investigative phase of such proceedings, and the UCE is responsible for the trial-form stage, while the resolution is issued by the Board. The UCE is also responsible for exercising *ex ante* controls on economic concentrations, and for the economic evaluation of the parties interested in participating in public tender procedures.

The Board is integrated by seven commissioners, including the Commissioner President, who is designated in a phased manner, after a qualification procedure carried out by an Evaluating Committee, based on the federal executive's proposal, with the Senate's subsequent ratification (SEGOB, 2013, Art. 27). The commissioners are in office for a non-renewable nine-year term (SEGOB, 2013, Art. 27). The Board is entitled to carry out many of the abovementioned functions, as well as to designate the head of the AI (LFTR, 2014, Art. 17) and the 15 honorary members of its Advisory Council (LFTR, 2014, Art. 34). The Commissioner President is the head and the legal representative of the institute, and as such, presides over the Board (LFTR, 2014, Articles 19 and 20). He or she is also responsible for the annual work programmes and for the quarterly activity reports of the institute, as well as for sending both documents, with the prior approval of the Board, to the executive and legislative (LFTR, 2014, Art. 20, Section XI). The appointment of the Commissioner President is ratified by the Senate, with a vote representing two thirds of the members present (SEGOB, 2013, Art. 28). The Commissioner President serves a four-year term, which may be subject to renewal for one time only (SEGOB, 2013, Art. 28).

The LFTR established a wide range of responsibilities for the Board, which are exclusive to it alone and cannot be delegated, leading to a cumbersome schedule. In 2016, the plenary held 47 ordinary and 21 extraordinary sessions, in which it resolved a total of 1 517 cases. This means that some cases that could be more efficiently undertaken by the IFT's administrative units take up the time of the Board, rather than allowing it to focus on the relevant attributions that require its collegial consideration and resolution.

Finally, the LFTR provides that outside hearings, the commissioners may discuss matters within their competence with persons representing the interests of the agents regulated by the IFT only through interviews, which are recorded and stored in electronic, optical or any other technological format. The recording and storage of interviews may, however, represent a mechanism that inhibits representatives of regulated agents from revealing sensitive and relevant information to IFT commissioners.

With respect to transparency, resolutions and agreements of a general scope issued by the Board shall be published in the Official Gazette of the Federation. Furthermore, its sessions and decisions shall be public, unless they refer to confidential information (LFTR, 2014, Art. 47). Thirdly, the sense of each commissioner's vote in the Board shall be public, even as pertains to private sessions carried out by this governing body (LFTR, 2014, Art. 49).

Public consultation procedures are mandatory when issuing and amending general rules, guidelines or administrative provisions, unless such disclosure may compromise the effects that the IFT intends to resolve though such decisions, or in emergency situations (LFTR, 2014, Art. 51). In addition, prior to the issuance of rules of a general scope, the IFT must carry out a regulatory impact analysis, or request the Federal Regulatory Improvement Commission's (Comisión Federal de Mejora Regulatoria, COFEMER) support (LFTR, 2014, Art. 51).

As concerns accountability, the chairman of the IFT is obliged to submit the entity's annual work plan and quarterly activity reports to the Senate and the executive branch (LFTR, 2014, Art. 20). Moreover, the chairman may be summoned by the executive branch or the federal Congress. Finally, the IFT has an autonomous internal comptroller appointed by the Chamber of Deputies (LFTR, 2014, Articles 35 and 37).

To conclude, with respect to the IFT's expert witness support in particular, the guidelines issued by the IFT in April 2017 determine that accreditation as an expert witness before the IFT demands undertaking a knowledge test in which the candidate must obtain a minimum score of 75 out of 100, as well as paying a sum of roughly USD 300. Moreover, revalidation as an expert witness will entail the payment of approximately USD 100, as shall any additional accreditations in other specialties. Such fees may ultimately discourage competent and knowledgeable professionals from acting as experts in regulatory procedures (the norm is that regulators ought to pay expert witnesses should they require their assessment, and not the other way round). The examination requirements are not per se questionable; however, if the experts' relevant prior experience is demonstrated through their *curriculum vitae*, and there are peers and clients that can certify thereto, it may actually generate a waste of administrative resources that could be best employed for other purposes.

With respect to the budget, the IFT's assets are, essentially, comprised of items allocated to it in the expenditure budget of the federation for the corresponding year. The rights for the use or exploitation of the radio spectrum and the monetary considerations thereto, are not assets pertaining to the IFT, notwithstanding the provision enshrined in Article 253-A of the Federal Rights Law (Ley Federal de Derechos, LFD), which determines that 3.5% of the resources obtained from the awarding of concessions and permits for spectrum or orbital resources use shall be destined to the IFT.

Federal Economic Competition Commission

COFECE has as its objective to ensure free market access and economic competition and prevent, investigate and combat monopolies, monopolistic practices, concentrations and other restrictions on the efficient functioning of markets (LFCE, 2014, Art. 10). To this end, COFECE has the following powers (among others) (LFCE, 2014, Art. 12):

- To order measures aimed at eliminating barriers to competition and free market access, to determine the existence and regulate access to essential facilities, as well as to order the divestiture of assets.
- To practice "dawn raids", to subpoena persons and to demand the exhibition of information, as well as to request aid by the public forces, for the effective performance of its tasks.
- To command the suspension of the conducts and order preliminary injunctions.
- To impose administrative sanctions related to any violations to the LFCE.
- To resolve matters related to competition conditions, effective competition, the existence of SMP, and any other topic related to the competitive process.
- To perform competition advocacy functions, *ex officio* or per request, through the issuance of non-binding opinions.

COFECE's supreme governing and decision-making body is the Board, which is composed of seven commissioners, including a Commissioner President. They shall be

appointed in a phased manner –after a qualification procedure carried out by an Evaluating Committee – upon the federal executive's proposal, with the Senate's ratification (SEGOB, 2013, Art. 28). The commissioners shall be in office for a non-renewable nine-year term (SEGOB, 2013, Art. 28). The Board is entitled to carry out many of the abovementioned functions, as well as to designate the head of the AI (LFCE, 2014, Art. 30). The appointment of the Commissioner President is made by the Senate; with a vote representing two thirds of the members present (SEGOB, 2013, Art. 28). The Commissioner President serves a four-year term, subject to renewal only once (SEGOB, 2013, Art. 28).[13]

Furthermore, COFECE has an investigative authority charged with carrying out all the procedures related to the administrative investigations it performs, concerning possible transgressions of the LFCE (LFCE, 2014, Art. 28). Its governing body (the Board) is responsible for the trial-form phase of such proceedings (LFCE, 2014, Art. 18). The sessions of the Board shall be public, except as regards those fractions in which confidential information is covered (LFCE, 2014, Art. 18). The same treatment is provided with reference to the Board's agreements and resolutions (LFCE, 2014, Art. 18).

Moreover, the Commissioner President – as chairman of the Commission – is obliged to annually appear before the Senate, and to submit to the federal executive and legislative branches its annual work programme and quarterly activity reports, documents which must also be public (LFCE, 2014, Art. 49). Additionally, COFECE has an autonomous internal comptroller appointed by the Chamber of Deputies (LFCE, 2014, Articles 37 and 40). Analogously to the provisions regarding the IFT, COFECE's assets shall be constituted, essentially, by those assigned in the annual general budget of the federation (LFCE, 2014, Art. 48).

Federal Consumer Protection Agency

Pursuant to Article 20 of the LFPC, PROFECO is a decentralised social service body with its own legal personality and assets, although dependent on the Ministry of Economy (Secretaría de Economía, SE). It deploys administrative functions and has as its mandate to promote and protect the rights and interests of consumers, as well as to ensure fairness and legal certainty in the relationships between the latter and suppliers. For such purposes, it has the following attributions (among others) (LFPC, 1992, Art. 24):

- To represent consumers, individually or collectively, before judicial and administrative authorities, and before suppliers.
- To gather, develop, process and disseminate objective information so as to enable consumers to acquire better information regarding the products that are offered in the market.
- In telecommunication services, PROFECO must register the model contracts of adhesion submitted by service providers and publish them in a public register (LFTR, 2014, Art. 191). Further, it must verify that model contracts establish reasonable penalties in the event of anticipated termination, and of temporary service suspension for non-payment (LFTR, 2014, Art. 191).
- To determine, in conjunction with the IFT, the minimum rights of compulsory inclusion in the letter of rights that service providers must deliver to their users (LFTR, 2014, Art. 191).
- To sanction any infringements incurred by service providers to telecommunication users' rights, as determined by the LFTR (LFTR, 2014, Art. 297).

- To inform the IFT – and vice versa – of systematic or recurrent violations of the LFTR or of the LFPC by service providers, so they may take actions within their mandates (LFTR, 2014, Art. 191).
- To oversee and verify compliance with the provisions related to prices and rates.
- To implement educational strategies pertaining to consumer protection.

PROFECO is directed by the Federal Consumer Attorney General (LFPC, 1992, Art. 27), who is designated by the Mexican President (LFPC, 1992, Art. 28). In addition, there are several specialised units (*subprocuradurías*) on the following subjects: Verification; Legal Affairs; Telecommunication;[14] and Services (PROFECO, n.d.). Furthermore, PROFECO has the following departments: General Administrative Co-ordination; General Direction on Social Communication; General Direction on Delegations; Co-ordination on Education and Dissemination; and a General Direction on Planning and Evaluation (PROFECO, n.d.). Finally, it can be noted that PROFECO possesses delegations and sub-delegations across the entire country (LFPC, 1992, Articles 21 and 22). According to Article 23 of the LFPC, PROFECO's assets are composed by assets directly assigned to it in the general budget of the federation, and other resources provided by other public agencies and governments.

Governmental institutions

*Ministry of Communications and Transports (*Secretaría de Comunicaciones y Transportes*)*

The SCT is an entity of the federal government, who has as its mission to foster transport and communication systems that are safe, efficient and competitive, through the strengthening of the legal framework, the delimitation of public policies and the designing of strategies that contribute to sustained economic growth and balanced social development; expanding coverage and accessibility of services, achieving integration of the Mexican people and respecting the environment (SCT, n.d.).

Among its functions, the following can be highlighted (LFTR, 2014, Art. 9):

- To issue a technical non-binding opinion to the IFT on the awarding of concessions, and on the authorisation of changes of control of telecommunication and broadcasting concessionaires.
- To plan, establish, implement and conduct the policies and programmes referring to universal and social coverage.
- To formulate the federal government's policies regarding telecommunication and broadcasting.
- To perform all the actions required to guarantee access to broadband Internet in buildings and facilities belonging to the federal public administration, and to co-operate with federal and local governments to attain this objective.
- To establish programmes pertaining to broadband access in public sites, establishing an implementation schedule thereto.
- To acquire, establish and operate – directly or with third-party participation – infrastructure, telecommunication networks and satellite systems for the supply of telecommunication and broadcasting services.

- To send to the IFT its non-binding opinion on the IFT's annual work programme and quarterly reports.
- To develop, integrate and implement the programmes on: the expansion of the Red Troncal; making available to broadcasting and telecommunication operators, public sites, ducts, posts and rights of way so as to expedite infrastructure deployment; the DTT transition; and the National Radio Spectrum Programme geared at ensuring its optimal and efficient use.

*Ministry of the Interior (*Secretaría de Gobernación*)*

The SEGOB's Radio, Television and Cinematography Directorate (Dirección General de Radio, Televisión y Cinematografía, RTC), is responsible for regulating and monitoring the classification of content in radio, television and cinema. While the IFT is responsible for monitoring the conduct of providers regarding children's content, SEGOB sanctions providers that are found in fault in this regard and supervises conduct on all other values expressed in the Constitution and other specific laws, such as the LGAMVLV. SEGOB, through the RTC, also manages the programming time made available for use by the government.

Digital economy institutions' responsibilities

As the digital economy grows in importance, ensuring clear delineation of responsibilities is a challenge faced by all OECD countries. In Mexico, the allocation of responsibilities for this sector are divided among several federal government agencies, which has resulted in drawbacks in formulating public policy and inefficiencies in implementing resources, as well as challenges in measuring results. While in some cases arrangements involving two or more government bodies in the same area is clearly justified, there are some scattered allocation of responsibilities that could be regrouped under the supervision of a single government body in order to co-ordinate efforts to meet policy objectives.

Aside from the institutions and their responsibilities described above (the SCT and SEGOB) a number of other bodies have responsibilities in the areas involving the SCT, such as public policy, e-government and digital inclusion/the digital economy. Taking these areas in turn:

- Public policy: Attributions include different entities, in particular regarding the overall digital strategy, digital inclusion, e-government and the use of ICTs in the public sector, as well as digitalisation of the economy. At this stage, the National Digital Strategy Co-ordination (Coordinación de Estrategia Digital Nacional, CEDN), located at the office of the Presidency, is responsible for the elaboration of the National Digital Strategy and for the co-ordination of digital policies to promote the adoption of new technologies by individuals, and within the government. The implementation of the policies lies within the respective ministries.
- Digital inclusion/digital economy: The promotion of the use and advancement of ICT is a key objective of the Mexican government. To meet this goal, efforts are needed to increase penetration in households and individuals as well as in firms. The CEDN is the entity that is currently in charge of promoting the adoption of ICT. The SCT, through the Co-ordination of the Information Society and Knowledge, also has responsibility to increase the use of new technologies. Meanwhile, the SE has responsibilities for the promotion of new technologies relevant to economic development and the creation of centres specialised in technological development.

Judicial institutions

One of the main innovations established by the Constitutional Reform Decree of 2013 was the creation of specialised judicial authorities, with jurisdiction to decide on matters pertaining to competition, telecommunication services and broadcasting. In 2013, the Superior Council of the Judiciary issued an agreement by which it created two specialised district judges, and two specialised circuit courts, all of which enjoy national jurisdiction (Consejo de la Judicatura Federal, 2013). It should be noted that these judicial institutions resulted from the transformation of pre-existing district judges and circuit courts. Finally, the agreement in question dictates that the Institute of the Federal Judiciary must provide specialised courses to these bodies' public servants to consolidate their academic and professional knowledge on the matters of competition, telecommunication services and broadcasting.

These institutions – and in particular the courts – are responsible for resolving any disputes that may arise in relation to the implementation of the rules established in the LFTR, the LFCE and the secondary regulations and/or acts (LFTR, 2014, Art. 315). This includes the following functions:

- To substantiate indirect *amparo* trials directed at the general provisions, acts and omissions carried out by the IFT or COFECE (SEGOB, 2013, Art. 28). This function shall be performed by district judges or circuit courts.
- To resolve any disagreements arising between concessionaires and the federation, federal entities and municipalities, referring to the general ways of communication, civil works and rights of way associated with public telecommunication networks, as well as satellite communication services (LFTR, 2014, Art. 5). This function is specifically assigned to the circuit courts.
- To decide on positive or negative conflicts of jurisdiction arising between the IFT and COFECE, as regards their powers as competition authorities (LFCE, 2014, Art. 5). This function is specifically assigned to the circuit courts.
- To decide on lawsuits claiming damages derived from monopolistic practices or unlawful economic concentrations, once the competition agency's resolution becomes non-appealable (LFCE, 2014, Art. 134). This function is specifically assigned to the circuit courts.

Notes

1. The Pact for Mexico emphasises the need to intensify economic competition in strategic sectors of the economy, expressly mentioning: telecommunication, transport, financial services and energy. The five core propositions established in the Pact for Mexico are defined under the following topics: society of rights and liberties; economic growth, employment and competitiveness; security and justice; transparency, accountability and the fight against corruption; and democratic governability (http://pactopormexico.org).
2. This can also be observed in Article 63 of the LFTR.
3. This is provided for in Article 74 of the LFTR.
4. The LFTR contains several definitions that are relevant to the provision of wholesale services by telecommunication and broadcasting operators. Unbundling is construed as the separation of physical elements, including fibre optics, technical and logical elements, functions or services of the preponderant telecommunication operator's local public telecommunication network, aimed at ensuring that other concessionaires can effectively gain access to such network. In addition, unbundling entails the separation of such elements, functions or services when the local public telecommunication network pertains to an economic agent that enjoys substantial power in the national relevant market for retail services.
5. This provision includes, among the factors that must be pondered when asserting the existence of an essential input: if the input is controlled by a dominant or preponderant undertaking; if its duplication is not feasible from a technical, legal or economic perspective; if the input is indispensable for the provision of goods and services in one or more relevant markets, and it has no close substitutes; and if the circumstances by which the undertaking came to control it.
6. In particular, "Tier 1" sanctions shall be up to 8 million times the UMA; "Tier 2" fines, of up to 41 million times such unit; "Tier 3" penalties, of up to 66 times the UMA; and lastly, "Tier 4" and "Tier 5" sanctions shall be up to 82 times the UMA.
7. On this topic, Article 197 of the LFTR determines that concessionaires or authorised entities must block contents, applications or services upon explicit request by their users, provided that such blocking is not arbitrarily extended to other contents, applications and services not comprised within users' requests. However, in no case shall this procedure arbitrarily affect agents providing services or applications over the Internet.
8. Article 196 of the LFTR appends this provision by stating that concessionaires and authorised entities are obliged to supply their users or subscribers with the service in accordance with the terms and conditions explicitly or implicitly published in their advertising, unless provided otherwise, through express agreements with the user/subscriber.
9. It should be added that, pursuant to Article 214 of the LFTR, departments and entities of the federal public administration must support the development of programmes

pertaining to social coverage and connectivity in public sites. Furthermore, they must back the federal executive's digital strategy.

10. It should be noted that Article 5 establishes a specific procedure in order to settle such conflicts, and the deadlines that shall be observed by the institutions and the courts. In particular, it determines that once the IFT or the COFECE is aware that the other entity is substantiating a subject matter corresponding to their jurisdiction, it shall request the file be sent to it. If the requested entity considers it does not have the powers to substantiate the proceeding, it shall remit it to the requesting entity within five days following the petition. However, should the requested entity ponder it is competent, it shall inform the requesting institution of its decision within the same timeframe, and shall suspend the proceedings and send the file to the specialised circuit court, who shall resolve in a period of ten days. It should be stated that the aforementioned procedure and terms shall also be applicable, *mutatis mutandis*, to negative conflicts of jurisdiction.

11. Article 94 of the LFCE only refers to the attribution of the authority to mandate divestiture of assets of an economic agent when it poses a barrier to competition or an essential facility is determined. The attribution to mandate the divestiture of a predominant agent or an agent with SMP is not within the scope of the competition authority (i.e. the AI) but of the IFT as a regulator (and so it is up to the Regulatory Policy Unit).

12. It should be clarified that recidivism does not refer exclusively to an economic agent incurring the same conduct by which it has been previously sanctioned (thus, it may entail any violation to the LFCE). Furthermore, the law requires that no more than ten years to have passed from the moment in which the prior resolution has become non-appealable.

13. This is reiterated in Article 31 of the LFCE.

14. The Telecommunication Unit was created in compliance with Transitory Article 21 of the LFTR, which mandates that PROFECO create a specialised area – not inferior to a *subprocuraduría* – aimed at tending to, promoting and monitoring users' rights as enshrined in the LFTR.

References

Avelar, F. (2013), "Pact for Mexico and telecommunication reform in Mexico", *Law and Business Review of the Americas*, Vol. 19/2, pp. 247-252, https://people.smu.edu/ilra/files/2016/08/19-2.pdf.

Consejo de la Judicatura Federal (2013), "Acuerdo General 22/2013 del Pleno del Consejo de la Judicatura Federal, relativo a la conclusión de funciones de los Juzgados Cuarto y Quinto de Distrito del Centro Auxiliar de la Primera Región, y su transformación como Juzgados Primero y Segundo de Distrito en Materia Administrativa Especializados en Competencia Económica, Radiodifusión y Telecomunicaciones, con residencia en el Distrito Federal, y jurisdicción territorial en toda la República" [Federal Judicial Council, General Agreement 22/2013 of the Plenum of the Federal Judicial Council, regarding the completion of functions of the Fourth and Fifth District Courts of the Auxiliary Center of the First Region, and its transformation as First and Second District Courts in Specialized Administrative Matters in economic competition, broadcasting and telecommunication, with residence in the Federal District, and territorial jurisdiction throughout the republic], *Diario Oficial de la Federación*, 9 August, Mexico City, http://dof.gob.mx/nota_detalle.php?codigo=5309912&fecha=09/08/2013.

LFCE (2014), Ley Federal de Competencia Económica (Federal Economic Competition Law), *Diario Oficial de la Federación*, Mexico City, 23 May (last reform published on 27 January 2017), www.diputados.gob.mx/LeyesBiblio/pdf/LFCE_270117.pdf.

LFPC (1992), Ley Federal de Protección al Consumidor (Federal Consumer Protection Law), *Diario Oficial de la Federación*, Mexico City, 24 December (last reform published on 26 June 2017), www.diputados.gob.mx/LeyesBiblio/pdf/113_260617.pdf.

LFTR (2014), Ley Federal de Telecomunicaciones y Radiodifusión (Federal Law of Telecommunications and Broadcasting), *Diario Oficial de la Federación*, Mexico City, 14 July (last reform published on 27 January 2017), www.diputados.gob.mx/LeyesBiblio/ref/lftr.htm.

PROFECO (Procuraduría Federal del Consumidor) (n.d.), Federal Attorney's Office of Consumer website, www.gob.mx/profeco (accessed 19 October 2016).

SCT (n.d.), "Gráficas" [Graphics], Secretaría de Comunicaciones y Transportes, Mexico City, http://mexicoconectado.gob.mx/carousel.php?id=80&cat=80&id_carrusel=2 (accessed 15 December 2016).

SEGOB (Secretaría de Gobernación) (2016), "Decreto por el que se declara reformadas y adicionadas diversas disposiciones de la Constitución Política de los Estados Unidos Mexicanos, en materia de desindexación del salario mínimo" [Decree declaring various provisions of the Political Constitution of the United Mexican States reformed and added to the minimum wage de-indexation], *Diario Oficial de la Federación*, 27 January, Secretaría de Gobernación, Mexico City, www.dof.gob.mx/nota_detalle.php?codigo=5423663&fecha=27/01/2016.

SEGOB (2013), "Decreto por el que se reforman y adicionan diversas disposiciones de la Constitución Política de los Estados Unidos Mexicanos en materia de telecomunicaciones" [Decree amending the Constitution on Telecommunications], *Diario Oficial de la Federación*, 11 June, Secretaría de Gobernación, Mexico City, www.diputados.gob.mx/LeyesBiblio/ref/dof/CPEUM_ref_208_11jun13.pdf.

SEGOB (2002), "Decreto por el que se autoriza a la Secretaría de Hacienda y Crédito Público a recibir de los concesionarios de estaciones de radio y televisión el pago del impuesto que se indica" [Decree authorizing the Ministry of Finance and Public Credit to receive from the concessionaires of radio and television stations the payment of the indicated tax], *Diario Oficial de la Federación*, 10 October, Secretaría de Gobernación, Mexico City, www.dof.gob.mx/nota_detalle.php?codigo=719697&fecha=10/10/2002.

Chapter 4.

Policy and regulation in telecommunication and broadcasting in Mexico

This chapter examines the design of regulation and policies of the telecommunication and broadcasting sectors in Mexico, most of which have been introduced since the 2013 reform, based on the changes to the legal framework discussed in Chapter 3. It covers issues such as wholesale and retail regulation, digital inclusion strategies, competition aspects and enforcement as well as consumer protection and empowerment. It also reviews the second round of asymmetric measures imposed on the preponderant agents announced by the Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) in March 2017.

Wholesale regulation

The regulatory framework in Mexico has undergone a substantial transformation since the 2012 *OECD Review of Telecommunication Policy and Regulation in Mexico*. It distinguishes preponderant agents and agents with substantial market power (SMP) from other operators, such as concessionaires or entities, which have been authorised to provide telecommunication services (e.g. mobile virtual network operators, MVNOs). Since the reform, the Federal Telecommunications Institute (Instituto Federal de Telecomunicaciones, IFT) has declared América Móvil in telecommunication services and the Televisa Group in broadcasting as preponderant and has imposed asymmetric measures upon them. In February 2017, the IFT further determined that the Televisa Group also had SMP in telecommunication services due to its position in pay TV, which is considered part of the telecommunication market. However, thus far, the IFT has not imposed asymmetric measures on Televisa for pay TV.

Asymmetric measures, imposed on the preponderant players through either legal or regulatory instruments, encompass measures such as zero interconnection rates for traffic terminating in the preponderant telecommunication operator's network, or the compulsory unbundling of Telmex's and Telnor's local loop. The mandatory sharing of passive infrastructure and the ability of concessionaires to request access to the preponderant agent's network to co-locate equipment are other measures which may be applied asymmetrically.

Critically, the compulsory publication of reference offers in regards to wholesale services helps to provide legal certainty and transparency to operators that request such access. Since the reform, the IFT is able to regulate *ex ante* wholesale prices under cost-based methodologies. These wholesale prices concern services such as interconnection, the sharing of passive infrastructure and the leasing of dedicated links. The new preponderance measures establish that the public offerings must contain the applicable tariffs, with the exception of the reference offer for infrastructure sharing for mobile services. In this regard, the registration of contracts for the provision of wholesale services concluded between concessionaires and the public nature of the prices stipulated therein is a positive development. In addition, the IFT may impose accounting, functional and structural separations, which are crucial tools for fostering greater competition and improving market access in the telecommunication sector. In 2017, the IFT introduced accounting disaggregation for Telcel, Telmex and Telnor and functional separation for Telmex and Telnor.

In addition, changes to the rules on rights of way aim to enable concessionaires and other economic agents to access key infrastructure elements and facilities. This will hopefully accelerate further investment to provide consumers with broader access to telecommunication services at a reasonable price through the more efficient use of existing assets. Finally, once initiatives such as the Red Compartida and the use of the Federal Electricity Commission's (Comisión Federal de Electricidad, CFE) dark fibre capacity by Telecomunicaciones de México are up and running on a widespread basis, existing and new service providers will gain access to extremely valuable network facilities. This can be used to expand their businesses and thus contribute to attaining the universal and social coverage objectives enshrined in the 2013 Decree amending the Constitution on Telecommunications and the Federal Telecommunications and Broadcasting Law (Ley Federal de Telecomunicaciones y Radiodifusión, LFTR).

Notwithstanding significant progress and the adoption of good practices consistent with other OECD countries, some substantial challenges remain concerning the practical implementation of these measures. As the IFT has acknowledged, information asymmetries

still persist between the preponderant agent in telecommunication services and its competitors (e.g. access seekers wishing to use unbundled local loops). This is due in part to delays in implementing the Electronic Management System (EMS) by the preponderant operator.[1] Delays stemmed from the slow progress made in the committee that the IFT presides over on the one hand and from deadlines not met by the preponderant agent, sometimes due to meeting additional requests from the IFT, on the other hand.[2] This tool is meant to provide concessionaires and other players with complete and updated information on the preponderant's network and those facilities subject to shared access or co-location.

The industry has, however, been highly critical of the length of time the preponderant agent was permitted to disclose the required information to the market (IFT, 2016a).[3] Due to the lack of an informative and functional EMS, market players have underscored the impossibility to map where the preponderant agent's services are available and to know at which level of quality these services are provided. In addition, competitors have highlighted that it is not possible for the IFT to ensure that a preponderant agent effectively complies with its obligations, or to enforce these obligations as required. Such obligations include that a preponderant agent must not discriminate, in terms of contractual conditions and quality standards, between access seekers and its own operations, including its subsidiaries, affiliates and companies belonging to its economic interest group.

In this regard, the limited use and adoption of services derived from the reference offers suggest that the preponderant agent has not responded adequately to the needs of telecommunication service providers as potential customers (IFT, 2016a). For its part, América Móvil rejects such claims and uses its commercial agreement with Telefónica for national mobile roaming as an example. While it was required to reach such an agreement, the company nevertheless points out that the terms were agreed via commercial negotiations. This must, however, be assessed against the slow progress of key elements for effective competition, such as the lack of an operational and effective EMS and whether the current regulatory conditions enable the effective enforcement of obligations and provide the right incentives. It must be highlighted that compliance in theory is not equivalent to compliance in practice, especially if the absence of an effective EMS makes it impossible to monitor if a preponderant agent is meeting its obligations. This element is critical to making further progress and was central to considerations by the IFT in its 2017 preponderance review and the subsequent decisions that were taken.

Besides the purported ineffectiveness of the reference offers, some market players have reproved other measures adopted by the IFT (e.g. the creation of an Unbundling Technical Committee). Also, there have been unnecessary delays in the publication of said offers; the initial unbundling reference offer was only approved in December 2015 and required to be revised almost a year later. As such, many participants in the telecommunication sector have questioned some of the IFT's determinations leading up to the 2017 preponderance review. They claim that the measures taken have not effectively addressed the regulatory asymmetry that should exist between the preponderant agent and access seekers (IFT, 2016a).

The determinations criticised include: the methodology adopted by the regulator to establish default rates for wholesale services such as call termination;[4] the inclusion of interconnection services that go beyond the scope of what the LFTR considers must be provided by non-preponderant operators in the Agreement on Minimum Technical Conditions for Interconnection (e.g. co-location); and the application of the same accounting separation requirements for all operators (Telefónica, 2016a). In their view, access seekers should not be subject to *ex ante* regulation, and the cost methodologies

employed by the IFT to calculate interconnection rates should be reviewed to ensure that they effectively cover their costs and recoup their investments (CANIETI, 2016).

Although many objections have been put forward by telecommunication service providers, the aforementioned points may serve as a useful starting point for the analysis of the current wholesale regulation in Mexico. In many ways this regulation appears to be adequate, but it has encountered substantial obstacles in its practical implementation, particularly in meeting objectives for fixed networks.

Interconnection regulation

According to the LFTR, all concessionaires operating public telecommunication networks must adopt open network architecture aimed at guaranteeing the interconnection and interoperability of their networks under transparent and non-discriminatory conditions. However, the legal and regulatory regime in force levies specific asymmetric rules on the preponderant agent in telecommunication services. Additionally, the preponderant agent must provide the following interconnection services: transit, co-location, shared infrastructure, ancillary services, billing and invoicing. Notwithstanding, the following interconnection services are to be compulsorily provided for all concessionaires: traffic conduction, transmission links, access ports and signalling.

The preponderance framework states that the preponderant agent is obliged to publish an Interconnection Framework Agreement annually, with the IFT's previous review and authorisation. The agreement is in force for a year, and shall contain a series of minimum technical, economic and legal conditions, including, among others:

- Technical conditions: signalling protocols; transmission capacity; number and capacity of interconnection ports, as well as their geographical location; capacity requirements for the interconnection and interoperability of public telecommunication networks; estimated capacity demand; quality of service (QoS) parameters; and the procedures and deadlines in the management of failures and incidences.
- Economic conditions: unbundled rates for each interconnection service; individual invoicing of each telecommunication service; and dispute-resolution mechanisms.
- Legal conditions: the explicit inclusion of concessionaires' right to receive non-discriminatory treatment in the provision of interconnection services and the ways to make it enforceable under potentially discriminatory situations; and the mechanisms to ensure continuity in the provision of interconnection services.

In this context, the preponderant is obliged to share the conditions outlined in the Interconnection Framework Agreement with requesting concessionaires, under non-discriminatory terms and within a maximum time frame of 20 working days (IFT, 2014a, Annex 1: n. 11 and Annex 2: n. 2).

To sum up, the preponderant agent is obliged to conclude interconnection agreements with requesting concessionaires within a maximum period of 20 working days from the filing of the request. A copy of all contracts must be sent to the IFT, which registers them and makes them public, including the price. Finally, the IFT has issued regulation pertaining to the minimum technical conditions applicable to interconnection between concessionaires operating public telecommunication networks. This regulation incorporates rules such as the signalling protocol, co-location, and traffic exchange in interconnection points.[5]

In regards to interconnection pricing, one of the most important measures applied to the preponderant agent in the telecommunication sector relates to the zero termination

rate it must charge other operators for traffic termination on its network, namely, mobile voice, fixed voice and SMS. In this sense, pursuant to the preponderance regulation, the interconnection rates corresponding to services non-regulated therein or by law (e.g. the aforementioned zero termination rates), as well as those which must be paid by the preponderant agent to other concessionaires for services provided by the latter, are freely negotiated between the parties (IFT, 2014a, Annex 1: n. 59 and Annex 2: n. 6). In general terms, non-preponderant concessionaires shall freely negotiate the terms and conditions applicable to the interconnection of their networks. However, the IFT is empowered, by Article 131 of the LFTR, to intervene in the event of a dispute (IFT, 2014a).[6]

Under such circumstances, the IFT determines the interconnection rates by using a long-run incremental cost approach (LRIC), which can nonetheless undergo adjustments depending on the specific interconnection services (IFT, 2014a). Pursuant to the LFTR, the rates determined by the IFT based on such methodologies must be transparent, reasonable and, if applicable, asymmetrical, taking into account factors such as market share, network congestion times and traffic volume.

As per the preponderance regulation, rates referring to traffic origination, transit and termination to be paid by the preponderant are established by taking a pure LRIC, as determined by the IFT in subsequent decisions (IFT, 2014b). On the other hand, the IFT has defined that remaining interconnection services such as co-location, transmission links, invoicing and collection and so forth, should be based on a long-run incremental cost plus approach (LRIC+) (IFT, 2014b).

The most recent agreement issued by the IFT determines the interconnection rates applicable in the event of a dispute in relation to interconnection services provided by non-preponderant concessionaires, and establishes specific rates on the following services: local services terminating in mobile lines under a "calling party pays" scheme; mobile termination rates regarding SMS services; and local services terminating in fixed lines. Default rates for services supplied by the preponderant operator are established by taking into account local services originating in fixed networks, as well as transit services.

In this regard, the IFT has published an agreement defining the preponderant agent's interconnection points, in which it distinguishes between mobile and fixed networks, and specifies the corresponding signalling technologies.[7] As a result, 198 fixed interconnection points and 46 mobile interconnection points were defined for the SS7 signalling protocol. Additionally, 11 interconnection points for fixed and mobile networks with SIP-IP signalling protocol were defined. It should be noted that all of the aforementioned points are on a national level, which means that they enable traffic exchange irrespective of the origin or destination of the call within the national territory.

To complement the aforementioned provisions, the asymmetric regulation requires the preponderant operator to implement an EMS accessible at all times for the IFT and access seekers. In theory, though not yet fully in practice, this should enable these parties to be able to remotely access the system in order to consult updated information on the preponderant agent's network and its passive infrastructure (IFT, 2014a, Annex 1: n. 65 and Annex 2: n. 42). Furthermore, the EMS should enable requesting operators to conclude contracts referring to wholesale services and spare capacity of passive infrastructure; to report and track failures and incidents that arise with respect to the contracted services; to perform consultations on the status of their contracting requests and all the measures necessary for the proper operation of wholesale services (IFT, 2014a). On this matter, the preponderance regulation also requires the preponderant agent to enable a call centre and an email address to perform the EMS tasks in the event of failure. Furthermore, the

preponderant agent is obliged to utilise this system for operations carried out by itself, its subsidiaries and affiliates.

The EMS should have been implemented six months after the technical elements for its operation were defined, at the latest (IFT, 2014a, Annex 1: Transitory Article 12 and Annex 2: Transitory Article 4). This was to be undertaken by the IFT presiding over a Technical Committee, in which multiple aspects of the EMS were to be determined, based on a proposal from the preponderant operator. Unfortunately, although the preponderance regulations were issued in March 2014, the implementation of the system was severely delayed. This has been one of the major complaints from industry participants against the competitive conditions in the Mexican market. The status of EMS elements as at May 2017 is available here (Table 4.1)

Table 4.1. **Status of the implementation of the Electronic Management System (May 2017)**

17 March 2016	The mobile virtual network operators' module became fully operational.
27 April 2016	The roaming module became fully operational.
15 September 2016	Telmex's and Telnor's interconnection services module became fully operational.
3 February 2017	The leased lines services module became fully operational.
18 May 2017	Telcel's interconnection services module became fully operational.

Finally, both the LFTR and the respective regulation dictate that concessionaires operating public telecommunication networks must conclude interconnection agreements within a period of 60 calendar days. If not, the IFT is empowered to intervene upon request to establish the terms, conditions and rates subject to differences between parties, applying the cost methodologies it has previously defined in the latter case, without prejudice to the sanctions it may impose based on the LFTR rules. The IFT must resolve the aforesaid disputes within a maximum period of 30 working days following the conclusion of the allegation period. To conclude, the preponderance regulation stipulates that in the event of a rate-related controversy regarding the measures imposed, the IFT may order the preponderant agent to provide the respective service, regardless of whether or not it will settle the dispute at a later time (IFT, 2014a, Annex 1: n. 75 and Annex 2: n. 62).

The IFT has made very limited progress since the reform was introduced to ensure that wholesale services are available to access seekers. Certainly, there have been notable exceptions, such as the commercial agreement reached between América Móvil (Telcel) and Telefónica for Telcel to provide Telefónica with domestic mobile roaming. The agreement was signed in compliance with the roaming reference offer authorised in 2015 by the IFT and the rates were agreed upon through negotiations between the parties. In addition, the availability of the shared wholesale mobile network Red Compartida, beginning in 2018, may have been a longer term consideration given it will provide wholesale 4G access. However, there has been little to no progress in other areas. The law itself is likely not the primary issue, rather it is the incentives the preponderant agent has to comply with practical implementation as opposed to reporting compliance. In an environment where there is insufficient alternative infrastructure to furnish wholesale services and in the absence of tools such as an EMS to enable wholesale access, assess progress and ensure compliance with obligations, it is reasonable that the IFT seeks further functional separation. This was addressed in the 2017 preponderance review to act on the underlying causes of the slow progress.

In terms of interconnection, the LFTR states that, for as long as there is a preponderant agent in the telecommunication sector, that agent will not charge the other concessionaires for the traffic ending in its network. Regulation of interconnection should be flexible, and

should promote and facilitate the efficient use of networks, allow the expansion of existing competitors, and incorporate new technologies and services. The LFTR is not best placed to anticipate the tariff policy, either "bill & keep" or any other for the future, since the costs to modify it are very high.

The trend in OECD countries for many years has been to reduce termination rates. Mexico is following that pattern and its continuance would be welcome. At the same time, the IFT is best placed to determine the applicable tariffs, considering the technical aspects of the interconnection and the natural asymmetries of the networks to be interconnected. Consideration could be given to repealing the current asymmetric approach, though in practice it may be more effective to adopt a bill and keep approach or reduce rates to the point where they are negligible. Article 131 of the LFTR provides for this, but only when effective competition is in place.

Resource issues

Infrastructure sharing

Infrastructure sharing can be analysed from two perspectives: in relation to the preponderant agent in telecommunication services and with regards to non-preponderant undertakings. For the former, the preponderance regulation requires the preponderant agent to provide access to and share its passive infrastructure (e.g. ducts, poles, towers) with other concessionaires, on a non-discriminatory basis, including the conditions it offers to its own operations, and without conferring exclusive rights for their use or exploitation (IFT, 2014a, Annex 1: n. 15 and Annex 2: n. 23). These measures are enforceable regarding both fixed and mobile services. Accordingly, although Telcel, the preponderant agent's mobile service provider, divested its telephony tower assets through the creation of a new company (Telesites) in April 2015, the asymmetric measures are still applicable.[8]

By the same token, the preponderant operator must issue reference offers for access and shared use of passive infrastructure, which must comply with the same minimum content as required for interconnection offers, in addition to observing the rules geared towards preventing anticompetitive behaviours (IFT, 2014a, Annex 1: n. 16 and Annex 2: n. 41). Moreover, such reference offers must be assessed and approved by the IFT, prior to their implementation. In this sense, the IFT is empowered to introduce any modifications it deems pertinent, so as to ensure the reference offers are consistent with the asymmetric regulation, and with the purpose of fostering competition in the telecommunication sector.

In addition, the preponderance regulation stipulates that the reference offers of wholesale services have a validity of one year, and must include the following information, at a minimum: technologies available in the preponderant agent's network; identification of the interconnection points; coverage area maps; the infrastructure's characteristics and technical requirements; procedures for requesting services, fixing failures and managing incidences; and QoS parameters (IFT, 2014a, Annex 1: n. 16). Moreover, the preponderance regulation prohibits the following anticompetitive practices by the preponderant operator, when defining the conditions to be comprised within the reference interconnection offer:

- To apply discriminatory or abusive conditions in the delivery of wholesale services. Hence, the same prices, terms, conditions and discounts shall be applied to all requesting parties.
- To employ conditions diverging from those stipulated in the reference offer to itself or to enterprises encompassed within its economic interest group.

- To tie-in sales, either by conditioning the provision of wholesale services to the purchase, acquisition, sale or provision of an additional or different good or service, or by subjecting such provision to not acquiring, selling, commercialising or providing services supplied by a third party.

At the same time, access and passive infrastructure-sharing services must be provided by the preponderant agent under satisfactory quality conditions. Hence, they are obliged to indicate parameters pertaining to: delivery times; times for cable laying and installation of infrastructure; times for failure repairs and management of incidences; and quality indicators (IFT, 2014a, Annex 1: n. 35 and Annex 2: n. 29).

As with interconnection, the preponderant agent is obliged to conclude infrastructure-sharing agreements with requesting concessionaires within a maximum period of 15 working days from the filing of the request (IFT, 2014a, Annex 1: n. 17 and Annex 2: n. 43). Furthermore, a copy of any such contract must be sent to the IFT, who will place it in the Public Telecommunications Register.

Also pursuant to its asymmetric measures, the preponderant agent must maintain an EMS that can be accessed by the IFT and concessionaires, where it publishes updated information on its facilities and infrastructure (IFT, 2014a, Annex 1: n. 32 and Annex 2: n. 26). The system, which has been fully operational since April 2017, incorporates, among other aspects: the exact location of its facilities, including maps of elements such as ducts; the technical characteristics of the infrastructure; and the spare capacity of passive infrastructure (IFT, 2014a).

The measures compel the preponderant agent to address requests pertaining to access and shared use of passive infrastructure in the same manner as it does for its own operations and for companies belonging to the same economic interest group (IFT, 2014a, Annex 1: n. 42 and Annex 2: n. 35). Therefore, it must possess a single procedure for addressing requests in the order in which they are received.

In accordance with the preponderance regulation, infrastructure-sharing agreements are to be preceded by a technical visit after which additional work may be required to accommodate the infrastructure (IFT, 2014a, Annex 1: n. 37 and Annex 2: n. 31). In these cases, the preponderant operator must execute the work on the new facilities, which it then owns unless agreed otherwise (IFT, 2014a). The access seeker must then pay for any additional work required, such as the laying of cable or the installation of other network elements (IFT, 2014a, Annex 1: n. 38 and Annex 2: n. 32).

Additionally, if there is no spare capacity in any duct or alternative route, the preponderant agent shall decide whether it makes available either the provision of optical high-capacity transport channels or the rental of dark fibre to the requesting concessionaire (IFT, 2014a, Annex 1: n. 40 and Annex 2: n. 34). Finally, when the preponderant carries out new civil works which require permits from public authorities, it must notify public telecommunication network concessionaires prior to their commencement, so as to enable them to request the installation of their own infrastructure (IFT, 2014a, Annex 1: n. 30 and Annex 2: n. 24).

Under the initial preponderance regulation, the rates applicable to access and shared use of passive infrastructure services were freely negotiated between the preponderant agent and the requesting concessionaire, notwithstanding the IFT's power to settle disputes (that cannot be resolved by the parties within a maximum of 60 days), employing an average LRICmethodology (IFT, 2014a, Annex 1: n. 62 and Annex 2: n. 39). It should be noted that said rates must be offered in a non-discriminatory manner, but may be

differentiated according to geographic area. Finally, the rates convened between the preponderant agent and concessionaires, or those established by the IFT following a disagreement, shall be public (IFT, 2014a). The new preponderance measures, discussed later in this chapter, revised these rules, stating that all of the fixed wholesale prices are to be prescribed by the IFT based on an average LRICmethodology.

Furthermore, the disagreements concerning technical aspects shall be resolved by the IFT, taking into account two or more expert opinions sent by both the preponderant operator and the requesting concessionaire (IFT, 2014a, Annex 1: n. 74 and Annex 2: n. 61). As a final remark regarding fixed services, the preponderant agent must also allow the shared use of the infrastructure necessary for the provision of leased line wholesale services, when it proves technically feasible (IFT, 2014a, Annex 2: n. 14). The provision of leased lines as per the preponderance regulation shall be analysed later in this chapter.

In June 2016, the IFT issued the Fixed Access Network Cost Model for Access and Passive Infrastructure Sharing Services (*Modelo de red de acceso fija para servicios de desagregación y compartición de infraestructura – Aplicable para 2016*), which enables the IFT to determine the rates the preponderant agent charges other concessionaires for its access and infrastructure-sharing services in the event of disagreements.[9] Conforming to the preponderance regulation, the IFT uses an average LRIC approach that considers both the topology of an efficient hypothetical access network, as well as the approximated costs incurred by the preponderant operator in the provision of such services. To date, however, there are no specific rules concerning the sharing of multi-dwelling buildings' inside wiring.

In reference to the rules applicable to non-preponderant agreements, the LFTR specifically establishes that co-location and shared infrastructure use shall be settled between concessionaires. Should any controversy arise, the IFT may intervene to define the terms and conditions for said co-location or infrastructure sharing, including rates. The IFT may intervene only when co-location and shared infrastructure use are deemed essential to provide telecommunication services, there are no substitutes and there is available capacity.

Furthermore, all concessionaires and authorised entities are obliged to present to the IFT their information on their active infrastructure and transmission means, as well as on their passive infrastructure and rights of way, for their registration in the National Infrastructure Information System (Sistema Nacional de Información de Infraestructura, SNII). The guidelines for this system are currently under development. In any case, disputes regarding access and infrastructure-sharing services must be resolved by the IFT within a maximum of 30 working days,[10] regardless of whether they emerge between the preponderant agent and other concessionaires or between non-preponderant concessionaires.

In summary, the LFTR commands the federal executive to establish the conditions for providing concessionaires non-discriminatory access to real estate pertaining to the federal public administration, infrastructure associated with broadcasting stations, energy and radiocommunications transmission towers, energy distribution posts and poles and ducts, among others. Moreover, by law, any concessionaire may install infrastructure on public assets under non-exclusive conditions.

In compliance with said mandate, the federal executive has established an Agreement on the Building Policy and Coordination Bases to allow the Deployment of Telecommunication and Broadcasting Infrastructure (*Acuerdo que establece las bases y lineamientos en materia inmobiliaria para permitir el despliegue de infraestructura de telecomunicaciones y*

radiodifusión) (SFP, 2016, Art. 18). The policy was launched in May 2017 and underscores how operators may only use and exploit such assets provided they share the spaces and infrastructure they install therein, as well as confer the same conditions in access to their own infrastructure (SFP, 2016, Art. 3). Although the Institute for Administration and Appraisal of National Property (Instituto de Administración y Avaluos de Bienes Nacionales, INDAABIN) is the competent authority for establishing the economic, technical, security and operating conditions for such use and exploitation, as well as for leasing any of the aforesaid assets, the IFT is the competent authority for resolving disagreements that may originate in the areas of access to infrastructure and infrastructure sharing.

In many ways, the same conclusions can be drawn around infrastructure sharing as for wholesale provision. Undoubtedly, progress has been made in terms of reforming regulation and introducing measures to promote competition through access to essential elements, such as passive infrastructure. There remains, however, an asymmetric deficit in regard to information and co-operation. This must be addressed if access seekers are to effectively compete. As with the measures proposed by the IFT to address the challenges in respect to wholesale provision, increased functional separation is likely to change the incentives the preponderant agent has to effectively co-operate in this area.

Telecommunication resources

Rights of way

Consistent with the LFTR, preponderant agents or agents with SMP are obliged to share their rights of way. Additionally, as previously stated, the guidelines on the SNII will include useful information pertaining to rights of way geared towards allowing concessionaires to deploy telecommunication infrastructure within those assets.

In this regard, both concessionaires and public agencies must inform the IFT of all relevant information on the federal public sites, ducts, posts and rights of way for their registration in the SNII and its eventual availability to telecommunication and broadcasting operators to expedite the deployment of their networks.

Conforming to the LFTR's mandates, the Agreement establishing the Building Policy and Coordination Bases to allow the Deployment of Telecommunication and Broadcasting Infrastructure issued by the federal executive determines that the INDAABIN shall be in charge of establishing the economic, technical, security and operating conditions to make available rights of way related to the general communication pathways to all concessionaires on non-discriminatory and non-exclusive terms. It is also in charge of leasing any of the aforesaid assets in regards to the sharing of telecommunication or broadcasting infrastructure installed in said facilities. Although the rates for the leasing of federal public assets are established by INDAABIN, those corresponding to other facilities are to be determined by the competent entities in each case. Additionally, the agreement reiterates that the IFT is the competent authority for resolving any disagreements that may occur between concessionaires (SFP, 2016, Art. 17).

Pursuant to the Electric Industry Law (Ley de la Industria Eléctrica, LIE), the Energy Regulatory Commission (Comisión Reguladora de Energía, CRE) is empowered to issue the necessary provisions to allow access to the facilities and rights of way pertaining to the national electric system to public service providers acting in other industries, such as telecommunication services (LIE, 2014, Art. 12). Such public service providers will be expected to compensate the CRE at a fair rate (LIE, 2014, Art. 12).

According to the law, access to the facilities and rights of way belonging to the national electric system infrastructure, comprised of over 11 million energy distribution posts installed throughout the country (IFT, 2016b) and 820 000 kilometres of lines (Larocca, 2016), shall be made available to the largest possible number of public service providers from industries diverging from the energy sector, as long as it does not jeopardise the security and continuity in the provision of services in the latter (LIE, 2014, Art. 72). However, such a regulation is yet to be issued by the CRE. A forum related to this topic was held in August 2016, in which multiple institutions gathered to express their views for the regulation planned to be under public consultation by the Federal Regulatory Improvement Commission (Comisión Federal de Mejora Regulatoria, COFEMER) in the near future (IFT, 2016b). This is an area of critical importance for maintaining the momentum of progress in the Mexican telecommunication market. A national policy is, therefore, needed to reduce obstacles to infrastructure deployment, as there are multiple challenges for this at the local level. The abovementioned regulations will be issued by the CRE before the end of 2017.

Local-loop unbundling

One of the most important aspects of the reform in Mexico refers to the unbundling of the preponderant operator's local loop, which entails the lease or transfer of "last mile" infrastructure connecting the telephone exchange to users' homes or offices. In this regard, América Móvil is obligated to provide unbundling services to requesting concessionaires, which includes: total unbundling of the local loop and sub-loop; shared unbundling of the local loop and sub-loop; indirect access to the local loop; resale services, including lines, Internet and service packages, virtual unbundled local access, and co-location service as well as ancillary services (IFT, 2017a, Annex 3: n. 4). Moreover, it must grant the necessary permits, technical facilities and network elements, including the civil works elements required to access unbundling services or to connect equipment with a point of presence of the requesting concessionaire's public network (IFT, 2014a, Annex 3: n. 15).

The measures specify that unbundling services must be provided in all cases in which an end user has telephony or data services that are supplied by the preponderant agent, or if there are connections within the residence enabling the provision of unbundling services (IFT, 2014a). If the preponderant operator possesses all the necessary network resources to provide services to a user's residence, then the preponderant operator must provide unbundling services, even if there are no current connections in the residence (IFT, 2014a). However, in these events, the requesting concessionaire shall be in charge of installing the respective connection (IFT, 2014a). To sum up, unbundling services are to be provided at any point where it is technically feasible, and under the same quality parameters the preponderant agent applies to its own operations, subsidiaries, affiliates or companies within its own economic interest group (IFT, 2014a, Annex 3: n. 28).

As with other wholesale services, the preponderant operator must submit to the IFT, for its approval and subsequent publication, a reference offer pertaining to all of the services mentioned above, complying with the mandatory minimum content that must be stipulated therein (e.g. quality standards; deadlines and conditions for delivery of the loops or sub-loops; conditions for co-location services aimed at unbundling; failure reporting and incidence management; rates and so forth) (IFT, 2014a, Annex 3: n. 5). According to the last revision of the preponderance rules, this offer has a validity of one year (IFT, 2017a).

Unbundling rates must be approved by the IFT, taking into account the local loop's and sub-loop's delivery points to the requesting access seeker (IFT, 2014a, Annex 3: n. 38-39). There is thus no free negotiation between the parties, as with other wholesale services. There are specific methodologies depending on the type of unbundling service: an average LRIC approach is adopted concerning total and shared unbundling of the local loop and sub-loop, as well as co-location services for unbundling, while a retail minus methodology is employed in the case of indirect access to the local loop and resale of lines (IFT, 2014a, Annex 3: n. 39).

The preponderant operator must finalise unbundling agreements within 15 working days following the request (IFT, 2014a, Annex 3: n. 6). A copy of the agreement then must be sent to the IFT for registration and dissemination within 15 working days following the conclusion of the agreement (IFT, 2014a, Annex 3: n. 20). Any differences between parties regarding the provision of the abovementioned unbundling services shall be resolved by the IFT (IFT, 2014a, Annex 3: n. 41). In addition, although the preponderant operator has a duty to perform all the technical tests solicited by the requesting concessionaire, this may not be employed as a means to delay or withhold the delivery of unbundling services (IFT, 2014a, Annex 3: n. 32).

Grounded on efficiency and competition principles, the preponderant operator must allow that two or more requesting concessionaires be able to co-locate, as well as to share their infrastructure when it is technically viable (IFT, 2014a, Annex 3: n. 10). Moreover, the preponderant operator must use all the available space that may be required to address the requests related to co-location services for unbundling, and adopt all the measures aimed to ensure that the concessionaires who have been granted such spaces effectively use them, including non-discriminatory reallocation or recovery thereof (IFT, 2014a, Annex 3: n. 9). In any event, the IFT is in theory empowered to monitor the situations in which the preponderant agent decides there is no capacity to meet the demand for co-location facilities, though the lack of an EMS means that this is yet to occur in practice (IFT, 2014a).

Indirect access to the local loop and line resale services must be offered under technical conditions that enable the requesting concessionaire to replicate the services provided by the preponderant operator to end users (IFT, 2014a, Annex 3: n. 11). Furthermore, the preponderant operator must make interconnection points and relevant information available to the requesting concessionaire, in addition to being obliged to supply the interface and protocol through which such concessionaires may be able to access all users to whom they provide their services (IFT, 2014a). Even if the requesting party's equipment is in a distant location, the preponderant agent must share the corresponding permits, technical facilities and network elements so as to enable the former to effectively access unbundling services provided in a telephone exchange or equivalent facility (IFT, 2014a, Annex 3: n. 12).

Pursuant to the preponderance framework, the EMS that the preponderant agent is compelled to implement should also be operational for unbundling services (IFT, 2014a, Annex 3: n. 16). The system, when implemented, should enable users to access updated information on the preponderant agent's network; to contract such services; report and follow-up on failures, incidences and so forth (IFT, 2014a). In particular, the minimum information required for unbundling that must be included within the EMS is: the exact location of facilities such as switches, remote nodes and distribution points; the characteristics of co-location spaces for unbundling that are available in each telephone exchange or equivalent facility; and the number and availability of loops and sub-loops,

their relevant parameters, as well as the geographic coverage of each network element in which unbundling services are available (IFT, 2017a, Annex 3: n. 16).

Once established, the IFT will have permanent access to the EMS, in order to verify that unbundling agreements are concluded in a neutral and non-discriminatory manner, to evaluate their efficiency, to note the evolution of unbundling services, as well as to detect possible breaches to the preponderance framework (IFT, 2014a, Annex 3: n. 21). These tasks cannot be met without an operational EMS.

On the subject of local-loop unbundling, the preponderant agent is obliged to make an unbundling Frequency Spectrum Management Plan available to requesting concessionaires (IFT, 2014a, Annex 3: n. 35). This is to ensure the deployment of different types of signals within the local loop, in order to minimise interferences and optimise frequency spectrum use (IFT, 2014a, Annex 3: n. 35).

Furthermore, any modification to the local network altering the possibility to make use of unbundling services must be sent to the IFT at least three years in advance for its authorisation (IFT, 2014a, Annex 3: n. 29). In the event of the closure of telecommunication exchanges or equivalent facilities owing to a more efficient use or modernisation in access technologies, the preponderant operator must notify the IFT and requesting concessionaires at least 12 months ahead of time (IFT, 2017a, Annex 3: n. 30).

To conclude, the implementation of local-loop unbundling measures which were established in the reform has been delayed. By way of example, the initial reference offer proposed by Telmex and Telnor in December 2015 was approved by the IFT with important modifications (IFT, 2014a, Annex 3: Transitory Article 5).[11] However, several access seekers have reported that they have encountered challenges to begin using the preponderant agent's local loop and have highlighted that practically no local-loop unbundling had taken place by the close of 2016. A second reference offer aimed at improving the situation was published towards the close of 2016 and became effective in January 2017.

The main changes to the first reference offer include access to the incumbent's fibre lines and the virtual unbundling of local access. Telmex and Telnor are obliged to present a technical and operational proposal for virtual unbundled local access to allow other concessionaires access to their Gigabit Passive Optical Network point-multipoint fibre optic deployments. Furthermore, the second reference offer also includes changes with respect to different unbundled services:

- For wholesale service reselling where a retail minus methodology is applied, the discount from the retail price of the incumbent for Internet services and for a bundled Internet and voice service have increased. The discount for reselling voice only, however, has declined.
- For bitstream access, there is a larger variety of speeds that the access seeker can contract, mirroring all of the speed offers that the incumbent provides to the market (5, 10, 20, 30, 40, 50, 100, 150 and 200 Megabytes per second [Mbps]) and the retail discount is adjusted to reflect avoided costs by the incumbent, such as for the connection at premises and terminal equipment.
- For full local-loop unbundling, shared local-loop unbundling and sub-loop unbundling, the weighted average cost of capital has been updated, resulting in higher monthly tariffs, with increases ranging from 5% to 30%.
- For co-location, more options are provided.

- The obligation of the preponderant agent to present the Technical Committee with a technical and operational proposal for a wholesale line rental service that would allow other concessionaires to resell the telephone line and ask Telmex and Telnor to deliver the traffic in the interconnection points determined.
- For bitstream access (indirect access to the local-loop services), the preponderant agent has the obligation to include Voice-over-Internet Protocol, and the concessionaires have the chance to use their own end-user equipment based on the information Telmex and Telnor have to provide about technical specifications on their networks and equipment at the premises.
- Telmex and Telnor are forced to provide more detailed information about the infrastructure and technical characteristics of each local loop.

In sum, the preponderant agent must make all the necessary adjustments to its telecommunication exchanges, equivalent facilities or local network to be able to offer unbundling services, in accordance with the schedule defined by the Technical Committee (IFT, 2014a, Annex 3: Transitory Article 3). The IFT considered the effective access and unbundling of the local loop and core networks to be critical issues that have yet to be effectively implemented. Overall, there has not been sufficient progress in terms of actual lines being used by access seekers to provide services to their customers. As noted earlier, the proposal made by the IFT in the 2017 preponderance review aimed to change the preponderant agent's incentives through increased functional separation, and to treat access seekers as customers. This is welcome in a country where most users otherwise have little choice in fixed broadband services.

Dedicated leased lines

The preponderant agent in the telecommunication market is obliged to provide requesting concessionaires with wholesale service corresponding to the leasing of dedicated links, under the same conditions – including quality – and deadlines as those applied to its own operation or to companies within its economic interest group (IFT, 2017a, Annex 2). Additionally, it must allow the shared use of the infrastructure necessary for the provision of such services, when technically viable (IFT, 2017a, Annex 2). For these purposes, the preponderant operator must annually present reference offers pertaining to the leasing of dedicated links to the IFT for its approval and dissemination, which shall be in force for a one-year period (IFT, 2017a, Annex 2).

The use of leased lines is a critical component of enabling access seekers to expand their services in areas where they do not have their own facilities and, thereby, contribute to meeting policy objectives. An example could include a mobile network operator (MNO) wishing to lease lines to connect a new wireless tower or provide backhaul to a wider geographical area and thereby expand coverage. Access seekers have reported challenges in obtaining leased lines and, as in other areas of wholesale provision, will undoubtedly welcome the IFT to increase the use of functional separation in order to ensure that they are treated as customers instead of rivals. In addition, challenges with infrastructure deployment, such as obtaining rights of way, make this an even more critical area to be addressed. For example, even where access seekers wish to deploy their own facilities, there may be unreasonable barriers that leased lines could otherwise address in a timely manner. A revision of the preponderance review which states that the rates will be determined in the reference offer, to be approved by the IFT based on a LRIC+ methodology, is thus welcome.

Broadcasting resources

Must-carry must-offer regulations

Must-carry must-offer (MCMO) rules are designed to ensure that free-to-air (FTA) broadcasting content is carried by a cable television network, or other platform such as a satellite (i.e. must-carry), and the FTA broadcasting content is available to such networks should they wish to offer it (i.e. must-offer). In other words, must-carry rules stipulate that network providers that may otherwise not wish to carry FTA content do so. In the alternate, must-offer aims to ensure that FTA providers are forthcoming in providing their content to other networks should they prefer not to do so.

In Mexico, the objective of the MCMO rules is to provide FTA content for free for pay TV subscribers, in order to improve competition in pay TV services and to guarantee access to content from public broadcasters and federal institutions. The MCMO rules are, therefore, aimed to provide a consumer-oriented and platform-neutral regulatory regime, intended to ensure all viewers, on either cable or satellite, can view the most popular and longest-established channels (local for terrestrial pay TV and national channels for satellite pay TV). In Mexico, retransmission is mandatory for non-multiprogrammed and for the multiprogrammed signal of greater audience in each transmission channel, and for the public federal institutions' signals (both non-multiprogrammed and multiprogrammed). The remainder of multiprogrammed signals on each channel is left to the will of the pay TV concessionaire.

The most developed must-carry/retransmission consent rules have been applied in the United States since 1972, granting obligations on cable players (Cable Television Protection and Competition Act, 1992) to retransmit not only local FTA broadcast, but also public, educational and government access (e.g. C-SPAN) channels. Other OECD countries have also regulated the carriage of dedicated news and public service channels (Marsden, 1999). European Commission rules cover must-carry, but note that technological and market development may lead to substantial changes in these rules (European Parliament and Council, 2009). Their usefulness in a post-broadcast world, however, is debatable (Warner, 2008; García-Murillo and MacInnes, 2011).

When well designed, MCMO rules can encourage both localism, by requiring cable systems to carry the main FTA channels, and pluralism and diversity, by requiring public service channels to be carried. MCMO can also be used to encourage competition, by ensuring popular FTA channels and pay TV systems with SMP are required to negotiate carriage agreements. MCMO has to be modified for satellite distribution networks, given that the area covered by a satellite "footprint" is sometimes almost "continental" in scale, with national regulators that enforce MCMO typically only requiring a single signal (usually that of the largest market) to be carried by satellite broadcasters.[12] Finally, MCMO can also be used to achieve universal service objectives, and some have suggested that network neutrality ("net neutrality") is a condition placed on broadband networks to ensure all content providers can reach viewers and users.

MCMO fully enforced can mean that a broadcast channel is available on FTA, cable and satellite, which achieves much closer to ideal universal coverage than any single network. This is particularly important in a country as regionally diverse and topographically challenging as Mexico, with a large, dispersed and relatively low-income rural population. Often these people can only be reached by satellite and unidirectional wireless, though individual subscriptions may be beyond their incomes. As such, community reception is often used where individual households cannot afford subscription. In Mexico, for

example, only 31% of households in the state of Chiapas subscribe to pay TV (IFT, 2017b), with a much lower proportion in rural and mountainous areas.

FTA channels play a central role in the daily lives of many people in Mexico and this is the key to must-offer requirements. During the duopoly period from the 1950s onwards, in the absence of greater choice, the stations of the two incumbent networks established strong loyalties. For any new service this makes these FTA channels "must have" items, especially for viewers that have had these services most of their lives. While viewing habits are changing, particularly for younger people with a greater range of choice today, the popularity of FTA staples make them essential for some viewers.

Mexico is the most important producer of telenovelas, the Latin American form of a "soap opera", which typically runs for less than a year, a format pioneered in 1958 by the Televisa Group. This genre provides some of the most popular programmes in the MCMO channels' repertoire and is a core element in Mexican FTA industry exports, something that is especially true for the Televisa Group, in part through its United States investment in Univision. The Televisa Group and TV Azteca were once the leaders in the production and distribution of these popular programmes in the Mexican market, though independents (such as Argos, formerly the production unit of TV Azteca) and US producers (Telemundo-Comcast/NBC, Univision) now predominate.

MCMO is, however, rarely cost-free. In the United States, in 2012 alone, USD 2.1 billion was paid by local cable operators for retransmission for FTA programming (Beard et al., 2013). In contrast, in Mexico, under MCMO rules, no FTA channel can charge cable or satellite companies, unless the latter is ruled to have SMP. While this is designed to promote competition, the question remains as to whether public or commercial broadcasters should be compensated for making their channels available.

The importance of the four main FTA channels to viewers meant that the lack of effective MCMO rules until 2013 severely restricted development of pay TV take-up in the Mexican market. Some suggest that the incumbent FTA operators had asked for high fees from rival cable and satellite television companies to carry the broadcasters' FTA channels to slow the growth of pay TV (Luhnow, 2014). Irrespective, in 2013, the Televisa Group and TV Azteca opposed the IFT's right to create MCMO regulations, losing on appeal in the Supreme Court.

Following the entering into force of the MCMO rules in September 2013, players such as Dish and Megacable could access the FTA content of the Televisa Group to compete against the Televisa Group's majority owned satellite service (Sky and Izzi) and its growing portfolio of cable networks. The content of TV Azteca also became available under the new rules.

For their part, satellite operators are obliged to retransmit broadcast signals covering the majority of Mexican viewers, that is, according to the LFTR, the broadcasting signals covering 50% or more of the national territory, as well as the public federal institutions' signals: in practice, this means signals from the top 15 to 25 city broadcasts from the national networks (i.e. the Televisa Group, TV Azteca, Canal Once, Canal 22 and Una Voz con Todos). The Valley of Mexico, which contains the Mexico City Metropolitan Area, accounts for around 25% of Mexico's entire population, meaning the audiovisual content viewed there is the most likely to be carried by the satellite providers. Some have suggested that in practice this means reduced local content availability for people relying on satellite reception (Elbittar et al., 2014).

Though various OECD countries have similar asymmetrical treatment of satellite and cable operators, such as the United Kingdom (Ofcom, 2007), if there is sufficient digital satellite capacity satellite operators could be required to carry FTA channels of the main local transmissions (for example in the United Kingdom the BBC broadcasts all 14 local variants of its 2 main entertainment channels on all platforms). Mexico is typically divided into 28 major urban conurbations, each with at least one local FTA station.

On 14 March 2017, the Televisa Group was declared to have SMP in pay TV services, which will affect MCMO application and enforcement. This decision will entitle FTA operators to charge the Televisa Group's pay TV operators for the access to signals. It is also expected to call into question whether the charges and bundles from the operator with substantive market power are hindering the access to unbundled transmissions by its competitors.

Relevant broadcasting content

Potential resource constraints in broadcasting include issues related to exclusive ownership of relevant content, which, due to their popularity with viewers, can limit the access of competitors to audiences. Following the reform, the first measures to that effect were put into practice in the 2014 preponderant measures on the Televisa Group.

The measures apply to content determined by the IFT such as the broadcasting of the World Cup soccer finals, the opening and closing of the summer Olympic Games, and the Mexican soccer league championship games. The intention was to prohibit the preponderant agent from acquiring exclusive rights to highly popular audiovisual content, so it could not offer channels with exclusive content in a discriminatory manner to other platforms. This measure also relates to the specification prohibiting the preponderant agent from participating in "buyers' clubs". The goal is to ensure that "buyers' clubs" are not used to restrict competition.

Two years after the original measures were introduced, the IFT concluded that the preponderant agent had continued to benefit from exclusivity in relevant content, through its vertical integration and agreements with subsidiaries of the Televisa Group and the ownership of sporting clubs (notably soccer). The rights to matches in the Mexican soccer premier league have historically been sold by individual clubs rather than the league, providing an incentive for the then duopoly FTA broadcasters to own multiple teams. Due to convergence, other players have also purchased teams to have a stake in the allocation of the broadcasting and online rights. In 2017, as an outcome of the review of the preponderant measures imposed by the IFT, changes were introduced to expand the reach of the relevant content rules. The efficacy of the measures is expected to improve both economic outcomes for the Televisa Group, as well as for the companies that it influences (from which it acquires indirect exclusivity). The regulatory power of the measures is strengthened by the addition of a requirement that the preponderant agent also acquires the rights to sub-licensing for any current exclusivity deal, which need to then be offered publically.

The IFT plans to further examine cross-ownership of media and any safeguards that may be necessary to prevent concentration, permit freedom of expression and ensure the right to information. Changes on the preponderance measures in the telecommunication sector may also affect the future appropriateness of relevant content measures on broadcasting and the cross-sectoral dynamics should be carefully analysed. Issues such as those emanating from convergence and the licensing of some content on a regional basis have already come to the fore.

The Spanish-language rights to the 2016 summer Olympic Games for most of Latin America were sold *en bloc* to América Móvil's Claro Sport. As América Móvil had insufficient presence in the Mexican broadcasting market to fulfil its contractual conditions with the International Olympic Committee, the rights holder effectively gave away the rights to the public broadcasters in Mexico, as well as selling in part to ESPN and Fox Sports. América Móvil did this because of the restriction placed on it in the broadcasting/pay TV market and to implement the agreement that coverage be offered to the whole of Mexico, but without giving an advantage to any particular commercial competitor. This resulted in Canal Once, Canal 22 and other Public Broadcasting System (Sistema Público de Radiodifusión, SPR) channels broadcasting the Olympics in high-definition digital terrestrial television (DTT), mostly without any advertising, across their platforms and to the largest ratings boost in recent history for Mexican public broadcasting.[13] This exceptional case illustrates both a likely challenge by América Móvil to the Televisa Group's channel popularity, in the case the telecommunication preponderance measure prohibiting the pay TV services offer is lifted, and the potential for the relevant content preponderance condition to be reviewed in the event that more IPTV or pay TV competition to the Televisa Group emerges.

Infrastructure deployment

Regulation on deployment of infrastructure: Local and federal regulations

Pursuant to Article 115 of the Constitution, state and municipal authorities are designated to manage and oversee the use of public real estate and rights of way in their jurisdictions, save for those under the federal administration. Consequently, each local or federal government has the authority to dictate its own set of requirements, conditions and fees related to the use by third parties of the aforementioned real estate and rights of way. This situation has resulted in the establishment of different regimes (pertaining to requirements, conditions and fees) throughout the country. Several network operators report facing significant challenges at the local and municipal levels when trying to deploy new infrastructure such as fibre lines. They say these challenges include obtaining rights of way; obtaining access to passive infrastructure, such as ducts, poles and so forth; dealing with complex administrative procedures at different levels of government; and frequently being asked to cross-subsidise unrelated public facilities and services.

In addition to these claims, several studies have been conducted highlighting these difficulties at local and municipal levels. As stated in a recent report carried out by the Development Bank of Latin America (CAF) in collaboration with Analysys Mason, the lack of uniformity among state and local regulations constitutes one of the factors triggering imbalances in mobile broadband penetration in Mexico (Analysys Mason, 2017).

According to the Ministry of Communications and Transports (Secretaría de Comunicaciones y Transportes, SCT) and the IFT, the absence of clear rules on the concurrence of powers between federal, local and municipal authorities relative to civil works and rights of way generates significant barriers to infrastructure deployment and undermines legal certainty for service providers (IFT, ITAM and CEC, 2016). This, they say, is despite the LFTR's provision deeming these topics as federal issues. While such a formal declaration does not eliminate the constitutional attributions of state and municipal governments, all actors in the telecommunication sector believe this is an area that can be improved (IFT, ITAM and CEC, 2016).

In this context, the IFT's recent review of 25 states' and 15 municipalities' legal frameworks ascertained that there are few specific state or local regulations on telecommunication infrastructures, which results in these entities applying rules governing other general topics. Additionally, they ignore the degree of specialisation involved in telecommunication services. Even where there is a specific framework related to telecommunication infrastructures, these are not available to the subjects to whom the law is addressed, or even worse, they lack a legal foundation (IFT, ITAM and CEC, 2016).

When the rules and procedures are public, there is no homogeneity among the different municipalities or even within the same municipality or state. Accordingly, local authorities apply their regulation against their own criteria and interpretations, eroding legal certainty and greatly hindering operators' ability to take reasoned, informed investment decisions with regards to infrastructure deployment (IFT, ITAM and CEC, 2016). Furthermore, some municipalities, especially small ones, do not have access to the necessary resources in order to issue rules on this highly complex and technical topic (IFT, ITAM and CEC, 2016).

As affirmed by the IFT, operators often face a high degree of uncertainty when deploying telecommunication infrastructure due to the difficulty to accurately estimate implementation costs. This is a result of the unclear and divergent local regulation pertaining to telecommunication infrastructure deployment, and the lack of information concerning existing infrastructure (IFT, ITAM and CEC, 2016). According to industry actors, cost overruns can range from 15% to 50% of each project's base cost, depending on the company, the existing and projected infrastructure, the competent public authority and the municipality. Under some extraordinary circumstances, overruns have amounted to 500% (IFT, ITAM and CEC, 2016).

Broadly speaking, industry players have expressed their concerns to the IFT that the permits and fees demanded by local authorities can be excessive, incorrectly applied given the situation or lack a legal basis (IFT, ITAM and CEC, 2016).[14] In addition to the existence of arbitrary requirements, it appears that some local governments have compelled service providers to execute "in-kind donations" to benefit the local community or, in some cases, civil or private gain, as a condition for the granting of permits for infrastructure deployment. Examples include requirements to carry out repairs to public spaces and buildings or funding civil associations (IFT, ITAM and CEC, 2016).

The aforementioned issues create barriers to new or upgraded infrastructure development, something which is key to foster market entry by new players and to further expand telecommunication access across the country (IFT, ITAM and CEC, 2016). Incumbent actors, such as the CFE, Telmex or local cable television companies, have a distinct advantage, having dealt with these issues in the past. Telesites, for example, has over 50% of the antenna towers in Mexico (IFT, ITAM and CEC, 2016). By way of contrast, entities striving to deploy new infrastructure face tremendous barriers. Apart from the challenges of dealing with local authorities, space in prime sites may be scarce and shared infrastructure is not always possible. The IFT has concluded, for example, that only half of Telesites' towers can support a second operator.

As one response to these problems, the LFTR tasked the SCT to ensure the co-ordination among all real estate management departments or agencies of the federal government (LFTR, 2014, Art. 147). Therefore each state or local Secretary of Communications should give recommendations to their respective state or local government directed at reducing bottlenecks to infrastructure deployment (e.g. unnecessary procedures, fair access to rights of way, unjustified charges). Nonetheless, the existence of over 2 400 municipalities, within

32 federal entities, with ample autonomy to issue their own rules concerning territorial administration greatly complicates the viability of such deployment for service providers.

To address this challenge, the SCT is currently pursuing different mechanisms to synchronise the involvement of local and state authorities through a passive infrastructure programme containing four parallel projects, with the intention of lowering the costs for infrastructure deployment and increasing coverage across the country (SCT, 2017a). These projects are discussed in turn below.

Recommendations for states and municipalities

Co-operation mechanisms need to be developed between the different levels of government and the industry so as to help concessionaires obtain licenses and authorisations for deploying infrastructure at federal, state and municipal levels. Here, the SCT aims to develop co-ordination agreements between the different players. Under these agreements, local and municipal governments undertake to strictly implement a model statute that would apply to all requests submitted by operators and infrastructure developers in connection with the construction, installation, expansion and modification of telecommunication and broadcasting infrastructure in their territory. By doing this, the SCT seeks to simplify and standardise criteria, including requirements, procedures and fees, thus reducing bureaucratic barriers associated with the deployment of infrastructure. A second action undertaken by the SCT, through the Ministry of Agrarian, Land and Urban Development (Secretaría de Desarrollo Agrario, Territorial y Urbano, SEDATU), was the inclusion of telecommunication infrastructures as basic infrastructure, such as water or electricity, in the new General Law of Human Settlements, Territorial Order and Urban Development (Ley General de Asentamientos Humanos, Ordenamiento Territorial y Desarrollo Urbano, LGAHOTDU) (LGAHOTDU, 2016), ending zoning restrictions for the installation of telecommunication infrastructures.

Lease of government real estate as passive infrastructure

The SCT issued an inter-agency agreement on 4 May 2017 which allows for approximately 110 000 state-owned structures to be used and shared by concessionaires (licensees), permission holders and infrastructure developers as passive infrastructure for telecommunication networks under non-discriminatory, equal access and non-exclusive conditions. Information pertaining to the relevant properties, including geo-referenced location as well as physical, economic, technical, safety and operational conditions, are available on an online platform since May 2017, operated and managed by INDAABIN. The economic conditions (i.e. price of the space to be leased) aim at fostering competition in the sector to encourage more operators to use the infrastructure (i.e. prices should be low in conformity with Article 147 of the LFTR).[15]

The one-stop online portal, ARES, was launched in May 2017 with 10 507 geo-referenced federal government buildings available for lease. The leasing price depends on the municipality, but in average, operators will only pay around USD 160 for a maximum rented area of 190 square metres.[16] The aim is to reach 20 000 buildings by the end of 2017, and 110 000 in the near future. As a result of this project, the government fulfils the policy objectives as established in Article 6 (the right to access of information and communication technologies [ICTs]) and Transitory Article 17 Numeral III of the constitutional reform (i.e. which stipulates that the government should identify the largest number of public spaces to make available to telecommunication and broadcasting operators in order to foster infrastructure deployment).

Interested parties can use this platform, which will serve as a one-stop portal and electronically process all the requests. This will include the ability to sign the lease contract. Apart from the federal buildings, other interested public institutions, such as those at the municipal level, can become a member of the portal and present their properties that fulfil the necessary technical conditions.

The portal is commendable and an innovative approach to ease the deployment of passive infrastructure. It increases the efficiency of locating properties that are suited for building up infrastructure by establishing contact, facilitating agreement with the properties and cutting out administrative processes. Not only that, it provides a platform that makes properties available throughout the entire country.

National inventory

The SCT is co-ordinating the creation of a national inventory of all passive infrastructures, which shall include a record of any sites, ducts, posts and rights of way, among others, belonging to the federal administration and decentralised agencies such as Mexican Petroleum and the CFE. The goal of the inventory is to reveal the availability and status of this infrastructure in order to increase efficiency in deploying telecommunication networks. According to the law, the design, development and implementation of the SNII correspond to the IFT. The system will have to include information about the passive infrastructure of diverse entities, including decentralised agencies. It will be critical that both the SCT and the IFT be careful not to generate unnecessary duplication of information requirements for those which will be obliged to submit data through the SNII.

Rights of way

The SCT is promoting the use of federal rights of way of roads and railways for the installation of telecommunication infrastructure. Further details were described earlier in this chapter. In order to achieve this objective, it is extremely important that the SCT co-ordinates, issues and promotes guidelines that approve criteria, requirements and procedures at the national, state and municipal level in conjunction with the IFT, INDAABIN, CRE, the Federal Roads and Bridges Access (Caminos y Puentes Federales, CAPUFE), the National Bank of Public Works and Services (Banco Nacional de Obras y Servicios Públicos, BANOBRAS) and the SEDATU. This also includes developing prices based solely on the factors influencing the deployment in order to guarantee the existence of telecommunication infrastructure, the use of spaces in federal real estate, the obtainment of construction licenses, and the use of the right of way and the fibre optic backbone lines of the CFE.

For their part, private sector actors have noted they would welcome the establishment of stricter time limits for the consideration period of deployment requests; the streamlining of procedures of applications, for instance, by establishing a centralised platform to process deployment requests; and that in the case an application is rejected, it would be desirable to require authorities to explicitly mention the reason for the rejection in order to allow applicants to remedy potential issues.

Red Troncal: A national backbone network

One of the recommendations of the OECD review in 2012 was for Mexico to make better use of the CFE's "dark" or unused fibre, as it covered 50% of the country (OECD, 2012). In a country with an underdeveloped telecommunication market, this resource could, the review suggested, greatly support development policy objectives. At that stage,

the main backbone provider in Mexico was Telmex – though other small telecommunication transportation network providers were also present – whose fibre transportation network covered approximately 85% of the territory. The 2012 review mentioned that relying on a single provider led to higher costs and the potential for quality degradation for competitors. This suggested that backbone and backhaul sometimes comprised up to 70% of the cost to provide service.

The 2012 review did, however, commend action taken prior to the reform that had started to auction unused CFE fibre to the market. In 2010, a pair of the CFE's fibre optic strands were transferred to Grupo de Telecomunicaciones de Alta Capacidad (GTAC), a consortium formed by Megacable, the Televisa Group and Telefónica. By 2016, GTAC was using almost 20 000 kilometres of this fibre. Nonetheless, the review cautioned that further action was needed to prevent a potential duopoly once the market had settled, and that policy makers should strive to make more of the CFE fibre available.

Transitory Article 15 of the constitutional reform established that, for the deployment of a national backbone network, the CFE would assign to Telecomunicaciones de México ("Telecomm") its concession to install, operate and exploit a public telecommunication network and transfer all the resources and equipment needed to exploit the concession and guarantee Telecomm an effective and shared access to such infrastructure.

The Red Troncal is a project under which Telecomm plans, designs and builds on the CFE fibre ceded to it to provide a high-capacity fibre optic national data transport network. Along with Red Compartida, Red Troncal aims to support the development of broadband telecommunication services to places currently unserved, as well as to promote competition in locations served by only one fibre optic operator. The project aims to play the critical role of reducing barriers to entry for both fixed and mobile telecommunication service providers thereby enabling and improving outcomes for end users in terms of price and service quality. In addition, Red Troncal aims to offer backbone transport to other projects of the federal government, such as Red Compartida.

Consistent with the Constitution, on 18 January 2016 the transfer of rights of the CFE's concession in favour of Telecomm was completed and formalised. This has laid the foundation for the use and expansion of the CFE's fibre optic backbone to build Red Troncal. The 30-year concession granted to Telecomm is for a wholesale network, thus it can only commercialise capacity, infrastructure and telecommunication services to other concessionaires or resellers. That is, Red Troncal cannot commercialise services to end users, either directly or through affiliates or authorised subsidiaries, except in those geographical areas where there are no other concessionaires that provide such services.

Telecomm now has the obligation to plan, design and implement a programme to further develop the network, which must be updated every three years. To that end, important safeguards have been put in place. According to the concession, Telecomm must comply with investment, quality and coverage commitments and with the parameters established by all applicable laws and regulations. Additionally, it must operate the network under the principles of infrastructure sharing, unbundling of services and capabilities, transparency and non-discrimination, so that all operators and authorised entities that contract any service of the Red Troncal will have full clarity on the conditions and prices of the contracted services. Notably, Telecomm has assigned the right to use two fibre optic strands to Red Compartida, as part of the contributions of the Mexican government to this project. This is in compliance with Transitory Article 16 of the constitutional reform, which states that Red Compartida may contemplate the use of the CFE's fibre optic network.

The Red Troncal project is now underway, making an important step towards a more extensive, diverse and robust backbone network. Such a development is essential to support policy objectives such as expanded service in areas that were underserved and more effective competition in those areas that had existing service. Challenges remain, however, including finding necessary investment to light the remaining dark fibre as well as adding redundancy in such a way that ensures the QoS objectives for the network.[17] Meeting these tasks will not be easy in an environment of scarce public resources, but is essential to support the telecommunication market as well as other government initiatives such as Red Compartida and México Conectado.

Much more can be done in Mexico to promote synergies in the deployment of optical fibre in large basic infrastructure projects such as electricity, roads, oil pipelines, railways and so forth. The Red Troncal can play a critical role in this area, as Telecomm can build on its existing strengths, such as access to established rights of way. Accordingly, Telecomm is looking for opportunities in the area of public-private partnerships to expand the network and leverage private investment, and should consider entering into fibre capacity swaps with private operators, given its unique position.

Moreover, the increasing convergence between transport and communication services (e.g. connected vehicles, machine-to-machine transport logistics) means that the SCT is uniquely placed to set policy and ensure co-ordination in this regard. The SCT administers rights of way along roads and rail and is aware of ongoing construction and maintenance work, thereby enabling "dig once" policies. Co-ordination with other agencies and entities managing real estate and other rights of way of the federal public administration, particularly the high-, medium- and low-voltage posts of the CFE, for their use for the deployment of telecommunication infrastructure will be increasingly critical. The SCT can also co-ordinate contributions from the federated states to Red Troncal, adding to the project's use and sharing of passive infrastructure initiatives.

The extension of the backbone network is closely linked to the SCT's passive infrastructure projects, given it is necessary to take advantage of the rights of way of existing transport infrastructures (road, rail, electric and hydrocarbon network) and other telecommunication infrastructures to reduce deployment costs. Finally, the relationship between Telecomm and the CFE will be increasingly critical, as the CFE retains the control of facilities such as power line poles. Fibre is being deployed deeper into networks in all OECD countries to support fixed and wireless services, with urban infrastructure (e.g. the posts for street lights) becoming even more strategic facilities for such connections.

In sum, among the strategic projects defined in the reform, the most challenging to implement so far is the Red Troncal. The initial analysis provided to the SCT indicated that the project would not be successful without financial support from public funds. At a time of constrained public resources, this has slowed development. It is commendable, therefore, that the SCT and Telecomm are open to revising the original approach to meeting policy goals. Red Troncal does not need to be a single backbone network, nor is Telecomm's participation required on all routes. Some options include: capacity swaps on different routes or allowing third parties to illuminate dark fibre on some routes in return for sharing capacity on those routes. In addition, the use of rights of way could be opened up where CFE fibre is deployed or where it is not yet available. It is also possible to facilitate access to tower infrastructure and afterwards as a passive infrastructure for the installation of antennas to all the concessionaires, so as to promote competition and coverage without the need to create a new network at the national level.

Finally, in May 2017, a request for expressions of interest on the Red Troncal was launched, aimed at gauging interest by the private sector in the project. It is intended to conduct a plan similar to the one for Red Compartida, in which, as part of the process, a publication of the general criteria of the project and the preliminary basis of the tender will be carried out. This will be conducted to increase transparency and legal certainty. Accordingly, the project will be developed as a public-private partnership. The technical details of the project will be determined as a result of the aforementioned consultations.

Retail regulation

Broadly speaking, while several aspects concerning retail regulation have changed following the 2012 OECD review, others have remained the same. All telecommunication service providers are still compelled to register their prices prior to their implementation. In addition, Telmex-Telnor, as the preponderant agent in fixed services, is still subject to price-cap regulation, although new services have been added to the basket of services, such as broadband Internet.

Notwithstanding the above, one crucial change is that the LFTR mandates that the IFT has the power to impose asymmetric obligations on preponderant agents or firms enjoying SMP, and to require the preponderant agent to obtain the regulator's approval of the proposed retail prices. However, mobile services provided by preponderant operators or enterprises with SMP are currently not subject to price caps or any other price control methodology.

Price regulation

Retail prices for telecommunication services are freely set by concessionaires as a general rule, provided they register their prices with the IFT prior to their implementation.[18] However, preponderant agents or undertakings with SMP must submit their retail rates to the IFT for their approval and registration, before employing them in the market.

Furthermore, consistent with Telmex's and Telnor's concession titles, and to the IFT's resolution by which it declares América Móvil and other enterprises within its economic interest group the preponderant agent in the telecommunication sector, some of the said agent's fixed service offerings are subject to a price-cap regime (IFT, 2014a, Annex 2: n. 40). Indeed, the preponderance resolution establishes a ceiling on the average weighted prices referring to a basket of basic residential and commercial telecommunication services, which must include, among others[19] (IFT, 2014a):

- fixed local service:
  - per line installation fee
  - per line basic rate
  - local measured service rates
  - rates for local calls originating in fixed phones and terminating in mobile ones under the "calling party pays" scheme
- fixed broadband Internet access service, disaggregated according to offered speeds
- international long-distance services.

In addition, Telmex's and Telnor's concession titles determine that the following services shall be subject to price control mechanisms through the establishment of caps on the weighted average rates of a basket composed of basic services, aimed at ensuring that Telmex passes on part of its productivity and efficiency gains to its customers:[20]

- Installation fees, encompassing the rates charged for the installation and connection of terminal and backbone lines to Telmex's-Telnor's network, for residential and commercial basic telephony services.
- Per line basic monthly rates – for terminal and backbone lines – for basic telephony services, for residential and commercial users, comprising a maximum airtime or number of local calls which must be offered free of charge.
- Retail tariffs for local fixed telephone calls for residential and commercial users. This is referred in Telmex's concession title as "local measured service rates".
- International long-distance rates (domestic long-distance has been eliminated through regulation).

The preponderance regulation, in addition to preserving the rules on the abovementioned services as per Telmex's-Telnor's concession titles, appends the following two services: calls originating in fixed lines and terminating in mobile lines and, notably in an increasingly converged competitive landscape, broadband Internet access services.

Pursuant to the preponderance regulation, the price-cap scheme establishes a maximum limit on the increase of a set of service prices, which cannot exceed the difference between the increase of the economy's price index and the value of a productivity factor (X factor) determined by the IFT. In particular, the X factor shall be defined by the IFT based upon a technical-economic study that considers: the preponderant agent's productivity gains, the economy's productivity gains, the evolution in prices of inputs necessary for the services pertaining to the basket and the evolution of the economy's prices as a whole.

In this manner, the methodology yields a measure of the company's productivity and compensates for its improvement, while also taking inflation into account. In essence, by employing this methodology, Telmex's prices must be consistent with the trends reflected by the average prices in the economy, and should decrease in accordance with its efficiency improvements and the technological innovations it implements. Consistent with the rules currently in force, the X factor has been established at a level of 0.98% and is applied from 1 January 2017 until 31 December 2018.

As per the preponderance resolution, every two years Telmex must submit to the IFT a proposal related to which services should be considered within the basket. In this regard, it should be noted that the regulated services may also include sub-baskets of services. Moreover, and following the obligations from its concession title, every four years Telmex must deliver its proposal on the pricing structure that should be applied, consistent with the described price-cap methodology.

Under these circumstances, should the IFT deem Telmex's price-cap proposal unreasonable, the regulation defines a procedure in which three experts will present their opinions on what should be the appropriate magnitude of the X factor. One such expert shall be selected by the IFT, another by Telmex and the third is designated by mutual consent. In the end, the experts' opinions shall be considered a valid input into the definition of the price-cap parameter; nevertheless, it should be underscored that it is up to the IFT to issue a final determination on the matter.

Aside from establishing asymmetric price-cap regulation on the preponderant fixed operator, it should be emphasised that the LFTR levies specific obligations geared at preventing discriminatory practices, including among these, margin squeezing – and/or obstructionist practices upon preponderant agents and operators with SMP for call and short message termination. In the provision of such service, the following practices are prohibited for retail prices:

- To differentiate in prices applicable to on-net and off-net services.
- To charge other concessionaires of public telecommunication networks rates that are higher than those applied by the preponderant/agent with SMP to its end users.

To conclude, transparency in the preponderant agent's pricing strategies referring to fixed and mobile services is ensured through the establishment of accounting separation obligations which must be submitted periodically to the IFT for review (IFT, 2014a, Annex 1: n. 68 and Annex 2: n. 55). Furthermore, non-compliance with this asymmetric measure is a just cause for revoking the preponderant undertaking's concession (IFT, 2014a). The broader functional separation of the preponderant operator and its related companies put in place by the 2017 preponderance review should enable some retail regulation to be eliminated. By way of example, to the extent that functional separation enables a successful uptake in local-loop unbundling, this will offer increased choice for consumers, abrogating the need for retail regulation to substitute for insufficient competition.

Contract registration

All telecommunication service providers (i.e. concessionaires and authorised entities) must register their model contracts of adhesion with the Federal Consumer Protection Agency (Procuraduría Federal del Consumidor, PROFECO) prior to their implementation and commercialisation. The purpose of this obligation is to allow PROFECO to verify the reasonableness of the provisions stipulated therein, as well as to allow users to acquire an improved knowledge and awareness of the different service offerings available in the market through their publication.

Concessions and spectrum management

Concessions regime

Prior to the reform, differentiated regimes were applicable in the concessions for broadcasting and telecommunication services. As a result, providers wanting to offer both services had to initiate separate procedures with different authorities, while observing several regulations in each case. In order to simplify this situation, and consistent with the shift towards convergence in telecommunication markets, the LFTR integrated concessions for the provision of both broadcasting and telecommunication services.

Following the reform, the IFT was designated as the competent authority to grant all concessions, eliminating the intervention of multiple institutions in the process. In addition, the LFTR created the single concession, which allows concessionaires to provide telecommunication and broadcasting services in a convergent manner (LFTR, 2014, Art. 3, Numeral XII). That being said, single concessions must be accompanied by an additional concession for the use of spectrum or orbital resources.

The latter of these concessions describes the frequencies granted by the IFT as well as which services the concessionaire is allowed to provide, according to the National

Frequency Allocation Table (Cuadro Nacional de Atribución de Frecuencias). In this sense, the LFTR establishes four kinds of concessions for the use of spectrum or orbital resources: 1) for commercial use; 2) for private use; 3) for public use; and 4) for social use (LFTR, 2014, Art. 67). The main difference between these types of concession is the process that must be carried out to request, and be granted, these titles. Namely, concessions for most commercial and private use are awarded by means of a public auction, while those intended for public and social use shall be assigned directly.[21]

As a transitory measure for concessionaires that had acquired their rights prior to the reform, the LFTR allows them to request authorisation to provide additional services (LFTR, 2014, Transitory Article 8). Alternatively, they may migrate to a single concession, provided they are in compliance with the requirements set out by the law and that this does not constitute a breach of the terms of their current concessions. As for the case of concessionaires that hold several concessions, these entities are entitled to either shift to a single concession or consolidate the existing ones into a single concession.

Pursuant to Transitory Article 10, however, an exception applies to preponderant economic agents and concessionaires whose concessions include prohibitions or restrictions in relation to the provision of additional services. For example, Telmex may not provide television services under its current concession given that a provision therein specifically bars it from doing so. In the aforementioned cases, prior to the request for further authorisations, concessionaires must certify that their concession contracts and/or relevant administrative permissions are in compliance with the constitutional obligations introduced by the reform before the IFT for 18 uninterrupted months. Additionally, preponderant agents cannot migrate to the single license regime unless they prove that they have complied with the obligations established in their concession titles for18 uninterrupted months.

In December 2016, the IFT decided to extend Telmex's concession title for an additional 30 years, commencing in March 2026 (IFT, 2016c). In 2023, three years prior to the current title's expiration date, the IFT is due to disclose the terms under which the extension is conferred to Telmex and Telnor (IFT, 2016c). The IFT says quite reasonably that, due to the dynamic nature of the sector, there is currently insufficient market and operational information in order to appropriately define the conditions that shall govern Telmex's concession a decade ahead of it coming into force (IFT, 2016c). Moreover, in its resolution, the IFT did not carry out any analysis pertaining to Telmex's compliance with the preponderance framework, which, as has been underscored, is a prerequisite for it to be able to provide additional services, mainly television, noting that such evaluation would take place in a separate procedure (IFT, 2016c). Accordingly, Telmex is still not entitled to deliver television services to its customers or replicate the bundled offers of other competitors that contain television services in the market. As in many areas of the current regulatory framework, the successful implementation of increased functional separation resulting from decisions taken under the 2017 preponderance review may make lifting this restriction on the preponderant operator an option in the future.

In sum, unifying procedures for concessions and establishing the IFT as the single authority to grant and remove them have been major steps forward since the reform. Under the new framework, the competition review of the telecommunication and broadcasting sectors that was previously undertaken by the former Federal Competition Commission (Comisión Federal de Competencia, COFECO) is now also done by the IFT. The role of the SCT is limited to issuing non-binding technical opinions; this has undoubtedly expedited such processes. Nonetheless, there is little clarity on which aspects should be addressed by the SCT in these technical opinions. Currently this seems limited to making pronouncements

regarding the suitability of possible concessionaires and the origin of the resources for investment. In an environment where a whole-of-government approach is needed, this can also have drawbacks, as the SCT may have difficulties gathering relevant information from other parts of the administration. Presently, there is no mechanism or procedure contained in a law or regulation that clearly indicates the topics on which the SCT must issue an opinion or that enables the SCT to request information necessary for the issuance of technical opinions from security agencies and competent supervisory bodies.

Finally, as noted, Telmex's concession title expressly prohibits the provision of television services to the public. This legal restriction has several consequences, such as reducing incentives for the preponderant agent to invest in broadband infrastructure if it cannot offer a full range of services and limiting a potential competitor entering this market. It may also reduce the incentives for other competitors to invest in infrastructure given they do not have to offer a full range of services in competition with Telmex.

Telmex's concession title stipulates some universal service conditions, as well as the expansion and modernisation of the network, and an obligation to install and maintain coverage in urban and rural areas. As such, enabling the provision of a full range of services may provide incentives for these activities. In other words, as a result of these coverage obligations, the telecommunication network of the preponderant agent reaches localities that may be more financially attractive if a full range of services could be offered.

Spectrum management

Spectrum management has been an area that has had a notable transformation since the 2012 OECD review. Pursuant to the Constitutional Reform Decree and the LFTR, the IFT is the sole competent authority for the awarding of concessions relative to the use, development and exploitation of the radio spectrum, notwithstanding the SCT's power to issue a non-binding technical opinion. The same rule applies to the revocation and the authorisation of transfers or changes in shareholder control, ownership or operation of companies related to concessions in broadcasting and telecommunication services.

Furthermore, the IFT is charged with other related tasks, such as: the elaboration and approval of the plans and programmes pertaining to the use of the radio spectrum; the establishment of the requirements which must be followed for frequency bands to be granted; the determination of the monetary amount to be paid by potential or existing concessionaires – prior to a non-binding opinion from the Ministry of Finance and Public Credit (Secretaría de Hacienda y Crédito Público, SHCP); and the use of oversight and sanctioning functions on spectrum use. As guiding principles in the execution of these functions, the IFT is tasked with pursuing diverse objectives, such as working to benefit end users; promoting effective competition in converging telecommunication and broadcasting markets; ensuring efficient use of the radio spectrum; and fostering effective investment in infrastructure, innovation and industry development of converging products and services.

Commercial and private-use spectrum concessions must be awarded through public tender procedures, the exceptions being related to frequencies for experimental purposes or for amateur radio operators, with the aim of guaranteeing maximum market participation, preventing concentration phenomena and ensuring low prices for retail services. However, purely economic factors cannot be used as determining aspects to select a winning bidder. In particular, when awarding telecommunication concessions, the IFT may consider elements such as: the economic proposal, coverage, quality and potential for innovation. In addition, a competition analysis is performed by the IFT. Prior to the reform, this was divided between the former bodies of COFECO and the Federal Commission of Telecommunications

(Comisión Federal de Telecomunicaciones, COFETEL), which have now been replaced by the Federal Economic Competition Commission (Comisión Federal de Competencia Económica (COFECE) and the IFT; thus, defining the IFT as the body to undertake such analysis is welcome. Spectrum concessions are granted for up to 20 years, with the possibility of extensions for equal periods, except for public or social use concessions, whose renewable period may only be up to 15 years.

The determination of the annual fees for spectrum use are established by the Mexican Congress based on a proposal by the SHCP and must be paid each year over the lifetime of the license. This scheme came into effect in 2003. While some countries have annual spectrum fees related to the administrative costs of managing spectrum (or some other form of annual regulatory fee), when an auction mechanism is in place, annual fees beyond such cost recovery are not usually employed. Some may consider the United Kingdom as a recent exception, which placed annual license fees on spectrum in the 900 megahertz (MHz) and 1 800 MHz bands (Ofcom, 2015). However, Ofcom, as part of its spectrum-pricing principles, only establishes annual license fees for spectrum that was not initially auctioned with the aim of reflecting the opportunity cost of using spectrum efficiently in bands facing high-usage demand (Ofcom, 2010). For spectrum that has been auctioned, the rationale for not using annual license fees is that the auction mechanism already promotes the most efficient use of the spectrum band, reflected in the willingness to pay of the player that acquires the license, and thus, no additional fees are required as long as the license has not expired (Ofcom, 2015; 2010).

The employment of annual fees, in addition to the use of an auction to establish an up-front payment, sets Mexico apart from the more common practice in OECD countries of having an auction determine the full amount for payment.

While most countries use an initial auction to determine the total price of spectrum, over the lifetime of a licence, some countries allow bidders to spread payments over a number of years. This method has some of the same benefits of Mexico's approach for operators. These consist in lowering entry barriers to the auction, by reducing the amount that needs to be paid when the spectrum is auctioned, while taking on less debt, by aligning the payments of spectrum fees with the cash flow generated through annual revenues of the operators. However, it has the important difference of using the auction mechanism to set the total fee.

In Mexico, the sums of annual fees over the lives of licenses granted under this practice have represented 70% to 92% of the total cost of spectrum (IFT, 2017c). While the annual fees can be considered as part of the auction reserve price, the question can be raised as to whether the market value is discovered under this method as the up-front payment determined through the auction has represented no more than 30% of the total amount eventually paid. While this approach has some of the benefits of using auctions, such as transparency and explainable outcomes, it may not establish the market value of spectrum. This opens the risk of the eventual price of spectrum being higher or lower than would be achieved through an auction solely being used to determine the final value. Higher fees over the lifetime of the licence may result in discouraging market entry or lack of spectrum being taken up, whereas lower fees could mean the full amount participants were willing to contribute to the public purse has not been discovered. These two points can be further elaborated.

There seems to be two main potential drawbacks of using a hybrid model (i.e. an up-front auction fee and an annual fee) instead of an approach which relies entirely on an auction. First, if the hybrid model leads to uncertainty in a contract (as perceived by the potential bidders), it may dissuade operators from properly revealing their value for spectrum during the auction, leading to a misallocation of this scarce resource (i.e. spectrum being

allocated to a player that will not make the most efficient use of it). Second, even in the scenario of complete certainty of the contract terms, if the sum of an annual fee over the lifetime of the licence together with the initial up-front fee paid from the auction is substantially higher than the market value determined from a single auction, it may discourage market entry and efficient use of available spectrum, hence hampering competition. That being said, any system with a reserved price set too high may encounter a similar problem.

While operators take into account the net present value of these annual fees when bidding in an auction, introducing uncertainty in this contract or license would not allow the process to distinguish the true value of spectrum, as operators have no incentive to properly reveal their valuation if contracts can potentially be renegotiated and if they are unsure about whether the annual fees will remain constant. In other words, if authorities "know" that a bidder has a high valuation for spectrum, which they discover through the tender process, they may have an incentive to raise the fees in the next period. Therefore, operators will not want to reveal in the first place how much they "truly" value spectrum. This is known in the economic literature as the "ratchet effect", or the lack of commitment in dynamic contracts, which results in a "bunching of types" (Laffont and Tirole, 1988). This renegotiation does not need to take place *ex post*, but just the mere fact that operators think that it will happen *ex ante* can lead to this result. In fact, the Business and Industry Advisory Committee (BIAC) to the OECD, has expressed the view that annual fees cause uncertainty in the ammount operators may eventually pay for licenses over their duration.[22] This would be dependent on an expectation around potential change. That being said, it can be noted that the Mexican Congress has not changed the spectrum fee in real terms since 2003, diminishing contractual risk.[23]

In the case that auction participants are completely certain of the levels of these fees during the lifetime of the license, then these annual fees will have similar effects of increasing the minimum reference price of the auction. That is, if the sum of annual fees plus the up-front reserve price set by the regulator in an auction is very high, it may cause lack of participation in the auction by players that, if given the chance, may have introduced more competition in the market. It may also cause spectrum blocks to go unsold.

If an administrative process results in it setting the largest proportion of a spectrum fee rather than an auction discovering market value, the system in some ways resembles an administrative selection process. In this case, the efficiency of the secondary market for spectrum could also be hampered. Indeed, Paul Milgrom, an economist specialised in auction design, has made a strong case against using administrative selection, pointing out that if the good is initially allocated to the "wrong hands" in the primary market, there is no way of designing a private bargaining process (i.e. secondary market) without delays or failures (Hazlett, Muñoz and Avanzini, 2012; Milgrom, 2000).[24]

In sum, "… a policy that has an enormous impact in increasing license revenues need impose only tiny proportional costs in output markets to undermine its social utility. So, for example, a new auction design that (heroically) doubled auction revenues would, if it reduced consumer surplus by just one half of one percent, produce costs in excess of benefits" (Hazlett, Muñoz and Avanzini, 2012).

When examining the different annual spectrum fees, which are paid per megahertz, significant differences can be observed depending on the spectrum band (Table 4.2). While the 2.5 Gigahertz (GHz) band has not yet been auctioned, operators have stressed that the differences in the annual spectrum fees do not provide equal conditions for all players due to historical spectrum holdings across bands. They are further concerned that for the upcoming 2.5 GHz auction, expected to be concluded by the second quarter of

2018, the minimum reference price, comprised by the sum of the reserve price chosen by the IFT and the net present value of annual fees determined by Congress, may be set higher than final auction results around the world in that band, as it could potentially dissuade participation in this important auction.

Table 4.2. **Overview of annual spectrum fees**

Frequency range (MHz)	Price/MHz (MXN)
Personal Communication Services (PCS) band	
824-849 MHz	42 334 690
869-894 MHz	
1 850-1 910 MHz	
1 930-1 990 MHz	
Advanced Wireless Services (AWS) band	
1 710-1 770 MHz	42 334 690
2 110-2 170 MHz	
2.5 GHz band	
2 500-2 690 MHz	17 355 390

Source: LFD (2017), Ley Federal de Derechos [Annual Fees Law], https://legalzone.com.mx/wp-content/uploads/2017/02/Ley-Federal-de-Derechos-Legalzone-Mx.pdf.

Ultimately, with a well-designed auction, there is a strong tendency for the licenses to go to the parties that value them the most, and thus will make the best use of the spectrum (Cramton, 2002). For future auctions in Mexico, the critical aspect to take into consideration is how to ensure a "well-designed auction" that enables the determination of the market value of the spectrum. In this sense, future auctions should take into account that significant annual fees may undermine the mechanism under which an auction allows the process to properly reveal the value of spectrum, and thus allocate it efficiently. If it is considered beneficial for spectrum fees, derived from future auctions that set the total amount upfront, to be paid over several years this could be part of the auction conditions. Such an approach would permit the market value to be discovered while at the same time enabling the attributes of deferred payments.

Spectrum allocation procedures for telecommunication services

The IFT has promoted auctions as a way to develop the telecommunication service market and to enhance competition. This includes establishing non-monetary factors as requirements to attain licenses, in order to allow for participation of diverse bidders, regardless of their size and actual presence in the sector. Notably, the winners of the latest spectrum auction for mobile telecommunication services (Licitación IFT-3) were announced in February 2016.

Under the Licitación IFT-3, the IFT intended to allocate up to 80 MHz of the AWS band (1.7/2.1 GHz) for mobile services, in eight 10 MHz spectrum blocks integrating three different sub-bands of national coverage, as follows (IFT, 2015a):

- AWS-1 sub-band: three blocks of 5+5 MHz, within the 1 710-1 725 MHz/ 2 110-2 125 MHz segments
- AWS-3 base sub-band: three blocks of 5+5 MHz, within the 1 755-1 770 MHz/ 2 155-2 170 MHz segments
- AWS-3 extended sub-band: two blocks of 5+5 MHz, within the 1 770-1 780/ 2 170-2 180 MHz segments.

In addition to awarding further spectrum to mobile operators, one of the underlying objectives of this procedure was to rearrange concession titles from fragmented, regional licenses to national, contiguous allocations in the AWS band. The aim was to enable operators to provide improved services to their customers through a more efficient use of the radio spectrum, which in turn would contribute to a more efficient development of the mobile broadband market. AT&T and Telcel made spectrum available in the 1 735 MHz/2 135 MHz block that was previously fragmented regionally between the two companies. This was added to the auction; the auction therefore planned to allocate 80 MHz of new spectrum (divided into eight blocks of 10 MHz), and an additional 10 MHz of previously allocated regional blocks of spectrum were made available at a national level to players.

Furthermore, the terms of the tender expressly provided for specific caps geared at preventing spectrum hoarding: 80 MHz (40+40 MHz) in the AWS band in general, and of 50 MHz in the AWS-1 sub-band (25+25 MHz), in any region of Mexico. This cap considered both the previously assigned spectrum and any spectrum the winning bidder should accede to by virtue of the Licitación IFT-3 (IFT, 2015a, n. 6).

Ultimately, upon conclusion of the tender process, 80 MHz of the AWS band were made available, with AT&T having won two AWS-1 lots, Telcel having acceded to two AWS-1 lots and four AWS-3 lots, with 10 MHz in the AWS-3 sub-band remaining available for future tendering procedures (IFT, 2016d). AT&T and Telcel ended up paying the reserve price determined by the IFT, since each of them had diverged their existing lots in the AWS frequency bands. However, it should be mentioned that AT&T, while only having been allocated two lots in the AWS-1 sub-band, ended up paying more than Telcel, due to the higher value of this asset derived from the pre-existence of functioning networks and equipment therein (IFT, 2016d). In sum, the spectrum allocated through the Licitación IFT-3 shall generate, during the following 15 years, income for the state amounting to approximately USD 2.4 billion (MXN 45 billion), considering the monetary consideration and the annual fees to be paid by the winning bidders (IFT, 2016e).[25]

Both AT&T and Telcel have deployed their Long-Term Evolution (LTE) networks in the AWS band; hence, they are able to exploit the radio spectrum in a more efficient manner, offering their clients higher data transfer rates (IFT, 2016f). At the same time, the IFT expects that the allocated spectrum shall result in increased innovation, investment and coverage of mobile telecommunication services across the country (IFT, 2016e). To conclude, as an outcome of the Licitación IFT-3, Telcel possessed 80 MHz of spectrum at a national scale in the AWS band, and AT&T had 50 MHz. Consequently, Telcel moved from having 29.8% of the total international mobile communications spectrum to having 41.2% thereof, while AT&T's share decreased from 43.7% to 38.2%, as did that of Telefónica, moving from 25.1% to 19.5% (IFT, 2016e).

Finally, among the IFT's plans for 2017 is the execution of a public tender procedure concerning the 2.5 MHz band, which is crucial for the provision of next-generation mobile services, eventually permitting existing network operators to deploy Advanced Long-Term Evolution (LTE-A) services through carrier aggregation (Castañares, 2016a). The auctioned spectrum shall be composed of a 130 MHz package, distributed in three bandwidths, one of them possessing a capacity of 50 MHz, and the remaining two with 40 MHz capacity (Lucas, 2016a). Initially scheduled to take place during the third quarter of 2016, the auction was delayed in consideration of the potential beneficial relationship with the Red Compartida.

The secondary market for spectrum

The LFTR creates a secondary market for concessioned spectrum frequency bands of commercial or private licenses, allowing concessionaires to transfer the rights to use the radio spectrum without changing the concession title holder, thus avoiding the need to enter into public tender procedures. However, spectrum leasing is subject to the IFT's prior authorisation. In March 2016, the IFT issued rules aimed at fostering competition in services utilising spectrum as an input and reducing inefficiencies that occurred in the allocation of spectrum (e.g. spectrum that remains idle). Hence, the rules allow third parties to use spectrum to meet the demands of users, guaranteeing more efficient use. An additional objective inherent to this piece of regulation is to avoid harmful effects on competition, such as concentration, cross-ownership or hoarding.

One of the conditions under which spectrum may be leased is when the lease owner possesses a sole concession for commercial or private use, depending on the nature of the concession enjoyed by the leasing party. Moreover, it determines that the interested parties may freely determine the contract's duration, provided it does not surpass any of their concession titles. Finally, the lease may be total or partial, as it may regard channels, frequencies or frequency bands.

Although there was a nascent secondary market prior to the reform, the lack of clear regulation on the subject gave concessionaires excessive discretion to determine the contractual provisions governing the lease of spectrum, thus creating a great deal of speculation (COFETEL, 2013). Consequently, as acknowledged in a study undertaken by COFETEL in 2013, there was a compelling need to issue specific legal and regulatory provisions in this area, which has finally been accomplished through the LFTR and the rules recently established by the IFT.

To conclude, the changes introduced to enable a secondary market through clearer regulation are commendable. Even during the process to develop the new Spectrum Leasing Guidelines, the IFT authorised the lease of spectrum, as well as the exchange of frequency bands, between AT&T and Telefónica (IFT, 2015b). These companies were authorised to exchange their assigned frequency blocks in the 1.9 GHz band in the case of AT&T and the 1.7/2.1 GHz band concerning Telefónica, in specific regions in Mexico. Subsequently, Telefónica was enabled to lease the frequency bands acquired within the same areas (IFT, 2015b).

In April 2017, the IFT approved an agreement between América Móvil and MVS Comunicaciones (MVS) that Telcel could use 60 MHz in the 2.5 GHz band assigned to MVS. Due to the SCT's 2013 mobile network deployment condition, this spectrum has to be in use by 31 December 2017 to avoid losing the concessions it still possesses in this high frequency band (Lucas, 2016b). Some criticism has been raised in relation to this transaction, considering that it would enable Telcel to exploit the 2.5 GHz band before its competitors, without having to partake in a public tender procedure (Lucas, 2016b). Following a period for public consultation on the auction procedure for the 2.5 GHz band, in mid-2017, the auction is expected to be concluded by the second quarter of 2018. This means operators will likely be able to start using spectrum in this band from the beginning of 2019. By the same token, some have indicated that the transaction may pose some challenges to the IFT and the Red Compartida. Firstly, it accentuates the urgency of making the 130 MHz that the state currently controls in the 2.5 GHz band available to the market; and secondly, the Red Compartida's winning bidder may lose a potential customer (Telcel) due to the latter's control of spectrum in the 2.5 GHz frequency band (Lucas, 2016b).

Spectrum refarming

The IFT has taken action with respect to spectrum refarming, and recently initiated the rebanding processes in order to accommodate public protection and disaster relief narrowband services in the 806-814/851-859 MHz frequency band and broadband services in the 814-824/859-869 MHz band. At the same time, it intends to carry out similar initiatives in 2017 in relation to the 1 900 MHz band, foreseeably through contiguous and larger blocks for serving LTE networks (Lucas, 2015).

The dynamic use of spectrum

The IFT is currently conducting a study that reviews existing technologies that enable dynamic access to spectrum. The work examines which technologies are currently under development and which have already been successfully implemented to identify viable options for Mexico. A second stage of the research will assess the legal and regulatory framework and the economic and competition elements to assess their implementation in the context of the Mexican regulatory framework. If regulatory barriers are identified for the dynamic use of spectrum, the study will recommend actions to reduce such barriers. The outcome of the research, to be published in the second quarter of 2017, is timely. Given the growing demand for spectrum to be used by communication services, and in light of convergence, it is envisaged that the dynamic use of spectrum may lead to a higher degree of spectrum utilisation and thus better use of this scarce resource. Some OECD countries have started to look at the necessary conditions for such a dynamic use of spectrum; actions in this respect are timely (OECD, 2015).

Internet traffic exchange and network interconnection

The 2012 OECD review noted that Mexico was the only country in the OECD which did not have an Internet exchange point (IXP) and recommended that one or more be established by Internet service providers. IXPs allow Internet service providers to exchange domestic traffic more efficiently and at a lower cost, rather than sending traffic outside the country only to return for termination. An IXP allows for the exchange of traffic at a single point, reduces transit costs, eliminates cross-border transportation costs, and provides an incentive to create national content and a data centre infrastructure in the country. Since the 2012 OECD review an IXP has been created in Mexico; however, traffic exchange is reportedly low. Additionally, at the close of 2016, the preponderant agent in telecommunication services had not participated in the exchange. Ideally, IXPs are voluntary, co-operative and industry-driven entities that benefit all players. The exception can be where a single player has an overwhelmingly large share of a market and decides not to participate in any IXP in that country.

It is important to remember that while asymmetric regulation is used at this stage with the preponderant agent, in the long run, Internet traffic resolutions should aim to promote a market-led traffic exchange model based on a diverse combination of neutral and community-based IXPs, as well as for-profit and private ones, with different pricing models and services. This will be increasingly critical in Mexico considering the convergence towards Internet Protocol (IP) networks and the growing volumes of traffic to be exchanged. There is no need for domestic traffic to be exchanged at foreign IXPs if effective domestic equivalents are established; this is one of the objectives of the National Digital Strategy.

Policies and programmes towards increasing access and usage of ICTs

The National Digital Strategy and the Digital Connectivity Programme

The National Digital Strategy

In 2013, a department within the Presidency was created whose purpose is to formulate, co-ordinate and periodically evaluate the first National Digital Strategy undertaken in Mexico: the National Digital Strategy Department of the Presidency (Coordinación de la Estrategia Digital Nacional de la Presidencia de la República) (Gallegos, 2013). The National Digital Strategy (México Digital), launched in November 2013, contains the goals and actions to be undertaken by the federal government over the subsequent five-year period (2013-18). The aim is to boost the quality of life for all Mexicans by maximising the economic, social and civil benefits derived from access to and use of ICTs (Government of Mexico, 2013).

The strategy aims to make Mexico a leader in digitalisation among Latin American countries, as well as to raise performance as measured by key indicators of digitalisation in the OECD (Government of Mexico, 2013). Furthermore, the strategy responds to the provisions listed in Transitory Article 14 of the 2013 Constitutional Reform. Namely the National Policy for Universal Digital Inclusion must guarantee that at least 70% of households and 85% of all micro, small and medium-sized enterprises at a national level have access to broadband with actual download speeds consistent with the average in OECD countries.

The National Digital Strategy establishes five objectives to be fulfilled by 2018 in the areas of governmental transformation, digital economy, quality education, effective and universal health, and civic innovation and engagement. Under the topic of governmental transformation, the strategy is geared to building a new relationship between society and government through the adoption of ICTs. This is currently undertaken through the Ventanilla Única Nacional[26] and the open government[27] initiatives. The digital economy objective is directed towards applying ICTs in economic processes as well as stimulating productivity, economic growth and job creation. The Programme for the Development of the Software and Innovation Industry (PROSOFT)[28] and the Public Challenges (Retos México)[29] initiative support this objective.

The quality education goal aims to integrate ICTs into the educational process, by virtue of initiatives such as @prende2.0,[30] MéxicoX,[31] Online School (Prepa en Línea)[32] and the Open and Distance University of Mexico (Universidad Abierta y a Distancia de México).[33] In the area of effective and universal health, it is intended to generate a comprehensive digital health policy that increases coverage, effective access to and the quality of health services, so as to make infrastructure in this sector more efficient. The most important project in this context is the National System for Basic Health Information, which aims to manage the identity of an individual throughout the health sector and the efficient use of the capacity of all the institutions of the public sector. The RadarCiSalud[34] mobile application is based on the National System for Basic Health Information and the Guidelines of Information Exchange on Health have been implemented within the framework of the Sectoral Health Programme (Programa Sectorial de Salud).[35] Finally, under the theme of innovation and citizen participation, the aim is to enable citizens' involvement in the development of governmental public policies (Government of Mexico, n.d.). This is the Mexican government's initiative for fostering digital citizen participation aimed at improving public policy, making its process more effective, inclusive and collaborative. The "gob.mx/participa" has five key components and is aimed at simplifying citizen and

government engagement by providing multiple paths to participation. It is also aimed at improving the accessibility, quality and response cycle to citizens' petitions.[36]

While the areas mentioned above go beyond the scope of this review, the National Digital Strategy acknowledges that, in order to attain its objectives, an enabling environment must be created, through: connectivity; inclusion and digital skills; interoperability; the legal framework; and open government data (Government of Mexico, 2013).

A key goal in promoting next-generation access is fostering greater connectivity throughout Mexico. The strategy envisages several initiatives to support this aim, including the expansion of the fibre optic backbone network (Red Troncal); the deployment of a shared wholesale mobile network (Red Compartida); the promotion of broadband access in public sites through the México Conectado initiative; the sharing of infrastructure and rights of way between operators, concerning the state's passive infrastructure; the efficient use of the 700 MHz and 2.5 GHz bands, and in general of the radio spectrum; and the establishment of IXPs, among others.

As these initiatives are covered in other sections of this chapter, only the Mexican Satellite System (Mexsat) will be considered here, together with the draft National Satellite Policy. Mexsat is viewed as a crucial asset to provide broadband services in remote and underserved areas, as well as to meet requirements in fields such as defence or emergency services.

Satellite use in the National Digital Strategy

Mexsat is the third generation of the country's satellite system. It currently consists of two satellites. Bicentenario, launched in 2012, is geared towards providing fixed communication services. The other, Morelos 3, which was launched in 2015, is aimed at supplying mobile services. A third satellite, Centenario, was originally planned but lost during launch. The SCT plans the establishment of a third satellite in the Mexsat system. There are two in-country Telemetry and Control Centres for their operation, located in Mexico City and Hermosillo (Sonora), respectively. The satellites fall under the auspices of the federal government and are required to be operated by Mexican citizens (Posada, 2016).

Mexsat offers numerous communication services, including:

- through the Bicentenario satellite, connectivity for 5 000 rural schools and other public "hot spot" sites pertaining to the México Conectado programme
- the operation of the Morelos 3 satellite, which provides nationwide real-time voice, data and video services on land, at sea and in the air, over the entire area covered, with the capacity to deliver mobile telecommunication services to up to 110 000 users
- the provision of capacity for defence and emergency services, something that was uppermost in the design of the satellite and required higher security levels as well as enabling a standardised communication platform across such use.

The Mexican government is further developing a National Satellite Policy (SCT, 2017b). The draft, which is based on five main objectives, was out for public consultation until March 2017. The main objectives are: 1) social inclusion; 2) economic prosperity; 3) national security; 4) technological development; and 5) international co-operation. These five objectives are articulated through lines of action – policy, financial and regulatory – and are elaborated in accordance with the National Digital Strategy. In order to develop a

coherent vision and ensure co-ordination, the draft policy states that the SCT shall establish an Inter-institutional Satellite Committee to:

- define the targets and indicators needed to measure the progress and effectiveness of the Mexican satellite policy
- design and implement plans for the implementation and follow-up of actions suggested by the satellite policy
- advise the government on satellite issues.

The current draft policy has yet to provide details on the composition of this committee. In order to be effective, the committee should include all of the different governmental entities currently involved in satellite policies, as well as other stakeholders, such as the satellite and related communication industry and civil society.

Overall, the development of a National Satellite Policy is commendable given that the current governance framework is complex and that investments, especially from the private sector, have been modest in recent years. The current draft, however, is general in nature and contains few concrete actions or measures. Some of the pillars, such as economic prosperity and national security, will need to balance different sets of interest and, so far, the priorities or weighting of the different pillars are yet to be defined.

The private sector has raised concerns related to the policy determining the reserved capacity they are required to grant to the state. Currently the SCT determines the Satellite Capacity Reserved to the State (Capacidad Satelital Reservada al Estado, CSRE), which the operators must make available to the federal government for its use in national security, civil protection and social coverage, based on Article 150 of the LFTR.

If the satellite service provider is the holder of an authorisation to exploit the rights of emission and reception of signals from foreign satellites, a lower CSRE is required than that from concessionaires of Mexican orbital resources. Concessionaires exploiting signals from foreign satellites generally must provide 8 MHz of capacity as CSRE, though a contribution of 5% of total income is an alternate option. This 8 MHz contribution corresponds to a much lower percentage of total capacity on foreign satellites. For concessionaires of Mexican orbital resources, the contribution varies from 2% to 12%, but it is on average around 7% of the total capacity. When considering this reserved capacity, the way in which the CSRE is "delivered" by each operator causes the reserve capacity to be segmented and distributed among several satellites. This in turn makes its use inefficient.

Especially when national slots are occupied, the reserved capacity requirements are said to be high, which could be a barrier to further investment and competition in the market if such arrangements make projects less attractive. The current draft acknowledges that the existing regulation needs to be revised, but does not elaborate a proposal for such a revision. A first step could be evaluating the capacity that is needed by the government to meet policy objectives in the future. This could look at what is now available through the Mexsat system to meet demand and will become available in the future through the planned third satellite. It could also assess needs that could be met through other networks, such as the Red Compartida. This assessment, together with calculating a value for the state reserved capacity, could be viable next steps to make the policy more concrete and to revise the reserved capacity requirements. With respect to the reserved capacity requirements for existing satellites, the government should take into account that these were priced in when establishing the conditions for the current operators of the

satellites. In addition, where the reserved capacity is currently being used and cannot be eliminated without negative effects on the provision of social services or national security matters, these considerations would also need to be taken into account. If it is decided to lower the requirements and to establish neutral requirements across different orbital slots, existing operators could be given the choice to lower the requirements on their satellites by paying a fee, which reflects the value of the freed capacity.

In relation to México Conectado, the Bicentenario satellite plays an important role in providing connectivity to schools and other public locations. It was not, however, initially designed with broadband connectivity in mind; rather other public policy requirements were at the forefront. Given the higher degree of specification in terms of security required for areas such as defence, the provision of services over this satellite is more complex than over satellites dedicated to civil use.

As the demand for communication services increases, multiple governmental agencies and public entities are requesting capacity on the Bicentenario and Morelos 3 satellites. This capacity is also in high demand for commercial use, which could generate additional revenues. While a careful assessment is needed of the different satellites and their properties to ensure sufficient capacity is available for public policy priorities, this could provide a source of income when different entities need to bid for capacity on the satellite at commercial rates, taking into account the overall capacity available. This additional income could be used to fund alternative connectivity for users under México Conectado. For example, if the capacity currently being used for schools was made available at commercial rates to other users, this revenue could be used to connect schools to providers using the Red Compartida, at a more economic rate and higher capacity, as it expands into their locations in rural areas.

The satellite capacity reserve provided for in the LFTR restricts domestic and foreign investment in the country and is a disincentive to occupy orbital resources allocated to Mexico. In addition, it is an entry barrier in the exploitation of the orbital resource and associated spectrum. It is therefore advisable to revise or eliminate it. In any case, the policy should carefully consider how to guarantee the continuity of current services that are provided on these resources.

The Digital Connectivity Programme

Spurring connectivity is a key enabling factor of the National Digital Strategy. The SCT has recently disseminated its Digital Connectivity Programme, encompassing ten projects – some of which have already been executed and some of which are underway – geared at expanding the Mexican population's access to broadband services, founded on the fundamental right to access ICTs stated in Article 6 of the federal Constitution. The programme's main objectives are severalfold: first, to promote access to ICTs by ensuring the existence of fixed and mobile telecommunication infrastructures across the entire national territory that are compliant with international standards respecting quality and availability thereof; and second, to foster service affordability, so as to guarantee that all persons, regardless of their income, are able to access broadband services (SCT, 2017a).

The ten projects that compose the SCT's Digital Connectivity Programme are: 1) the DTT transition, which has already been completed, making Mexico among the first country in the Americas to release its digital dividend; 2) the shared wholesale network, Red Compartida, aimed at boosting availability and access to quality mobile broadband services throughout the country at affordable prices; 3) the availability of passive infrastructure pertaining to the state (real estate and rights of way that could be employed

in infrastructure deployment); 4) the fibre backbone network, Red Troncal, a high-capacity data transport network under the responsibility of public service provider Telecomm; 5) the Mexican Satellite System (Mexsat); 6) Mexico's Satellite Policy, through which it is intended that Mexico consolidates its leadership in Latin America by means of encouraging investment, promoting competition and advancing co-operation between public and private entities; 7) México Conectado, directed towards providing free broadband Internet access in public sites; 8) Puntos México Conectado, directed to increase digital literacy and skills among the Mexican population; 9) the National Network for Scientific and Technological Research and Education (Nicté), focused on interconnecting Mexican higher education and research institutions with the global community; and 10) the National Spectrum Programme, bolstering availability and efficient use of the radio spectrum (SCT, 2017a).

To meet the Mexican federal government's digitalisation and connectivity objectives, it is crucial that broadband access availability and take-up is expanded throughout the country. Reforms introduced in recent years in many ways rightly harness market forces to do the "heavy lifting" to meet this requirement. In part this is because public resources are always scarce relative to other priorities and because by using competition to grow that part of the market those scarce resources can be targeted to where they are most needed to address inequalities and promote inclusion.

Since 2012, in this respect, the outstanding change in Mexico's connectivity and usage has been in mobile broadband. Progress has been made but is slower in fixed broadband penetration, such as in the area of prices and take-up. Some may see this as a natural progression given changing technological capabilities and demand. However, in many ways the technologies are complementary for users that can afford both services. If increased competition in fixed markets can be raised to the level of mobile service, Mexican consumers can enjoy the same levels of complementary usage as in other OECD countries. At the same time, policies are needed to address those areas not reached by the market and to assist people to develop the skills they need to benefit from the digital economy.

In many ways, if successfully implemented and expanded, programmes such as the Red Compartida and Red Troncal could be transformative enablers for many of the other initiatives such as México Conectado.

With respect to the government strategies, critics assert that although the National Digital Strategy is ambitious and well-intentioned, some programmes have fallen short of their objectives due to factors such as budgetary constraints, issues of cohesion across different parts of government services or a lack of clear indicators that enable an assessment of their performance in areas such as connectivity, inclusion and e-government. Proponents point to progress in areas such as connectivity and, in the case of e-government, the approval by the Ministry of Public Administration (Secretaría de la Función Pública, SFP) of the guidelines for government purchases in technology as part of the development of an information technology policy.

Six months into the National Digital Strategy, important additions were added to the National Institute of Statistics and Geography's National Indicators Catalogue to assist in assessing performance. These included, for example, the percentage of households with Internet access, the percentage of exports of ICT goods and the percentage of imports of ICT goods.

Critics point to the challenges in reaching the targets of some of the programmes against the goals set for them. Some industry and civil associations have underscored that

some of the strategy's components, on topics such as digital inclusion and e-government, have shown less progress than expected and have been delayed (e.g. the Ventanilla Única Nacional). In addition, some believe the five-year target is too short to accomplish the goal of being the leading Latin American country in terms of connectivity, and attaining digitalisation levels similar to those present in OECD countries. On the other hand, especially in the area of e-government, progress has recently been made according to the *United Nations' E-Government Survey 2016* (United Nations, 2016): in the Online Service Index Mexico moved up from 35th position in 2014 to 19th in 2016 and in the e-Participation Index, it moved up from 45th position in 2014 to 14th in 2016. In addition, the Mexican government established an Interministerial Commission for the Development of Electronic Government (Comisión Intersecretarial para el Desarrollo del Gobierno Electrónico, CIDGE) to co-ordinate e-government matters. The SFP has the lead and works with other ministries to co-ordinate e-government programmes.

Overall, the goals set out by the federal executive are in many ways ambitious and are made more challenging by budget constraints shared across all areas of government (Arteaga, 2015; Sánchez Onofre, 2015). This is why it is so critical that programmes such as the Red Compartida build on the progress made by increasing competition in commercial supply, and that other programmes, such as México Conectado, leverage the new capabilities of this network to meet objectives. Going forward, it will be critical to work on an update of the National Digital Strategy and establish clear milestones for the different programmes for the coming years in co-ordination with the different governmental and public entities.

Digital inclusion strategy

México Conectado programmes

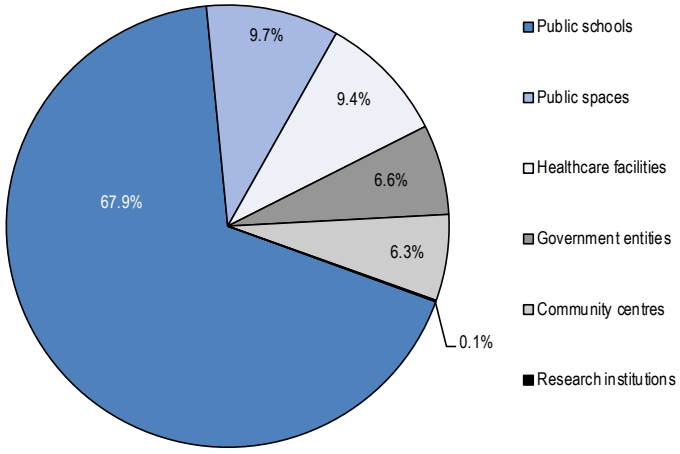
México Conectado

Launched in 2013, México Conectado is the government's social Internet connectivity programme. Currently, around 81 000 public schools, libraries, clinics and other points of interest are reported to have Internet access and the installation of a further 20 000 is underway. This was achieved through co-ordination between the federal government, along with states and municipalities, and private investors. As a result, several federally financed public tenders have taken place, by means of which private operators have participated in the provision of connectivity to public sites.

A breakdown of the connected sites is provided here (Figure 4.1) (SCT, n.d.). A large majority is public schools, followed by public spaces, healthcare facilities, government entities and community centres. Research institutions represent only a minute percentage. Furthermore, 69.6% are connected through a fixed terrestrial network with an average bandwidth of 19 Mbps, while 29.1% employ satellite technologies with an average bandwidth of 1Mbps to 2 Mbps. Finally, 1.3% use high-capacity broadband services, with an average of 300 Mbps, although available bandwidth may reach 10 Gigabytes per second; over half of these sites enjoy Wi-Fi access (SCT, 2016; n.d.).

The distribution of the México Conectado sites is uneven across the country, though in part this reflects population density. The majority of sites are in the State of Mexico, with around 13%, followed by Nuevo León, Veracruz, Jalisco, Sonora, Tabasco, Puebla and Oaxaca, each accounting for 5% to 6% (SCT, n.d.). The states of Baja California Sur, Aguascalientes and Zacatecas have less than 1 000 connected sites (SCT, n.d.).

Figure 4.1. **Overview of connected sites through the México Conectado programme**



Source: SCT (2017c), "Estadísticas", México Conectado webpage, http://mexicoconectado.gob.mx/carousel.php?id=80&cat=80&id_carrusel=2 (accessed 3 April 2017).

The positive effects of the programme range from improving the quality of public services with ICT technologies that would have been unavailable without Internet access to reducing the digital divide by increasing free Internet access for the general population. In addition, it has aided in achieving better economies of scale by aggregating the demand for Internet services of the three levels of government through public tenders. In acknowledgement of these advancements, the programme was awarded the World Summit on the Information Society prize for information and communication infrastructure.

While an admirable initiative, México Conectado will face challenges in its execution going forward due to a significant budget reduction (Juárez Escalona, 2016). From USD 88 million in 2015 and USD 40 million in 2016, only USD 12 million has been assigned for 2017, in line with overall stringency measures taken across many areas of government spending (Juárez Escalona, 2016).[37] Consequently, the SCT has reduced México Conectado's objectives and has decided to focus exclusively on providing connectivity to public schools (Juárez Escalona, 2016). While the goal at the commencement of the programme was to connect 250 000 public sites, this has been reduced to 120 000 (Castañares, 2017). Furthermore, while previously 42 000 public sites were targeted to increase per year, the shift in focus has dropped to 8 000 schools only (Juárez Escalona, 2016). This shift means that other public sites such as government entities, healthcare institutions, public spaces, community centres and research institutions will not be included in the project moving forward (Juárez Escalona, 2016). The SCT is currently working on the design of a tender procedure aimed at delivering connectivity to these educational institutions.

Fostering private sector involvement in the pursuit of these objectives may not only offset a reduction in public funds, but may expedite its effective execution. Furthermore, well-managed and supervised public-private partnerships can help to ensure that public funds are used effectively and efficiently through risk-sharing schemes (Lucey and Mitchell, 2016; EPEC, 2012).[38] There are examples of countries that have effectively used public-private partnerships to support their national broadband plans, including Mexico itself with Red Compartida. These experiences should be considered when Mexico decides whether to pursue this option (Galperin, Mariscal and Viecens, 2013).[39]

Aside from potential partnerships with the private sector, it is equally important to involve municipalities. Apart from creating potential co-financing options, this allows opportunities to increase the acceptance of programmes and to involve communities in its implementation. In Colombia, for example, public institutions at the local level can apply for a similar programme, but they must co-fund it to ensure local buy-in. Depending on the income levels of the entities, the amounts of co-funding varies. While wealthier areas fund over 50% of such programmes, there are lower requirements for less affluent locations (OECD, 2014).

Aside from the availability of resources for México Conectado, other challenges facing the project have been raised. Some stakeholders say performance levels have fallen short of expectations at some locations. Examples include connections not being effectively maintained or offering speeds that are lower than the QoS standards agreed by the contractors. In general there appears to be less satisfaction with satellite connections than fixed ones, though overall speeds are lower than expected across the board, even on fixed networks.

In the future, service providers using the Red Compartida could be used to provide higher quality connections to schools in rural areas at lower costs compared to satellite connections, for example. In any case, a close monitoring of the performance of the different sites is critical to track whether operators comply with contractual requirements and deliver the respective speeds to public sites. Performance measures could then be reported on the statistics section of the México Conectado website. In addition, suppliers should be required to consult with communities on where to place the optimal points of presence when installing sites.

Finally, the experience of the programme again underlines the importance of effective co-ordination across different parts of government. In the case of schools, the various contributions necessary for a school's successful connection rely on inputs from different ministries; it is essential that these inputs are available at the same time. It has been reported, however, that devices were provided to schools that were not yet connected to the Internet, while connectivity was available to some that had not received the necessary devices to access the Internet. The new joint programme @prende, described later in this chapter, is a good step forward to overcoming such instances. Under this project there is a greater recognition of the need for different ministries to work together to ensure the co-ordinated delivery of all the necessary inputs. This includes making sure schools are equipped with both Internet connectivity and devices to access the Internet, and ensuring that digital content is part of the curriculum and that teachers are trained to capitalise on the new digital technologies available in the classroom.

Puntos México Conectado

Puntos México Conectado is a federal government initiative that intends to develop digital skills among people of all ages. There are 32 *puntos* (centres), one in each state, that are operated by private individuals specialised in information technology. The *puntos* provide training in topics such as digital literacy, robotics and programming, as well as entrepreneurship. Furthermore, this competency-based training approach is being applied to the areas of digital training, innovation, cultural heritage and artistic expression to promote the development of digital cultural skills. In addition, the programme also gives special attention to disadvantaged social groups such as women, indigenous people and people with disabilities.

The initiative is reported to have had a noticeable effect in the areas where there is a centre. It has done this by offering programmes and courses for every age group, providing participants with the abilities needed to incorporate technology into their daily lives.

Another example is how the promotion of technological tools for productive projects is said to have helped increase the productivity of small and medium-sized enterprises and contributed to the creation of new formal jobs. Advocates say this constitutes a step forward from previous efforts at closing the digital divide, considering that former plans focused almost exclusively on basic digital literacy. In contrast, this programme aims to go beyond earlier initiatives by setting the base for the development of technological skills and promoting interest in areas such as science and technology among the entire population. Critics, however, point out that 32 *puntos* for a country the size of México is insufficient and that more needs to be done to further develop advanced digital skills among the Mexican population and firms. While the programme could be extended, it is important to ensure long-term financial sustainability as it is based on federal governmental funding. Options could include involving local levels of government, such as described earlier, or working jointly with companies that could, for instance, rent the sites for a certain percentage of time to undertake training programmes.

@prende México 2.0

@prende México 2.0 was launched in November 2016 as part of the educational reform. The project acknowledges and aims to remedy some of the challenges of past ICT adoption programmes. In particular, it is aimed at promoting the use of ICTs to develop skills for a digital economy and society for both students and teachers. The programme has six principal components: 1) teacher training; 2) digital education resources; 3) statistical initiatives; 4) equipment; 5) connectivity; and 6) monitoring and evaluation.

It is aimed at students, parents and faculty, with the objective to strengthen the essential skills needed in a digital economy. One of the backbones of the programme is the training of teachers in the use of ICT, regardless of their level of basic education.

From 2017 to 2018, the pilot programme is being set up in 3 000 educational institutions. The focus is no longer on handing out devices, but rather providing a better digital learning environment and equipping classrooms. These classrooms will be fitted out with electronic devices and content servers connected to the México Conectado programme. Internet traffic will be monitored, taking into account the Internet capacity of these schools. Through the use of these devices, users will gain access to a compilation of digital educational resources, starting with 2 000 content elements. The content platform @prende has also been launched and includes material for all levels of the Mexican basic education system nationwide, and which is made available both to public and private schools. The platform is available to teachers and members of the broader school community, who are able to access a broad range of subjects. It also offers a series of free activities such as courses, tournaments, workshops and projects to benefit the community. The programme, thereby, aims to promote technological inclusion of different social groups and to strengthen social cohesion in the community through ICTs.

Three different models of the programme will be put in place based on the quality of the Internet connection. A school with a lower level of connectivity will receive updates of the educational content, while schools with higher connectivity levels will have additional functions, such as developing content in the cloud or following online courses. A monitoring and evaluation phase is planned, in which the use, efficiency, connectivity and availability of the resources provided will be assessed in order to determine the programme's results.

It is commendable that the programme focuses on teaching skills that are essential for a digital society, such as critical thinking and problem solving using digital tools, compared to the prior focus of distributing devices. In addition, the monitoring and evaluation pillar

of the programme is crucial. According to the programme, it will monitor and evaluate the technology being used, as well as the capabilities of the students and their digital skills and monitor teachers' skills. The planned baseline assessment is important to mark the initial skills and performance levels of the pupils prior to the start of the programme in order to conduct sound impact assessments at a later stage.

It is laudable that @prende 2.0 has built in an evaluation module that allows for a close measurement of the effects of the programme. However, a potential challenge of the programme is that, while done in co-operation between the federal and regional levels, it does not yet involve the local communities. Involving the local government and the local community has proven to be a very effective tool to increase a project's acceptance and to raise additional funding for a programme. Moving forward, involving the local levels should be considered. To be effective for the students, the schools and the country, the @prende 2.0 programme requires collaboration between the federal government, the 32 state governments and the local communities. Other aspects to consider as the programme progresses, are the number of devices actually needed, which might diminish with the recent uptake rates of mobile devices in the country, and the scale of the programme in terms of the number of schools reached. While it is understandable to start with 3 000 schools, there will be a need to increase the scale of the programme in the coming years.

Universal service

Pursuant to the reform in Mexico, Article 6 of the Constitution was amended to give the state an obligation to guarantee citizens' integration into an information and knowledge-based society. Accordingly, the SCT was designated to design and implement a digital inclusion policy to achieve universal coverage, by ensuring that all citizens have access to ICTs, broadcasting and telecommunication services, including broadband and Internet access. In addition, the SCT is required to publish an annual social coverage plan, to ensure the increase in network coverage and the penetration of broadband services. The IFT considers this plan when deciding whether to grant concession titles.

While there has been a universal service fund since 2002, its resources were channelled in recent years towards the DTT transition. The fund operated through a reverse auction procedure where operators were allocated funds which were to be used to expand telecommunication services to under- or unserved populations under cost-recovery rules (Sánchez, 2011).[40] However, the SCT has proposed to reform the universal service fund scheme as it not meeting objectives in practice. A series of other programmes have been set out with the intention, among others, to reduce deployment costs and to develop telecommunication infrastructures for shared equitable use, and to increase efficiency in the use of resources. In this regard, initiatives such as Red Compartida, passive infrastructure projects, Red Troncal and México Conectado have been set in motion to extend coverage and to establish conditions required for effective competition in the provision of telecommunication services.

Prior to the reform, the SCT established social coverage obligations for concessionaires. These obligations tended to be in the form of required discounts to certain groups or localities, or the expansion of operator coverage. There is little or no evidence that these programmes have been successful. In fact, all indicators show that they have been relatively ineffective at increasing the coverage and penetration of telecommunication services. There is a substantial number of people without service today, even when taking into account those areas serviced by market forces since the reform or the commendable initiatives by indigenous communities with 2G mobile technology to provide basic telephony in rural villages.

In an effort to address this coverage deficit, the SCT is analysing a new approach for social coverage to use the market as a mechanism for assigning coverage obligations. The programme would define the coverage requirements per concessionaire as a percentage of gross income in a way that implies an equitable burden between all affected firms and minimises possible distortions in the market.

Such a programme would establish that obligations must be met in-kind, through the provision of telecommunication services. The service to be provided "in-kind" would be defined as providing broadband Internet access to the sites and public spaces with the largest social or economic impact. A competitive process would be carried out in order for the market to determine the allocation of the sites in which each concessionaire must then offer services.

In each site, the concessionaire who submits the offer that generates the most value for the state would have the amount offered deducted from its social coverage obligations. Concessionaires who do not meet their obligations may otherwise fulfil them in cash.

In sum, there will be at least 7.8% of the population not covered by the Red Compartida after its completion, or by other networks from large commercial players. Therefore, the SCT's proposal has a number of advantages for the remaining percentage of the population who are not connected. First, the private sector is best placed to know the cost of extending services in-cash or in-kind, with the latter enabling them to leverage their existing facilities in ways not necessarily possible in a stand-alone project. Second, using competitive tenders may enable new players to bid to meet the demands of underserved areas. Giving licenses to indigenous telecommunication providers for the use of spectrum, for example, has enabled them to offer services for the first time in some villages. Thirdly, other initiatives, such as the Red Troncal, may extend the range of players able to bid for such projects. Overall, these changes show promise in being able to more closely target underserved areas at a potentially lower cost and at a higher degree of competition than was historically the case. Finally, telecommunication operators are beginning to build requirements into contracts with equipment suppliers and network builders in rural and remote areas to measure performance from the edge of networks in addition to the core. Any new programme should, therefore, require successful bidders to explain how they will monitor service quality, and make this data available for open review.

While the aforementioned scheme is a cost operators will pass on to the overall market, all else equal and competitive conditions allowing, there is also an opportunity to eliminate the burden of the special tax on products and services (Impuesto Especial sobre Producción y Servicios, IEPS), something the industry has been critical of since its inception, as discussed below.

The special tax on products and services

The IEPS has been in place since 2010 and established that telecommunication services are subject to a tax of 3% of the total value of the service. Exceptions to this tax include rural telephony, public telephony, interconnection and Internet access services, which were granted in part due to concern over what effect this measure would have for equity and growth at the time.[41]

In addition to the telecommunication services listed above, the main (non-oil related) products charged with the IEPS are: alcoholic beverages, tobacco, energised drinks, pesticides, foods with a high caloric density and gambling. In short, apart from aiming to raise revenue, the tax is clearly focused on discouraging or reducing consumption of these products and services, and therefore contradictory to other policy objectives in

telecommunication services. As opposed to some of the abovementioned products, telecommunication services provide a positive externality to the economy. Thus, from an economic perspective, the positive spillover effects of these services contribute to the case against retaining such a tax.

In Mexico, the positive externalities of communication services have been recognised at a constitutional level. Namely, the Constitution emphasises that telecommunication and broadcasting services are not only public services of general interest for the Mexican population, but that access to these services are fundamental rights SEGOB, 2013, Art. 6). Although fostering competition in the period after the reform has played a key role in reducing prices, eliminating the tax would render these services even more affordable for people that yet to have a service, in line with policy objectives.

The 2012 OECD review suggested eliminating the IEPS on communication services due to its negative implications for meeting other policy goals, such as the expansion and take-up of services. Critics rightly say that special levies on communication services, such as the IEPS, discourage the take-up and use of telecommunication services by rendering them less affordable.[42] The OECD has also previously cautioned on the negative effects of applying a special tax to communication services, namely in the case of Colombia (OECD, 2014). To that effect, the OECD stated that such a tax is not justifiable for services that provide positive externalities to the economy.

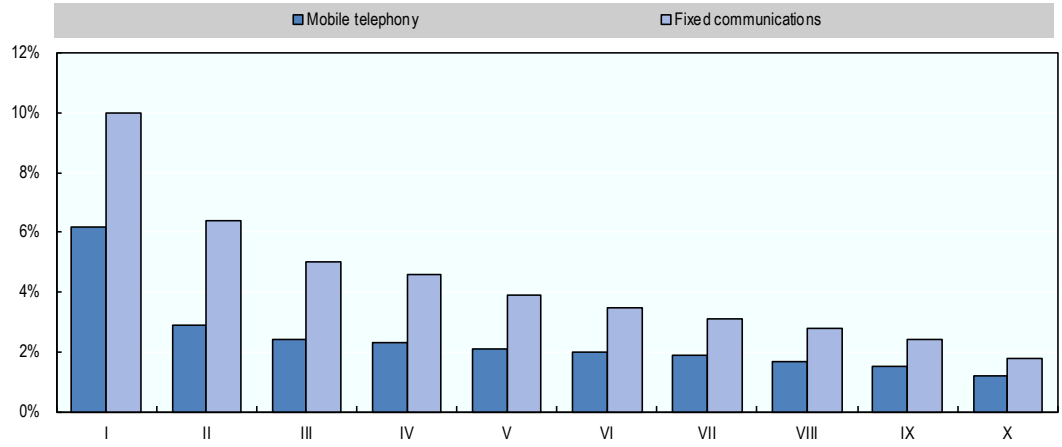
Much of the economic literature has argued against the deadweight loss effects of taxing the communication sector, which can prevent its development and its positive economic spillovers of ICTs (Hausman, 2000; Katz, Flores-Roux and Mariscal, 2010). Even though some governments in the past have levied taxes on telecommunication services as a source of additional revenue due to the sector's rapid growth and low collection costs, this is less common today in OECD countries (Cave and Mfuh, 2013; OECD, 2014). This is not least because the behaviour may distort the market by reducing demand, and because policies that stimulate growth (e.g. high penetration and use) increase revenue through general taxes (e.g. value-added tax [VAT] on products and services) (OECD, 2014). Therefore, imposing a sector-specific tax on communication services, as is the case with the IEPS, may have a negative effect on the development of the sector and, as a result, on the whole economy.

In effect, imposing such a tax has a direct influence on the total cost of these services for consumers, placing a higher burden on stakeholders in a sector that creates many positive spillovers throughout the economy relative to other sectors without such a tax. For instance, some studies have estimated that this special tax could add 19% to the total cost of having a mobile service (GSMA/Deloitte, 2015). As a result, it risks hampering levels of adoption, innovation and investment in the communications sector.

In an environment of fiscal stringency, eliminating any form of income from such a tax is challenging as it contributes to the public purse. In addition, to date, the tax has in absolute terms raised more from people in higher income groups. However, as communication services become more pervasive, the tax is more likely to have a disproportionate effect on people with lower incomes.[43] This is because it could discourage the adoption of telecommunication services by the poorest users or by those that have yet to join a network due to cost. For instance, in 2014, for the 10% least well-off households in Mexico, their average monthly expenditure in fixed and mobile communications represented 10% and 6.2% of their monthly income, respectively, whereas the expenditure for these services only represented 1.8% and 1.2% of the monthly income of the top 10% of the wealthiest households in Mexico (Figure 4.2).

While the exclusion of the IEPS in some areas of telecommunication services is welcome, such as for data used to access the Internet, and is consistent with the aim to expand the availability and use of these services, the lack of technological neutrality can be noted. The potential for market distortion is, therefore, to the forefront in how people use such services. If wealthier users migrate to data services as a substitute for voice services, not only will this tend to lower receipts from voice services, but it will fall most heavily on those users of feature-phones rather than smartphones or those that are on older mobile networks. This is also likely to be the less affluent people in Mexico.

Figure 4.2. **Percentage of household monthly expenditure in communication services as a proportion of income, 2014, sorted by income group**



Note: I-X represent income groups, where Group I is the poorest 10% households in Mexico, and Group X the richest 10% of households in Mexico.

Sources: OECD elaboration using data from INEGI (2015), *Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) 2014* [National Survey on Household Income and Expenditures 2014], www.beta.inegi.org.mx/proyectos/enchogares/regulares/enigh/tradicional/2014/default.html; and IFT (2016j), "Anuario estadístico 2015" [Statistical yearbook 2015], www.ift.org.mx/estadisticas/anuario-estadistico-2015.

In addition, it appears that the IEPS has not raised the revenues originally envisaged upon implementation (El Economista, 2015). Industry associations, such as ANATEL, have emphasised that eliminating the IEPS would not significantly affect the federal government's revenue, highlighting that in 2012 only 0.26% was derived from the IEPS. In addition, the amount has further declined in terms of overall revenues (Table 4.3) and as a percentage of the federal government's revenue: 0.28% in 2013, 0.25% in 2014, 0.20% in 2015 and 0.17% between January and October 2016 (SHCP, 2016). While, there is a valid budgetary concern with the elimination of this tax on telecommunication services, any such change needs to be set against the VAT garnered from the growth in the sector since the reform.

In summary, an industry as crucial as telecommunication services, which has a decisive influence on a country's economic growth and development, should not be subject to such burdens, for it may bring about unintended spillover effects on other economic sectors' productivity (OECD, 2014). Finally, when imposing measures such as the IEPS, the Mexican authorities should also consider the ability of telecommunication services to facilitate relationships between the administration and the general public, which has made gains in recent years based on increased telecommunication access (Cave and Flores-Roux, 2017). To the extent that the additional cost limits access for the proportion of the population that remain unserved, it may place a limit on administrative efficiency.

Table 4.3. **Revenues from the special tax on products and services on telecommunication services, 2010-September 2016**

Year	MXN thousand
2010	5 875 604
2011	8 331 866
2012	6 085 576
2013	7 620 748
2014	7 220 221
2015[1]	6 591 412
January 2016-September 2016[1]	4 484 135

1. Preliminary figures are presented for 2015 and 2016.

Source: SHCP (2016), "Estadísticas oportunas de finanzas públicas" [Timely public finance statistics], www.shcp.gob.mx/POLITICAFINANCIERA/FINANZASPUBLICAS/Estadisticas_Oportunas_Finanzas_Publicas/Paginas/unica2.aspx.

Red Compartida: The shared wholesale network

The constitutional reform mandated collaboration between the SCT and the IFT for the deployment of the Red Compartida, a wholesale mobile telecommunication network for the provision of services in an unbundled and non-discriminatory manner. This programme intends to create an open access wireless market[44] in Mexico, by having the private sector fully design, finance, deploy, operate and promote a 4G network. To this end, a self-financed public-private partnership has been granted a 20-year concession, renewable for an equal period, along with a pair of Red Troncal fibre optic strands for the operation of this project.

As a result of the reform, Red Compartida can have up to 100% direct foreign investment. For antitrust reasons, there are other constitutional limitations as to who was allowed to bid for the contract. Namely, companies that provide telecommunication services to end users were excluded from bidding. The goal of this restriction was to promote a more efficient and equitable use of spectrum infrastructure, by having Red Compartida be operated by a concessionaire that is not an active player in the retail market of providing services to final consumers. Access to Red Compartida's network will only be sold to retailers such as MVNOs, MNOs and fixed network operators offering quadruple-play services, among others.[45] Red Compartida was designed to be a self-financing project, where the contribution of the government relies on providing the leasing of 90 MHz of the 700 MHz spectrum as well as having the option of accessing the right of use of two fibre optic strands from the CFE's fibre optic network.

Red Compartida has several different aims concerning market dynamics as well as for existing and future users. Firstly, it aims to increase competition and QoS, including in underserved areas. Secondly, it is expected to facilitate the entry of new MVNOs and their influence, which by 2016 was limited to less than 1% of the overall mobile market in Mexico. The new MVNOs are expected to expand innovation in areas such as use of the Internet of Things (IoT) or in sectors such as the financial industry, by the creation of new business models.

The bidding process for the Red Compartida was transparent and in compliance with the best international practices. Given the project's innovative nature and potential widespread influence on the future of communication services, the government held three public consultations: 1) invitation to express interest in the project; 2) request for information;

and 3) consultation of the preliminary bidding rules. Additionally, Open Contracting Data Standards, as promoted by the World Bank, were followed and Transparencia Mexicana, the Mexican chapter of Transparency International, served as social witness to oversee compliance therein.

The final bidding rules were published on Compranet[46] on 29 January 2016. Four rounds of Q&A sessions were conducted between March and July, through which the SCT responded to around 900 questions from the participants in the tender process. Pursuant to the Federal Economic Competition Law (Ley Federal de Competencia Económica, LFCE) (LFCE, 2014), participants were required to provide a favourable antitrust opinion from the IFT as a prerequisite to submitting a proposal. On 20 October 2017, two proponents submitted a bid to the SCT: 1) Altán Redes, composed of multiple investment funds, such as Morgan Stanley and the International Finance Corporation,[47] as well as Megacable and Axtel, though these two operators will be without voting rights or influence in the consortium's management; and 2) a joint-bid from Rivada Networks and Spectrum Frontier.

Strong measures were included in the bidding rules to ensure the seriousness of the proposals, to preclude the possibility of contract renegotiation and to sanction any non-compliance of the contract by the developer (i.e. the winner of the contract).

On 4 November 2016, the SCT issued a statement saying that the joint-bid between Rivada Networks and Spectrum Frontier had been disqualified from the bidding, given that it had failed to provide the bid security in the terms described under the bidding rules.[48] Consequently, only the economic proposal of Altán Redes was considered adequate to be examined by the SCT. After analysis, the SCT held that Altán Redes presented sufficient evidence of having the financial and economic capacity to provide the required resources for the execution (at least 30% of which will be contributed in capital), and of meeting all the financial obligations undertaken for that purpose.

On 17 November 2016, Altán Redes was awarded the contract to deploy and operate Red Compartida. It was further announced that Altán Redes had bid to cover 92.2% of the Mexican population. In making this announcement, the SCT underscored that the network shall not be concentrated in urban centres, noting the conditions required that the network cover 0.15% of rural population for every 1% of urban population covered by the Red Compartida. It is also required to serve 111 *Pueblos Mágicos*[49] (25% in 2018, 50% in 2020, 75% in 2021 and 100% in 2022). The milestones of the Red Compartida have been set up to 2023 (Table 4.4).

Table 4.4. **Red Compartida milestones**

Year	Milestone
2016	Award of the public-private partnership contract in November 2016
2017	Beginning of the deployment of the network
2018	At least 30% of the population covered by March 2018
2020	At least 50% of the population covered by January 2020
2021	At least 75% of the population covered by January 2021
2022	At least 85% of the population covered by January 2022
2023	At least 88.6% of the population covered by January 2023
2023	At least 92.2% of the population covered by January 2024

Source: Information provided by the SCT.

After the announcement that it had been awarded the contract, Altán Redes had until 27 January 2017 to execute the public-private partnership contract with the Organism for the Promotion of Investment in Telecommunications (Organismo Promotor de Inversiones en Telecomunicaciones, PROMTEL) and Telecomunicaciones de México (Telecomm). Before that time, Altán Redes also had to: incorporate a specific purpose corporation, pursuant to the Public-Private Partnership Law (Ley de Asociaciones Público Privadas); and request and obtain the wholesale concession title from the IFT. These steps were all completed by the due dates.

On 17 January 2017, the IFT's *pleno* decided to grant PROMTEL and Altán Redes the necessary concessions for the execution of the Red Compartida. In this sense, PROMTEL attained a 20-year concession title in two specific segments of the 700 MHz band, to wit: a portion ranging from 703 MHz to 748 MHz and a second segment covering 758 MHz to 803 MHz. Furthermore, Altán Redes obtained a commercial concession title to operate a shared wholesale network for a 20-year period, following the IFT's determination that the winning bidder had complied with the restrictions pertaining to its governance structure (Juárez Escalona, 2017b).

On 24 January 2017, Altán Redes, PROMTEL and Telecomm signed the 20-year public-private partnership contract, formally initiating the Red Compartida project and thus the infrastructure deployment commitments thereto. PROMTEL participates with the concession of the 700 MHz band while Telecomm offers the right of use of two fibre optic strands from the CFE's fibre optic network. Subsequently, on 30 March 2017, Altán Redes announced that Huawei and Nokia had been selected to provide technology for the roll-out of the network and that they would fulfil the conditions of the contract, which came into effect on 31 March 2017. These conditions were authorised and verified by PROMTEL, and included: creating a trust fund for management and payment purposes; granting a bid security to the Federation Treasury for MXN 5 billion (approximately USD 25 million); and paying the fee to the promoting agency of the successful bidding process, Bank of America-Merryl Lynch. The initial funding for the project is based on USD 2 300 billion: USD 765 million (33%) is provided by investment capital from local and foreign investors, multinational institutions, institutional investors and local industrial partners; Huawei and Nokia are providing loans of USD 850 million (37%), which will be exchanged progressively with credit from the commercial banks, and approximately USD 690 million on credit provided by Mexican development banks. Additionally, if needed in the future, the development banks have said they will provide USD 252 million (Altán Redes, 2017).[50]

Henceforth, PROMTEL is the designated body in charge of monitoring the compliance with the contract. This includes, for example, the obligation of Altán Redes to launch the operation of Red Compartida by 31 March 2018, at the latest. It is also stipulated that by this date, Red Compartida must provide coverage for at least 30% of the Mexican population. PROMTEL is also in charge of providing investment for the deployment of infrastructure by applying public policies established by the SCT, such as those regarding passive infrastructure access.

The establishment of the Red Compartida has the potential to fundamentally change the mobile market and, as a consequence, stimulate and expand the digital economy in Mexico. It will, in many ways, be the first wholesale-only mobile network in the OECD. Aside from the fact that the deployment of the network is further increasing investment in the Mexican telecommunication sector, which is said to be USD 7 billion over the 20-year contract, it can increase coverage and connect rural and remote areas, thus diminishing the regional disparities that are currently observed in the Mexican market.

In addition, it is aimed at being a driver for competition, by increasing QoS and cost-reduction strategies by sharing tower sites and other network resources, which might further lower prices in the mobile market. It can also be expected to spur innovation, not only in the mobile market, but also in the entire Mexican economy, and to nurture the Mexican digital market in areas such as the IoT, mobile payments or e-commerce. Red Compartida aims to lift the QoS available to Mexicans. This will be accomplished by the planned offering download and upload speeds that will be two to three times higher than are currently available in many areas. The network is aimed at prompting the existing MNOs to lift their service quality in addition to using Red Compartida themselves. The objective of Red Compartida is therefore to promote improved QoS and facilitate new services.

There will also be challenges, both at the technical and economic level. In terms of technology, the Red Compartida is a 4G-only network. To date, only a few telecommunication companies, such as Tele2 in the Netherlands, Reliance Networks in India or Avantel in Colombia, operate 4G-only networks without legacy 3G networks. For its part, Tele2 has found that support of Voice over LTE (VoLTE) has proven to be device and manufacturer specific, with several 4G devices not capable of supporting VoLTE on Tele2's network. In addition, in their experience, many devices revert back to the 2G/3G mode in the case of voice calls or emergency calls. It will be important to address challenges in this respect at an early stage and it might be worthwhile to draw on the experiences of the few 4G-only networks that currently exist. At the economic level, it will be crucial that Altán Redes carefully designs its business model to offer access rates that are attractive to other operators and companies from other sectors of the economy, so that they will wish to use the wholesale network. It will be equally important that the offer for access seekers is flexible enough so that they have the maximum possible freedom to innovate around the wholesale network. Retailers of some of the most successful wholesale networks tend to be at the forefront of commercial offers to end users, especially if they are to compete with players that can innovate over their own facilities to meet rapidly evolving customer demand.

It must be said that the services that Red Compartida will offer to the market will be granted through a public offer of services that needs to be approved by the IFT in order to guarantee that competition conditions are fully met without any sort of anticompetitive measures. Notwithstanding, Red Compartida is completely free to establish services and tariffs that will apply to this public offer of services.

Public broadcasters

The constitutional reform created the Mexican State Public Broadcasting System as a decentralised entity to co-ordinate public broadcasters in Mexico and promote the pluralistic and diverse expression of ideas. Since then, the SPR has been an important space for supporting the production and diffusion of national and independent audiovisual content in Mexico. The financial resources to support public broadcasting are arguably insufficient, however, to meet the policy objectives set out in the Constitution and the LFTR.

Alternatives can be considered to provide public broadcasters more flexibility and less uncertain (longer term) financial resources to meet their mandates. Public broadcasters, for example, could benefit from conditions guaranteeing their direct financing from general revenue. This could assist them in maintaining financial stability and strengthen their editorial independence relative to day-to-day political concerns. Moreover, public broadcasters could potentially charge for content under MCMO rules and also be permitted to sell advertising, even if limited. If those mechanisms were to be put in place, there would need to be appropriate safeguards to limit unfair competition with the private sector

(e.g. advertising airtime limitations). Additionally, the benefit contained in the LFTR for indigenous and community licensers granting them the right to receive a percentage of the budget spent by public entities on social communication should be extended to public broadcasters as well. A combination of these measures could also be considered to lower the burden on the public purse. The enhancement of funding and the possibility to sell advertising, accompanied with appropriate safeguards, should be extended to indigenous, rural, and community television and radio broadcasters alike.

Digital terrestrial television transition

The 2012 OECD review emphasised the importance of completing the transition from analogue to digital FTA broadcasting. The objective of the transition was to both free analogue television broadcast spectrum for wireless broadband services (LTE or so-called "4G" fourth-generation mobile) and to provide more channels and higher picture quality to viewers. This process was completed in December 2016 and made available the spectrum to be used for the Red Compartida. Meanwhile, the number of channels rose from 228 in 2011 to 734 by the end of 2016, and 364 new channels were created by multiplexing. In 2016, the new national DTT network was also launched.

The DTT switchover was a complex process as it involved awarding the use of new channels and upgrading both transmission and reception equipment (television sets or at least set-top boxes). Given the near 100% coverage of analogue FTA, developed over 60 years, the transition required investments in new equipment to be made in almost every household and for all broadcasters, as well as speedier assignation and authorisation of new channels by the IFT.[51] While that process was underway, it was necessary to broadcast television in both analogue and digital format until the final analogue transmitters were switched off.

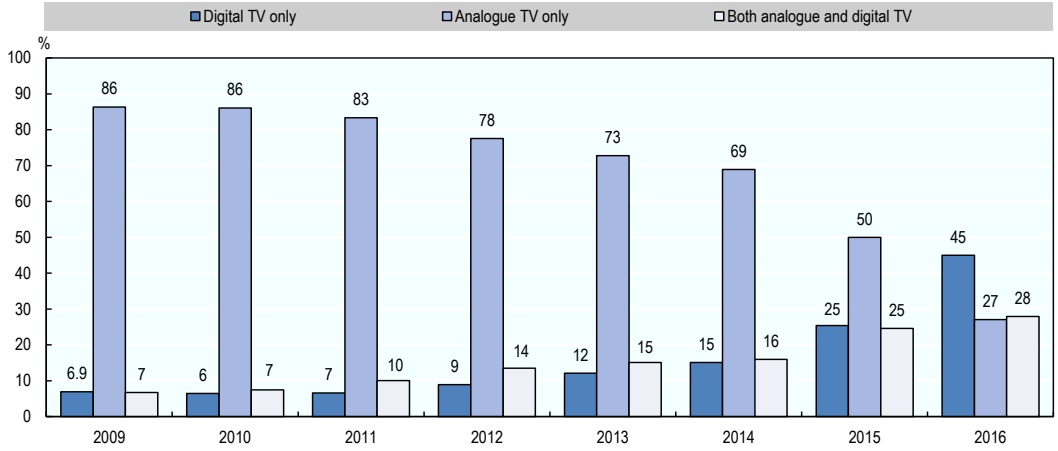
In the case of Mexico, the constitutional reform mandated that by August 2015 all broadcasters had to be transmitting with fully digital systems and the closing of the analogue system by December 2015. Moreover, by this analogue switch-off date, 90% of people with a lower income, as defined by the Ministry of Social Development (Secretaría de Desarrollo Social, SEDESOL), had digitally enabled sets in their residences. In practice, this meant ensuring services were available to one third of all Mexican households that fell within these criteria. OECD countries have typically had programmes to subsidise the final portion of residences housing people with low incomes, elderly or with a disability, a model established in the first analogue switch-off in Berlin, Germany, in 2002, though the scale set out by policy makers was far larger in Mexico.[52]

Based on an assessment of the potential for improving audiovisual quality for users, boosting local television manufacturers and gains in energy efficiency and interactivity, Mexico took the decision that distributing television sets was preferable to set-top boxes to eligible households. Due to budgetary constraints, though, the television sets were not made to be "smart" or interactive, as initially planned. The programme for the nationwide delivery of equipment was published in 2014 and the process was led by the SCT. Between 2014 and 2015, 10.1 million television sets were distributed at a cost to the government of MXN 28 billion, of which 10% was for logistics.

By July 2014, before the distribution commenced, only 31% of Mexican households with television sets were capable of receiving DTT, that is, of those with television sets, 69% only had analogue television sets, 15% had digital, and 16% both analogue and digital sets. By May 2016, once the distribution of television sets was completed, 45% of households had at least one digital television set. Among the households with television

sets, 73% were capable of receiving DTT, 27% still only had an analogue television set, 45% had a digital set, and 28% had both digital and analogue sets (Figure 4.3). It is important to note that 7% of households did not have television sets when the analogue switch-off happened and, therefore, were not affected.

Figure 4.3. **Households with a television set, by type**

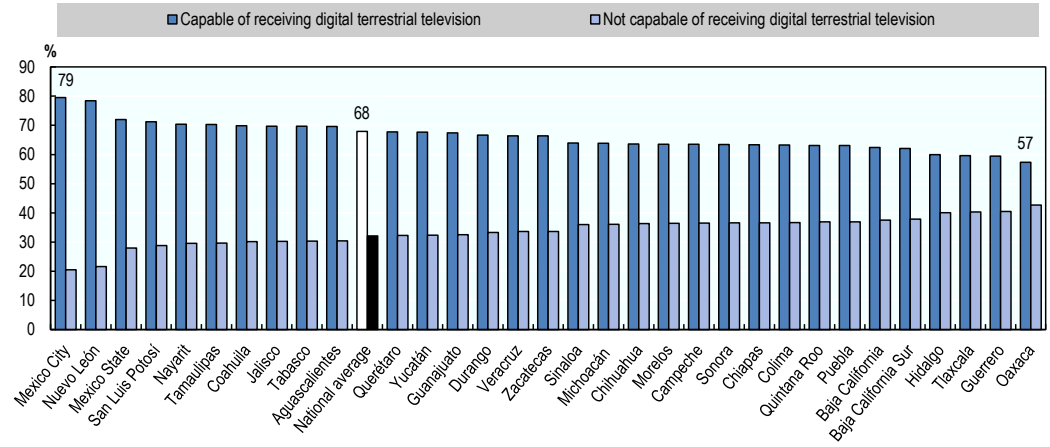


Notes: Data for 2009 correspond to the month of July; data for 2010, 2015 and 2016 correspond to the month of May; and data for 2011-13 correspond to the month of April.

Source: INEGI (2017), *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2016* [National Survey on Availability and Use of Information and Communication Technologies in Households 2016], www.beta.inegi.org.mx/proyectos/enchogares/regulares/dutih/2016/default.html.

When all households are considered, including those without television sets, Mexican authorities estimate that by 2016, 68% of households were DTT enabled. However, disparities across the country persist. In Mexico City, 79% of households report having at least one digital television set, that is, DTT enabled, while in Oaxaca, the penetration of digital television sets in households is only 57% (Figure 4.4).

Figure 4.4. **Households capable of receiving digital terrestrial television, by state, 2016**



Note: Indicators correspond to May 2016 and were calculated over all the Mexican households, including those without television sets.

Source: INEGI (2017), *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2016* [National Survey on Availability and Use of Information and Communication Technologies in Households 2016], www.beta.inegi.org.mx/proyectos/enchogares/regulares/dutih/2016/default.html.

Within the distribution process, the largest challenges were carrying out the bidding for manufacture and distributing the television sets in the time frame mandated by the constitutional reform, disposing of redundant analogue televisions, as well as with correctly determining the households that should receive free televisions, as some low-income households already had DTT sets by the time the programme commenced. A further issue was the "simulcasting". In many OECD countries, the "simulcasting" of FTA in both analogue and digital signals, following the award of digital licences to existing analogue FTA broadcasters, continued (e.g. the United Kingdom between 1998 and 2012). Mexico's transition spanned 2004-16, though many viewers needed to convert in the final months; 16% in Monterrey in October 2015, for example (Nielsen IBOPE, 2015). During the transition, the need to simulcast analogue and digital services led to lower quality broadcasts.

In terms of policy reform, a key outcome of the digital transition has been an expansion in the choice of services available to people in Mexico. In addition to more channels, there are more providers following the entry of a new national digital FTA provider. The 2015 auction resulted in two national licence bids, with one of them going on to establish service. Imagen TV began national digital broadcasting in October 2016 and is scheduled to complete its national network by 2020. In addition to its own sites, Imagen TV currently uses the transmission sites of the SPR while it continues to deploy its network, though not, as might have been expected after the 2014 measures, of the preponderant agent.

Quality of service

In terms of QoS, there have been significant improvements in comparison to the shortcomings identified in the 2012 OECD review. That being said, some challenges remain, such as with fixed broadband Internet access QoS obligations. The IFT is planning to conduct a public consultation on the matter in 2017. There are different quality requirements between concessionaires for fixed services in terms of the preponderant agent and others. For MNOs, all operators have the same rules and reporting requirements, with the IFT being able to publish these data as well as to impose monetary sanctions for non-compliance, increasing the information available to consumers and reducing transaction costs associated with switching their provider.

In general terms, QoS is defined as the overall effect of a service's performance that determines the degree of satisfaction perceived by users and the quality levels in the functioning of a network. In other words, the ability of a network, or parts of it, to provide the functions related to communications between users (COFETEL, 2011, Guideline No. 6).

The Fundamental Technical Plan for Quality of Local Mobile Services was issued in August 2011 by the IFT's predecessor, COFETEL, and is to this day still in force. This piece of regulation defines the indicators, parameters and obligations to be met by operators within their service offerings, covering telephony, SMS and Internet for each technology they provide (i.e. 2G, 3G or 4G) in the geographic coverage areas they have reported to the IFT. In this sense, the concept of guaranteed coverage is crucial, for it relates to the areas reported by each mobile operator in which the QoS conditions outlined in the plan are ensured. Compliance field measurements are carried out only in the guaranteed coverage areas.

In local mobile services, QoS may be assessed through indicators pertaining to network capacity and availability, the time taken to establish a communication, or the speed and error rate in downloading a file through an Internet connection, among others

(COFETEL, 2011, Guideline No. 6). As would be expected, the Fundamental Technical Plan acknowledges that the increase in the number of mobile service users is a critical factor in analysing service quality, owing to the fact that network saturation directly affects their proper functioning (COFETEL, 2011, Guideline No. 6). Hence, the indicators refer to:

- telephony: failed call attempts, interrupted calls, time elapsed for the establishment of a call and audio quality
- short message system (SMS): failed attempts at sending SMS messages, message delivery time and message integrity
- Internet: interrupted File Transfer Protocol (FTP) sessions, failed FTP sessions, time elapsed for the establishment of IP service for FTP and average FTP data download speed.

However, specific compliance levels are not defined for all of the abovementioned indicators. In fact, the plan adopts a hybrid approach at QoS monitoring in which the three indicators whose compliance levels are explicitly provided are subject to monetary sanctions in the event of non-fulfilment, while disregard of the remaining indicators shall only be subject to the IFT's comparative evaluation, among all operators, for their subsequent dissemination. That being said, the particular compliance levels defined in the plan are:

- failed call attempts: less than 3%
- interrupted calls: less than 3%
- failed attempts at sending SMS messages: less than 5%.

The IFT is responsible for compliance oversight of such parameters, and conducts periodic random field measurements, without prior notice, simultaneously to all concessionaires in equivalent conditions within their guaranteed coverage zone. Moreover, measurements are realised from outside each operator's network, comprising all its elements, from the radio frequency interface to traffic switching. All the data collected during the measurements carried out by the IFT are published on its website on a quarterly basis.

The LFTR establishes the minimum and maximum percentages that the IFT can sanction violations of the law, which are calculated based on the annual income of the concessionaire, authorised or infringing actor. Non-compliance with the stipulated QoS obligations enable the IFT to impose sanctions ranging from 1% to 3% of the infringer's revenue corresponding to the fiscal year during which the failure was detected. That being said, if no data are available for said period, the revenues obtained in the preceding fiscal year shall be used.

Among the punitive decisions adopted by the IFT on this topic, the November 2015 fine levied on the mobile operator Telefónica (Movistar) is notable. This was levied for non-compliance with the minimum QoS parameters defined in the respective Fundamental Technical Plan (in particular, concerning the percentage of failed call attempts in the city of León, Guanajuato) (IFT, 2015c). At the time, the IFT said the fine of roughly USD 20.5 million constituted the largest it had imposed to that date (IFT, 2015c). Another example is the sanction amounting to approximately USD 1.5 million imposed on Maxcom, a fixed operator, in March 2016, for not complying with the minimum QoS standards defined in its concession title, on indicators pertaining to service continuity, quality of basic service, and quality of lines and private circuits (IFT, 2016g). In the latter case, the IFT highlighted that the fine was the minimum amount that it could impose pursuant to the LFTR in its decision (i.e. 1% of the operator's cumulative revenue) (IFT, 2016g).

Finally, the IFT is currently working on new guidelines that set the Quality Parameters for Mobile Service Providers, abrogating the abovementioned Fundamental Technical Plan, and the Measurement Methodology established in 2012. A proposal is currently being analysed by the Board.

In addition to the specific regulation on QoS, whose compliance is monitored by the IFT, PROFECO receives complaints from consumers related to deficiencies in the provision of services. This task is assigned to the Subprocuraduría de Telecomunicaciones by the Federal Consumer Protection Law (Ley Federal de Protección al Consumidor, LFPC) and LFTR, to resolve procedures to compensate consumers following complaints.

Overall, while each case has its own merits, in some instances being able to impose a lower fine may be more proportionate to a specific transgression. The current framework for fines lacks flexibility when it comes to infringements for QoS. As the minimum fine must amount to at least 1% of the transgressor's revenue corresponding to the fiscal year during which the failure was detected, it may be too high for some circumstances. In addition, the IFT is required to apply a fine based on a single QoS measurement period rather than performance over time.

Consumer protection and empowerment

Since the 2012 OECD review, measures to empower and protect consumers have undergone substantial changes. The reform established an extensive catalogue of rights within the LFTR and the Letter of Minimum Rights of Users of Telecommunication Services issued by the IFT and PROFECO in July 2015 (IFT and Procuraduría Federal del Consumidor, 2015), as well as those included in the LFPC. This goes far beyond the scope of Annex II of the 2006 SCT Convergence Agreement. In particular, the new rights telecommunication users are entitled to include:

- To freely choose their service provider, as well as the services they intend to purchase, handsets, plans and method(s) of payment, without being compelled to acquire additional products or services.
- To enjoy free number portability, which must be made effective within 24 hours following the filing of the request, and with no limitation as to the number of times porting can be made.
- To have their mobile devices unlocked upon expiration of their contracts, or upon payment of the equipment's full price. In addition, the Mexican Official Standard (NOM-184-SCFI-2012) dictates that the service provider must inform users by written notice if a handset is locked to be used exclusively in its network, and the procedure to follow in order to unlock it to be utilised in any other network once the user obtains full ownership thereof, without incurring additional charges.
- To contract and to be sufficiently informed of the commercial conditions determined in the model contracts of adhesion registered before PROFECO and the IFT, in a clear, precise and accurate manner. Moreover, the contracts that users conclude with operators must be previously authorised and registered with PROFECO and the IFT. Moreover, the operators need to submit model contracts for registration and authorisation to PROFECO and the IFT ahead of commercialisation.
- To modify adhesion contracts bilaterally only, that is, through an agreement between the operator and the user. Therefore, users may demand the enforcement of the contract when the service provider alters it without their prior consent. In addition,

the LFTR defines specific causes to void or nullify contractual clauses, e.g. when they release concessionaires or authorised entities of their civil liability; when they set prescription terms curtailing those set forth in the law; or when they establish any formality for exercising actions against concessionaires or authorised entities. Finally, the IFT is required to register the information of contracts (e.g. tariffs and services provided) in the Public Concessions Registry.

- To consult their balance in prepaid mobile services free of charge and without any conditions compelling them to purchase additional credits. Furthermore, users must be able to carry over their unused balance when purchasing credit within the year following its expiry date.
- To not be charged with national long-distance fees by their fixed or mobile service provider, as well as to be offered per second billing. Furthermore, the invoices and proofs of payment delivered to users must be clear and disaggregated.
- To demand from their service provider compliance with the QoS levels they have committed to fulfil, and to receive a bonus or discount in the event of poor service or derived from the application of undue charges.
- To access information aimed at defending users' rights and to have access to a telephone-assisted system for placing their inquiries and complaints.
- To have their personal data and privacy protected, which includes not receiving commercial calls or messages they have not previously authorised.
- To allow users with disabilities the same ability to receive devices or equipment with accessibility features and functionalities and to access emergency telephone services, as all other users. In addition, operators' facilities and websites must be adequately equipped so as to ensure accessibility for disabled users.
- To have their service immediately suspended in the event of theft or loss of their mobile device.
- To give users the option of a parental control service in the case of pay TV services, prior to the corresponding request, with ample explanations on the conditions and instructions provided on using the service by their service provider.

To sum up, all users are empowered to submit their complaints against their service providers in the event these do not comply with their legal or contractual obligations, before the IFT and PROFECO. The protection of consumers is integral to PROFECO's mandate.

Two specific topics can be elaborated on the protocols for co-operation between PROFECO and the IFT, and the regulation pertaining to number portability. The concluding part of this section shall set forth recent information on the number of complaints filed by telecommunication users, categorised by services and operators. It is important to note that PROFECO also has an important role in promoting the protection of not only individual, but also collective, rights carried out through class actions, for which the IFT, acting as an expert, should provide technical advice and information.

Office for Telecommunications in PROFECO

In September 2015, and in compliance with the mandate from the LFTR (LFTR, 2014, Transitory Article 21), PROFECO created a specialised office for the promotion and supervision of the users' rights established in the LFTR and LFPC – the Subprocuraduría de Telecomunicaciones.

While dealing with consumer protection in the telecommunication sector had previously been part of PROFECO's role, the magnitude of complaints related to these services (one in every four complaints received by PROFECO), justified the creation of a specialised department. The objective of this department is to have a specialised approach for telecommunication services (fixed and mobile telephony, Internet and pay TV) and to integrate all of PROFECO's functions related to telecommunication services (from registration of model contracts, processing of complaints and conciliation through to monitoring of advertising, class actions, advice and research).

An online dispute-resolution platform (Concilianet) was created to address consumer complaints on telecommunication services. The process can be carried out completely on line and is free of charge. Following a due administrative process, the service provider is mandated to appear before PROFECO to find a solution, otherwise fines may be imposed for non-attendance or prosecution commenced for misbehaviour. In 2016, 23% of complaints were processed through this route, up from 13% in 2015.

Co-operation between PROFECO and the IFT

PROFECO is in charge of promoting, protecting, advising, defending, reconciling and representing users and consumers. The IFT has a mandate to regulate, monitor and oversee the quality of telecommunication services in accordance with established indicators, parameters and procedures. In this sense, PROFECO is empowered to sanction operators' violations of users' rights, notwithstanding the IFT's functions with regard to the imposition of penalties for non-compliance with the minimum QoS parameters established in its regulations or in the concession contracts concluded with service providers.

In this regard, pursuant to the Constitutional Reform Decree in 2013, both institutions concluded an agreement aimed at collaborating and reaching concerted actions within the National Consumer Protection System.[53] This document, signed on 20 September 2016, was replaced by the current General Collaboration Framework Agreement (hereto referred as the "agreement"). Although very similar to its predecessor, its content adapted to the new provisions set forth in the LFTR.

The agreement aims to establish the basis for the collaboration, co-ordination and concerted action between PROFECO and the IFT, upon which the parties shall establish joint work programmes and carry out actions in order to safeguard telecommunication users' rights. In addition, the agreement is geared towards fostering information exchanges between both entities, enhancing their effectiveness in the execution of their respective mandates. Within this framework, the agreement provides for co-operation on various topics ranging from purely regulatory measures to the provision of technical advice for the analysis of the prevailing conditions in telecommunication markets, in order to facilitate the detection of possible anticompetitive or unfair practices on the part of operators.

Other relevant areas of collaboration can be mentioned: the verification functions on the clauses stipulated in service providers' contracts of adhesion; oversight functions on compliance with the applicable laws and regulations, including advertising issued by operators; consumer education through joint information campaigns; a joint analysis – which must be performed at a minimum on a yearly basis – of the Letter of Minimum Rights of Users of Telecommunication Services, amending its content whenever necessary; to update and maintain the Soy Usuario platform; and to supply adequate training to their personnel in the field of consumer protection in telecommunication services.

Indeed, an important example of collaboration between the IFT and PROFECO is the Soy Usuario platform, which is a web-based system implemented in July 2015 which

informs users of telecommunication services, as well as enables them to file their complaints and allegations (IFT, n.d.). The information currently disseminated through the website relates to: the abovementioned Letter of Minimum Rights; periodic reports on the complaints received by the IFT and PROFECO by users of telecommunication services; a guide to number portability and information as to the status of a request; a catalogue comprising mobile handsets with accessibility features for disabled individuals; a guide to the procedure in the event of mobile handset theft; information on mobile telephone registration through the International Mobile Equipment Identity (IMEI); and the comparison of plans offered by telecommunication service providers (IFT, n.d.). When a complaint is received through *Soy Usuario*, the service provider has a maximum of 48 hours to get back to the user.

User complaints

The Soy Usuario platform has been a useful tool to file user complaints in an expeditious manner. Between July 2015 when the platform was launched and August 2016, 10 946 complaints were filed, most of which pertained to mobile telephony and broadband services (i.e. 36.6% and 29.3%, respectively). A vast majority of user complaints were regarding problems with QoS (i.e. 55.3%, out of which half were related to broadband services and 22% to service failures of mobile telephony), but a significant amount were also related to issues concerning the billing process (i.e. 14.5%).

In 2016, a total of 32 921 complaints were filed with PROFECO, of which 88% were resolved through a conciliated settlement between the users and the respective service provider. Among the reasons given by consumers when presenting their complaints, the refusal to deliver the product or service was nominated most frequently with 18.2% of the cases, followed by the denial to rescind the contract (13.8%) or to make the warranty effective (11.9%).

Most of the complaints submitted during this period concerned mobile telephony, representing 54.1% of users' claims. Pay TV services accounted for 30% of complaints, followed by fixed telephony with 10.82%, and Internet services at 2.34%.

The aforementioned data are congruent with the information on rulings issued against service providers, as presented by PROFECO. A ruling is defined as a non-negotiable enforceable instrument emitted in favour of the consumer quantifying the violated contractual obligation, hence enabling it to initiate executive proceedings before the commercial jurisdiction to recoup said amounts from the service provider, as well as an additional amount derived from the inconveniences caused.

The most frequent grounds for the rulings related to undue charges, service deficiencies, such as those derived from incorrect or defective installation, poor service quality and operators' refusal to cancel the contracted service based on poor QoS complaints.

A further area that could be examined for potential improvements is the effectiveness of current sanctions in this field. The amount able to be imposed by PROFECO, the same as for all services and sectors, is MXN 150 000 (USD 8 000), albeit double that amount if associated with transgressions against indigenous communities. Given that the sanction may be regarded as modest in relation to some transgressions and that PROFECO does not collect the fine, in some cases the cost of initiating the process and collection is greater than the amount levied.

For pay TV services, there have been reports of complaints related to some cable and satellite providers degrading the signal of rival channels and public broadcast signals, with "snowy" channels persisting, despite using digital systems. These complaints, however,

have not publicly reached the IFT and information on whether the Investigative Authority (Autoridad Investigadora, AI) in the IFT has started a formal procedure on the matter of signal degradation can only be made public when that investigation is brought to the Board.

Some of the involved actors have approached PROFECO in an attempt to catalyse collective class actions in this regard. A collective class action under PROFECO has already been won against Sky and Dish for unfair billing practices. For its part, the IFT has yet to establish standards of quality against which those complaints can be assessed. Although PROFECO and the IFT co-ordinate through joint agreements and a joint website, no statistics on broadcasting complaints are yet publicly available, which hampers consumer information and choice.

According to the IFT, 12 non-conformities related to the issue of DTT have been received during 2016 and 2017 through the Soy Usuario platform, in cases related to user complaints about the lack of signal in their localities, changes in programming or the inability to visualise a channel in particular, either through pay TV or FTA providers. Of these complaints, 11 have already been treated.

Informing users

The Comparador de Servicios de Telecomunicaciones (price comparison website of telecommunication services) is a tool created by the IFT to allow users to consult and compare mobile and fixed providers' service offerings to optimise their decision-making processes. It contains detailed information on aspects such as the monthly flat rate, airtime, SMS and MB (IFT, 2015d). Furthermore, it provides information regarding all other features or options that are available to users for an additional fee. Although the tool was initially geared towards mobile services, today it is operational for pay TV, Internet and fixed telephony which are available in single, double- and triple-play packages. The Comparador is accessible to consumers from any device.

The IFT is further developing a Comprehensive Information System for Users, which combines tools to facilitate decision making when accessing and using telecommunication services. These tools include:

- A simulator of data consumption enabling the calculation of monthly data consumption when using applications or services available on the Internet, as well as for users to become aware of and compare the tariff plans offered by operators that fit a given data volume.
- Guaranteed coverage maps which allow any user to consult the guaranteed coverage areas reported by mobile operators by access technology, and at both state and street level.
- A catalogue of approved equipment, disclosing the main characteristics of mobile terminal models that have a certificate issued by the IFT, which guarantees that they comply with technical standardisation standards.
- A tool which allows users to consult contracts that have been authorised and registered by the IFT, as well as to compare the terms and conditions of service provision.
- A comparison of the quality of the mobile service according to the measurements made by the IFT and provides access to an interactive magazine, which lists the main points to consider before buying a telecommunication service.

Number portability

While users have been entitled to number portability since 2008, in abidance with the LFTR, the IFT issued a new set of regulations in November 2014. Among the advancements derived from the new rules on number portability is the fact that porting must be carried out within a maximum time frame of 24 hours, without levying any additional charges on the user.[54] Moreover, the new provisions significantly simplify the requirements and documentation users must submit for porting their numbers, enabling them make the request electronically, as long as the information received is legible.

The user's personal identification number (PIN) must be delivered by the potential service provider within 5 minutes following a request by the user, and must be confirmed by the user within 15 days in order to validate his/her desire to change operators. Consequently, operators cannot compel consumers to submit documentation such as prior invoices or contracts, nor subject portability to having a specific amount in their prepaid account balance. Furthermore, number portability may not be obstructed on the basis of pending payments on the part of the user.

To sum up, the IFT's new rules on number portability determine that, once porting is executed, users cannot be left without service for over 30 minutes in 95% of the cases, and in no event for over 120 minutes. Additionally, should the porting procedure exceed the regulatory deadlines, the user will be entitled to cancel the telecommunication services contracted without paying the corresponding contractual penalties and/or demand the payment of said penalties, notwithstanding the sanctions that may be imposed by the IFT. The right to number portability has no limitation concerning the number of times a user may port their mobile or fixed number and there are hence no minimum periods during which users must remain with a specific operator.

According to the IFT, between 2012 and 2016, the amount of ported lines almost tripled as a consequence of the simplified and expedited portability procedures for users and operators in the 2014 Number Portability Rules. While the number of ported lines (fixed and mobile) in November 2012 amounted to 286 380, in July 2016 they represented 1 478 841 lines (IFT, 2016h). Although the number of fixed lines subject to portability remained relatively low between January 2012 and May 2016, after this date the number of ported lines increased exponentially.

Since the 2013 reform, there have been major advances in consumer protection and empowerment. These include rapid number portability; the need for operators to promptly respond to service complaints; and the development of a number of useful tools for providing greater information to consumers. On the one hand, some smaller providers find the requirement for previous authorisation by PROFECO of every model contract to be burdensome given the number of contracts that may be associated with frequent changes in service offers or bundles. On the other hand, if considerations exceed 30 days, there is automatic clearance. Each application for clearance of a model contract costs USD 42. At the same time, the number of contracts needing to be approved makes it burdensome for authorities and leads to delays in the introduction of offers and slows the pace of competitive response. In some countries, such filing requirements are only mandated for operators beyond a certain threshold (e.g. number of customers), and while this may not be possible under the current legal requirements, it could be one way to reduce the regulatory burden for all parties if changes were made.

International aspects

Foreign and state ownership

The telecommunication sector has benefited from increased foreign direct investment since the reforms, most notably from AT&T, Eutelsat, Virgin Mobile and Altán Redes, the winning bidder for the Red Compartida. As previously noted, all telecommunication and satellite communication service markets have been opened to foreign investment, due to the fact that the 2013 constitutional reform raised the pre-existing 49% limitation to 100%. Prior to this change, the only sector in which 100% foreign investment was permitted was in mobile telecommunication services, subject to the approval of the National Commission on Foreign Investments (Comisión Nacional de Inversiones Extranjeras).

By way of contrast to telecommunication services, broadcasting services have not yet been completely liberalised, as they are still subject to a 49% restriction on foreign investment. This is additionally contingent upon reciprocal treatment in the investing company's country of origin and subject to a prior and favourable opinion issued by the National Commission on Foreign Investment. Reciprocity stipulates that should the country where a potential foreign investor is residing have a foreign direct investment (FDI) limitation of 30%, for example, then Mexico would mirror the restriction on that investor; therefore, the investor would be limited to a 30% investment instead of a 49% one.

The establishment of the new threshold is an important change considering that prior to the constitutional reform no foreign stake in broadcasting enterprises was permitted, although the establishment of a reciprocity requirement has introduced a discriminatory measure that should be eliminated.

Reciprocity limits Mexico's interest in being able to attract the best foreign bidders for broadcasting licences. It is indeed in Mexico's interest to abolish its reciprocity rules with respect to FDI in broadcasting as FDI limitations and conditions of reciprocity create regulatory restrictions for investors and preclude using foreign investments to reduce market concentration. In addition, suppressing the condition of reciprocity would be consistent with Article 9 of the OECD's Code of Liberalisation of Capital Movements, which excludes discriminating between other members "in authorising the conclusion and execution of transactions and transfers … which are subject to any degree of liberalisation" (OECD, 2016b).

Mexico has historically had very concentrated audiovisual markets and a long-standing limitation on foreign ownership in broadcasting. Governments throughout OECD countries have widely used broadcasting licences as a means to promote media pluralism and diversity or to achieve other objectives, such as local content requirements. Limiting foreign ownership, for the reasons governments define, are sometimes associated with these approaches.

Some OECD countries – such as Australia, the Czech Republic, Germany and Ireland – have lifted foreign ownership restrictions on broadcasting over the past decade or made changes to facilitate foreign participation.[55] In the United States, for example, a waiver is required from the Federal Communications Commission (FCC) for foreign ownership above 25%. In September 2016, however, the FCC adopted rules to extend to broadcast licensees the same streamlined rules and procedures that common carrier wireless licensees use to seek approval for foreign ownership, with appropriate broadcast-specific modifications (FCC, 2016a).

The Mexican broadcasting market is strongly influenced by its northern neighbour, the largest broadcast market in the world. In 2017, about 6 million Hispanics lived in the United States, approximately 63% from Mexico. This large Spanish-speaking market (half the size but twice the wealth of Mexico) both imports and exports a large proportion of programming with Mexico. The largest United States Hispanic production companies and broadcast networks are Univision and Telemundo, the latter owned by Comcast/NBC and with production, programming and distribution agreements with the Televisa Group (via Sky in Mexico).

In January 2017, the Televisa Group was given foreign ownership waiver permission in the United States by the FCC, to raise its private equity stake in Univision from 10% to 49% (with a limit of 40% voting interest), maintaining 60% US voting interest, with further compliance rules should shares become publicly traded (Federal Communications Commission, 2017). This waiver permitted more than the statutory limit of 25% foreign ownership (US Code, 1934, Title 47). The FCC concluded under its 2013 rules that this would "serve the public interest in diversity and competition in the media sector without any countervailing national security, law enforcement or trade policy concerns" and "facilitate investment from new sources of capital in Univision that would not otherwise be available and encourage reciprocity by foreign governments" (FCC, 2017, Section 310(b)(4)). Note that the 2016 rules are applicable for future decisions (FCC, 2016b). At the time of the decision, the Televisa Group already supplied 35% of Univision's programming.

Some supporters of the limitation on foreign ownership say such restrictions promote or protect the national identity values that are disseminated through broadcast content. However, consistent with previous OECD recommendations, the suppression of such FDI restrictions may greatly benefit Mexican consumers through the promotion of increased plurality on social or political matters, and the prospective generation of culturally and regionally diverse content (OECD and COFECO, 2012). Furthermore, the entry of foreign players to the Mexican broadcasting market may strengthen competition, by using experience obtained in other countries, or assist to open new markets for the export of content produced in Mexico (OECD and COFECO, 2012). Finally, other tools are available to foster or support the production and dissemination of content related to culture and national identity.

International mobile roaming

Mobile operators in Mexico can freely negotiate commercial agreements for international roaming with their peers in foreign countries. Entering into such agreements is mandatory for a preponderant operator or those deemed to have SMP. In addition, the LFTR grants MVNOs the right to conclude their own international roaming arrangements.

The approach towards MVNOs is an area where Mexico is among the leaders in terms of regulatory reform. That being said, the substantial changes evident in the Mexican market for international mobile roaming has to date been clearly driven by competition between MNOs. Meanwhile, MVNOs have not yet made many independent arrangements. Certainly, an MVNO using Telefonica's network appeared to be the only MVNO offering international mobile roaming by the close of 2016. Virgin Mobile, the largest player in the MVNO segment by number of users, and other MVNOs did not provide international roaming services to their customers at that time. This may be due to several factors. One could simply be that MVNOs are not addressing markets where users prioritise international mobile roaming. This may also be due to technical reasons or the market may be extremely competitive post-reform.

Historically, even full MVNOs wishing to offer international mobile roaming have been reliant on their host MNO and did not appear to be eligible to enter into the GSM Association's Standard Terms for International Roaming Agreements (STIRA) (Ypsilanti, 2013). In addition, in order to implement STIRA, the MVNO needed to have its own mobile network code, implying that it is only full MVNOs and not resellers who can negotiate wholesale roaming access.

Still, even having the legal right to do so and using their own mobile network code, full MVNOs may be reluctant to implement their own STIRA, because they could be resource consuming and lack economies of scale. That being said, any exclusion of full MVNOs from foreign wholesale roaming markets could reduce competition by precluding those players from seeking better deals for their outbound traffic (European Commission, 2016).

While Mexico's regulatory reform has enabled MVNOs to enter into international mobile agreements, it remains to be seen if this proves to be the most efficient way to do so, either together with existing MNOs or in association with the development of the Red Compartida. That being said, if foreign wholesale markets are not open to these MVNOs for direct negotiations, it could be a barrier to the MVNOs' development and a potential constraint on the Red Compartida compared to its competitors in the Mexican market. If this becomes an obstacle, Mexico will need to press for international reforms to address such constraints. This might include reviewing the eligibility of MVNOs to join STIRA.

For the present, however, there are few areas of the telecommunication market that have undergone more change than international mobile roaming. Compared to the situation before the reform, there are now many offers for roam like at home services for Mexican users travelling in North and South America. For example, AT&T provides its customers with two types of international communication offers: the "Casa" (Home) option, which allows users to employ their minutes, messages, Internet and social network services for the same price, in Mexico, Canada and the United States; and the "Roaming" option, which may be used in any other country, under two diverging pricing schemes (AT&T Mexico, n.d.).

For their part, Telcel and Telefonica have also launched roam like at home offers for North American travellers that are vastly improved from the period prior to the reform. By way of example, Telcel has produced a number of unlimited plans ("Telcel Max Sin Límite"), which enables users to enjoy unlimited airtime, SMS, WhatsApp, Facebook and Twitter and up to 5 Gigabytes (GB) of data in Mexico, Canada and the United States, for monthly fees starting at approximately USD 25 (Telcel, 2017).

Telefonica's Movistar, through its "Vas a volar" plans, is also offering unlimited calls and messages between Mexico, Canada and the United States; international roaming without additional cost; and unlimited Facebook, Twitter and Whatsapp, starting at USD 10 per month for 2 GB of data (Movistar, 2017a). Movistar also offers free international roaming to its prepaid customers in the United States, applicable to any balance reloading exceeding USD 3 (Movistar, 2017b).

Competition aspects and enforcement

The IFT: The competition authority of the sector

In cases involving the broadcasting and telecommunication sectors, the IFT is to act as the competition authority as well as the regulator (Article 7 of the LFTR). Since the reform, there have been two jurisdictional disputes between the IFT and COFECE in which both agencies claimed to be the competent competition authority to investigate cases involving the telecommunication and broadcasting sectors.

On 18 June 2015, the Nokia Corporation (Nokia) and Alcatel Lucent (Alcatel) notified the IFT about a market concentration that would have effects in Mexico, namely, an international transaction through which Nokia acquired Alcatel shares. During its review, the IFT informed COFECE of the merger, requesting comments on the transaction. COFECE replied by claiming to be the competent authority to evaluate the concentration and instructing the IFT to deliver the relevant files. In turn, the IFT issued its own statement in which it said it had authority, and placed the investigation on hold until a tribunal resolved the dispute.[56]

The designated tribunal decided this first jurisdictional dispute in favour of the IFT on 14 October 2015. It ruled, among other things, that analysis of the telecommunication and broadcasting sectors required a high degree of technical and specialised knowledge, and that this was why the Permanent Constituent designated the IFT for this purpose.

In 2016, the proposal for a merger between AT&T and TimeWarner raised another jurisdictional question between the IFT and COFECE, but with a different outcome. AT&T and TimeWarner presented notifications to both the IFT and COFECE regarding what they considered to be each entity's respective scope of action. The designated tribunal decided to allow the authorities to work jointly on the case, taking into account that the operation also affected sectors other than telecommunication and broadcasting, whose market concentration should be analysed by COFECE. Some of the markets for which COFECE was deemed competent were videogames, wholesale intellectual property licenses, collectibles, as well as licensing and distribution of audiovisual content for personal and theatrical use, in various formats, including digital.

The decision on jurisdiction in the AT&T and TimeWarner case is of some concern. It restores uncertainty regarding the competent authority in the telecommunication and broadcasting sectors. One of the main objectives of creating the IFT was to eliminate the double-window effect between the SCT and COFETEL, which risks being raised again as an issue following this decision between the respective roles of the IFT and COFECE. Furthermore, the decision does not consider the implications convergence has for the provision of services that rely on telecommunication and broadband infrastructure. It also does not consider that, pursuant to the LFCE, the IFT has constitutional autonomy to determine the scope of its specialised competence for the telecommunication and broadcasting sectors.

Mechanisms to promote competition

Coexistence of preponderance, substantial market power and monopolistic practices

The variety of mechanisms that are available to the IFT for promoting competition in the telecommunication and broadcasting sectors can seem complex on a first reading. That is especially true with regard to the concepts of preponderance, SMP and monopolistic practices, whose objectives, evidentiary requirements and remedies partially overlap. Detailed explanations of each concept are provided in the following sub-sections. Before proceeding to them, though, considering these concepts from a high-level perspective will begin to bring their differences into focus.

A starting point is to bear in mind that the IFT acts as both a sectoral regulator and a competition law enforcement agency. Preponderance is a regulatory concept, monopolistic practices are a competition law concept, and SMP is a competition law concept that can be applied in a regulatory setting.

Preponderance is a potent tool because establishing it is relatively simple and the remedies it makes available are capable of reshaping entire sectors. Preponderance was designed to slice through legal and administrative red tape, giving the IFT a faster, more effective means of injecting competition into telecommunication and broadcasting. However, it can be applied only to companies that dominate a whole sector at the national level, in other words either the telecommunication sector as a whole or the broadcasting (free-to-air/free digital television) sector.

SMP, in contrast, applies to relevant markets (sectors can be made up of many relevant markets). Thus, a firm need not dominate an entire sector for SMP to exist. Moreover, if a firm has SMP, then the IFT can apply the same remedies that are available under preponderance. That being said, proving that a firm has SMP requires a more demanding analysis than proving preponderance.

Finally, monopolistic practices are prohibited by Mexico's competition law and encompass both co-ordinated conduct by several firms (such as forming a cartel) and unilateral conduct (such as refusing to deal or predatory pricing) when it is carried out by a firm with SMP. Participating in a cartel is a *per se* offence, so it requires only proof of an agreement among horizontal competitors to fix prices or rig bids, etc. For unilateral monopolistic practices, establishing SMP is just one part of the evidentiary requirements. The IFT must also show that the company in question engaged in one of a number of forbidden practices with the intent or effect, or at least the possible intent or effect, of displacing the affected firm from the relevant market or a related one, substantially impeding its access, or establishing exclusive advantages in favour of one or several firms. Finally, the remedies available under the competition law are not entirely the same as those available to a sectoral regulator and typically do not involve the ongoing, detailed oversight that some regulatory remedies require.

Preponderance and sector definitions

As indicated earlier, the preponderance concept was developed after the previous regulatory and competition law frameworks proved to be slow, cumbersome and ultimately unsuccessful at addressing the lack of competition in Mexico's telecommunication and broadcasting sectors. Establishing that a firm is preponderant requires nothing more than proof that the firm's share of the nationwide business in one of those sectors is above 50%.[57] Once it determines that a firm is preponderant, the IFT can impose asymmetrical remedies on it. Those remedies will remain in effect until the IFT declares that effective competition conditions exist in the markets that make up the sector and the preponderant firm's sectoral share drops below 50%.

Preponderance is now one of the IFT's most powerful tools. Preponderance greatly facilitates the IFT's ability to stimulate competition by reducing the influence of the leading firms and easing barriers to entry, and to do so in an expedited fashion. The relative ease with which it can be put into action, particularly the minimalist evidentiary requirement, may make some observers uncomfortable, particularly if they view preponderance through the lens of competition law. Preponderance is a regulatory instrument, though, and it was uniquely designed for and specifically limited to Mexico's telecommunication and broadcasting sectors. It is neither part of Mexico's competition law nor applicable to the general economy. Furthermore, being a sectoral regulator as well as a competition authority, the IFT has some statutory objectives that are more intervention-oriented than a competition law enforcement perspective alone would suggest. Accordingly, preponderance is an *ex ante* measure, requiring no specific conduct to have

taken place before it can be applied. In contrast, apart from merger control, competition law enforcement involves *ex post* measures.

With regard to preponderance, the word "sector" is not to be confused with the competition law concept of a "relevant market." Article 3 of the LFTR defines the telecommunication sector broadly, as it encompasses not only fixed and mobile telephone service, but pay TV (including satellite and cable services), as well. In contrast, Article 3 defines the broadcasting sector narrowly, as it includes only free digital (formerly FTA) television.[58] All of these definitions have important implications for the IFT's ability to promote, protect and guarantee competition in the various parts of the economy it regulates, as will be discussed shortly. The decision not to include pay TV in the broadcasting sector, but rather in the telecommunication sector, has had a particularly significant influence on the IFT's capacity to affect competition in pay TV.

The process for identifying whether there is a preponderant firm or economic agent in the broadcasting or telecommunication sector can be initiated at the request of the federal executive, the Ministry of Economy (Secretaría de Economía, SE), or an affected economic agent, or else by legal mandate. The AI of the IFT then issues an initiating decision and publishes an extract in the Federal Official Gazette, whereupon the investigation period starts. That period cannot be less than 15 days or more than 45 days. The AI may extend that period by an equal amount of time if an extension is duly justified. That gives the AI a maximum of 90 days to complete its preponderance investigation.

Upon completing the investigation, if the AI finds that the necessary evidence for declaring a preponderant exists, it notifies the alleged preponderant. That firm then has an opportunity to submit evidence on its own behalf, after which the IFT's Board of Commissioners[59] (the Board, also known as the "plenary" or "*pleno*") will issue a resolution containing its decision in the matter. If the Board finds that a party is preponderant, then the IFT is empowered to impose asymmetric regulations. Those regulations could be designed, for example, to address problems with information, service offering and QoS, exclusive agreements, or limitations on the use of terminal equipment between networks. The measures imposed could include, for instance, regulation of tariffs and network infrastructure, including local-loop unbundling or, where appropriate, structural or functional separation.

In 2014, the IFT declared a group of companies controlled by América Móvil to be preponderant in the telecommunication sector. That group includes the largest fixed and mobile operators, Telmex and Telcel, respectively. The IFT also declared the Televisa Group to be a preponderant agent in the broadcasting sector. The IFT imposed asymmetric regulations on both of them as described earlier.

In considering the current regulatory state of play in Mexico, it is necessary to take into account that in addition to being the leading free digital broadcasting company, the Televisa Group is also an important operator in the telecommunication sector. It owns both the largest cable TV service network and the largest satellite television service in Mexico. Nonetheless, its pay TV operations, though sizeable, are not sufficiently large for it to displace América Móvil as the preponderant agent in the telecommunication sector as it was defined, due to that group's far larger operations in fixed and mobile telecommunication. Therefore, the pay TV businesses of the Televisa Group do not fall within the scope of its status as a preponderant and are not subject to any asymmetric regulations that follow from it.

Substantial market power determination

The LFTR, along with the LFCE, provides the IFT with another route for imposing asymmetrical regulations on companies involved in the telecommunication or broadcasting sectors, which is to determine that a company has SMP. In one sense, the SMP approach is easier for the IFT than preponderance because there is no need to show that a company has SMP in an entire sector. Instead, the IFT can narrow its focus to a relevant (product and geographic) market that is within one of those sectors and that is defined using competition law methods. On the other hand, the SMP approach is more difficult than preponderance because proving a minimum market share is only part (and typically the relatively easy part, at that) of proving SMP.

SMP is a competition law concept in that competition law standards are used to determine its existence. However, it is also a regulatory tool because once the IFT determines that a company has SMP, the IFT need not prove anything else before it is authorised to impose remedies, whereas having SMP alone (i.e. without some additional proof of conduct) would be insufficient to trigger a violation of Mexico's competition law. Moreover, those remedies can be regulatory in nature. That is to say, the remedies can be designed to fulfil objectives that require ongoing and detailed intervention, including *ex ante* interventions. In contrast, competition law remedies are designed for meeting competition law objectives, which do not normally require sustained oversight or intricate involvement by an agency and (apart from the merger control context) are imposed *ex post*.[60] Consequently, a company found to have SMP might find itself facing some or all of the same regulatory measures that the IFT has imposed on preponderant firms.

Under Article 59 of the LFCE, to determine whether one or several economic agents have SMP in a relevant market, the following substantive elements must be considered:

- the market share[61] and ability to unilaterally fix prices or restrict supply in the relevant market, without competitors being actually or potentially able to counterbalance such power
- the existence of barriers to entry and the factors that could foreseeably alter either those barriers or the supply of other competitors
- competitors' existence and power
- the respective abilities of the firm(s) under investigation and competitors to access input sources
- the recent market behaviour of the firm(s) under investigation
- any other factors provided by the regulatory provisions, and the technical criteria issued by the commission to that effect.

Under Article 96 of the LFCE, the procedure for identifying whether there is a firm or economic agent with SMP in the broadcasting or telecommunication sectors can be initiated at the request of the federal executive, the SE or an affected economic agent, or else by legal mandate. The AI then issues an initiating decision and publishes an extract in the Federal Official Gazette, which starts the investigation period. That period must last between 15 and 45 days. The AI, however, may extend that period by up to 45 more days if an extension is duly justified. The AI therefore has a maximum of 90 days to complete its SMP investigation – exactly the same maximum period that it has for preponderance investigations.

Upon completing the investigation, if the AI finds that the conditions for determining the existence of SMP have been met, it issues a preliminary statement to that effect, including its evidence and reasoning. Next, there is an opportunity for the firms named in the matter to present arguments and evidence, and for the IFT's Economic Competition Unit (Unidad de Competencia Económica, UCE) to consider the evidence and provide advice to the Board. Finally, the Board issues a resolution containing its decision in the matter. If the Board finds that a party has SMP, then the IFT is empowered to impose asymmetric regulations on it.

Monopolistic practices determination

When the IFT acts as a competition authority, it can conduct investigations and enforce the LFCE in matters involving anticompetitive horizontal agreements (e.g. cartels) and abuse of dominance. In Mexico, these are referred to, respectively, as absolute and relative monopolistic practices.

Absolute monopolistic practices (cartels)

Article 53 of the LFCE bans contracts, agreements, arrangements and combinations among competitors that have the purpose or effect of: fixing prices; reducing output or demand; dividing or allocating markets; rigging bids; or exchanging information with any of the foregoing purposes or effects.

Under Article 127 of the LFCE, the IFT may impose (among other remedies and sanctions) a maximum fine equivalent to 10% of a firm's annual income for engaging in an absolute monopolistic practice, regardless of any corresponding civil or criminal liability. The Federal Criminal Code has also been amended to strengthen criminal sanctions against cartels. Participation in a cartel is now punishable by 5 to 10 years in prison (previously 3 to 10 years), plus the equivalent of 1 000 to 10 000 days of salary (previously 1 000 to 3 000 days). Furthermore, company executives and directors who participate in cartels may be banned from serving in such positions for up to five years. The strengthening of Mexico's penalties against cartels is consistent with a trend that has been taking place around the world for several years (OECD, 2016a; 2011).

Relative monopolistic practices (abuse of dominance)

Articles 54-56 of the LFCE ban a specific group of acts when they are carried out by entities with unilateral or joint SMP in the relevant market in which the acts take place. The ban applies whether such an act is executed individually or jointly, but it is essential that the act "[h]as or may have as its purpose or effect, in the relevant market or a related market thereof, that of unduly displacing other economic agents, substantially impeding their access or establishing exclusive advantages in favour of one or several economic agents". The specific acts in the group prohibited by these articles include resale price maintenance, tying, exclusive dealing, refusal to deal, collective boycotts, price discrimination, predatory pricing and raising rivals' costs, among others. Parties alleged to have engaged in relative monopolistic practices are given the opportunity to prove that their actions have pro-competitive effects, or efficiencies, that outweigh any harm to competition.

Under Article 127 of the LFCE, the IFT may impose (among other remedies and sanctions) a maximum fine equivalent to 8% of a firm's annual income for engaging in a relative monopolistic practice, regardless of any corresponding civil liability.

The LFCE's evidentiary requirements for abuse of dominance are easier to meet than those in many other OECD countries. Articles 54-56 recognise the possibility of joint SMP rather than requiring a single firm to possess it, and they are satisfied by proof that an act was merely intended to cause certain results (as opposed to requiring proof that it actually caused or was likely to cause those results). Articles 54-56 are even satisfied by proof that conduct may have been intended to have such effects. Furthermore, no actual or even possible harm to competition is necessary. Instead, proof that the act harms, may harm, is intended to harm or may be intended to harm another economic agent is sufficient. In other words, showing that either market competition itself or consumer welfare has been or could be damaged by the conduct in question is needed.

Concentrations

The IFT is also Mexico's competition authority for the purpose of merger control in the telecommunication and broadcasting sectors. Under Article 62 of the LFCE, a merger whose purpose or effect is to obstruct, diminish, harm or impede free market access and economic competition is considered unlawful. Article 63 sets out the factors to be considered, which include mainstream elements such as the definition of the relevant market, the level of post-merger market concentration and the magnitude of the change from the pre-merger level, the market power (if any) of the main competitors, the merger's expected effects on rivals and consumers, and merger-related efficiencies.

Under Article 64, the following factors will be considered as indications that the merger is anticompetitive:

- confers or may confer SMP on the merged entity
- increases or could increase SMP
- has or may have the purpose or effect of imposing barriers to entry or impeding third parties' access to the relevant market or related markets or
- has the purpose or effect of substantially facilitating the merging parties to engage in conduct otherwise prohibited by the LFCE (particularly monopolistic practices).

Even if a merger presents risks of anticompetitive effects, however, the IFT can still authorise it subject to remedies. The remedies must be directly related and proportional to the correction of the merger's anticompetitive effects. The remedies may include an obligation to:

- carry out, or abstain from, certain conduct
- divest specific assets, rights, interests or stock to third parties or viable competitors
- modify or eliminate certain conditions of the merger agreement or acts intended to be executed, and/or
- implement actions to foster the participation of competitors in the market.

Competition policy enforcement

Roles of the Investigative Authority (Autoridad Investigadora) and the Economic Competition Unit (Unidad de Competencia Económica)

The constitutional amendment of 2013 set up measures to create separate administrative units within the IFT that investigate monopolistic practices and market conditions. The AI

is the unit responsible for conducting the investigation of procedures related to competition matters. In exercising its powers, the AI has technical and administrative autonomy regarding its operations and resolutions. Among other responsibilities, the AI:

- receives, and if necessary, initiates or dismisses complaints for probable infringements of the LFCE
- conducts investigations of probable violations of the LFCE
- conducts investigations in matters concerning effective competition and the existence of SMP in a relevant market
- conducts investigations to determine the existence of barriers to competition and free market access or of essential facilities that could generate anticompetitive effects.

The purpose of this structure is to allow investigations to be conducted independently from the trial phase, if there is one, providing a more impartial execution of the duties handled by the IFT. Prior to the reform, the office in charge of investigations was the same one that presented the cases before the Board.

Every procedure, therefore (apart from those related to *ex ante* merger clearance), is divided into two stages. First, an investigation is opened and carried out by the AI. Then, if there is a preliminary finding of an anticompetitive practice or an unlawful merger, the AI issues a statement and the case enters a second stage.

In the second stage, the parties that are alleged to have breached the law have the opportunity to argue that the AI's preliminary findings are erroneous. The UCE, which is separate from the AI, is in charge of implementing this second stage. At the end of its inquiry, the UCE issues advice to the Board, which then reaches a determination or "resolution". The Board's resolution may be appealed to the specialised courts.

Significant cases

This section illustrates the relationship between the AI, the UCE, the Board of Commissioners and the specialised courts by presenting a selection of competition-related cases in which the views of these entities differed. It also shows how a variety of significant, competition-oriented matters have been analysed in the post-reform period. Finally, it offers some commentary on several of those decisions.

The matters in which there was a difference of opinion within the IFT are summarised in Table 4.5. Presenting the information in tabular form makes it easier to compare what happened at each stage of the decisional process within the IFT. Following the table, these and several other significant matters are organised according to the type of case involved (e.g. SMP, abuse of dominance, etc.) and discussed.

Substantial market power cases

As indicated above, the IFT's power to declare that an economic agent has SMP in a relevant market and to take remedial action on that basis alone is a hybrid of sectoral regulation and competition law. The method for determining whether SMP exists is based on competition law principles. If SMP is found, then the IFT can apply regulatory remedies. No additional evidence is required. Because this power's threshold element comes from competition law, though, a selection of the IFT's SMP cases is included here.

Case AI/DC-001-2014 (general SMP investigation to determine whether SMP existed in any market in the telecommunication or broadcasting sectors)

First resolution

After conducting an investigation of the pay TV business in Mexico, the AI found that the Televisa Group held SMP in more than 87% of the local pay TV markets analysed. Before reaching that conclusion, the AI investigated each of the elements that the competition law requires to be considered in SMP determinations (Table 4.5).

The first factor underlying the AI's conclusion that SMP existed – that the Televisa Group had the largest market share in all of the local markets at issue – is not particularly meaningful by itself, but it is relevant in the context of the other factors. The next factor – that the Televisa Group was vertically integrated and controlled its own content, whereas rivals needed access to its content to be competitive – is significant because it showed that the Televisa Group was not dependent on others for inputs, but rather that others were dependent on it. That put the Televisa Group in a position to be able to potentially disadvantage rivals by refusing or delaying access to its content to them. Furthermore, the Televisa Group paid for exclusive rights to distribute some other content. In other words, if it so wished, it could seal off some content from its competitors. In addition, the Televisa Group had another advantage for accessing content owned by others, which was that it had the widest subscriber base among pay TV providers. That gave other content owners an incentive to distribute via the Televisa Group.

The remaining factors are all important, but the sixth one – that the Televisa Group's profit margins were greater than those of its local and international peers, and that the margins were stable – is especially significant given what followed in this matter. The fact that its margins were stable and comparatively high while its national market share either grew or at least was not significantly eroding (depending on how the Televisa Group's aggregate share is measured) is inconsistent with the idea that these pay TV markets were competitive.

The UCE then considered the AI's evidence and reasoning. Although the specifics of the UCE's opinions are never released,[62] it is understood that the UCE fully agreed with the AI's finding in this matter. In other words, the UCE concurred that the Televisa Group had SMP in all the local pay TV markets specified by the AI, even after taking into account the arguments submitted by the Televisa Group and other economic agents. The UCE, therefore, advised the Board to reach the same conclusion that the AI had reached.

The Board, however, disagreed with the AI and the UCE in several respects. One of its main reasons for doing so was its finding, at that time, that the Televisa Group's share of the nationwide pay TV market had declined by about 2 percentage points between September 2013 and March 2015.

That amount does not seem to be solid ground on which to base a disagreement with the AI and the UCE. Relatively minor market share movements are not reliable indicators of the presence or absence of SMP, especially when they are part of a shifting pattern rather than a steady trend. The pay TV companies under Televisa Group's ownership in 2016 had a market share that was identical to what they collectively had in 2011-12, that is, approximately 61% (see Figure 4.6). In other words, those companies gained and lost the same amount of market share during those years.

Table 4.5. **Sample of investigations in which the Board rejected the Investigative Authority's findings**

Case	Investigative Authority's preliminary statement	Economic Competition Unit's advice to Board of Commissioners	Board of Commissioners' decision
AI/DC-001-2014 (a general, regulatory substantial market power [SMP] case). On 5 September 2014, the Investigative Authority (Autoridad Investigadora, AI) initiated a market investigation to determine whether an economic agent with SMP existed in any relevant market in the telecommunication or broadcasting sectors. This was a **general investigation** that was not connected to any particular transaction or event. This investigation was performed under the provisions of Transitory Article 39 of the Federal Telecommunications and Broadcasting Law (LFTR), regarding Article 96 of the Federal Economic Competition Law (LFCE).	The AI issued its preliminary statement on 13 March 2015 concluding that the **Televisa Group had SMP** in 2 124 of 2 436 markets under analysis. The relevant markets comprised the supply of pay TV services through any means of transmission in geographic areas defined by municipal boundaries (except for Mexico City and its metro area). The AI found that: 1) the Televisa Group had the largest market share in all of the 2 124 markets; 2) the vertically integrated Televisa Group controls its own content, whereas rival pay TV firms need access to the Televisa Group's content for their bundles to be competitive; 3) the Televisa Group could participate in pay TV markets through two different platforms (cable and satellite), which allowed the company to: a) offer a broader range of service and price packages to customers with varying payment capacities and preferences, thereby winning a greater share of business; and b) implement pricing strategies designed to limit the Televisa Group's rivals; 4) the Televisa Group faced few competitors, and those firms had no capacity to exert competitive pressure sufficient to erode the Televisa Group's market shares or profit margins; 5) there were significant barriers to entry, such as the amount of investment necessary to enter and the uncertainty of recouping it; and 6) the Televisa Group earned profit margins exceeding those of its local and international counterparts, and the margins were not declining, which was inconsistent with a competitive environment.	The Economic Competition Unit (Unidad de Competencia Económica, UCE) concluded that the Televisa Group **had SMP** in 2 124 local markets of pay TV services. This advice took into account the conclusions made in the preliminary statement by the AI and the arguments submitted by the Televisa Group and other economic agents.	On 30 September 2015, the Board of Commissioners decided in a 5-2 vote that there was **not enough evidence to demonstrate the existence of an economic agent with SMP** under the provisions of Articles 59 and 96 of the LFCE. First, however, the Board agreed that the relevant product/service market was pay TV services. It also noted that over-the-top (OTT) services were not in that relevant market for a number of reasons, including that OTTs depend on high-quality Internet connections. The Board pointed out that Internet speeds are relatively low in Mexico and a significant portion of pay TV customers do not have an Internet connection, let alone a broadband connection. The Board also acknowledged that the Televisa Group was growing. Nevertheless, the Board was particularly moved by the fact that other pay TV providers had grown more. Between September 2013 and March 2015, the Televisa Group's aggregate (cable and satellite) national pay TV market share had declined from 64.1% to 62.2%, the Board said. It also noted that the Televisa Group was bound by must-offer measures to provide competitors with access to its most popular broadcast television channels. The Board was therefore not convinced that the Televisa Group's competitors face any restrictions to expanding or that the Televisa Group could unilaterally set market prices or restrict supply. On 19 January, 2017, this decision was invalidated by the First Specialised Tribunal, which found that the Board had erred by taking into account evidence from beyond the date the investigation was initiated. The tribunal therefore ordered the Board to reconsider the matter and issue a new resolution. On 2 March 2017, the Board released a new resolution declaring that the Televisa Group **had SMP in a national relevant market consisting of pay TV services**. This time the Board considered evidence only from the period January 2009 to August 2014.

Table 4.5. **Sample of investigations in which the Board rejected the Investigative Authority's findings** (*continued*)

Case	Investigative Authority's preliminary statement	Economic Competition Unit's advice to Board of Commissioners	Board of Commissioners' decision
(*continued*)			The geographic market was national, the Board decided, because satellite platforms actually and potentially compete nationwide and thus fixed (cable) platforms face national, not local, competition. That is why cable TV offers are comparable throughout Mexico, the Board reasoned. It also decided that the relevant service market is segmented, with one part consisting of satellite platforms that can offer service nationwide but are limited to pay TV alone and another part consisting of cable platforms that do not have nationwide networks but can deliver converged services (such as pay TV plus fixed telephony and/or fixed broadband). The Televisa Group had SMP, the Board said, because the Televisa Group was the only competitor that operated both satellite and cable platforms and because it produced and owned the rights to high-value content that was not available to its rivals. The must-carry obligations that were part of the 2013 constitutional reform had not yet had a significant effect during the period analysed. Other competitors therefore could not match the Televisa Group's offerings, so it did not face competitive pressure. The Board added that the Televisa Group did not lose any share of the national market during the analysed period, despite the efforts of its rivals. Furthermore, it pointed out that the necessary investments in infrastructure and access to content amounted to significant entry barriers. As a result of the second resolution in this matter, the IFT will be able to impose asymmetric measures on the Televisa Group in the pay TV market and it will begin proceedings for that purpose. The Board noted that any measures must be timely, reasonable, appropriate and relevant when they are enacted.

Table 4.5. **Sample of investigations in which the Board rejected the Investigative Authority's findings** (*continued*)

Case	Investigative Authority's preliminary statement	Economic Competition Unit's advice to Board of Commissioners	Board of Commissioners' decision
AI/DC-002-2014 (Regulatory SMP case following merger in Telecoms Sector). On 14 August 2014, the Televisa Group notified the IFT that it had acquired Grupo Cable TV, S.A. de C.V. (**Cablecom**), under the provisions of Transitory Article 9 of the LFTR. Cablecom was a competitor of the Televisa Group in 100 of the 102 local pay TV services markets in which Cablecom operated. The AI began an investigation on 17 December 2014 to assess whether this merger had created or strengthened SMP for the Televisa Group in any market in the telecommunication sector (including pay TV services, Internet broadband fixed services, fixed telephony, leased lines or interconnection services to end fixed calls).	On 22 April 2015, the AI stated that the Televisa Group **had obtained and/or increased SMP in 99 local markets for pay TV services**. The AI emphasised that: 1) the merger made the Televisa Group the largest pay TV provider in those markets; 2) the post-merger Herfindahl-Hirschman Index and Dominance Index far exceeded the maximum levels at which mergers are presumed not to affect competition; 3) the merger involved the two main competitors in these markets and thus eliminated an important source of competition. Of the 99 markets in which the Televisa Group was found to be the leader, 63 had only one competitor to the Televisa Group; 4) the merger increased the number of pay TV markets in which the Televisa Group was able to compete through two different platforms (cable and satellite) from 16 to 100, allowing it to offer a broader range of services with different payment capacities and options, thereby covering the low-, middle- and high-end segments; 5) by increasing concentration in these markets, the merger reduced the competitiveness of the Televisa Group's rivals, so they could not be expected to counteract the Televisa Group's ability to set prices; 6) there are barriers to entry in pay TV markets (same reasons as in case 001-2014, plus the cost of marketing and content acquisition); 7) the incentives of other firms to enter could be undermined by the position attained by the Televisa Group through this merger, as well as by the general increase in concentration, which reduced their prospects for viability because they would be competing against firms that have much larger market shares; and 8) the Televisa Group controls its own content, whereas rival pay TV firms need access to the Televisa Group's content to be competitive (the same reasoning as in case 001-2014).	The UCE´s advice to the Board suggested that the Televisa Group **did not have SMP** in the 99 local markets identified by the AI. This advice was issued after the UCE took the Board's decision in case AI/DC-001-2014 into consideration. Given that the AI analysed and used the same evidence in this matter as in the other one, the UCE advised that there was not enough evidence to determine that there was an economic agent with SMP in the relevant markets. Also based on the Board's decision in case AI/DC-001-2014, the UCE noted some methodological mistakes regarding the geographic definition of the relevant markets and the relevant service, which made it impossible to assess either the Televisa Group's market power or the competitive dynamics in the relevant markets.	On 2 November 2015, the commissioners concluded by a vote of 5-2 that there was **not enough evidence to establish that any economic agent had SMP** in the markets identified by the AI. This decision took into account that: 1) although the Televisa Group had the largest share in pay TV services, its principal competitors had increased their market shares in terms of revenue and subscribers between September 2013 and June 2015. Thus, the AI's preliminary statement did not show evidence that restraints on competition were preventing other concessionaires from expanding their operations; 2) due to the must-offer obligation, the Televisa Group was forced to share the highest-value broadcast signals with other concessionaires, so the Televisa Group's competitors were able to compete in the pay TV market with high-value content; 3) there was no analysis of competition dynamics between: a) multi-service providers; and b) providers that offer only pay TV services, therefore it is not clear that the Televisa Group had the power to set market prices in the multi-service markets; 4) there was no disaggregated information on commercial offers of all platforms used to provide pay TV services, so it was impossible to assess the competitive dynamics among them; and 5) the preliminary statement showed methodological limitations regarding the geographic definition of the relevant markets.

Table 4.5. **Sample of investigations in which the Board rejected the Investigative Authority's findings** (*continued*)

Case	Investigative Authority's preliminary statement	Economic Competition Unit's advice to Board of Commissioners	Board of Commissioners' decision
AI/DC-002-2015 (Regulatory SMP case following merger in telecom sector). On 8 January 2015, the Televisa Group notified the IFT that it had acquired Cablevisión Red, S.A. de C.V. (**Telecable**), under the provisions of Transitory Article 9 of the FTBL. Telecable was a competitor of the Televisa Group in 64 of the 65 local pay TV services markets in which Telecable operated. On 29 April 2015, the AI began an investigation of whether, as a result of this acquisition, the Televisa Group had obtained and/or increased SMP in a market in the telecommunication sector (including pay TV services, Internet broadband fixed services, fixed telephony, dedicated links or interconnection services to end fixed calls).	In its preliminary statement 3 September 2015, the AI found that the Televisa Group **obtained and/or increased SMP in 63 local markets for pay TV services**. The finding was based on seven factors: 1) the transaction made the Televisa Group the largest pay TV provider in 63 local markets; 2) the AI's preliminary statements in cases AI/DC-001-2014 and AI/DC-002-2014 had already concluded that the Televisa Group had SMP in 36 of the 63 markets; 3) with this transaction the Televisa Group had acquired its largest competitor; 4) the transaction enabled the Televisa Group to offer a broader range of services, particularly in the low- to middle-cost segments; 5) the Televisa Group ´s competitors did not have the capacity to restrain the Televisa Group's power to set market prices; 6) there were significant barriers to entry; and 7) the Televisa Group controlled its own content and had a competitive advantage in gaining access to content produced by other companies.	The UCE´s advice to the Board suggested that the Televisa Group did not have SMP in the 63 local markets mentioned by the AI. The UCE concluded that, given the criteria established by the Board of Commissioners in cases AI/DC-001-2014 and AI/DC-002-2014, and that the AI analysed and used the same evidence as it did in those matters, there was insufficient evidence to determine that there was an economic agent with SMP in the relevant markets. Furthermore, and again based on the Board's decision in case AI/DC-001-2014, the UCE found some methodological mistakes regarding the definition of the relevant geographic markets and the relevant service market, which made it impossible to assess either the Televisa Group's market power or the competitive dynamics in the relevant markets.	On 29 February 2016, the Board voted 5-2 that there was **not enough evidence to establish the existence of an economic agent with SMP** in the 63 relevant markets. Its decision rested mainly on five factors: 1) although the Televisa Group had the largest share in pay TV services, its principal competitors increased their market shares in terms of revenue and subscribers from September 2013 to June 2015. Thus, the AI's preliminary statement did not show evidence that other concessionaires faced competitive restraints to increasing their operations; 2) due to the must-offer obligation, the Televisa Group was forced to share the highest-value broadcast signals with other concessionaires, so the Televisa Group's competitors were able to compete in the pay TV market with high-value content; 3) there was no analysis of competition dynamics between multi-service providers and concessionaires that offer only pay TV services, so it is not clear that the Televisa Group had the power to fix prices in view of competition from multi-service markets; 4) there was no disaggregated information on commercial offers of all platforms used to provide pay TV services, so it was impossible to assess the competitive dynamics among them; and 5) the preliminary statement showed methodological weaknesses regarding the definition of the geographic relevant markets.

Table 4.5. **Sample of investigations in which the Board rejected the Investigative Authority's findings** (*continued*)

Case	Investigative Authority's preliminary statement	Economic Competition Unit's advice to Board of Commissioners	Board of Commissioners' decision
E-IFT/UC/DGIPM/CP/0002/2013 (*Ex post*, competition law merger case). On 12 December 2011, the former competition authority, the Federal Competition Commission (Comisión Federal de Competencia, COFECO), opened an investigation of an allegedly prohibited merger in the telecommunication and broadcasting markets between the Televisa Group, Corporativo Vasco de Quiroga, S.A. de C.V. (**CVQ**) and GSF Telecom Holdings, S.A.P.I. de C.V. (**GSF**). Due to the constitutional amendment of Article 28, COFECO ceased to exist and the IFT assumed responsibility for enforcing Mexico's competition law in the telecommunication and broadcasting sectors. Therefore, the IFT continued this investigation.	The AI issued a statement on 21 October 2014, concluding that **the parties had probable responsibility for conducting a prohibited merger**. The decision was based on the following: 1) the Televisa Group acquired, through CVQ, a percentage of GSF shares; 2) the acquired shares gave the Televisa Group and CVQ the power to appoint GSF's directors and executives; 3) new GSF managers were the Televisa Group-affiliated and could not be considered independent, so there were incentives for them to act in a co-ordinated fashion; and 4) the Televisa Group and GSF competed in some markets – in particular, pay TV markets.	In accordance with Article 33, Section VI of the previous LFC,[1] the UCE would not submit advice or draft resolutions directly to the Board in connection with abuse of dominance, collusion or merger cases. Instead, in such cases, the UCE´s role was to assist and work with the Commissioner-Rapporteur, providing analytical and technical tools. In other words, the preliminary advice to the Board was not provided by the UCE, but by the Commissioner-Rapporteur, with the participation of the UCE's staff.	On 29 April 2015, the Board, with the Commissioner President casting the deciding vote, ruled that the Televisa Group**, CQV and GSF had no responsibility for carrying out a prohibited merger** under Articles 16, 17 and 18 of the LFCE. The resolution stated that the AI had not proved that GSF's loss of independence resulted in less competition in the pay TV market. Therefore, the AI did not establish that the acquisition gave the Televisa Group the power to unilaterally fix prices in that market. Furthermore, the AI did not prove that the firms involved had exchanged information or that they had changed the structure of the markets in a way that would facilitate anticompetitive practices.
E-IFT/UC/DGIPM/PMR/0005/2013 (Relative abuse of dominance [refusal to deal] case under competition law). On 15 April 2012, COFECO began an investigation to analyse whether the Televisa Group had unilaterally refused to deal several broadcasting and pay TV channels to **Maxcom** TV, S.A. de C.V. (Maxcom TV) for the purpose of unduly displacing Maxcom TV, substantially impeding its access to the market, and/or establishing exclusive advantages in favour of other economic agents. Due to the constitutional amendment of Article 28, COFECO ceased to exist and the IFT assumed responsibility for enforcing Mexico's competition law in the telecommunication and broadcasting sectors. Therefore, the IFT continued this investigation.	On 27 February 2015, the AI issued a statement determining that the Televisa Group **had probable responsibility for unilaterally refusing to license** several TV channels to Maxcom TV without any legal or economic reason.[2] The AI found that: 1) there was not any economic justification for the Televisa Group to unilaterally deny its television channels to Maxcom TV in exchange for a fair rate; 2) the Televisa Group had SMP in the trade of licenses to retransmit broadcasted television channels; and 3) the purpose of the refusal was to establish exclusive advantages in favour of Empresas Cablevisión, S.A.B. de C.V., a subsidiary of the Televisa Group.	In accordance with Article 33, Section VI of the previous LFC, the UCE would not submit advice or a draft resolution directly to the Board in connection with abuse of dominance, collusion or merger cases. Instead, in such cases, the UCE's role was to assist and work with the Commissioner-Rapporteur, providing analytical and technical tools. In other words, the preliminary advice to the Board of Commissioners was not provided by the UCE, but by the assigned Commissioner-Rapporteur with the participation of the UCE's staff.	On 23 September 2015, the Board decided, with a vote of 5-2, that the Televisa Group was not responsible for a relative abuse of dominance by unilaterally refusing to deal its television channels to Maxcom TV. The Board found that **although** the Televisa Group **had SMP in the relevant market, the AI's statement of probable responsibility did not contain enough evidence** to prove that the Televisa Group refused its television channels with the purpose and/or the effect of substantially preventing Maxcom TV's access to the market and establishing exclusive advantages in favour of any economic agent.

Table 4.5. **Sample of investigations in which the Board rejected the Investigative Authority's findings** (*continued*)

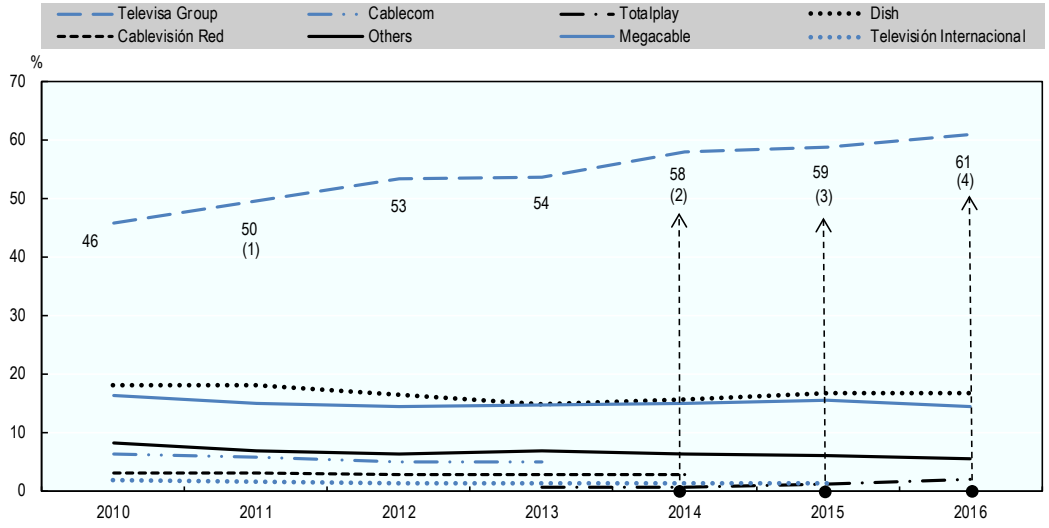
Case	Investigative Authority's preliminary statement	Economic Competition Unit's advice to Board of Commissioners	Board of Commissioners' decision
AI/DE-002-2015 (Relative abuse of dominance [margin squeeze] case under competition law). On 25 October 2010, COFECO began an investigation in the market of interconnection service for the termination of mobile phone calls after a complaint was filed against Teléfonos de México, S.A.B. de C.V. (**Telmex**), Teléfonos del Noroeste, S.A. de C.V. and Radiomóvil Dipsa, S.A. de C.V. (**Telcel**) for several abuse of dominance practices pursuant to Article 10, Sections V, X and XI of the LFC.[3] Due to the constitutional amendment of Article 28, COFECO ceased to exist and the IFT assumed responsibility for enforcing Mexico's competition law in the telecommunication and broadcasting sectors. Therefore, the IFT continued this investigation.	On 11 August 2015, the AI issued a statement of **probable responsibility** finding that: 1) since 2007, Telcel charged higher rates to its competitors than the rates it charged its own final consumers for the termination of mobile phone calls; 2) Telcel's rates substantially prevented its competitors from offering lower prices to consumers; and 3) Telcel's conduct was prohibited by Article 10, Section XI of the LFCE.	The UCE advised that **Telcel had already been sanctioned in a previous matter for the conduct at issue** in the AI's statement of probable responsibility. Therefore, under the legal principle that no legal action can be instituted twice for the same cause of action, the IFT was not entitled to impose a new fine.	On 17 March 2016, the Board ruled, four votes to two, that **Telcel could not be sanctioned** and fined for the conduct established in the statement of probable responsibility **because Telcel had already been sanctioned for the same conduct in a previous case**. Therefore, the IFT was not entitled to impose a new fine.

1. Procedure processed according to the abrogated Federal Economic Competition Law published on 5 May 2011.

2. This practice was prohibited under Article 10, Section V of the abrogated Federal Economic Competition Law.

3. Procedure processed according to the abrogated Federal Economic Competition Law published on 28 June 2006.

Figure 4.5. **Market shares in pay TV**



1. The Televisa Group acquired full ownership of Cablemás in 2011 (majority ownership was acquired in 2008).

2. The Televisa Group acquired Cablecom in 2014.

3. The Televisa Group acquired Cablevisión Red in 2015.

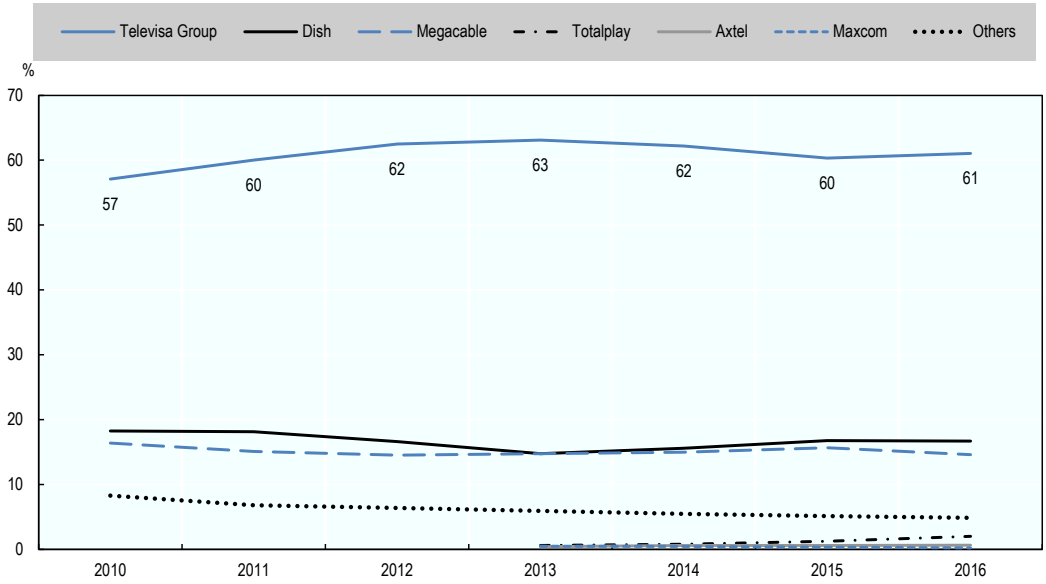
4. The Televisa Group acquired majority ownership of Televisión Internacional in 2016 (the initial 50% were acquired by the Televisa Group in 2006). For the 2010-15 market share calculations of the Televisa Group, only 50% of the subscriptions of Televisión Internacional were added; in 2016, market shares of the Televisa Group included the totality of subscriptions from Televisión Internacional.

Source: IFT (2017a), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

Incidentally, the competitor Megacable saw its national share decline from 16.4% to 14.6% between 2010 and 2016, after declining in the period from 2010-12 and rising from 2013-15 (see Figures 4.5 and 4.6). Thus, there have been some modest changes in the market shares of firms in the pay TV business, but these fluctuations go in both directions. This raises the question of whether the Board should have relied on a small decline in the market share of the Televisa Group over an 18-month period as a basis for rejecting the conclusion of the AI and the UCE.

A more fundamental reason for questioning this approach is that the Televisa Group's national pay TV market share has been steadily growing since 2010, from 46% to 61% in 2016, rather than declining (see Figure 4.5). The share has been steadily increasing because the Televisa Group was permitted to fully acquire four pay TV companies during that time period. To understand an interpretation that the Televisa Group's share was declining, it is necessary to consider the methodology used by the Board. The Board's reasoning was based on a method for calculating the market share that assumed that in September 2013, the Televisa Group had already acquired all of the pay TV companies that it owned as of March 2015. Thus, any decrease in those companies' market shares during that period were counted as declines in the Televisa Group's market share. Nonetheless, the Televisa Group's actual share grew each time that it completed one of those acquisitions.

Figure 4.6. **Market shares in pay TV, with subsidiaries of the Televisa Group as of 2016 made constant**



Note: Shares of the Televisa Group were calculated for each year based on a constant composition of their group as it was in 2016, regardless of the date of the real acquisition.

Source: IFT (2017b), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], https://bit.ift.org.mx.

The implications of this difference in methodology may be easier to understand visually, by comparing Figure 4.6, which shows the evolution of the Televisa Group's national pay TV market share using the Board's final approach, with Figure 4.5, which shows the accretive effect of the Televisa Group's acquisitions on its market share. The two figures clearly tell very different stories about the change in Televisa's market share over time.

There are other reasons to question the IFT's final decision, even if the Board's market share methodology is used. For example, while the number of subscribers of the Televisa Group was growing, but (at least in recent years) not as quickly as the number of its rivals' subscribers, there has been a modest decline in the Televisa Group's national market share since 2013. That led the Board to conclude that the Televisa Group could not unilaterally set prices or restrict supply, as competitors would be able to counteract any such attempts, and that the Televisa Group therefore did not have SMP. Nonetheless, as the AI pointed out, during that same time period, the Televisa Group's profit margins were comparatively and persistently high. If competitors were able to counteract attempts by the Televisa Group to set prices or restrict supply, though, it might be expected that the Televisa Group would have lost more market shares than it did, and to have done so more rapidly, given that it refused to sacrifice any of its profit margin despite the supposed competition it faced. A better explanation might be that other companies were growing mainly in areas where the Televisa Group may have been less interested in competing, such as in areas where it could not offer triple-play services. In any event, the Televisa Group's ability to maintain its margins while losing a fairly small amount of market share over three years does not offer much support for the notion that competition was constraining the company.

Another questionable feature of the Board's resolution is its premise that the relevant geographic market was national. The AI and the UCE had concluded that there were

thousands of local relevant geographic markets. The decision to switch to a national market definition is not mentioned among the conclusions in the analysis section of the Board's resolution, contrary to what might be expected in light of the outcome.[63]

It needs to be acknowledged that the Board made another major point, which was that the Televisa Group was bound by must-offer measures to provide competitors with access to its most popular broadcast television channels. That, the Board reasoned, should prevent the Televisa Group from withholding access and thereby restricting the ability of its pay TV rivals to compete. Along with the market share decline, this factor was also instrumental in the Board's decision that there was not enough evidence to show that the Televisa Group's competitors faced any restrictions to expanding their operations, or that the Televisa Group could unilaterally set market prices or restrict the supply of services.

In principle, the Board had a well-grounded argument. It assumed, however, that the Televisa Group was already abiding by its recently imposed must-offer obligations, whereas rival firms said they had substantial difficulties getting the Televisa Group to comply with those obligations, and indeed said that such difficulties continued through 2016.

Second resolution

As detailed in Table 4.5, the First Specialised Tribunal eventually invalidated the Board's first resolution in this matter and remanded it to the IFT's Board for reconsideration. After considering the tribunal's order and weighing evidence only from the period January 2009 to August 2014, the Board issued a new resolution (IFT, 2017b), stating that the Televisa Group did have SMP in the national pay TV market, at least up to August 2014.

This time the Board explained its finding that the relevant geographic market was national (it had made, but not explained, the same finding in the first resolution). It stated that satellite platforms actually and potentially compete nationwide and thus fixed (cable) platforms face national, not local competition. That is why cable TV offers are comparable throughout Mexico, the Board reasoned. Nevertheless, that statement differs from what the Board acknowledged in its resolution of case AI/DC-002-2014 in November 2015, when it found that commercial offers from cable TV companies vary from town to town (as does the number of competitors). It would be surprising for the nature of geographic price competition in markets for pay TV to change substantially from August 2014 to November 2015.

Despite the broader geographic market definition, the Board found that the Televisa Group had SMP during the relevant period. It did so for three main reasons. First, it acknowledged that the AI had been right to highlight the facts that the Televisa Group was the only competitor that operated both satellite and cable platforms and that it produced and owned the rights to high-value content that was not available to its rivals. The must-carry obligations (which the Board had relied on in its first resolution to rebut the content point) had not, upon further reflection, yet had a significant effect at the time of the relevant period. Second, restricting the relevant period to 2009 to August 2014 meant that it could no longer be said that the Televisa Group had been losing market share. This further demonstrates the pitfalls in a reliance on minor market share fluctuations to reach conclusions about SMP in the first resolution. A small shift in the time period led to a different result in the second resolution. Finally, the Board found that the investments in infrastructure and access to content that were necessary to compete in the pay TV market were significant entry barriers.

In light of the second resolution, the IFT will be able to impose asymmetric measures on the Televisa Group in the pay TV market. It is not, however, required to do so. The

IFT will conduct proceedings to determine whether it will impose any measures, and if so, what they will be. In this regard, a statement the Board made near the end of its resolution is notable. The Board said that any measures must be "timely, reasonable, appropriate and relevant when they are enacted". This may lay the ground for a decision not to impose any measures on the Televisa Group, despite the SMP finding. For example, it could easily be argued that measures imposed in 2017 for events that occurred in 2014 and earlier would not be timely.

One possibility, though, is that the second resolution will be deemed to have taken effect at the time the first resolution was issued. That could have repercussions on the two decisions described immediately below. If the Televisa Group had been deemed to have SMP in the pay TV market at the time of those decisions, they might have turned out differently. On the other hand, then the matter of whether measures could be imposed in connection with them in 2017 would arise. Presumably, the Board would still require that any measures would be timely, reasonable and so forth. Given that the mergers were completed in 2014 and 2015, that could be a difficult hurdle to clear, potentially leaving the IFT once again in the position of having been unable to regulate the pay TV market with the SMP approach.

Cases AI/DC-002-2014 and AI/DC-002-2015 (SMP investigations to determine whether the Televisa Group acquired or strengthened SMP in pay TV markets when it bought Cablecom and Telecable, respectively)

Before the Board issued its resolution in case AI/DC-001-2014, the AI initiated two investigations to determine whether the Televisa Group had acquired SMP in any pay TV markets specifically as a result of its acquisitions of the cable television companies Cablecom and Telecable. Due to a transitory article in the LFTR, the IFT was unable to apply the competition law's *ex ante* provisions against unlawful concentrations to these acquisitions. Furthermore, because pay TV had been defined to be part of the telecommunication sector and the Televisa Group was not the preponderant there, the IFT could not apply preponderance remedies in connection with these acquisitions, either. That meant the only recourse available to the IFT if it wished to scrutinise these transactions was the *ex post* SMP approach.

Transitory Article 9 of the LFTR states that as long as there is a preponderant in the broadcasting or telecommunication sectors, mergers involving concessionaires do not have to be cleared in advance by the IFT, provided that the mergers:

- generate a sectoral reduction of the Dominance Index, with an Herfindahl-Hirschman Index (HHI) increase of no more than 200 points
- result in the merged entity accounting for less than 20% of sectoral participation
- do not involve the preponderant economic agent in the sector in which the transaction occurs
- do not reduce, damage or prevent free competition in that sector.

The four conditions are weak when applied to the Televisa Group's acquisitions in the telecommunication sector. The first one, setting out requirements involving the Dominance Index and the HHI, relates to sectors, not relevant markets. That matters because in the telecommunication sector, as Mexico has defined it, the Televisa Group is very small when compared to the preponderant Telmex. That makes the first condition rather easy to satisfy for the Televisa Group.[64] The second condition is also easily satisfied in connection

with its pay TV acquisitions, for the same reason. The third condition has no effect, either, provided that the Televisa Group avoids transactions involving Telmex. The fourth condition is not clear because competition is a concept that is analysed with reference to relevant markets, not sectors. It is not clear what sectoral competition is or how to recognise it.

In any event, because these mergers were deemed to meet all four of the conditions listed above, they escaped *ex ante* oversight under the competition law's merger control provisions, leaving the IFT no choice but to proceed with the *ex post* SMP approach. That gave the regulator a maximum of 90 days from the date it submitted notice of each investigation to collect evidence that established SMP.

This is why it was mentioned earlier that the way the telecommunication and broadcasting sectors were defined for preponderance determinations had important implications for the IFT's ability to promote, protect and guarantee competition. Putting pay TV into the telecommunication category rather than the broadcasting category shielded the Televisa Group from any IFT oversight related to the Televisa Group's acquisitions of cable TV providers, other than *ex post* SMP investigations. Those investigations, as discussed below, have so far failed to prevent any of the Televisa Group's acquisitions of cable TV providers.

Furthermore, many of them did not have digital, bidirectional networks with which to provide broadband, so they were pure pay TV providers. In other words, they competed more with broadcasters than with telecommunication providers. Had they remained independent, they might have eventually upgraded their networks and begun to compete as multi-service providers. That avenue, however, has now been closed.

Turning to the Cablecom investigation first, Table 4.5 summarises the decisions and reasoning of the AI, the UCE and the Board in this matter. After looking for signs that SMP might exist in any market within the telecommunication sector, the AI found that the Televisa Group had obtained or strengthened SMP in 99 local pay TV markets as a result of its acquisition of Cablecom. Before reaching that conclusion, the AI investigated each of the SMP elements set out in the competition law.

The first factor underlying the AI's conclusion (the merger made the Televisa Group the largest pay TV provider in all 99 markets) is once again not particularly meaningful by itself, but it is relevant in the context of the other factors. The next consideration (the post-merger Herfindahl-Hirschman and Dominance Indexes far exceeded the safe harbour levels) may be more meaningful.[65] However, it is still necessary to weigh the evidence on the other elements. The remaining six factors relied upon by the AI are listed in Table 4.5 and are self-explanatory.

By the time the UCE issued its advice on this matter, the Board had already released its resolution in case AI/DC-001-2014. Having taken the Board's views into account, and given that the AI's evidence and reasoning were the same in this matter as in the previous one, the UCE advised that there was insufficient evidence to determine that the Televisa Group had acquired or strengthened SMP.

The Board then concluded once again that there was insufficient evidence to support a determination that SMP existed. Some of the Board's reasons for that decision, such as the small decline in the Televisa Group's national market share and the must-offer obligations that had been imposed on it, also appeared in the Board's resolution in case AI/DC-001-2014. They have already been discussed above. That being said, the Board provided some new reasons, as well.

One was that the AI had not analysed the "competition dynamics" between multi-service (e.g. triple-play) providers and providers that offer only pay TV services, so it was not

clear that the Televisa Group had the power to set market prices in the multi-service markets. Given that the AI had defined the relevant product/service market to be pay TV services rather than multi-service markets, this is really an argument about what the relevant product/service market is. If most pay TV subscribers were buying that service as part of a bundle with fixed broadband service and/or fixed telephony services at the time of the Cablecom acquisition, or if there was a credible trend of buying them in bundles, then the Board could have a fair point.

On the other hand, this argument is still a questionable basis for finding fault with the AI's statement. Broadband was not advanced enough in Mexico to make this point relevant. The Board itself effectively acknowledged this in case AI/DC-001-2014 when it pointed out that Internet speeds were relatively low in Mexico and a significant portion of pay TV customers did not have any Internet connection at all, let alone a broadband connection. In 2017, despite substantial improvements since the introduction of the reform, broadband access is still limited compared to most OECD countries.

Furthermore, even if there was a substantial degree of bundling or a trend towards it, it would not be clear that shifting the focus from pay TV alone to multi-service offers undermines the argument that the Televisa Group has SMP. In fact, it might strengthen it. The Board's underlying point about multi-service competition is that even if other firms could not match the Televisa Group with respect to pay TV itself, they might nevertheless win more customers and constrain the Televisa Group by outperforming it in other aspects of triple-play bundles. It would be easier for rivals to claim competitive differentiators with respect to fixed broadband than fixed telephony. At the same time, the Televisa Group's fixed broadband position is quite strong, being the biggest challenger of Telmex in fixed broadband with market shares of 18.5% and 20.7% in 2014 and 2015. Therefore, if anything, this consideration could actually strengthen the case for the Televisa Group having SMP, especially since Telmex is not permitted to offer multi-service bundles that include pay TV.

In any event, it raises the question of why the Board accepted pay TV services as the relevant market just one month earlier in case AI/DC-001-2014, but then raised the possibility in the Cablecom case that the correct market definition was multi-service platforms.

Another new reason given by the Board for rejecting the AI's conclusion that the Televisa Group had SMP in the Cablecom matter was that the AI did not provide disaggregated information about the various bundled commercial offers that include pay TV services, which made it impossible to assess the competition among the bundle providers. In making this point, the Board stressed that 55% of pay TV subscribers in Mexico use satellite suppliers, whose commercial offers are uniform nationwide. It also emphasised that the AI had identified differentiated service categories (e.g. basic, premium, etc.) but that it did not provide evidence showing that these categories are substitutes either on the demand side or the supply side. Without being able to draw conclusions about how inter- and intra-category competition takes place, the Board said it was impossible to determine whether the Televisa Group had SMP.

Nonetheless, if in some towns the Televisa Group, Dish and Cablecom were the only choices for pay TV services, that would lead to the question of why it was relevant that Dish establish nationally uniform offers. Those towns would still have gone from three choices to two as a result of this acquisition, which would raise concerns about the Televisa Group increasing cable subscription prices, offering fewer channels in its cable bundles or otherwise reducing the quality of its services. Second, more information about category competition would certainly have been helpful, and it may even have been necessary, for a sound SMP decision. This level of detail is far greater, however, than say

the simple national sectoral share that is required for the preponderance determination. Yet the AI has the same 90-day maximum time limit to conduct SMP investigations and produce an analysis as it does in preponderance cases. It is not clear how the AI could satisfy the level of scrutiny shown by the Board in SMP cases in such a short period, especially when both commercial offers from cable companies and the overall number of pay TV competitors vary from town to town.

Finally, the Board found that the AI's geographic market definition suffered from methodological weaknesses. The Board noted that, under Article 58 of the LFCE, one first determines the relevant product or service, then defines the relevant geographic market. It should not, however, be assumed that the relevant geographic market is the area in which a merger had some effects that prompted the investigation. After all, the Board noted that the Televisa Group is not limited to participating in only 100 or so municipalities. Consequently, the Board concluded that the record did not contain enough evidence for it to determine whether the AI's geographic market definition was correct.

That being said, earlier in its resolution the Board had pointed out that while satellite pay TV providers have national coverage and uniform commercial offers, cable providers offer services only in certain locations and their offers can vary from town to town. It is, therefore, difficult to see how the relevant geographic market could be national.

As for the Telecable case, it can be addressed very briefly: The analysis and outcome were virtually identical to those in the Cablecom matter. Table 4.5 summarises the decisions and reasoning of the AI, the UCE and the Board.

Thus, until the Specialised Court's decision in February 2017, the Board had repeatedly rejected the AI's findings that the Televisa Group had SMP in markets for pay TV services. Indeed, before that court decision, the Board had never found that any firm has SMP. It has now done so with respect to the Televisa Group, but so far the IFT has still never imposed asymmetric measures as a result of an SMP determination.

Absolute monopolistic practices (cartel) case: Market allocation agreement between Cablevision and Megacable S.A. de C.V. (Megacable)

In March 2011, Telmex, the leading provider of fixed communications services, alleged that Megacable and several of the subsidiaries of the Televisa Group had engaged in absolute monopolistic practices. The former competition authority, COFECO, opened an inquiry. In February 2014, the Board of the IFT (which had taken responsibility for this case after the reform) decided that Megacable and Cablevision, a subsidiary of the Televisa Group, had engaged in absolute monopolistic practices. In particular, they had geographically segmented the provision and marketing of telecommunication services in 13 local areas in the State de Mexico. The IFT imposed a fine of MXN 8.7 million (USD 440 000) for Cablevision and MXN 33.5 million (USD 1.7 million[66]) for Megacable. This resolution is under review before the judicial jurisdiction.

Those fines are decidedly low, given that the defendants' annual revenues are measured in multiple billions of US dollars. It is questionable whether such low fines will serve as meaningful deterrents to absolute monopolistic practices in the future. Because this matter involved conduct that took place before Mexico's competition law was overhauled in 2015, however, the IFT was constrained to impose lighter penalties than those now authorised under Article 127 of the LFCE (which could have included fines in the range of hundreds of millions of US dollars, as well as prison sentences for participating individuals).

Relative monopolistic practices (abuse of dominance) cases

Since the IFT came into being, it has found only once that an economic agent engaged in a relative monopolistic practice.[67] This is somewhat surprising, as not only does the IFT oversee concentrated markets with powerful leading firms, but as mentioned above, the LFCE's evidentiary requirements for abuse of dominance are easier to meet than those in many other OECD countries.

Concentrations

From the establishment of the IFT in September 2013 through the end of 2016, every merger application submitted to the IFT was eventually authorised in one form or another. Some applications were authorised subject to remedies or the fulfilment of commitments, but others were authorised without conditions and none were blocked. In any event, none of the resolutions issued by the IFT in connection with merger applications have been legally challenged, so none have yet been tested by Mexico's specialised courts.

Acquisition of DirecTV (DirecTV) by AT&T Incorporated (AT&T)

In November 2014, the IFT authorised the first of a series of acquisitions by AT&T. In this matter, AT&T was permitted to acquire DirecTV, a provider of pay TV services via satellite through Sky Mexico, subject to certain commitments. This transaction had effects in several countries and markets, including Mexico's pay TV market.

DirecTV has an indirect, non-controlling stake in the capital stock of Innova, S. de R.L. de C.V. (Sky Mexico). The Televisa Group is the other stockholder in Sky Mexico. As already discussed, the Televisa Group is an important competitor in several markets in Mexico's telecommunication sector, including pay TV markets.

While the case was being reviewed, AT&T divested its non-majority stock holdings in América Móvil (owner of Telcel and Telmex) and withdrew its representation on the board of that company. América Móvil is, of course, the main competitor in various markets in Mexico's telecommunication sector.

Despite that divestiture, the IFT found some risks of co-ordinated effects arising from the transaction in several telecommunication sector markets because it would have established an informal communication channel between América Móvil, AT&T and the Televisa Group due to the prior relationship between América Móvil and AT&T from 2002 to 2014. The risks were remedied through a series of conditions whose details were not disclosed.

Acquisition of GSF Telecom by AT&T

In December 2014, the IFT authorised the acquisition of GSF by AT&T, again subject to certain conditions. GSF Telecom was involved in two businesses: fixed telecommunication, including subsidiary Totalplay (a pay TV provider); and mobile telecommunication, including subsidiaries Iusacell and Unefon. Iusacell was the third leading provider of mobile telecommunication services in Mexico, with a nationwide network and a market share of 5.8% in terms of subscribers. AT&T had redefined its position in the Mexican mobile market by selling its stake in América Móvil (the preponderant operator in the telecommunication sector).

The IFT considered that the merger would not confer SMP to AT&T in the mobile telecommunication market, mainly because of the small share it would have. Furthermore, AT&T did not offer mobile telecommunication services in Mexico at that time, and its

newly acquired business would face strong competition from the other providers, especially Telcel (owned by América Móvil), which had a share of 69.7% in terms of subscribers.

Nevertheless, because AT&T was also in the process of acquiring DirecTV, the IFT concluded that the acquisition of GSF Telecom could damage competition in the provision of pay TV services because GSF Telecom participated in that market through Totalplay. Furthermore, the IFT considered that the acquisition could damage competition in the fixed telephony, fixed Internet access and dedicated links services markets because América Móvil is the main competitor in those services and AT&T had a previous relationship with América Móvil. The acquisition of GSF Telecom's fixed telephony, Internet and dedicated links business could create incentives for and facilitate co-ordination between América Móvil and AT&T/GSF Telecom.

Consequently, the IFT authorised the transaction subject to, among other conditions, the divestiture of GSF's fixed telecommunication business, including the pay TV service, and undisclosed behavioural remedies to avoid collusion between AT&T and América Móvil. Once again, it is not clear why those commitments were not made public.

Acquisition of Nextel International LLC (Nextel México) by AT&T

In April 2015, the IFT authorised the acquisition of Nextel México by AT&T, subject to certain conditions. Nextel México was the fourth-largest provider of mobile telecommunication services in the country, with a market share of 2.9% in terms of subscribers.

The IFT considered that the merger would not confer SMP to AT&T mainly for the same reason it did not consider AT&T's acquisition of GSF Telecom's mobile business to present a competition problem, i.e. because of the small post-merger market share AT&T would have and the strong competition it would face, especially from Telcel.

Moreover, the accumulation of a regional average of 42% of the mobile services spectrum was not considered a limitation on access to this input for competitors mainly because a substantial quantity of additional spectrum would be made available in the short and medium terms, which has been the case so far (see Chapter 3). In addition, Nextel had a fully deployed, little used, national level infrastructure that allowed it to compete intensely in the post-paid data segment of the mobile market, mainly against Telcel and Iusacell. The IFT did find some risks of co-ordinated effects, again because of the prior relationship between AT&T and América Móvil, but these were addressed through a series of undisclosed conditions.

Acquisition of Alcatel Lucent by Nokia Corporation (Nokia)

In September 2015, the IFT authorised the acquisition of Alcatel Lucent by Nokia, an international merger with effects in Mexico. The parties to the transaction had horizontal overlap in the manufacture of access and core network mobile telecommunication equipment and related services. The IFT concluded that the transaction would not decrease, harm or hinder competition in the affected markets, mainly because of the small increment in market shares the transaction implied.

What was noteworthy about this case was that both the IFT and COFECE claimed to have legal powers to review it. The case was brought before a federal specialised court, which ruled that the IFT was the competent authority to review any transaction that had effects on markets where a direct input to the provision of telecommunication or broadcasting services was traded, either because of its powers to regulate the input or its expertise in the functioning of those markets.

Increase in the capital stock ownership of Televisión Internacional by the Televisa Group

In February 2016, the IFT authorised, subject to conditions, a transaction in which the Televisa Group increased its capital stock ownership in Televisión Internacional, acquiring 100% control by purchasing stock held by individuals belonging to Grupo Multimedios. The merger directly affected the provision of pay TV service in northern Mexico. In a previous decision that evaluated the first acquisition of Televisión Internacional stock by the Televisa Group (which gave Televisa 50%, and joint control, of TVI), however, the former competition authority COFECO had imposed certain conditions that were still in effect. Furthermore, Grupo Multimedios and the Televisa Group are involved in the related commercial television and radio broadcasting markets, as well.

When ruling on this merger, the IFT found some risks of co-ordinated effects arising from a structural link that would remain between the Televisa Group and Grupo Multimedios. The risk of co-ordinated effects was in the television and radio broadcasting markets, given the fact that the Televisa Group and Grupo Multimedios are the biggest commercial television broadcasters in northern Mexico and that they compete in seven local broadcasting markets, as well as in six local commercial radio broadcasting markets. The operation was approved but subjected to structural conditions designed to avoid harm to competition in the related television broadcasting market. Specifically, Grupo Multimedios agreed not to own shares or have any kind of participation in the Televisa Group subsidiary that was acquiring Televisión Internacional.

Acquisition of a percentage of shares of GSF Telecom by the Televisa Group

The Board's decision in this *ex post* merger case seems well-founded, as none of the points raised by the AI establish any harm to competition (Table 4.5). Even if the Televisa Group had acquired 100% of GSF Telecom, and even though they were horizontal competitors in some markets, without evidence that the merger had caused or was likely to cause substantial harm to competition in those markets, there was no reason to block the transaction.

IFT review of the effectiveness of the preponderance measures

Telecommunication services

The preponderance remedies imposed on the economic interest group formed by América Móvil[68] in March 2014 expressly determine that they shall be subject to the IFT's biennial review as to their effectiveness in attaining the goals of fostering effective competition, promoting universal access to diverse telecommunication and broadcasting services under adequate quality and security standards, at competitive prices. In this context, a process was initiated in April 2016, commencing with a public consultation procedure in which multiple stakeholders submitted their views, accompanied by economic, technical and legal analyses on the part of the regulator. Then, having previously notified the preponderant operator of the proposed measures so it could also express its standpoint,[69] the resolution was approved by the IFT Board on 27 February 2017.

Broadly speaking, most of the pre-existing measures levied on América Móvil were not removed, but rather strengthened. Furthermore, new remedies were imposed, among which it is crucial to highlight the mandatory functional separation between the fixed service providers' (Telmex-Telnor) wholesale and retail operations. Against this background, this section elaborates on the most representative additions and rules enshrined in the new preponderance regulations.

Among the most pressing issues identified by the regulator was the need to ensure non-discriminatory conditions in the provision of wholesale services by the preponderant agent, with an aim of ensuring equivalence for access seekers. In particular, with the purpose of promoting equal access to infrastructure, both fixed and wireless, the IFT adopted several cross-cutting measures that apply to fixed and mobile services, the most relevant of which pertain to equivalence of inputs, economic replicability, technical replicability and reference offers. Furthermore, the preponderant agent and the IFT will need to participate in working groups (one for mobile services and one for fixed services) to facilitate the implementation of the new obligations as well as to identify and correct potential obstacles to an effective execution.

In respect to the fixed services segment, the IFT advanced the following arguments justifying the imposition of stricter measures on América Móvil: 1) fixed telephony services have evidenced slow and unsustainable growth; 2) there is scarce infrastructure-based competition; 3) Mexico occupies the lowest position as regards fixed broadband penetration, relative to OECD countries; 4) the fixed broadband penetration in households is below 50%; 5) average actual broadband speeds are only half of the OECD average; 6) fixed Internet price indexes have only decreased by 4 percentage points, while local telephony price indexes have only been reduced by 10 percentage points; 7) some 12% of the Mexican population does not have coverage of fixed telecommunication services; and 8) the effectiveness of unbundling measures is scant.

Therefore, one of the most crucial decisions adopted by the IFT, if not the most, derived from the exercise of its functions enshrined in Transitory Article 8 of the Federal Constitution and Article 262 of the LFTR, by virtue of which the regulator may impose accounting, functional and/or structural separation – as asymmetric, non-standard remedies – on preponderant firms, is the decision of mandating functional separation. In effect, Telmex-Telnor must henceforth be functionally separated into two separate legal entities, one of which shall exclusively provide wholesale regulated services while the other shall be in charge of providing fixed retail services. Along these lines, the new wholesale undertaking will be in charge of managing Telmex's-Telnor's posts, ducts, copper and fibre infrastructure. This decision was taken due to the competition concerns identified by the regulator as regards access thereto. Finally, it can be noted that functional separation also includes the creation of a wholesale division within Telmex-Telnor for those activities that are not retail-oriented.

Such functional separation shall entail for the new legal entity having autonomous decision-making and administrative bodies, as well as implementing independent corporate governance schemes, which the IFT said ought to include industry representatives. Furthermore, the separate legal entity that shall be incorporated thereto must have its own brand, operative and management systems, as well as its own human resources. Hence, invoking successful international experiences in this area,[70] where the risk of vertical discriminatory practices is reduced to a minimum.[71] The IFT has applied one of the strictest asymmetric measures in telecommunication regulatory practice, only preserving both units under the same ownership structure, which is, essentially, what distinguishes functional separation from structural separation (BEREC, 2011). In this vein, the IFT has commanded América Móvil to submit, within a 65-working day time frame, a proposal that is compliant with the aforesaid conditions. In addition, and once the aforementioned proposal is approved by the regulator, the preponderant agent will have a maximum of two years for the new legal entity to be fully operational. A transition group will be established with the participation of the preponderant agent and the IFT to closely monitor the implementation plan and timeline of the functional separation.

Along these lines, criteria such as equivalence of inputs, as well as technical and economic (i.e. retail prices applied by América Móvil) replicability are to be observed by the preponderant agent in the provision of both fixed and mobile wholesale services, such as interconnection services, wholesale access to dedicated leased lines, and access to passive infrastructure. Equivalence of inputs is established with the purpose of preventing non-price discrimination, and demands that the preponderant operator deliver all the relevant information and services to requesting third parties, including MVNOs, under the same conditions it applies to its own operations, which encompasses prices, QoS, deadlines, systems, processes and reliability. Consistent, for example, with the Body of European Regulators of Electronic Communications (BEREC's) Guidelines in Europe, under an equivalence of inputs framework, "[t]he product development process is therefore exactly equivalent as their provision in terms of functionality and price" (BEREC, 2011). In sum, equivalence of inputs implies that both the preponderant and alternative operators have access to the same wholesale services, including delivery methods, information systems, electronic equipment, tie-cables, space exchange and so forth, for the subsequent provision of retail services.

Secondly, replicability dictates that competitors of the preponderant agent must have the ability to respond to the latter's service offerings in the retail segment when they employ its wholesale services, in order to ensure that the preponderant agent's retail products are not employed towards driving its competitors out of the market, through practices such as cross-subsidisation, margin squeezes and/or predatory pricing.[72] In the context of economic replicability, the IFT will be able to carry out *ex post* controls as regards compliance with the aforementioned replicability measures in the mobile market, and both *ex ante* and *ex post* controls concerning fixed services (this, due to the diverging degrees of dynamism observed in both markets, which do not justify an equivalently rigorous intervention in both fixed and mobile services). The latter concept of replicability is intended to make sure that access seekers are able to reproduce the preponderant agent's offers when using wholesale access services (i.e. replicability does not apply when acquiring passive infrastructure or roaming wholesale access). Finally, technical replicability intends to forestall the preponderant agent from gaining an anticompetitive advantage due to its ability to access new technologies or non-replicable inputs prior to its rivals, and compels América Móvil to make available to third parties, through reference offers, any relevant inputs utilised in the production of its retail services, under the same terms and conditions it applies to its own activities. With this in mind, the IFT shall issue a methodology to be followed when assessing economic and technical replicability of said prices and services, respectively.

On the other hand, regarding transparency measures, the EMS, which is a key tool for increasing availability of information in the market, fostering contractual efficiency between the preponderant undertaking and parties requesting access to its infrastructure, and boosting the regulator's ability to monitor América Móvil's compliance with preponderance measures such as non-discrimination, as well as the prohibitions on margin squeezing, predatory pricing and illegal exclusive arrangements, among others. In particular, the EMS must be available for use, with all the respective modules and the available information to be uploaded to the system, within a maximum time frame of ten working days after the entry into force of the new preponderance rules, except in the event that the term required for the development of the module has not expired. However, as regards mobile services, the information relating to América Móvil's infrastructure had to be available in the EMS by 30 May 2017 at the latest. As regards fixed services, a tiered approach is being adopted, whereby at least 60% of the information on poles and pits nationwide must be available by 30 September 2017, while the remaining information must be disclosed in six-month periods, registering at least 15% of total infrastructure.

Furthermore, in the interest of ensuring that América Móvil's wholesale reference offers reflect the dynamism and technological evolution in telecommunication services, these are to be reviewed on a yearly basis by the IFT and not every two years, as per the previous preponderance rules, and shall be subject to public consultation procedures. Moreover, such reference offers must incorporate several minimum conditions, including wholesale charges. To conclude, the reference offers may be subject to additional adaptations by the IFT, aimed at fulfilling technical and economic replicability requirements.

Finally, while in mobile wholesale services the prices are to be defined by América Móvil – save interconnection and roaming, which are regulated by the LFTR – all of its fixed wholesale prices shall be prescribed by the IFT on a cost-based approach. On this topic, it is opportune to mention that wholesale charges for leased lines are to be defined by LRIC methodologies, thus eliminating the reference to the retail market that previously existed. Under the previous preponderance rules, the rates for the leasing of local, national or long-distance dedicated links were freely negotiated between the preponderant agent and the requesting concessionaire, and only in the event of a disagreement thereto would the regulator intervene, establishing the prices through a retail minus pricing methodology. In this regard, one of the criticisms formulated by América Móvil's rivals during the public consultation process was that, in addition to the pertinent reference offer not determining reasonable terms, associating the prices for leased lines to the downstream market was inconvenient due to the lack of a mature, competitive retail market thereof in Mexico. According to AT&T, for example, the preponderant agent has exploited this legal loophole to demand unjustifiably high prices for dedicated leased links (AT&T, 2016).

The stricter functional separation measures enforced *vis-à-vis* América Móvil in its fixed operations possess important similarities to those recently instituted by Ofcom in the United Kingdom relative to Openreach, BT's fixed wholesale subsidiary (Ofcom, 2017). Although said functional separation was introduced in the United Kingdom over a decade ago with the purpose of providing equal access to BT's local access network and backhaul products to all market players, the regulator identified some pitfalls in the provision thereof to Openreach's customers requiring such inputs in order to offer retail broadband services – namely, poor service, low investment levels and discriminatory practices favouring its parent company (Jordan, 2017) – which has, according to some, ultimately impeded customers from enjoying adequate QoS through their broadband connections in the United Kingdom (Sidak and Vassallo, 2015). This situation motivated the strengthening of the functional separation scheme, an initiative to which BT wholly agreed after negotiations over a two-year period.

Hence, in general terms, pursuant to the new functional separation rules levied on the fixed incumbent operator in the United Kingdom, Openreach must become a legally separate company within the BT group, with an autonomous management and governance structure, with the majority of the members of the Board being independent, and with its own personnel (Ofcom, 2017), thus diminishing the control previously exercised by the parent company.

Furthermore, even though the group's overall budget shall be set by BT, Openreach shall develop its own strategy and annual operating plans and thus control its budgetary allocations. In addition, Openreach's executives shall be accountable to the new, independent Board established pursuant to these measures, with BT only being able to veto CEO appointments with prior notification to Ofcom. Moreover, a matter of utmost importance is that Openreach will solely control its assets – such as the physical access network – required to deliver its services, thus being empowered to adopt decisions on the building and maintenance thereof. Finally, Openreach shall have a separate brand, completely dissociated to that of its controlling company.

Perhaps the main difference between the arrangements adopted in the United Kingdom and decisions taken in Mexico is the proposed participation of industry participants in the governance of the new wholesale infrastructure entity. While having independent members, the protocol agreed with the United Kingdom government excludes the Board of Openreach having representatives from rival firms. In a similar manner, the voluntary functional separation of wholesale and retail undertaken in the Czech Republic by the incumbent telecommunication operator has two independent boards (Box 4.1).

Box 4.1. **Voluntary functional separation in the Czech Republic**

In January 2016, O2 Czech Republic became a retail service provider and was functionally separated from CETIN, the wholesale provider of fixed and mobile infrastructure. There is shared ownership under the PPF Group. To ensure independent conduct, each company established its own independent Board of Directors, Supervisory Board, IT, business plan and goals, respecting the market orientation of the respective company.

The change established CETIN as an independent and autonomous entity, providing wholesale services to other telecommunication operators. These include the three largest mobile operators in the Czech Republic (O2, Vodafone and T-Mobile). CETIN provides backhaul, and all three operators use almost exclusively CETIN's fixed access network to provide voice, broadband and IPTV services to their subscribers. It provides the mobile networks for O2 across the Czech Republic and T-Mobile in part of the country. The goal in the voluntary adoption of functional separation included:

- Streamlining of two different businesses: As a fully integrated operator, O2 Czech Republic contained two distinct businesses, with competing priorities and objectives, i.e. an infrastructure business and a services business. The separation of these businesses allowed each company to focus exclusively on its respective core operations. CETIN now focuses on network investments with a long-term investment horizon and its general operational strategy. The two companies say the change has enhanced both players' profitability; accelerated the development and time to market for new products and services; and the process of innovation of their existing ones.
- Regulatory relief: As CETIN does not conduct any retail activity, it is less burdened with regulatory obligations related to consumer-facing operations. Meanwhile O2 is free to compete without the regulation, which applies to CETIN.
- Opening the network: CETIN has been able to open its network to other retail service operators, thereby expanding its customer base. As a strictly wholesale operator, it is able to offer its network to all retail operators on equal conditions, with no need to compete with them in the domestic retail market.

The 2016 financial results of O2 Czech Republic, the first year of the functional separation, recorded increases in revenue, profitability, investment and employment. Notably, O2's IPTV service has captured more than 10% of the market in the Czech Republic and CETIN says it encouraged other operators, such as T-Mobile and Vodafone, to develop a similar product, for which it sells them wholesale services. In its prospectus to the market, CETIN's reported November 2016 financial results include an earnings before interest, taxes, depreciation, and amortisation margin for its domestic services business of 65.6% for the first three quarters of that year.

Sources: CETIN Finance B.V (2016), "A financial prospectus", p. 82, https://www.cetin.cz/documents/10182/53953/20161117+CETIN+Finance+B.V.+prospectus.pdf/6c04f24e-9858-4af1-a0e9-80a672670e6d; O2 Czech Republic (2017), "2016 Annual report", https://www.o2.cz/file_conver/525431/AR_2016_24_3.pdf.

The reinforcement of the preponderance measures with respect to América Móvil have been severely questioned by the company, who has indicated it will challenge the regulator's resolution on the grounds of violating its concession titles and undermining legal certainty, among others (Cortés, 2017). At the same time, the preponderant agent has declared that the IFT's verdict is not founded on a comprehensive assessment of competitive conditions in the telecommunication sector – where, it affirms, there is "effective competition" in both fixed and mobile services – nor ponders the "profound changes" that have taken place as a corollary to the implementation of the asymmetric preponderance framework (Juárez Escalona, 2017c).Aside from the suggestion that industry should participate in the governance of the new wholesale infrastructure entity, the general measures proposed by the IFT seem balanced and proportionate. They address the primary bottleneck to the development of both fixed and mobile communication services by focusing on opening fixed networks, in terms of backbone, backhaul and local loops to access seekers in a manner that is necessary to achieve policy objectives. In a market where there is sufficient alternative infrastructure competition, such measures would not be needed. In contrast, Mexico aims not only to provide access for the first time to some of its citizens and improved telecommunication services to existing customers, in a manner their peers take for granted in other OECD countries, but to create the conditions to take majors steps forward in economic competitiveness and social well-being.

As a regulatory and economic competition authority, the IFT must continue its efforts to minimise barriers to competition and facilitate access to essential inputs, such as:

- ensure the effective fulfilment of the must-carry must-offer rules, established by the Constitution, and avoid the use of programming as a mechanism to exclude broader competition
- respond to market demand by continuing to allocate radio spectrum, in order to avoid shortages that prevent competition or increase the cost of services
- ensure effective compliance with the regulation imposed on the preponderant economic agent in telecommunication services regarding wholesale services necessary to compete, such as the interconnection and provision of dedicated links and unbundling of the local loop
- promote the secondary market of radioelectric spectrum avoiding phenomena of hoarding under efficiency criteria.

The revised regulatory settings aim for the preponderant agent to provide equivalence of inputs in a manner where the wholesaler enables access to services to all retailers as customers rather than rivals. By so doing, it aims to change the incentives around an infrastructure that is key to developing a digital economy in an equitable and efficient manner, thus moving forward with meeting policy objectives. At the same time, the effective implementation of functional separation could enable regulatory relief for the preponderant agent, not least in the ability to offer pay TV and broadcasting services should the company so wish. The benefit of this could be twofold. First, it may provide increased incentives for the wholesale provider to invest in high-speed infrastructure in the knowledge that demand will increase if all retail providers can offer such services. Second, if the preponderant agent does enter these markets, it is likely to be a very effective participant, adding competition and improving choice for consumers in an otherwise concentrated market.

Accordingly, in the exercise of its regulatory function, the IFT should promote convergence so that the greatest number of possible services can be provided with the

infrastructure and spectrum available, and not artificially limit the supply of services and thus competition. In the case of the preponderant agent in telecommunication services, schemes could be initiated to allow gradual convergence (temporarily and geographically), replacing the restrictive rule currently envisaged by the legislation.

While the proposal for inclusion of rivals in the governance of the wholesale entity is understandable as a means to "self-regulate" the behaviour of the new entity, it is contrary to good practices in terms of promoting competition. In other words, there will still be infrastructure competition in some locations in Mexico, making it unfair for the wholesale provider, or providing opportunities for collusive practices. This is not to say that consultation should not occur between the wholesale provider and its customers. Indeed, in many ways this should be encouraged, but at arm's-length. Rather, however, the governance of the Board of the new wholesale provider should be independent to the maximum extent possible from both its parent company and rivals.

Finally, the IFT should maintain a regulatory approach based on favouring greater competition in the telecommunication and broadcasting markets. The decision taken in the 2017 preponderance review aims to move away from the pressures of issuing regulations tending to favour some operators over others because of their market share. The regulation of the preponderant agent should focus on addressing obstacles to free competition in the telecommunication and broadcasting sectors, derived from the importance of such agents in the markets, and not be the way to normalise the markets as a whole. Over time, changes to market shares should stem mainly from the actions that the competitors implement, such as investing to improve their services, notwithstanding that they take advantage of the asymmetry of the regulation.

Broadcasting services

Pursuant with transitional Article 8 (SEGOB, 2013), on 6 March 2014, the IFT declared the Televisa Group a preponderant economic agent in the broadcasting sector (IFT, 2014c). With this resolution, it determined that the preponderant agent be subject to asymmetric measures related to infrastructure sharing, content, advertising, information and relationship with other preponderant economic agents. Since then, as established by the legal framework, the IFT carried out a biennial evaluation of the impact of the measures on competition in the sector, with the objective of revising measures that had not proven effective. After a process that commenced on 7 April 2016 with public consultations, and involved receiving comments on the effects of the 2014 preponderance measures, the IFT issued a final resolution on 27 February 2017.

Out of the nine conditions originally imposed in 2014, the most pertinent to the current review are:

- infrastructure sharing: the preponderant agent must make its passive broadcasting infrastructure available to third-party concessionaires of broadcast television for commercial purposes in a non-discriminatory and non-exclusive manner
- advertising sales: the preponderant agent must deliver to the IFT and publish the terms and conditions of certain broadcast advertising services and fee structures, including commercials, packages, discount plans and any other commercial offerings
- prohibition on acquiring exclusive rights for certain relevant content: the preponderant agent may not acquire transmission rights, on an exclusive basis, for any location within Mexico with respect to certain relevant audiovisual content, determined by the IFT

- FTA channels: the preponderant agent must offer FTA channels to any other person that asks for distribution over the same platform as the Televisa Group has offered, on the same terms and conditions (i.e. to pay TV rivals)
- participation in "buyers' clubs" of audiovisual content: the preponderant agent is prohibited from participating in "buyers' clubs" or syndicates to acquire audiovisual content, without the IFT's prior approval
- preclusion on preponderance telecommunication investment: the preponderant agent is precluded from participating, either directly or indirectly, in the operations of América Móvil.

The first condition imposed on the Televisa Group in the 2014 measures, on infrastructure sharing, was designed with the objective of reducing the deployment time of national broadcasting networks, improving the coverage of existing regional concessionaires, and reducing the economic and social inefficiencies from the duplication or triplication of passive network infrastructure for broadcasting. To date, no direct effects from this measure can be observed towards reducing entry barriers to competitors.

Since 2014, no agreements between the new national broadcasting network (Imagen TV) or regional concessionaires and the preponderant agent have been signed. The Televisa Group considers that its transmission network, of over 200 towers, is of strategic value and has not shared that network with any rival. This raises the question of whether the preponderant agent has acted in good faith or had an incentive to slow progress in negotiations in order to delay the expansion of coverage by its competitors.

Furthermore, the EMS, which was supposed to enable concessionaires to access detailed information on infrastructure-sharing services, has not been fully implemented by the preponderant agent. This measure did not have a deadline for implementation and the IFT was therefore unable to monitor the preponderant agent's behaviour in this regard. It should be noted, however, that during the two years following the establishment of the preponderance measures, no official request for infrastructure sharing from any concessionaire was received.

After both a public consultation on the effects of the preponderance measures in this sector and the proper administrative process, the IFT decided in March 2017 to revise measures to improve the sharing of infrastructure. It did so by extending the scope for access seekers to include the sharing of both passive and active infrastructure, allowing public broadcasters to access it and by including signal transmission services in the preponderant agent's obligations whenever co-location is not possible, as well as detailing the information to be included in the EMS and the disaggregation of accounting information to be sent to the IFT to enable appropriate monitoring of the preponderant agent's behaviour regarding infrastructure sharing. It is expected that with these measures, the barriers for any further new entrants will be lowered by reducing the costs of deploying infrastructure; that the lack of capacity for co-location will be mitigated by the alternative of having the preponderant agent provide signal transmission services; and that by making the provision of signal transmission services and EMS an obligation, the changes will make the preponderant agent use its passive infrastructure more efficiently.

Furthermore, the IFT also modified relevant content and advertising measures to avoid discriminatory behaviour by the preponderant agent. The main measures incorporated in the biennial review of 2017 for the broadcasting sector were:

- signal transmission services (sharing of active infrastructure): when technically feasible, a signal transmission service is to be offered by the preponderant agent when space for co-location for passive infrastructure is insufficient

- access by public concessionaires: public concessionaires, as well as the private ones, can require the preponderant agent to provide access to infrastructure
- tariffs in the public offer of infrastructure: inclusion of tariffs of both co-location and signal transmission services in the public offer of infrastructure, which will be determined by the IFT using a long-run incremental marginal cost methodology
- exclusive rights to relevant audiovisual content: the scope of the original measure is widened by prohibiting the preponderant agent from acquiring, directly or indirectly, the exclusive right to transmit relevant audiovisual content through FTA channels, unless the right to sub-licensing this content to other concessionaires is also established
- reporting on advertising sales: details of advertising sales to be published and presented to the IFT
- accounting separation: the obligation to present separate accounting information per service (such as co-location and signal transmission) is imposed on the preponderant agent.

Notwithstanding recent developments, the situation of a preponderant broadcasting actor, which also has SMP in the pay TV market, has been long-standing and unwavering. While it is too early to assess the success or failure of the 2014 and 2017 preponderance conditions, several remedies beyond them exist to address the situation if progress is not being observed in meeting policy objectives. Structural and functional separation remedies, for example, can be deployed to separate the preponderant agent in any of the existing points in the value chain. The menu of options can be categorised into five groups (from the least to more interventionist regulatory approaches) if they are required in the future:

1. Separate transmission: The model of entirely separating transmission from broadcasters has been implemented in the United Kingdom for all broadcasters, with the splitting of vertically integrated broadcasting incumbents into broadcasters and an independent company that operates television and radio transmitters. This option should be considered when new entrants are unable to access the transmission network of the preponderant agent on a fair, reasonable and non-discriminatory basis, despite behavioural measures imposed.
2. Separate spectrum ownership (digital multiplexes): This model involves instituting digital multiplexing, with separate spectrum fees from broadcasting. It would require auctions for spectrum under new conditions.
3. Separate advertising sales: The model of splitting advertisement sales from broadcasting follows the rationale that a separate advertising sales house would have no incentive to favour the broadcasting incumbent over other channels of advertising. This has been attempted, only partially successfully, in the United Kingdom's FTA commercial television market as it moved away from a monopoly. The effects of new digital platforms of advertising should also be considered when attempting to create such a separate advertising entity.
4. Separate programming (altogether or in part): The model of splitting the vertical value chain can also be made between transmission and programming (either production, rights ownership or both). Several broadcasters in OECD countries already operate without an in-house production arm and premium content has long been offered with separate rights ownership (e.g. Olympic Games). Regulation to partially or wholly separate production from broadcasting has historically been enforced in the United States and in all European Union countries. Experience in OECD countries shows

that splitting broadcasters into separate commercial subsidiaries for programming can help independent producers or sporting clubs/leagues access the incumbent's viewership and enhance media plurality. Under this option, MCMO rules that currently mandate broadcasters to offer free retransmission would need to be amended.

5. Separate pay TV (altogether or in part): The model of separating pay TV from broadcasting is the most far-reaching option for separating the preponderant broadcaster in Mexico. It consists of either functionally or structurally separating broadcasting from cable and/or satellite pay TV services. This measure is usually undertaken when anticompetitive incentives are created through this vertical integration of broadcasting and cable services, such as through the bundling of channels from the broadcaster in expensive cable offers and degradation of signals from other FTA channels, as has been claimed by some in Mexico. The separation of cable pay TV from satellite could also be carried out. Several OECD countries have implemented such arrangements and Mexico could benefit from this type of model if sufficient progress has not been made to meet policy objectives.

Any separation of the broadcasting preponderant agent, if implemented, should be a topic of extensive research and consultation. While competition is expected to increase with over-the-top (OTT) services, IPTV, the entrance of new digital broadcasting players and the measures improving access to the preponderant agent's infrastructure, it may be that the position built over 60 years is too strongly entrenched for effective competition to take root. In that case, each of these models has some support in good practices found in other OECD countries. Given the evolution of competitive dynamics in the future, authorities in Mexico could consider introducing such measures as appropriate.

Audiovisual content regulation

The 2013 reform defined some of the roles regarding audiovisual content regulation, notably those of Ministry of the Interior (Secretaría de Gobernación, SEGOB), the Ministry of Health (Secretaría de Salud) and the IFT. However, the implementation of some of these roles, such as the generally defined rights of audiences, is still a cause for institutional dispute. Moreover, technological developments are expected to put pressure on how audiovisual contents are monitored and legal instruments on this issue may need to be reviewed in the future. At the same time, some developments have also brought innovative ways to implement content monitoring, automating and easing the burden on staff.

From SEGOB's perspective, the 2013 reform helped to raise attention to broadcasting issues. SEGOB has been monitoring television, radio and cinema content for over 40 years, but the reform enabled it to update its monitoring methods by investing in technology and reducing the number of people involved in this daily task. More specifically, SEGOB is responsible for classifying audiovisual content and monitoring that classifications and children's protection principles are respected. The digitalisation of channels, however, has multiplied the volume of audiovisual content available and introduced a new challenge for SEGOB, as it has for its peers around the world. With the continued growth in content, over different platforms, such oversight and sanctions will likely prove to be an increasingly impractical task in the future. That being said, and as self-regulatory mechanisms may not render satisfactory results in the important and sensitive realms of the protection of children and accessibility, there may be a need to develop specific regulatory measures that consider international best practices. Good practices include the adoption of co-regulatory schemes as a way to balance and respect the rights of audiences, particularly for children and people with disabilities, and, at the same time, protect and respect human rights, including freedom of speech.

Under the current framework, the IFT has an important role in informing and instructing the market on how audiovisual content regulation will be implemented. According to the Constitution, the IFT has attributions on monitoring certain audience rights, requiring information from service providers, resolving complaints and sanctioning infractions (SEGOB, 2013, Transitory Article 11). After a period for public consultation and an examination carried out from July 2015, in December 2016, according to the requirement established in the LFTR (Art. 256), the IFT published the Audiences' Rights Guidelines (IFT, 2016i). The guidelines establish that advertising content should be clearly distinguished from programming, create mechanisms for the protection of children and people with disabilities, and regulate the functioning of an audiences' rights' ombudsmen. The guidelines, although developed based on the LFTR, have been suspended until the Supreme Court decides on a jurisdictional question regarding some articles of the LFTR with respect to audience rights, and, as a consequence, the IFT's mandate to regulate audience rights. This legal action was initiated by the federal executive and Senate. They say that eight articles of the LFTR violate the Constitution by mandating that the IFT regulate issues that are of a constitutional nature and, therefore, should be under the exclusive power of the President.[73]

A final resolution by the Supreme Court will resolve this case over the roles regarding audiences' rights, whether the LFTR needs to be modified and, as a consequence, whether the IFT has the mandate to develop guidelines on audience rights.

Network neutrality and video carriage

The reform introduced in Mexico has a number of specific measures related to "network neutrality". Article 145 of the LFTR establishes that the concessionaires and authorised entities providing Internet access service shall comply with the general guidelines, according to general principles of consumer choice and non-discrimination (LFTR, 2014). However, how this legal instruction is to be applied is not yet defined, and will be a matter of public consultation and examination by the IFT in 2017. Moreover, the outcomes of the 2017 review of preponderance measures are key in this area given the increased functional separation between fixed infrastructure and services. At the same time, while the mobile market is still highly concentrated, the commencement of the Red Compartida as a wholesale-only wireless network will be a relevant consideration. In the future, those developments should lead to more retail service providers over the respective fixed and mobile networks and, therefore, more competitive choice. This increased competition should assist in governing the behaviour of network and service providers.

Some OECD countries have adopted detailed guidelines on preserving the open Internet (also under the heading of "net neutrality" or "non-discrimination"), which typically require regulatory clarification of the principles laid down in legislation.[74] One of the most prominent areas of discussion has been the relationship between video carriage and differential pricing or discounting traffic (e.g. zero-rating). In April 2017, in order to provide clarity to stakeholders, including consumers, content providers and Internet service providers, the Canadian Radio-television and Telecommunications Commission (CRTC) established a framework and set out the evaluation criteria it will apply to determine whether an ISP's specific differential pricing practice is or is not consistent with applicable legislation in that country (Canadian Radio-Television and Telecommunications Commission, 2017). The evaluation criteria established, which do not include an ISP's own IPTV service, were the following: the degree to which the treatment of data is agnostic (i.e. data are treated equally regardless of their source or nature); whether the offering is exclusive to certain customers or certain content providers; the impact on

Internet openness and innovation; and whether there is financial compensation involved. Of these criteria, the CRTC said the degree to which the treatment of data is agnostic would generally carry the most weight. In any evaluation, they added, the CRTC will also consider whether there are any exceptional circumstances that demonstrate clear benefits to the public interest and/or minimal harm associated with a differential pricing practice.

Meanwhile, on the issue of zero-rating in European Union countries, BEREC states that while "it is not the case that every factor affecting end users' choices should necessarily be considered to limit the exercise of end users' rights" (BEREC, 2016), it warns that the combination of the largest mobile operator and the largest social network provider could produce an anticompetitive discriminatory access agreement. BEREC also suggests that price differentiation between individual applications within a category (such as IPTV) has a greater influence on competition than between classes of application, and that such an influence is likely to be stronger in markets with lower data caps, as has historically been the case in Mexico.

Several service providers have been experimenting with zero-rating in Mexico. Accordingly, in 2017, the IFT may need to review this against its requirement to enforce Article 145 of the LFTR. By the end of 2016, no operators, with the exception of Telcel, had published their guides to traffic management as required by Article 145. Meanwhile, mobile entrant Virgin has offered Facebook's Free Basics since 2015. By mid-2016, 46 million Mexicans had a Facebook account.

Currently, OTT services are present in urban and suburban fibre-led markets. However, it is expected that video services, such as those offered by Netflix and Amazon, as well as Claro's Uno and Blim, will drive more pronounced demands on fixed, and especially mobile, broadband networks (Marsden, 2017). Across OECD countries, rural fixed and wireless service providers are often less able to support video given the restricted bandwidth available, unless their networks were designed with this service in mind, and many say it is necessary to manage traffic accordingly. Red Compartida should increase network capabilities in this respect, with baseline speeds of 4 Mbps downstream and 1 Mbps upstream being targets for the edge of network coverage. This would be sufficient for standard definition video, though subject to local conditions and data allowances that permit greater use of video services. The availability of backhaul will, of course, be one of the determining factors, underlining the importance of projects such as the Red Troncal.

In its 2017 evaluation of net neutrality, therefore, the IFT will need to consider an increase in wholesale availability over time in both fixed and mobile networks in considering the likely implications for increased consumer choice at the retail level. More retail choice, all else being equal in areas such as backhaul or content availability, should enable greater reliance on competition than regulation. Thus, a case-by-case assessment as issues arise, based on principles established after the IFT review and consistent with the Constitution, may be the best first step.

While there are countries that have applied relatively strict rules on practices like zero-rating, such as Chile, India, the Netherlands and others, this has been based on an assessment of local competitive conditions. Accordingly, Mexico will need to closely examine developments and potential effects on competition. The issues around net neutrality have been less to the forefront in countries where there are a greater number of offers with higher data caps in both fixed and mobile markets. These offers, or unlimited ones, due to competition, tend to decrease discussions around zero-rating.

Notes

1. Before the EMS was in place, the IFT instructed the preponderant agent to make information on its infrastructure available.

2. The preponderant measures approved by the IFT in March 2014 granted Telmex, Telnor and Telcel six months to develop the EMS for each wholesale service once the IFT defined the technical and operational aspects, and two years to include the information associated with their infrastructure. In order to address industry concerns, through the reference offers of unbundling and infrastructure sharing, the IFT imposed on the preponderant agent the obligation to provide additional information about its infrastructure.

3. This can be observed in the comments submitted by CANIETI (an industry association), Telefónica and AT&T regarding the consultation process initiated by the IFT in April 2016, pursuant to the evaluation of the preponderance measures imposed on América Móvil.

4. For instance, Telefónica has expressed that the utilisation of a pure LRIC approach does not adequately reflect the cost of receiving a call, which may, consequently, undermine the preponderant operator's competitors' revenues and hence not contribute to levelling the playing field, which is one of the primary objectives of the whole reform. Another argument set forth relates to the fact that the rates are determined in Mexican pesos, even though many of the relevant costs are incurred in US dollars.

5. This agreement was published on 3 October 2016 in the Official Gazette.

6. This is with regard to the preponderant operator in the telecommunication sector.

7. The agreement was published on 17 February 2015.

8. In fact, the IFT has already settled disputes concerning access rates to Telesite's towers in relation to Telcel's most important competitors: AT&T and Telefónica. Agreements were signed, as stated by Telesite's Annual Report, in December 2015. Information available at https://www.bmv.com.mx/docs-pub/infoanua/infoanua_666829_2015_1.pdf (accessed 25 October 2016).

9. The model was published as a result of the disagreement filed by Megacable, although it had already been used to determine disaggregation rates in December 2015.

10. The 30-day period begins once the parties have notified their disagreement, presented expert evidence and stated their allegations.

11. According to Transitory Measure 5 of Annex 3, the procedure thereto required the IFT to previously issue a resolution on the topics to be decided by the Technical Committee. Subsequently, the reference offer was to be submitted to the IFT for its approval within 60 calendar days.

12. In Mexico, satellite operators providing pay TV services are required to retransmit national signals (those covering 50% or more of the national territory) and public federal institutions' signals. By May 2017, that amounted to ten different national signals that satellite operators had to retransmit.

13. Although standardised metrics of non-commercial programming is unavailable in Mexico, estimates from public broadcasters point to them having garnered their record audience share.

14. For instance, the requirement to use directional drilling for fibre optic installation, an overly expensive deployment technology; the presentation of civil works protection programmes, when they are non-applicable; the prohibition to access towers at certain times; certifications that there are no health effects (such as cancer); and the redesign or relocation for aesthetic reasons of the infrastructure.

15. The guidelines (published on 4 May 2017) of co-operation between the SCT, the SHCP, INDAABIN and other agencies involved in the ARES project highlight that the economic conditions (i.e. price of the space) that INDAABIN will determine have to be non-discriminatory terms, and with the aim of fostering competition in the sector as to incite more operators to use the infrastructure. (In other words, the prices have to follow the principles of Article 147 of the LFTR, and hence the cost of leasing the spaces should be low enough as to incite participation). For the text in Spanish, see www.dof.gob.mx/nota_detalle.php?codigo=5481537&fecha=04/05/2017.

16. A link to the online platform ARES can be found at https://sistemas.indaabin.gob.mx/ARES/#no-back-button. The programme was launched 8 May 2017, so the exchange rate used was MXN 18.76 per USD based on the exchange rate for May 2017 (OECD, 2017).

17. For example, the Red Troncal is required to provide leased lines with specific service level agreements: 99.95% monthly uptime availability; average latency of 30 milliseconds; under 0.3% lost packets; maximum jitter under 10 milliseconds.

18. Prices are recorded in the Public Concessions Register administered by the IFT.

19. In addition to the ceiling on the average weighted prices of the basket of telecommunication services, the tariff scheme may include particular limits to any element of the proposed basket.

20. Pursuant to Condition 6 of the concession titles.

21. According to the LFTR, concessions for private use also comprise concessions for experimental purposes or for amateur radio operators. In these cases, the concessions are assigned directly and there is no public auction.

22. Bearing in mind that the Congress in Mexico changes every three years, fees set by Congress could potentially translate into to six to seven changes in the annual fee structure in the lifetime of a spectrum license (which lasts 15 to 20 years).

23. From 2003 to date, the annual spectrum fees have remained unchanged in real terms over five congressional periods each of three years' duration.

24. This proof by Milgrom (2000) applied to auctions is based on an important result in mechanism design theory known as the "Myerson-Satterthwaite theorem", which states that in the presence of asymmetric information, and when two negotiating parties have different probabilistic valuations for a good, there is no way of achieving an efficient bilateral trade.

25. Specifically, AT&T shall pay during the next 15 years over USD 688 million, and Telcel shall disburse over USD 1.68 million. This information is based on an IFT press release regarding the AWS auction of February 2016, where the IFT calculated the net present value of the annual fees for a period of 15 years (IFT, 2016e). The exchange rate used corresponds to MXN 18.462/USD for February 2016 (OECD, 2017).

26. The Ventanilla Única Nacional allows individuals to initiate manifold procedures, request services and communicate with the government in areas such as: the presentation of complaints and allegations against federal public servants; civil registration and other identification procedures; passports and visas; assistance to corporations in fields such as foreign trade and consumer protection; social protection programmes directed at vulnerable population; public procurement; urban and territorial development, etc. (www.gob.mx, accessed 12 December 2016).

27. Through this initiative, developed within the framework of the Alliance for Open Government, the Mexican executive has formulated biannual plans implementing the four key principles of open government: transparency, accountability, citizen participation and innovation, as well as a series of commitments that are created, applied and supervised by civil society (http://gobabiertomx.org/mision-y-objetivos, accessed 12 December 2016).

28. PROSOFT 3.0 addresses the aforesaid objective through five specific strategies: 1) training of human capital specialised in ICTs and innovation in strategic sectors; 2) generation of applied research, technological development and innovation therein; 3) financing for companies pertaining to strategic sectors; 4) the generation of infrastructure for the development and adoption of ICTs; and 5) generation and dissemination of knowledge on ICTs and innovation through studies and events (https://prosoft.economia.gob.mx/acercade, accessed 12 December 2016).

29. Public Challenges invites entrepreneurs and innovators to propose and develop ICT-based solutions to problems facing the federal government, through a public procurement process (http://retos.datos.gob.mx/acerca, accessed 12 December 2016). Retos Públicos evolved to Reto México, an initiative that offers challenges from both the public and the private sectors. More information is available at: https://retomexico.org (accessed 1 June 2017).

30. @prende2.0 is geared at fostering the development of digital skills and computational thinking through multiple actions, such as: ICT training for teachers, digital and education resources, equipment, adoption of different connectivity models, and monitoring and evaluation strategies. (https://www.gob.mx/aprendemx/prensa/presentacion-del-nuevo-programa-prende-2-0-ciudad-de-mexico-a-7-de-noviembre-de-2016, accessed 12 December 2016).

31. MéxicoX is an online platform offering free courses, focused on six strategic lines: basic academic skills; training for teachers; specialised training; national challenges and support towards the fulfilment of the objectives of the federal public administration; global challenges; and dissemination of culture, history, science and the enjoyment of knowledge. The platform was awarded the World Summit on the Information Society prize for education (http://mx.mexicox.gob.mx/courses, accessed 12 December 2016).

32. As its name indicates, this programme is geared at providing individuals the opportunity to study – free of charge – regardless of the place and time (www.prepaenlinea.sep.gob.mx, accessed 12 December 2016).

33. The Open and Distance University of Mexico is somewhat similar to the abovementioned strategy, but aimed at providing university-level education (https://www.unadmexico.mx, accessed 12 December 2016).

34. *RadarCiSalud* is a mobile application encompassing over 28 000 public, private and social healthcare centres, providing its users with the fastest access route by car, public transportation or foot (https://www.gob.mx/apps/10, accessed 12 December 2016).

35. These guidelines represent technical documents focused on achieving technical and semantic interoperability between healthcare service providers (www.gob.mx/salud/acciones-y-programas/menu-intercambio-de-informacion-dgis?state=published, accessed 12 December 2016).

36. Other objectives include making government consultation and participation mechanisms less daunting for citizens; leveraging innovative digital tools to monitor, manage and understand participatory processes and patterns; reducing barriers of entry to consultation and participation processes with the aim of creating new opportunities and empowering people to co-design policy and legislative projects; and building and strengthening communities around issues of public interest.

37. Some have highlighted that the divergence between the 2016 and 2017 budgetary allocations concerning the México Conectado programme reflects an 84% decrease (Castañares, 2016c).

38. One may also consult Bernal (2013).

39. Refer also to national broadband plans in countries such as Colombia, Peru, the United Kingdom and the United States, where private operators have been charged with the task of building, owning and operating the networks required to increase uptake and coverage of broadband services therein (World Bank, 2012).

40. On this subject, it should be noted that there have been allegations concerning a lack of compliance with the universal coverage objectives to be fulfilled by Telmex as the primary beneficiary of the resources allocated through the fund, but also owing to the conditions stipulated in its concession title (Sánchez, 2011).

41. Rural telephony is fixed telephony service provided to towns up to 5 000 inhabitants. Public telephony refers to services provided through public telephones. Exemptions to any applications and content provided through the Internet.

42. For instance, the Broadband Commission, set up by the ITU and UNESCO, recommended eliminating taxes on ICT services and equipment to render them more affordable (Broadband Commission for Sustainable Development, 2016).

43. Although, at the time of the introduction of the IEPS in 2010, studies showed that the majority of the tax was mostly paid by the highest income group back then, already those considered "poor" under the CONEVAL measure (constituting 51.3% of the population) were paying 17.7% of the total non-petroleum IEPS (Maya Bautista, 2011).

44. Information available at: www.cramton.umd.edu/papers2015-2019/cramton-doyle-open-access-wireless-market.pdf.

45. Some operators have already expressed their interest in eventually acquiring capacity from the Red Compartida in the future. For instance, AT&T has indicated that, albeit its priority being the deployment of its own wholesale network to fulfil its coverage goal of providing connectivity to 100 million Mexicans by 2018, it shall evaluate the possibility of purchasing capacity form the Red Compartida once said goal is attained, in pursuance of reaching further regions in the country (Castañares, 2016b). Furthermore, the opportunity represented by the Red Compartida is luring potential entrants into the Mexican telecommunication market. For example, C3ntro Telecom, a firm directed at the business sector and with ample industry knowledge, is currently analysing the viability of establishing an MVNO operating on the Red Compartida tending exclusively to business customers (Lucas, 2016c).

46. CompraNet is the Mexican electronic system for government procurement.

47. These investors would contribute 60% of the project's capital.

48. It should be noted that the disqualified entity filed, in November 2016, for an indirect *amparo* recourse against the SCT's determination, which was admitted for examination by the Second Administrative District Court specialising in Economic Competition, Broadcasting and Telecommunications in mid-December 2016. It is relevant to highlight that, although the authority denied the Red Compartida's definitive suspension, it did admit the recourse presented by Rivada Networks in the sense that the SCT must preserve its economic and coverage proposal unaltered. Moreover, Rivada's allegations pertaining to Altán Redes' purported access to privileged information in power of the SCT during the bidding process is currently being analysed by the SFP's internal comptroller (El Financiero, 2016; Juárez Escalona, 2017a).

49. *Pueblos Mágicos* are locations with symbolic attributes, legends, history, transcendent facts, daily life, magic that emanate from each of our socio-cultural expressions, and which today represent a great opportunity for tourism.

50. The provider agreement includes Huawei technology for central and southern Mexico (telecommunication regions 6-9) as well as providing the backbone, while Nokia's technology will be rolled out in the northern part of the country (regions 1-5). Additionally, Nokia will be in charge of the construction of the network's core, which includes a Network Operation Center and a Security Operation Center.

51. Between the adoption of the A/53 standard in 2004 and the constitutional reform in 2013, only 22% of the Mexican broadcasters were able to perform digital transmissions. In the period between 2013 and the analogue switchoff date (31 December 2015), the IFT assigned more than 300 channels for digital transmissions and approved the operation of more than 500 television stations.

52. The speed at which analogue to digital switch overs are completed also depends on the proportion of FTA households in the country. In Berlin, as well as in Luxembourg (2006) and the Netherlands (2006), households using FTA for their primary television set represented a small proportion of total households with television sets. In this case, governments typically do not subsidise second and subsequent televisions or portable televisions and very limited funds are distributed to support analogue households converting to digital sets, with the United Kingdom budgeting GBP 600 million, for example, but spending only GBP 260 million (Digital UK, 2012; Brown and Picard, 2004).

53. This co-operation agreement entered into force on 27 June 2014.

54. This 24-hour rule was implemented on 10 February 2015.

55. A particularly extensive analysis of foreign ownership within the context of media pluralism and diversity was carried out in 2011 by Ofcom, the United Kingdom regulator, in relation to a bid for control of dominant pay TV operator BSkyB (Ofcom, 2010; Craufurd Smith and Tambini, 2012).

56. Circuit Collegiate Tribunal Specialized in Administrative Matters for Economic Competition, Radio Broadcasting and Telecommunication Matters (Tribunal Colegiado de Circuito en Materia Administrativa Especializado en Materia de Competencia Económica, Radiodifusión y Telecomunicaciones).

57. For purposes of determining preponderance, a firm's market share can be measured by the number of users, subscribers, audience, traffic on their networks or usage of the capacity of those networks.

58. To be precise, under Chapter LIV, broadcasting is "the dissemination of electromagnetic waves of audio or associated audio and video signals, using, enjoying or exploiting the frequency bands of the radio spectrum, including those associated to orbital resources, allocated by the institute for said service, with which the population may directly and freely receive the signals of its transmitter using the proper devices." Under Chapter LXVIII, telecommunication is "every emission, transmission or reception of signs, signals, data, documents, images, voice, sounds or information of any nature made through wire, radio electricity, optical, physical or other electromagnetic systems, without including broadcasting."

59. The plenary has seven commissioners, including its President. It is the governing body of the institute.

60. Typically, competition laws aim to protect the competition that already exists in markets, whereas regulations, among many other things, may aim to forcibly inject more competition into them.

61. To determine market share, the IFT may consider sales indicators, number of clients, production capacity, as well as any other factor deemed appropriate.

62. The UCE's preliminary advice is never published because it is considered equivalent to a working paper, containing diverse hypotheses that may not be conclusive.

63. In a subsequent case (AI/DC-002-2014), the Board did explain why it concluded that there was insufficient information in the AI's analysis to support the conclusion that the relevant geographic market for pay TV was local rather than national. But it is odd that the explanation was not provided in this case, too. Most recently, in its second resolution in case AI/DC-001-2014, the Board briefly provided some reasons for its finding that the relevant geographic market is national.

64. The HHI is the sum of the square of each participant's market share in a relevant market, resulting in an index that can vary between 0 and 10 000. The Dominance Index, as defined in Transitory Article 9, is like the HHI but instead of using the sum of the squares of market shares, uses the sum of the squares of the percentages of the HHI that each firm accounts after performing the normal HHI calculation (i.e. with market shares).

65. In 2016, the UCE issued guidelines entitled "Technical criteria for Concentration Index in the areas of telecommunication and broadcasting" (available at: www.dof.gob.mx/nota_detalle.php?codigo=5432595&fecha=11/04/2016). These guidelines clarify that the IFT will use the HHI to measure the degree of concentration in the telecommunication and broadcasting sectors. The guidelines set thresholds for both magnitudes and changes in the HHI that help to identify mergers that are unlikely to hinder, diminish or otherwise harm competition.

66. Exchange rates as of 24 February 2017.

67. In September 2014, the Board decided to fine Telmex for hampering the production process or reducing the demand faced by competitors. The fine was approximately USD 3 million – an amount which is small compared to Telmex's annual revenue.

68. These firms are S.A.B. de C.V., Teléfonos de México, S.A.B. de C.V., Teléfonos del Noroeste, S.A. de C.V., Radiomóvil Dipsa, S.A. de C. V., Grupo Carso, S.A.B. de C.V. and Grupo Financiero Inbursa, S.A.B. de C.V.

69. The proposed measures were notified to the preponderant undertaking in September 2016, who expressed its views and presented the corresponding evidence during a procedure that concluded on 9 January 2017.

70. The BEREC guidelines thereto (2011) clearly indicate this desirable outcome: "The primary argument for introducing vertical separation is that it reduces or (in the extreme) eliminates the incentive of the incumbent network operator to engage in non-price discrimination in favour of its own retail operations. In particular, it eliminates the incumbent's incentives and possibilities, whether legal, economic or technical, to maximize the profits of its own downstream divisions via discriminatory practices (…) In the absence of separation, the incumbent has incentives to maximize the joint profits of its upstream network operations and its downstream retail division by using such practices".

71. Albeit acknowledging the criticism formulated by the literature concerning the impact of functional separation on the degree of investment and innovation in such a capital-intensive market, especially as to the deployment of next-generation networks based on fibre infrastructure, and the exploitation of efficiencies emanated from vertical integration. This is why it is crucial that such a measure be adopted by a regulator as a last resort, essentially, when all other, less-intrusive remedies have proven ineffective and there is meagre prospect for infrastructure-based competition in the access network in the medium or long term. On this topic, see: BEREC (2011); Blackman and Srivastava (2011); Mediatelecom Policy and Law (2017).

72. Indeed, some of América Móvil's rivals have questioned some of its practices in the retail market, which have allegedly impeded the replicability of its offers by the former. For example, AT&T has objected to América Móvil's exclusive agreement with Dropbox, announced in November 2015, through which subscribers of Telmex's Infinitum Internet service would receive 5 GB of extra storage space in the cloud computing services provided by Dropbox, as well as preferential fees for acquiring unlimited storage space. Ultimately, non-replicability derives from the exclusive nature of said agreement. For further information see www.ift.org.mx/sites/default/files/consulta-publica/ift-2016-0704a1606/20160615_1611_ATT_Comercializaci%C3%B3n_M%C3%B3vil.pdf.

73. www.gob.mx/presidencia/prensa/president-epn-files-constitutional-challenge-against-eight-articles-of-the-federal-telecommunications-and-broadcasting-act.

74. Such as Article 3 of the European Union Resolution 2015/2120/EU.

References

Altán Redes (2017), "ALTÁN Redes completa con éxito la financiación de la Red Compartida" [ALTÁN networks complete successful network funding], Altán Redes, http://altanredes.com/2017/04/05/altan-redes-completa-exito-la-financiacion-la-red-compartida.

Analysys Mason (2017), *Cómo superar las barreras al despliegue de servicios de comunicaciones móviles: Hoja de ruta México* [How to overcome barriers to the deployment of mobile communications services: Roadmap Mexico], Development Bank of Latin America, http://scioteca.caf.com/bitstream/handle/123456789/1021/Informe%20Expansion%20Conectividad%20Mexico-31mar.pdf?sequence=2&isAllowed=y (accessed 19 April 2017).

Arteaga, J.R. (2015), "Agenda digital, ¿una misión (casi) imposible de lograr?" [Digital Agenda, a mission (almost) impossible to achieve?], Forbes Mexico, 3 April, https://www.forbes.com.mx/agenda-digital-una-mision-casi-imposible-de-lograr (accessed 13 December 2016).

AT&T (2016), "Comentarios a la consulta pública de la efectividad en términos de competencia de la medidas impuestas al agente económico preponderante en el sector de telecomunicaciones" [Comments to the public consultation on the effectiveness in terms of competence of the measures imposed on the preponderant economic agent in the telecommunication sector], Instituto Federal de Telecomunicaciones, www.ift.org.mx/sites/default/files/consulta-publica/ift-2016-0704a1606/20160615_1611_ATT_Comercializaci%C3%B3n_M%C3%B3vil.pdf (accessed 6 October 2016).

AT&T Mexico (n.d.), "Roaming mundial de AT&T" (AT&T worldwide roaming), press release, 7 November, AT&T Mexico, www.att.com.mx/servicios/roaming.html (accessed 29 November 2016).

Beard, T. R. et al. (2013), "An economic framework for retransmission consent", *Phoenix Center Policy Paper*, No. 47, Washington, DC, https://ssrn.com/abstract=2913135.

BEREC (Body of European Regulators of Electronic Communications) (2016), "BEREC guidelines on the implementation by national regulators of European Net Neutrality Rules", *Guidelines*, BoR(16)127, Body of European Regulators of Electronic Communications, Riga, http://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/guidelines/6160-berec-guidelines-on-the-implementation-by-national-regulators-of-european-net-neutrality-rules.

BEREC (2011), "BEREC guidance on functional separation under Articles 13a and 13b of the revised Access Directive and national experiences", BoR(10)44 Rev 1, Body of European Regulators for Electronic Communications, http://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/guidelines/195-berec-

guidance-on-functional-separation-under-articles-13a-and-13b-of-the-revised-access-directive-and-national-experiences.

Bernal, D. (2013), "Providing broadband services through PPP (public private partnership) models", presentation made at the "Regional Seminar on Costs and Tariffs for Asia and Pacific and Meeting of the SG3RG-AO", 8-9 April, Tokyo, www.itu.int/ITU-D/finance/work-cost-tariffs/events/tariff-seminars/Japan-13/documents/Sess8_BroadbandPPP_Bernal.pdf (accessed 6 March 2016).

Blackman, C. and L. Srivastava (eds.) (2011), "Telecommunications regulation handbook, Tenth anniversary edition", International Bank for Reconstruction and Development/The World Bank, InfoDev & the International Telecommunication Union, Washington, DC, www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/05/30/000425970_20120530103643/Rendered/PDF/691960ESW0P1200lation0Handbook02011.pdf (accessed 10 March 2017).

Broadband Commission for Sustainable Development (2016), *The State of Broadband 2016: Broadband Catalyzing Sustainable Development*, ITU and UNESCO, Geneva and Paris, September, http://broadbandcommission.org/Documents/reports/bb-annualreport2016.pdf.

Brown, A. and R. Picard (2004), *Digital Television in Europe*, Lawrence Erlbaum Associates, New York.

Canadian Radio-Television and Telecommunications Commission (2017), "Telecom regulatory policy CRTC 2017-104: Framework for assessing the differential pricing practices of Internet service providers", Canadian Radio-Television and Telecommunications Commission, Ottawa, Ontario, http://crtc.gc.ca/eng/archive/2017/2017-104.htm.

CANIETI (Cámara Nacional de la Industria Electrónica, de Telecomunicaciones y Tecnologías de la Información) (2016), "Consulta pública de la efectividad en términos de competencia de las medidas impuestas al Agente Económico Preponderante en el sector de telecomunicaciones " [Public consultation of the effectiveness in terms of competition of the measures imposed on the Prevailing Economic Agent in the telecommunication sector], Cámara Nacional de la Industria Electrónica, de Telecomunicaciones y Tecnologías de la Información, Mexico City, www.ift.org.mx/sites/default/files/consulta-publica/ift-2016-0704a1606/20160504_0942_C%C3%A1mara_Nacional_de_la_Industria_Electr%C3%B3nica,_de_Telecomunicaciones_y_Tecnolog%C3%ADas_de_la_Informaci%C3%B3n_(CANIETI).pdf.

Castañares, I. (2017), "SCT buscará alianza privada para elevar meta de 'México Conectado'" [SCT to seek private alliance to raise goal of "Connected Mexico"], *El Financiero*, www.elfinanciero.com.mx/empresas/sct-buscara-alianza-privada-para-elevar-meta-de-mexico-conectado.html.

Castañares, I. (2016a), "Telefónica, Telcel y AT&T 'pelearán' por la banda de 2.5 GHz que fue de MVS" [Telefonica, Telcel and AT&T "will fight" for the 2.5 GHz band that was MVS], *El Financiero*, 16 February, www.elfinanciero.com.mx/empresas/telefonica-telcel-y-at-t-pelearan-por-la-banda-de-ghz-que-fue-de-mvs.html.

Castañares, I. (2016b), "AT&T evalúa dar cobertura vía Red Compartida en 2018" [AT&T evaluates to provide coverage via shared network in 2018], *El Financiero*, 14 February, www.elfinanciero.com.mx/empresas/at-t-evalua-dar-cobertura-via-red-compartida-en-2018.html (accessed 15 December 2016).

Castañares, I. (2016c), "México Conectado puede fracasar por recorte: Expertos" [Mexico Connected may fail to cut: Experts], *El Financiero*, 8 September, www.elfinanciero.com.mx/empresas/reduciria-84-presupuesto-para-mexico-conectado-en-2017.html (accessed 15 December 2016).

Cave, M. and E. Flores-Roux (2017), "How Mexico can benefit from the digital economy", 17 January 2017, Consejo Ejecutivo de Empresas Globales (CEEG), México City, http://ceeg.mx/new/wp-content/uploads/2017/01/CEEG-Final-Version-25-jan-2017.pdf.

Cave, M. and W. Mfuh (2013), "Taxing telecommunications/ICT services: An overview", International Telecommunication Union, Geneva, www.itu.int/en/ITU-D/Regulatory-Market/Documents/Taxation%20Study-final-en.pdf.

CETIN Finance B.V (2016), "A financial prospectus", 17 November 2016, https://www.cetin.cz/documents/10182/53953/20161117+CETIN+Finance+B.V.+prospectus.pdf/6c04f24e-9858-4af1-a0e9-80a672670e6d.

COFETEL (Comisión Federal de Telecomunicaciones) (2013), *El espectro radioeléctrico en México. Estudio y acciones* [Radio spectrum in Mexico. Study and actions], Comisión Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/sites/default/files/contenidogeneral/espectro-radioelectrico/espectro-radioelectrico-en-mexico-vp.pdf (accessed 12 December 2016).

COFETEL (2011), "Plan Técnico Fundamental de Calidad del Servicio Local Móvil" [Fundamental Technical Plan for Quality of Local Mobile Services], *Diario Oficial de la Federación*, www.dof.gob.mx/nota_detalle.php?codigo=5206919&fecha=30/08/2011.

Cortés, M. (2017), "AMX pierde 4.5%; Televisa sube 1%" [AMX loses 4.5%; Televisa rises 1%], *Mediatelecom*, 10 March, www.mediatelecom.com.mx/index.php/finanzas/negocios/item/132853-amx-pierde-4-5-televisa-sube-1 (accessed 10 March 2017).

Cramton, P. (2002), "Spectrum auctions", Chapter 14 in: Cave, M., S. Majumdar and I. Vogelsang (eds.), *Handbook of Telecommunications Economics*, Vol. 1, pp. 605-639, Elsevier Science, Amsterdam.

Craufurd Smith, R. and D. Tambini (2012), "Measuring media plurality in the United Kingdom: Policy choices and regulatory challenges", *EUI Working Papers RSCAS*, Vol. 2012/36, http://cadmus.eui.eu/bitstream/handle/1814/23314/RSCAS_2012_36.pdf?sequence=1&isAllowed=y.

Digital UK (2012), *Digital UK Switchover 2008-2012: Final Report*, Digital UK, London, www.digitaluk.co.uk/data/assets/pdf_file/0019/82324/DigitalUK_Switchover_final_report_Nov2012.pdf.

El Economista (2015), "OCDE cuestiona efectividad de IEPS a telecom" [OECD questions effectiveness of IEPS to telecom], *El Economista*, 19 August, http://eleconomista.com.mx/industrias/2015/08/19/cuestionan-efectividad-ieps-telecomunicaciones (accessed 19 December 2016).

El Financiero (2016), "Licitación de Red Compartida fue transparente, reitera Ruiz Esparza" [Ruiz Esparza reiterated that the tender for shared network was transparent], *El Financiero*, 12 December, www.elfinanciero.com.mx/empresas/licitacion-de-red-compartida-fue-transparente-reitera-ruiz-esparza.html (accessed 15 December 2016).

Elbittar, A. et al. (2014), "Injecting competition in broadcasting through MCMO Regulations: Some recommendations for Mexico", SSRN Publishing, http://dx.doi.org/10.2139/ssrn.2403048.

European Commission (2016), "Proposal for a regulation of the European Parliament and of the Council amending Regulation (EU) No 531/2012 as regards rules for wholesale roaming markets", Commission Staff Working Document, European Commission, Brussels, http://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/SWD-2016-202-F1-EN-MAIN-PART-1.PDF (accessed 24 April 2017).

EPEC (European PPP Expertise Centre) (2012), "Broadband: Delivering next generation access through PPP", European PPP Expertise Centre, Luxembourg, www.eib.org/epec/resources/epec_broadband_en.pdf.

FCC (Federal Communications Commission) (2017), "Univision Holdings, Inc. grant of petition for declaratory ruling to exceed 25 percent foreign ownership benchmark in Section 310(b)(4) of Communications Act of 1934, as amended", Declaratory Ruling, 3 January, Federal Communications Commission, Washington, DC, https://www.fcc.gov/document/univision-holdings-inc-grant-petition-declaratory-ruling.

FCC (2016a), "FCC streamlines foreign ownership rules and procedures for broadcast & common carrier licensees: Action maintains thorough review of foreign ownership above 25 percent", Declaratory Ruling, 29 September, Federal Communications Commission, Washington, DC, https://apps.fcc.gov/edocs_public/attachmatch/DOC-341506A1.pdf.

FCC (2016b), "Review of foreign ownership for broadcast, common carrier and aeronautical radio licensees, 81 Fed. Reg. 86568", Federal Register of the United States Government, https://www.federalregister.gov/documents/2017/03/06/2017-03990/review-of-foreign-ownership-policies-for-broadcast-common-carrier-and-aeronautical-radio-licensees.

Gallegos, R. (2013), "Por primera vez, una estrategia digital nacional" [For the first time, a national digital strategy], *El Economista*, 25 November, http://eleconomista.com.mx/foro-economico/2013/11/25/primera-vez-estrategia-digital-nacional.

Galperin, H., V. Mariscal and M. Viecens (2013), "National broadband plans", Chapter 7 in: Jordán, V. et al. (eds.), *Broadband in Latin America: Beyond Connectivity*, Economic Commission for Latin America and the Caribbean, Santiago, http://repositorio.cepal.org/bitstream/handle/11362/35899/S2013644_en.pdf?sequence=1&isAllowed=y.

García-Murillo, M. and I. MacInnes (2011), "Net centric distribution of video signal and must carry rules in the U.S.", *Communications & Strategies*, No. 77, pp. 79-99, https://ssrn.com/abstract=1809709.

Government of Mexico (n.d.), "Participa con tu gobierno en línea" [Participate with your government on line], webpage, https://www.gob.mx/participa/welcome (accessed 12 December 2016).

Government of Mexico (2013), "Estrategia Digital Nacional" [National Digital Strategy], www.gob.mx/cms/uploads/attachment/file/17083/Estrategia_Digital_Nacional.pdf (accessed 12 December 2016).

GSMA/Coleago Consulting (2014), "The cost of spectrum auction distortions: Review of spectrum auction policies and economic assessment of the impact of inefficient outcomes", GSM Association, London, www.gsma.com/spectrum/wp-content/uploads/2014/11/The-Cost-of-Spectrum-Auction-Distortions.-GSMA-Coleago-report.-Nov14.pdf (accessed 10 February 2017).

GSMA/Deloitte (2015), "Digital inclusion and mobile sector taxation 2015", https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/06/Digital-Inclusion-Mobile-Sector-Taxation-2015.pdf.

Hausman, J. (2000), "Efficiency effects on the U.S. economy from wireless taxation", *National Tax Journal*, Vol. 53/3, Part 2 (September 2000), pp. 733-742, http://dx.doi.org/10.17310/ntj.2000.3S.06.

Hazlett, T., R. Muñoz and D. Avanzini (2012), "What really matters in spectrum allocation design", *Northwestern Journal of Technology and Intellectual Property*, Vol. 10/3, pp. 93-123, http://scholarlycommons.law.northwestern.edu/cgi/viewcontent.cgi?article=1159&context=njtip.

IFT (Instituto Federal de Telecomunicaciones) (n.d.), "Unidad de Competencia Económica" [Economic Competition Unit], Instituto Federal de Telecomunicaciones, www.ift.org.mx/conocenos/estructura/unidad-de-competencia-economica (accessed 30 September 2016).

IFT (2017a), "Resolución mediante la cual el Pleno del Instituto Federal de Telecomunicaciones suprime, modifica y adiciona las medidas impuestas al agente económico preponderante en el sector de telecomunicaciones mediante resolución de fecha 6 de marzo de 2014, aprobada mediante acuerdo P/IFT/EXT/060314/76" [Resolution in which the Board of IFT supresses, modifies and adds measures imposed to the preponderant economic agent in the telecommunication sector on the resolution of 6 March 2014, approved in the agreement P/IFT/EXT/060314/76], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/sites/default/files/pitfext270217119verpub_1.pdf.

IFT (2017b), "Cuarto informe trimestral estadístico 2016" [Statistical report of the fourth trimester], Instituto Federal de Telecomunicaciones, Mexico City, https://bit.ift.org.mx.

IFT (2017c), "Spectrum fees for telecommunication services", unpublished material provided by the Instituto Federal de Telecomunicaciones.

IFT (2016a), "Comentarios de la consulta pública de la efectividad en términos de competencia de las medidas impuestas al agente económico preponderante en el sector de telecomunicaciones" [Comments from the public consultation on the effectiveness in terms of competition of the measures imposed on the preponderant economic agent in the telecommunication sector], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/industria/consultas-publicas/de-la-efectividad-en-terminos-de-competencia-de-las-medidas-impuestas-al-agente-comments (accessed 24 October 2016).

IFT (2016b), "Dialogan autoridades e industria sobre mejores prácticas de acceso a infraestructura eléctrica a operadores de otras industrias (Comunicado 89/2016)" [Authorities and industry dialogue on best practices access to electricity operators from other industries infrastructure (Press 89/2016)], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/comunicacion-y-medios/comunicados-ift/es/dialogan-autoridades-e-industria-sobre-mejores-practicas-de-acceso-infraestructura-electrica.

IFT (2016c), "El pleno del IFT prorrogó a Telmex la vigencia de la concesión para construir, instalar, mantener, operar y explotar una red pública telefónica, otorgada en su favor el 10 de agosto de 1990 (Comunicado 143/2016)", [The plenary of the IFT extended to Telmex the validity of the concession to build, install, maintain, operate and use a public telephone network, granted in its favour on 10 August 1990

(Communiqué 143/2016)], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/comunicacion-y-medios/comunicados-ift/es/el-pleno-del-ift-prorrogo-telmex-la-vigencia-de-la-concesion-para-construir-instalar-mantener-operar.

IFT (2016d), "Acta de fallo: Licitación IFT 3" [Record of failure: Litigation IFT 3], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/sites/default/files/acta_de_fallo_ift-3_0.pdf.

IFT (2016e), "El IFT anuncia los resultados de la tercera etapa de la licitación para el concesionamiento de hasta 80 Mhz en la banda AWS (1.7/2.1 GHz) [Comunicado 13/2016]" [The IFT announces the results of the third stage of the tender for the concession of up to 80 MHz in the AWS band (1.7/2.1 GHz) (Communiqué 13/2016)], press release, Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/comunicacion-y-medios/comunicados-ift/es/el-ift-anuncia-los-resultados-de-la-tercera-etapa-de-la-licitacion-para-el-concesionamiento-de-hasta.

IFT (2016f), "Mitos y realidades de la licitación de 80 MHz de espectro en la banda AWS" [Myths and realities of the bidding of 80 MHz of spectrum in the AWS band], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/sites/default/files/mitos_y_realidades_aws_4.pdf.

IFT (2016g), "El pleno del IFT resuelve sancionar a Maxcom por incumplir con parámetros de calidad en la prestación del servicio (Comunicado 21/2016)" [The plenary of the IFT resolves to sanction Maxcom for breaching quality parameters in the provision of the service (Communiqué 21/2016)], press release, Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/comunicacion-y-medios/comunicados-ift/es/el-pleno-del-ift-resuelve-sancionar-maxcom-por-incumplir-con-parametros-de-calidad-en-la-prestacion.

IFT (2016h), "Estadísticas de portabilidad" [Number portability statistics], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/estadisticas/estadisticas-de-portabilidad (accessed 5 December 2016).

IFT (2016i), "Lineamientos generales sobre los derechos de las audiencias" [General guidelines on the rights of audiences], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/sites/default/files/industria/temasrelevantes/4746/documentos/lineamientosdchosaudienciasaccesible.pdf.

IFT (2016j), "Anuario estadístico 2015" [Statistical yearbook 2015], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/estadisticas/anuario-estadistico-2015.

IFT (2015a), "Licitación IFT-3: Banda AWS" [Litigation IFT-3: AWS band], Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/industria/espectro-radioelectrico/espectro/2015/licitacion-ift-3-banda-aws.

IFT (2015b), "El IFT autoriza intercambio de bandas de frecuencias y arrendamiento de espectro entre AT&T y Pegaso (Comunicado 117/2015)" [IFT authorises spectrum band and frequency band exchange between AT & T and Pegaso (Communiqué 117/2015)], press release, Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/comunicacion-y-medios/comunicados-ift/es/el-ift-autoriza-intercambio-de-bandas-de-frecuencias-y-arrendamiento-de-espectro-entre-att-y-pegaso.

IFT (2015c), "El IFT sanciona fallas en el servicio de Pegaso (Communicado 96/2015)" [IFT sanctions fails of service of Pegaso (Communiqué 96/2015)], press release, Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/sites/default/files/comunicacion-y-medios/comunicados-ift//comunicadoift96.pdf.

IFT (2015d), "Comparador de servicios de telecomunicaciones" [Comparison of telecommunication services], Instituto Federal de Telecomunicaciones, Mexico City, http://comparador.ift.org.mx (accessed 5 December 2016).

IFT (2014a), "Versión pública del Acuerdo P/IFT/EXT/060314/76" [Public version of Agreement P/IFT/EXT/060314/76], Resolution, Instituto Federal de Telecomunicaciones, Mexico City, http://apps.ift.org.mx/publicdata/P_IFT_EXT_060314_76_Version_Publica_Hoja.pdf.

IFT (2014b), "Acuerdo mediante el cual el pleno del Instituto Federal de Telecomunicaciones emite la metodología para el cálculo de costos de interconexión de conformidad con la Ley Federal de Telecomunicaciones y Radiodifusión [Agreement whereby the board of the Federal Institute of Telecommunications issues the methodology for the calculation of interconnection costs in accordance with the Federal Law of Telecommunications and Broadcasting], *Diario Oficial de la Federación*, 18 December, Mexico City, www.dof.gob.mx/nota_detalle.php?codigo=5376422&fecha=18/12/2014.

IFT (2014c), "Versión pública del Acuedo P/IFT/EXT/060314/77" [Public versión of the agreement P/IFT/EXT/060314/77], Resolution, Instituto Federal de Telecomunicaciones, Mexico City, www.ift.org.mx/sites/default/files/p_ift_ext_060314_77.pdf.

IFT and Procuraduría Federal del Consumidor (2015), "Carta de derechos mínimos de los usuarios de los servicios públicos de telecomunicaciones" [Letter of minimum rights of the users of public telecommunication services], Instituto Federal de Telecomunicaciones and Procuraduría Federal del Consumidor, www.ift.org.mx/sites/default/files/contenidogeneral/usuarios-y-audiencias/cartaderechosminimosprofeco.pdf.

IFT, ITAM (Instituto Tecnológico Autónomo de México) and CEC (Centro de Estudios de Competitividad) (2016), "Estudio sobre las barreras a la competencia y a la neutralidad competitiva causadas por reglamentaciones y trámites de entidades públicas en los mercados de telecomunicaciones y radiodifusión" [Study on barriers to competition and competitive neutrality caused by regulations and procedures of public entities in the telecommunication and broadcasting markets], Instituto Federal de Telecomunicaciones, Instituto Tecnológico Autónomo de México and Centro de Estudios de Competitividad, http://despliegueinfra.ift.org.mx/docs/estudios/IFT-Barreras-Documento-Final.pdf (accessed 13 December 2016).

INEGI (Instituto de Nacional de Estadística y Geografia) (2017), *Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares (ENDUTIH) 2016* [National Survey on Availability and Use of Information and Communication Technologies in Households 2016], Instituto de Nacional de Estadística y Geografia, Mexico City, www.beta.inegi.org.mx/proyectos/enchogares/regulares/dutih/2016/default.html.

INEGI (2015), *Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) 2014* [National Survey on Household Income and Expenditures 2014], Instituto de Nacional de Estadística y Geografia, Mexico City, www.beta.inegi.org.mx/proyectos/enchogares/regulares/enigh/tradicional/2014/default.html.

Jordan, D. (2017), "BT Openreach deal aims to shakeup UK broadband", BBC News, London, www.bbc.com/news/business-39228115 (accessed 10 March 2017).

Juárez Escalona, C. (2017a), "Niegan suspensión a Rivada en juicio contra licitación" [Deny suspension to Rivada in trial against bidding], *El Economista*, 8 January, http://eleconomista.com.mx/industrias/2017/01/08/niegan-suspension-rivada-juicio-contra-licitacion (accessed 23 January 2017).

Juárez Escalona, C. (2017b), "Promtel alista firma de contrato para Red Compartida" [Promtel enlists contract signing for shared network], *El Economista*, 19 January, http://eleconomista.com.mx/industrias/2017/01/19/promtel-alista-firma-contrato-red-compartida.

Juárez Escalona, C. (2017c), "Reglas de preponderancia sí tomaron en cuenta condiciones del mercado: IFT" [Rules of preponderance did take into account market conditions: IFT], *El Economista*, 9 March, http://eleconomista.com.mx/industrias/2017/03/09/reglas-preponderancia-tomaron-cuenta-condiciones-mercado-ift.

Juárez Escalona, C. (2016), "Menos presupuesto frena cobertura de México Conectado" [Low budget slows coverage of Mexico Connected], *El Economista*, 4 October, http://eleconomista.com.mx/industrias/2016/10/04/menos-presupuesto-frena-cobertura-mexico-conectado.

Katz, R.L., E. Flores-Roux and J. Mariscal (2010), "The impact of taxation on the development of the mobile broadband sector", GSMA and Telecom Advisory Services, LLC, https://www.gsma.com/spectrum/wp-content/uploads/2012/03/tasreport.pdf.

Laffont, J.-J. and J. Tirole (1988), "The dynamics of incentive contracts", *Econometrica*, Vol. 56/5, pp. 1 153-1 175, www.jstor.org/stable/1911362.

Larocca, N. (2016), "Las autoridades regulatorias de México quieren garantizar uso de infraestructura eléctrica para telecomunicaciones" [Mexico's regulatory authorities want to guarantee use of electrical infrastructure for telecommunications], 16 August, Telesemana.com, www.telesemana.com/blog/2016/08/16/las-autoridades-regulatorias-de-mexico-quieren-garantizar-uso-de-infraestructura-electrica-para-telecomunicaciones.

LFD (2017), Ley Federal de Derechos [Annual Fees Law], Congreso de los Estados Unidos Mexicanos, *Diario Oficial de la Federación*, last reformed on 7 December 2016, https://legalzone.com.mx/wp-content/uploads/2017/02/Ley-Federal-de-Derechos-Legalzone-Mx.pdf.

LFCE (2014), Ley Federal de Competencia Económica (Federal Economic Competition Law), Congreso de los Estados Unidos Mexicanos ,*Diario Oficial de la Federación*, Mexico City, 23 May (last reform published on 27 January 2017), www.diputados.gob.mx/LeyesBiblio/pdf/LFCE_270117.pdf.

LFPC (1992), Ley Federal de Protección al Consumidor (Federal Consumer Protection Law), *Diario Oficial de la Federación*, Mexico City, 24 December, (last reform published on 26 June 2017), www.diputados.gob.mx/LeyesBiblio/pdf/113_260617.pdf.

LFTR (2014), Ley Federal de Telecomunicaciones y Radiodifusión [Federal Law of Telecommunications and Broadcasting], Congreso de los Estados Unidos Mexicanos, *Diario Oficial de la Federación*, last reform published 27 January 2017, Mexico City, www.diputados.gob.mx/LeyesBiblio/ref/lftr.htm.

LGAHOTDU (2016), Ley General de Asentamientos Humanos, Ordenamiento Territorial y Desarrollo Urbano [General Law of Human Settlements, Territorial Order and Urban Development], Congreso de los Estados Unidos Mexicanos *Diario Oficial de la Federación*, 28 November, Mexico City, www.diputados.gob.mx/LeyesBiblio/pdf/LGAHOTDU_281116.pdf.

LIE (2014), Ley de la Industria Eléctrica [Electric Industry Law], Congreso de los Estados Unidos Mexicanos, *Diario Oficial de la Federación*, www.cfe.gob.mx/ConoceCFE/1_

AcercadeCFE/MarcoLegalyNormativo/Lists/Leyes1/Attachments/26/Leydelaindustriaelectrica11ago.pdf.

Lucas, N. (2016a), "IFT evalúa opciones para licitar la banda del 2.5 GHz" [IFT evaluates options to tender the 2.5 GHz band], *El Economista*, 7 June, http://eleconomista.com.mx/industrias/2016/06/07/banda-25-ghz-tambien-se-licitaria-como-aws-ift.

Lucas, N. (2016b), "Telcel usará los 60 MHz de espectro de MVS en la banda del 2.5" [Telcel will use the 60 MHz MVS spectrum in the 2.5 band], *El Economista*, 28 November, http://eleconomista.com.mx/industrias/2016/11/28/telcel-compra-espectro-mvs-banda-25-ghz.

Lucas, N. (2016c), "C3ntro Telecom piensa en un MVNO sobre la Red Compartida" [C3ntro Telecom thinks about an MVNO over the shared network], *El Economista*, 12 December, http://eleconomista.com.mx/industrias/2016/12/12/c3ntro-telecom-piensa-mvno-sobre-red-compartida.

Lucas, N. (2015), "Reordenamiento de banda de 1900 MHz, en 2016: IFT" [Rearrangement of 1900 MHz band in 2016: IFT], *El Economista*, 7 August, http://eleconomista.com.mx/industrias/2015/08/07/reordenamiento-banda-1900-mhz-2016-ift.

Lucey, P. and C. Mitchell (2016), "Successful strategies for broadband public-private partnerships", Institute for Local Self-Reliance, https://ilsr.org/wp-content/uploads/downloads/2016/08/PPP-Report-2016-1.pdf.

Luhnow, D. (2014), "Ratings war in Mexico pits Nielsen against TV giants Televisa and Azteca", Wall Street Journal, 4 March, www.wsj.com/articles/SB10001424052702304450904579364711103563596.

Marsden, C.T. (2017), *Network Neutrality: From Policy to Law to Regulation*, Manchester University Press, Manchester.

Marsden, C.T. (1999), "Pluralism in the multi-channel market: Suggestions for regulatory scrutiny", Report to the Council of Europe, Directorate of Human Rights, International Journal of Communications Law and Policy, Issue 4, https://pdfs.semanticscholar.org/f8d3/96615b42419bc25fc91de8a3b0376342aee8.pdf.

Maya Bautista, J.E. (2011), "Impacto recaudatorio e incidencia en la población pobre de México: IEPS no petrolero", 16 November, Centro de Investigación Económica y Presupuestal, Mexico City, http://ciep.mx/impacto-recaudatorio-e-incidencia-en-la-poblacion-pobre-de-mexico-ieps-no-petrolero.

Mediatelecom Policy and Law (2017), "Separación functional: Oportunidad para invertir en redes de nueva generación y convergencia" [Functional separation: Opportunity to invest in new generation networks and convergence], Mediatelecom, available at: http://mediatelecom.com.mx (accessed 10 March 2017).

Milgrom, P. (2000), "Putting auction theory to work: The simultaneous ascending auction", *Journal of Political Economy*, Vol. 108/2, pp. 245-272.

Movistar (2017a), "Planes móviles para celulares" [Mobile plans for cell phones], webpage, www.movistar.com.mx/descubre/planes/movil (accessed 30 November 2016).

Movistar (2017b), "Prepago para celulares" [Prepaid plans for cell phones], webpage, www.movistar.com.mx/descubre/prepago/movil (accessed 30 November 2016).

Nielsen IBOPE (2015), "Transición digital seguimiento en el panel de medición de audiencias de TV" [Digital transition monitoring in the panel on measuring TV audiences], Nielsen IBOPE, Mexico.

O2 Czech Republic (2017), "2016 annual report", https://www.o2.cz/file_conver/525431/AR_2016_24_3.pdf.

OECD (2017), *OECD Monthly Monetary and Financial Statistics* (*MEI*) (database), https://stats.oecd.org/index.aspx?queryid=6779.

OECD (Organisation for Economic Co-operation and Development) (2016a), "Commitment decisions in antitrust cases", OECD, Paris, www.oecd.org/daf/competition/commitment-decisions-in-antitrust-cases.htm.

OECD (2016b), "OECD Code of Liberalisation of Capital Movements", OECD, Paris, www.oecd.org/daf/inv/investment-policy/CapitalMovements_WebEnglish.pdf.

OECD (2015), *OECD Digital Economy Outlook 2015*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264232440-en.

OECD (2014), *OECD Reviews of Innovation Policy: Colombia 2014*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264204638-en.

OECD (2012), *OECD Review of Telecommunication Policy and Regulation in Mexico*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264060111-en.

OECD (2011), "Promoting compliance with competition law", OECD, Paris, www.oecd.org/daf/competition/Promotingcompliancewithcompetitionlaw2011.pdf.

OECD and COFECO (Comisión Federal de Competencia) (2012), "Eliminación de restricciones a la participación extranjera en México: Evaluación de los beneficios potenciales en algunas industrias" (Elimination of restrictions on foreign participation in Mexico: Assessment of potential benefits in some industries), OECD and Comisión Federal de Competencia, www.oecd.org/daf/competition/IEDreporteOCDECFC.pdf.

Ofcom (2017), "BT agrees to legal separation of Openreach", press release, 10 March, Ofcom, London, https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2017/bt-agrees-to-legal-separation-of-openreach (accessed 10 March 2017).

Ofcom (2015), "Annual licence fees for 900 MHz and 1 800 MHz spectrum: Provisional decision and further consultation", Ofcom, London, https://www.ofcom.org.uk/consultations-and-statements/category-2/annual-licence-fees-further-consultation#.

Ofcom (2010), "SRSP: The revised framework for spectrum pricing: Our policy and practice of setting AIP spectrum fees", Ofcom, London, https://www.ofcom.org.uk/__data/assets/pdf_file/0024/42909/srsp-statement.pdf.

Ofcom (2007), "Summary profiles of pay-TV in France, Germany, Italy, Spain, Sweden and United States: Annex 9 to pay-TV market investigation consultation", Ofcom, London, https://www.ofcom.org.uk/__data/assets/pdf_file/0023/53564/annex9.pdf.

Posada, M. (2016), "Entregó Boeing el Sistema Satelital Mexsat, que ya será operado sólo por mexicanos" [Boeing delivered the Mexsat Satellite System, which will be operated only by Mexicans], *La Jornada*, 26 August, www.jornada.unam.mx/2016/08/26/politica/025n1eco (accessed 14 December 2016).

Sánchez, M. (2011), "Telmex y SCT incumplen programa social de telecomunicaciones" [Telmex and SCT default on social telecommunication programme], *Contralínea*,

26 June, www.contralinea.com.mx/archivo-revista/index.php/2011/06/26/telmex-y-sct-incumplen-programa-social-de-telecomunicaciones.

Sánchez Onofre, J. (2015), "Seguimos esperando ejecución efectiva de Estrategia Digital" [We are still waiting for effective execution of Digital Strategy], *El Economista*, 10 August, http://eleconomista.com.mx/tecnociencia/2015/08/10/seguimos-esperando-ejecucion-efectiva-estrategia-digital.

SCT (Secretaría de Comunicaciones y Transportes) (n.d.), "Gráficas" [Graphics], Secretaría de Comunicaciones y Transportes, Mexico City, http://mexicoconectado.gob.mx/carousel.php?id=80&cat=80&id_carrusel=2 (accessed 15 December 2016).

SCT (2017a), "Banda ancha para todos: Programa de conectividad digital" [Digital connectivity program: Broadband for all], Secretaría de Comunicaciones y Transportes, Mexico City.

SCT (2017b), "Política satelital de México" [Satellite policy of Mexico], Secretaría de Comunicaciones y Transportes, Mexico City, http://sct.gob.mx/fileadmin/DireccionesGrales/Comunicaciones/2017-consulta-publica-politica-satelital.pdf (accessed 24 April 2017).

SCT (2017c), "Estadísticas", México Conectado webpage, http://mexicoconectado.gob.mx/carousel.php?id=80&cat=80&id_carrusel=2 (accessed 3 April 2017).

SCT (2016), "Acciones de conectividad" [Actions of connectivity], Secretaría de Comunicaciones y Transportes, Mexico City, http://mexicoconectado.gob.mx/sobre_mexico_conectado.php?id=169 (accessed 15 December 2016).

SEGOB (Secretaría de Gobernación) (2013), "Decreto por el que se reforman y adicionan diversas disposiciones de la Constitución Política de los Estados Unidos Mexicanos en materia de telecomunicaciones" [Decree amending the Constitution on Telecommunication Matters], *Diario Oficial de la Federación*, 11 June, Secretaría de Gobernación, Mexico City, www.diputados.gob.mx/LeyesBiblio/ref/dof/CPEUM_ref_208_11jun13.pdf.

SFP (Secretaría de la Función Pública) (2016), "Acuerdo que establece la politíca inmobiliaria y las bases de coordinación, para permitir el despliegue de infraestructura de telecomunicaciones y radiodifusión" [Agreement establishing the buildings policy co-ordination and bases to allow the deployment of broadcasting and telecommunication infrastructure], Secretaría de la Función Pública, Mexico City, www.cofemersimir.gob.mx/portales/resumen/40181.

SHCP (Secretaría de Hacienda y Crédito Público) (2016), "Estadísticas oportunas de finanzas públicas" [Timely public finance statistics], Secretaría de Hacienda y Crédito Público, Mexico City, www.shcp.gob.mx/POLITICAFINANCIERA/FINANZASPUBLICAS/Estadisticas_Oportunas_Finanzas_Publicas/Paginas/unica2.aspx (accessed 19 December 2016).

Sidak, J.G. and A.P. Vassallo (2015), "Did separating Openreach from British Telecom benefit consumers?", *World Competition*, Vol. 38/1, pp. 31-76, https://www.criterioneconomics.com/docs/did-separating-openreach-from-british-telecom-benefit-consumers.pdf (accessed 10 March 2017).

Telcel (2017), "Telcel Max Sin Límite" [Telcel Max Unlimited], Telcel, www.telcel.com/personas/telefonia/planes-de-renta/tarifas-y-opciones/telcel-max-sin-limite (accessed 30 November 2016).

Telefónica (2016a), "Manifestaciones a la 'consulta pública de la efectividad en términos de competencia de las medidas impuestas al agente económico preponderante en el sector de telecomunicaciones' convocada por el Instituto Federal de

Telecomunicaciones" [Manifestations to the "public consultation of the effectiveness in terms of competition of the measures imposed on the prevailing economic agent in the telecommunication sector" convened by the Federal Telecommunications Institute], 16 June, www.ift.org.mx/sites/default/files/consulta-publica/ift-2016-0704a1606/20160616_1229_Pegaso_PCS,_S.A._de_C.V._y_Grupo_de_Telecomunicaciones_Mexicanas,_S.A._de_C.V..pdf (accessed 24 October 2016).

Telefónica (2016b), "TELEFÓNICA agradece al Instituto Federal de Telecomunicaciones (IFT) la oportunidad que brinda a través de esta consulta pública para realizar comentarios y propuestas al 'Proyecto de bases para la licitación pública de 80 MHz de espectro radioeléctrico disponibles en la banda 1710-1780/2110-2180 MHz (Licitación IFT-3)'" [TELEFÓNICA is grateful to the Federal Telecommunications Institute (IFT) for the opportunity it offers through this public consultation to make comments and proposals to the "Project of bases for public bidding of 80 MHz of radio spectrum available in the band 1710-1780/2110-2180 MHz (IFT-3 Bidding)"], www.ift.org.mx/sites/default/files/industria/temasrelevantes/consultaspublicas/documentos/5.pdf (accessed 19 December 2016).

United Nations (2016), *United Nations E-Government Survey 2016: E-Government in Support of Sustainable Development*, United Nations, New York, http://workspace.unpan.org/sites/Internet/Documents/UNPAN96407.pdf.

US Code (1934), "Title 47: Telecommunications", United States Code of Law, Washington, DC, http://uscode.house.gov (amended).

Warner, R.M. (2008), "Reassessing Turner and litigating the must-carry law beyond a facial challenge", *Federal Communications Law Journal*, Vol. 60/2, https://www.questia.com/library/journal/1G1-178895277/reassessing-turner-and-litigating-the-must-carry-law.

World Bank (2012), "National Broadband Network (NBN) initiatives, comparison of private sector participation (PPP)", World Bank, Washington, DC, http://siteresources.worldbank.org/INFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/2012-06_PPP-policy-note-National-BroadbandInitiativestablev4.pdf (accessed 6 March 2016).

Ypsilanti, D. (2013), "International mobile roaming services: Facilitating competition and protecting users", International Telecommunication Union, Geneva, www.itu.int/en/ITU-D/Regulatory-Market/Pages/Events2013/GE_Roaming/Document/Roaming%20Study%20EV4.pdf (accessed 24 April 2017).

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