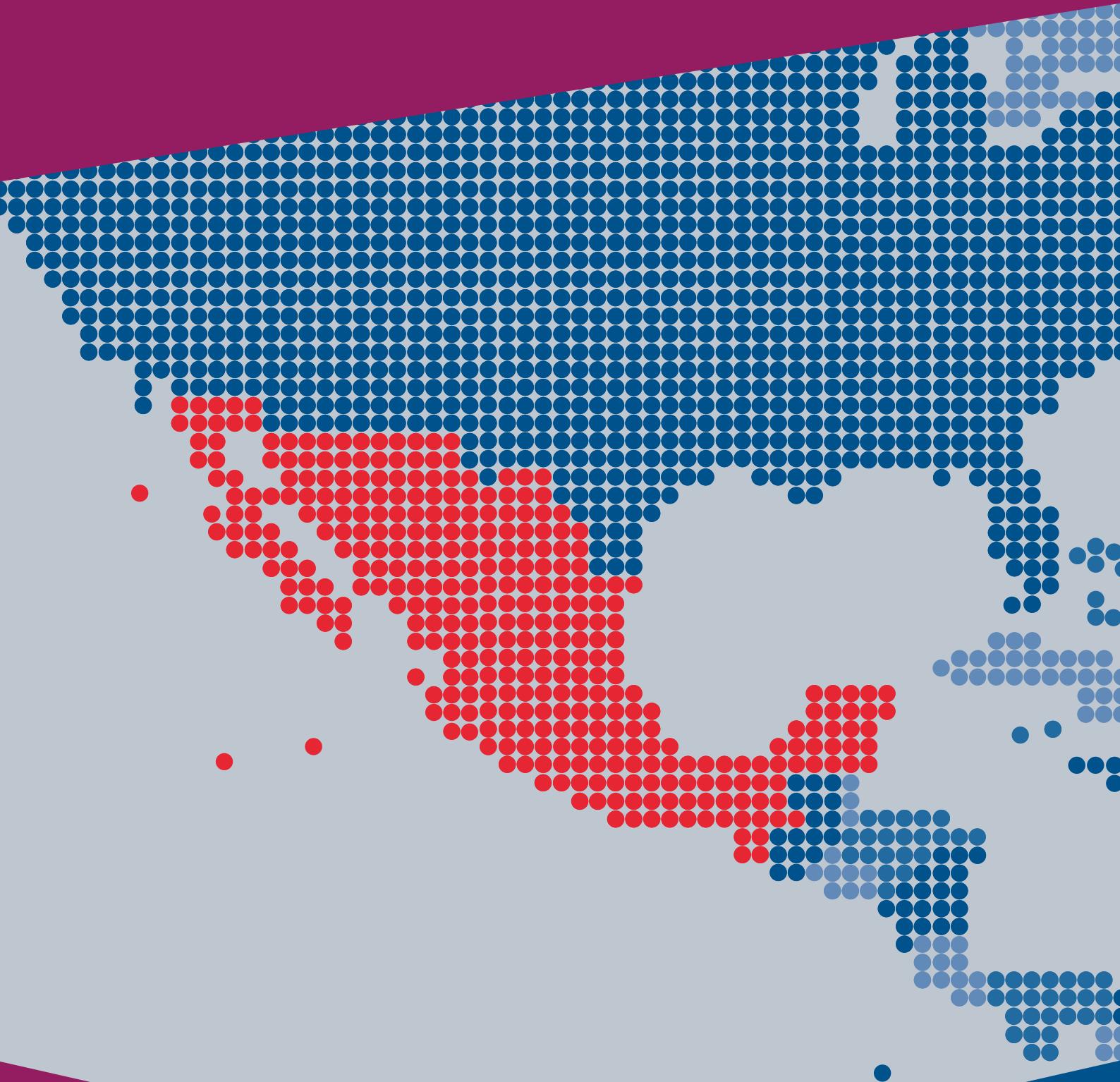




Digital inclusion and mobile sector taxation in Mexico



Deloitte.

AUGUST 2015

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Mobile services support digital inclusion and economic and social development in Mexico.

Executive Summary

Mobile services are critical for digital inclusion and economic and social growth in Mexico

Mobile services in Mexico currently connect 47 million unique subscribers, 38% of the population, and while most of the connected Mexican subscribers still use 2G services, faster speeds are increasingly available. Although more progress is needed, mobile services are already making a number of positive contributions to the Mexican economy and society:

- Mobile promotes digital inclusion, enabling many more Mexicans to benefit from the exchange of information for business and social purposes and from increased productivity, and can potentially improve access to education, healthcare and government services. These impacts can help the government toward achieving the national goals of sustainable and inclusive economic growth outlined in the National Development Plan 2013-2018.
- Mobile services are creating economic activity in Mexico, both through the direct contribution of the mobile operators and the indirect value added by the activity of other related sectors as a result of mobile operators' expenditure on their services. GSMA/Deloitte carried out a study of these impacts in 2012 and estimated that operators directly created USD 2.7 billion in value add in 2011. Operators' expenditure across the mobile ecosystem contributed a further USD 4.6 billion in 2011. The induced impacts resulting from subsequent rounds of expenditure created by these direct and indirect spend was estimated at USD 2.9 billion in 2011. Extending access to mobile has the potential to increase GDP growth, employment, tax revenues and long-term economic and fiscal stability.
- Mobile is the most cost-effective way of extending access to broadband, driving the growth of the knowledge economy and developing digital capabilities across all sectors of the economy. The ITU has estimated that in 2015, the global average price of a basic fixed broadband plan is 1.7 times higher than the average price of a comparable mobile broadband plan.
- Mobile has the potential to support and enhance social development. For example, applications like "Mi bebe", a health service for pregnant women, provide locally relevant content that directly impacts on users' quality of life. Further, mobile banking services such as Transfer and Fondo Personal MiFon help to extend banking services to the unbanked, while initiatives such as those in the TELMEX Digital Education and Culture Program deliver educational Information and Communication Technology (ICT) content and training to promote the digital inclusion of children, young people and adults.

However, despite the progress the mobile industry has made in extending mobile access and digital inclusion over the recent years, the majority of Mexicans do not yet have a mobile connection, and even more Mexicans lack access to mobile internet and broadband services. Approximately 54 million adults are not yet mobile subscribers, and Mexico's mobile internet penetration rate is the second lowest in Latin America. Low income earners and women in rural communities are especially at risk of being left behind.

Seeking to extend ICT access, the government and international organisations have identified affordability and investment as key issues that create barriers to digital inclusion. First, devices and services remain unaffordable for many Mexicans, particularly those in the poorest segments of the population. A basic device accounts for over 5% of annual income for the poorest 10% of households, and more advanced smartphones are even more unaffordable. Second, further investment is needed to extend networks and improve service quality. Mexico has the lowest level of mobile investment per capita among the signatories to the Convention on the Organisation for Economic Cooperation and Development (OECD countries), and provision of network capacity is required to ensure users can access the benefits of high-speed mobile broadband.

Against this background, the Mexican government has recently introduced a series of wide regulatory and policy reforms that

are intended to address these issues. These reforms have three pillars – national coverage, competitive prices and quality of service. The reforms involve changes to the mobile market, including a set of regulatory changes, a public-private partnership network and a “universal digital inclusion” policy. As a result of these reforms, several new regulations have been introduced in the mobile market: for example a number of wholesale services (e.g. mobile call termination, SMS termination, national roaming, and MVNO access) are now subject to regulation and lower rates. If successful, the reforms have the potential to increase subscription, usage and economic growth. However, there is considerable debate over aspects of these reforms.

Even in these reforms, the government has not yet addressed the policy issue of imbalanced taxation on the mobile sector, which creates significant costs for mobile consumers and operators.

Higher taxation on mobile compared to other goods risks reducing the impact of the government’s reforms, growth in the mobile sector and Mexico’s overall economic growth.

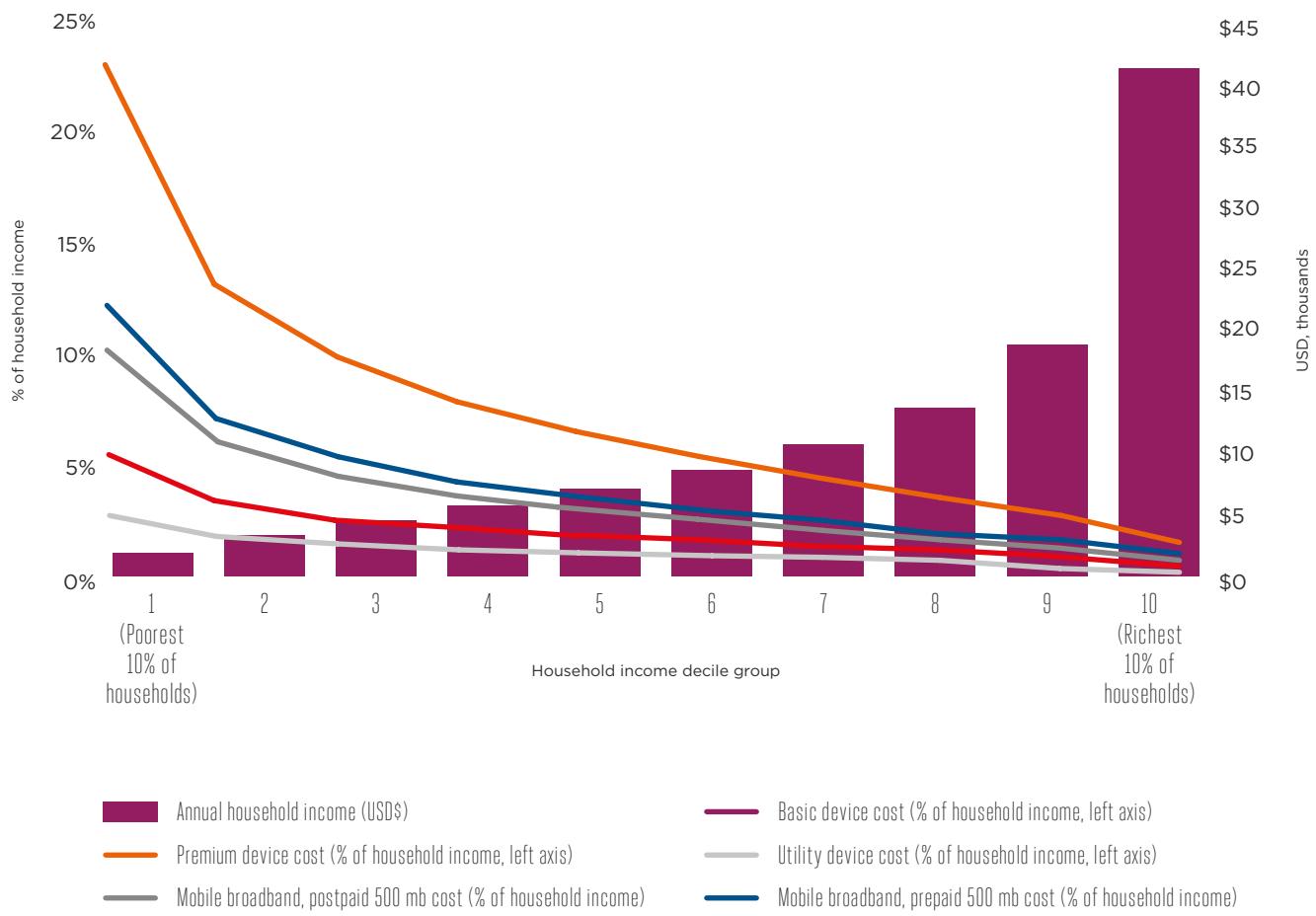
Mobile consumers pay the Impuesto Especial sobre Producción y Servicios (IEPS) tax on mobile airtime and SMS. The IEPS is a special tax on production and services that is levied on certain goods and services such as sales of alcoholic beverages, tobacco, gasoline, diesel, gambling and betting, and telecommunication services. This tax adds to the cost of service consumption and the overall cost of owning and using a mobile phone. When all taxes on devices and services are taken into consideration, taxes accounted for nearly 19% of the Total Cost of Mobile Ownership in Mexico in 2014.

This tax burden on consumers can lead to reduced demand for mobile services, slowing the growth of the sector. This burden can be particularly problematic in Mexico because affordability is a key barrier.



Today 47 million people, or 38% of the population, in Mexico have at least one mobile subscription. But mobile services remain unaffordable to many.

Affordability of mobile services and devices by income group (2012)



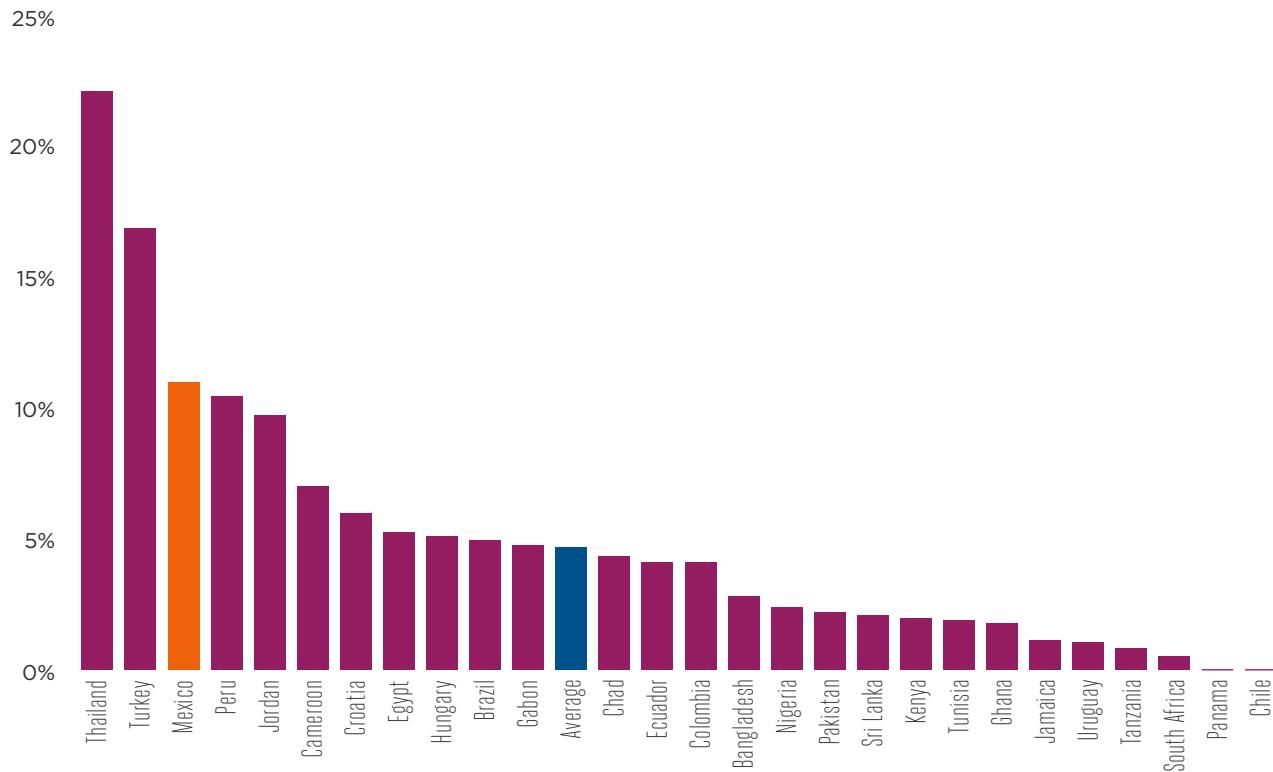
Source: Deloitte analysis based on income statistics from Instituto Nacional de Estadística y Geografía (INEGI), device prices from Gartner and mobile broadband prices from the ITU Measuring the Information Society 2013

Figure 1

Operators are also subject to a number of taxes and regulatory fees, including general taxes such as the corporation tax, customs duties and customs processing fees, and fees paid to the national telecommunications regulator. Mobile operators' contribution to the government through annual regulatory fees is amongst the highest globally. The share of Mexican operators' revenues spent on regulatory fees is the third highest amongst 26 countries for which data is available.



Recurring regulatory fees as a percentage of revenues



Source: Deloitte analysis based on Mexican operator data for 2014 and GSMA/Deloitte (2015): "Digital inclusion and mobile sector taxation".

Figure 2

As a result of taxes on mobile consumers and operators, the mobile industry paid more than USD 4.5 billion in recurring tax and fee payments in 2014, contributing 1.5% of total government tax revenues in Mexico.

Mobile-specific taxes are inefficient and can limit digital inclusion and economic growth in Mexico.

Mobile services create positive externalities across society by facilitating communication and the flow of the information, increasing productivity throughout the economy. However, mobile consumers and operators face sector-specific taxes in Mexico, similar to products such as alcohol, tobacco and gambling for which governments typically find it desirable to discourage consumption. This may disincentivise digital inclusion and limit the benefits that mobile is able to provide to the Mexican society and the economy.

Furthermore, the mobile-specific taxes that are levied in Mexico do not appear to fully align with many of the recognised principles of taxation outlined by organisations such as the IMF. For example, the OECD recently noted that "It is difficult to justify a specific sectoral tax, such as the IEPS, as it places a needless burden on the telecommunications industry". The table below highlights these principles and the potential impacts of mobile-specific taxation on the Mexican economy.

Alignment of taxes and regulatory fees on the mobile sector in Mexico with the principles of taxation

1. In general, taxation should be broad based

Mobile specific taxes such as the IEPS tax may lead to inefficiently low consumption and investment in the mobile sector.

- The IEPS is not broad-based and is levied on mobile services and a limited number of “luxury” goods and services and may create distortions in consumers’ purchasing decisions

2. Taxes should account for sector and product externalities

Mobile specific taxes fail to account for positive externalities and spillovers onto other sectors.

- In addition to the IEPS, mobile is subject to a number of sector-specific regulatory fees even though the sector generates positive impacts in the wider economy through spillover effects. Taxing mobile in a disproportionate manner could be taken as a signal that the government wishes to discourage rather than encourage consumption.

3. The tax system should be simple, understandable and enforceable

Uncertainty and lack of transparency over taxation systems and liabilities may deter investors and are also likely to increase enforcement costs for government.

- Taxes on the mobile sector have increased in recent years due to the imposition of IEPS on the mobile sector and an increase in the corporation tax rate.

4. Incentives for competition and investment should be unaffected

Higher taxes on a given industry compared to other sectors reduce the incentives for investment in the industry, both domestically and internationally and could reduce investment in infrastructure and quality of service improvements.

- The share of operators’ revenues spent on regulatory fees is the third highest compared to a survey of 26 countries.

5. Taxes should not be regressive

Taxes on mobile lead to a disproportionate burden on poorer citizens, and risk excluding them from the benefits of digital and financial inclusion.

- Mobile-specific taxes such as the IEPS increase barriers to access and hit the poorest consumers hardest.

Table 1



By transitioning to a tax system where mobile is treated equally to other goods, the Mexican government can promote digital inclusion, economic growth and fiscal stability.

Mobile operators recognise the role of the industry in supporting government revenues and contributing to public services. However, taxation on mobile could potentially deliver short-term benefits to government revenues at the cost of long-run socio-economic development. The current reform policies implemented by the government offer an opportunity to correct existing digital inclusion gaps, and a realignment of mobile taxation could enhance the success of these reforms.

By transitioning to a taxation structure where the mobile industry is treated equally to other sectors of the economy, the Mexican government can increase digital inclusion and economic growth, but also has the potential to generate higher tax revenues through more efficient and broader-based taxation. Complementing the existing market reforms implemented by the government, reforming mobile taxation has the potential to further enable the investment required

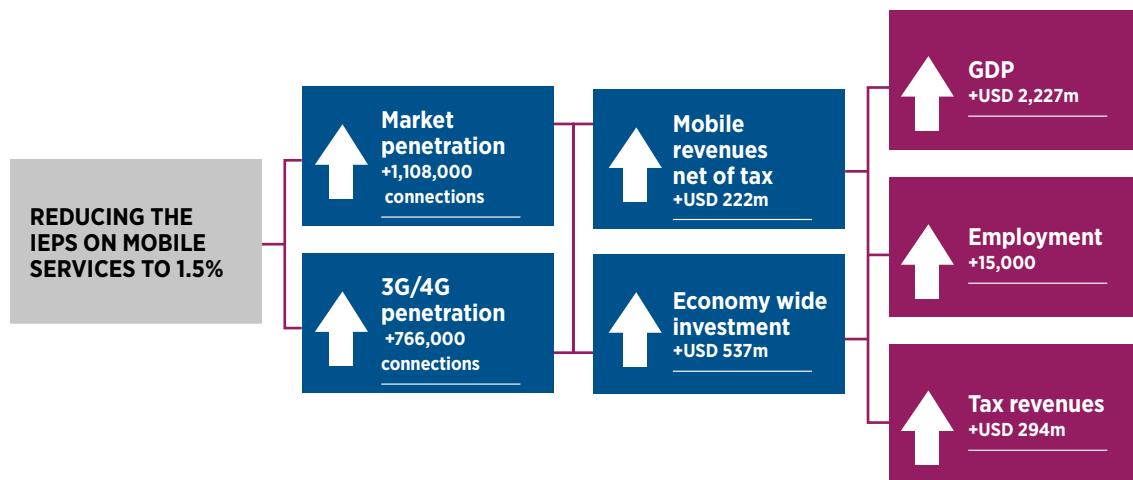
to expand mobile broadband network infrastructure. A phased movement toward eliminating sector-specific taxation would be consistent with principles of efficient taxation recommended by international organisations such as the IMF.

A model of the Mexican mobile sector and its macroeconomic impacts was used to estimate the impacts of changes to taxation on mobile penetration, economic growth and tax revenues. The quantitative impacts of a series of potential reforms are estimated in this report.

Reducing the IEPS on mobile services

from 3% to 1.5% would reduce the cost of mobile services for consumers, incentivising many non-subscribers to acquire a mobile connection for the first time. As a result, this could add an additional 4.6 million mobile connections between 2016 and 2020, of which approximately 2.9 million are expected to be mobile broadband connections.

Potential impact of reducing the IEPS on mobile services to 1.5% relative to the base case, 2020



Source: Deloitte analysis based on operator, GSMA intelligence database, IMF and World Bank data

Figure 3

Enhanced mobile usage would drive growth within the sector and its supply chain and increase productivity for new users. As a result of this enhanced economic activity, the government of Mexico could achieve revenue neutrality within two years and gain up to USD 294 million in additional revenues in 2020, equivalent to nearly USD 950 million cumulatively over the years 2016-2020.

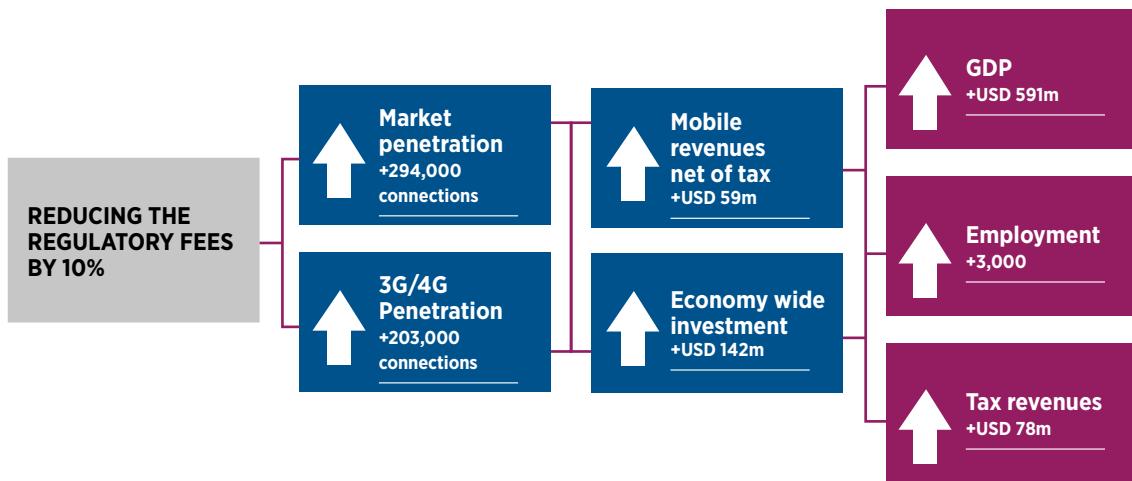
Completely removing the IEPS on mobile services would have an even greater impact on digital inclusion, doubling the number of new connections to 2.2 million in 2020 alone, and creating a cumulative 9.2 million new connections over the period 2016-2020.

This greater reduction in the tax level could also allow the government to achieve a neutral tax revenue impact within two years

as a result of the enhanced economic activity enabled by increased mobile penetration. Taking into consideration the initial loss in tax revenues resulting from the decrease in the tax rate, over the period 2016-2020, the government could experience a net revenue gain of USD 1.3 billion.

Reducing operators' annual regulatory fee payments by 10% would reduce the distortionary impact of these fees on investment. If the operators pass a proportion of these savings onto consumers in the form of lower prices, reduced annual regulatory fees could increase demand for mobile services. Under this assumption this has the potential to lead to increased aggregate investment by up to USD 882 million cumulatively from 2016-2020.

Potential impact of reducing the regulatory fees by 10% relative to the base case, 2020



Source: Deloitte analysis based on operator, GSMA intelligence database, IMF and World Bank data

Figure 4



Moreover, despite an initial fall in tax revenues after the reduction in tax, the government could potentially achieve tax neutrality within two years and in 2020 the increase in GDP growth could enable up to an additional USD 78 million in tax revenues to be collected through more broad-based taxation.

By incentivising investment, the reduction of regulatory fees could further encourage network roll-out and increases in quality of service. Wider economic growth generated by the tax reduction could also allow the government to achieve a neutral impact on tax revenues within two years.

Based on evidence from a series of studies and best practice principles in taxation, as well as on consultation with GSMA and mobile operators, a number of areas for tax reform have been identified which could complement the existing market reforms and support the mobile sector to further contribute to economic growth and government revenues over and above its current impact:

- **Reduce specific taxation of the mobile sector:** Higher than normal taxation on mobile operators and consumers distorts production and consumption behaviour; it may limit usage of digital services, reduce the ability of mobile operators to finance investment in digital infrastructure, and can in the long term reduce government revenues.
- **Apply phased reductions of taxes on established services:** A phased reduction of mobile specific taxes offers the government the opportunity to benefit from the economic contribution from mobile whilst limiting short-term fiscal costs.
- **Facilitate the development of emerging services through supportive taxation:** The growth of mobile data and other innovative services such as M2M applications open up the possibility for the sector to increase its economic value through a whole new generation of products and services ranging from health care services to education and finance.
- **Reduce complexity and uncertainty of mobile taxation:** Taxation on the mobile sector has increased over the years in Mexico. Any unpredicted tax change that occurs after investment in spectrum licence is made may negatively impact an operator's business plan. The risk of future tax rises is priced into investment decisions and can therefore be expected to reduce both FDI and domestic investment in the medium-term.

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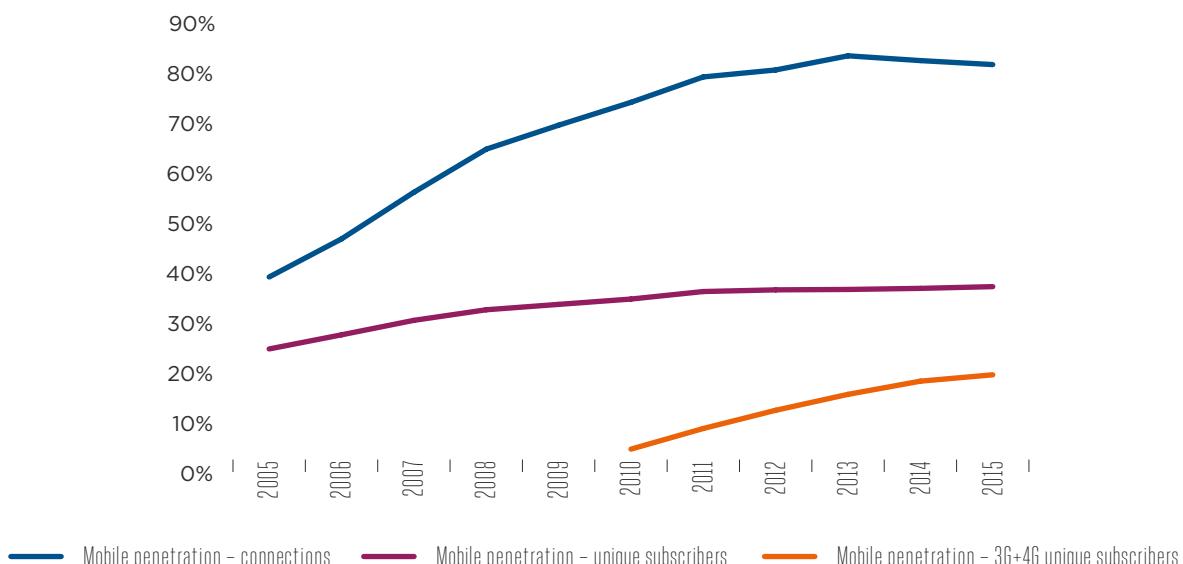
The mobile industry in Mexico

1.1 Mobile services are enabling digital inclusion in Mexico

Mexico is the second largest economy in Latin America and also has the second largest mobile market in the region, after Brazil. Currently, 47 million unique subscribers, or 38% of the population, can access the benefits of mobile¹. The market is led by three operators: Telcel, Movistar, and AT&T². In addition, there are seven Mobile Virtual Network Operators (MVNOs)³ that utilise operators' networks, with a planned entry of six new MVNOs using Movistar's network⁴.

Mobile connectivity grew rapidly after 2G services were first launched in 2004, with the growth rate of unique subscribers averaging 10% between 2005 and 2010. Now, Mexicans are beginning to access mobile broadband through increasing 3G coverage. 3G services were first launched in 2010, and operators invested USD\$ 236 million for 3G licences⁵. 4G services have also begun to be rolled out in 2012⁶ and 2014, and the regulator Instituto Federal de Telecomunicaciones (Ifetel) has stated that further 4G spectrum will be auctioned in 2015⁷.

Figure 5: Total mobile penetration, 3G and 4G penetration in Mexico



Source: GSMA Intelligence Database

Figure 5

1. Unique subscriber penetration refers to the percentage of the market population that owns at least one mobile connection. Mobile penetration, in contrast, refers to the percentage of connections of the total market population and can thus be more than 100% if there are more connections than unique subscribers.
2. AT&T has recently established a presence in the market by the acquisitions of Grupo Iusacell and Nextel. Source: BuddeComm, 2015. Mobile Market Insights, Statistics and Forecasts, and Economist Intelligence Unit (EIU) – Telecommunications report Mexico.
3. Mobile virtual network operators.
4. Economist Intelligence Unit (EIU) – Telecommunications report Mexico.
5. GSMA Intelligence database and BuddeComm, 2015. Mobile Market Insights, Statistics and Forecasts.
6. GSMA Intelligence database.
7. http://www.ifet.org.mx/sites/default/files/pabf_2015.pdf.



The mobile industry has already made significant contributions to increasing digital inclusion in Mexico. In 2013, the penetration rate of fixed-line telephony was 17% compared to 86% for mobile penetration in terms of connections^{8,9}. Mobile is also more affordable – an ITU report on the costs of ICT services a

representative basket of fixed-line services was found to cost 2.3% of gross national income (GNI) per capita in Mexico in 2013, while the mobile basket cost 1.4% of GNI per capita¹⁰. As a result, mobile is the leading means for Mexicans to access the social and economic benefits of connectivity.

1.2 Mobile services are a key driver of social and economic development

The Mexican government has recognised that low growth and productivity, inequality, poverty, and social exclusion remain important issues for the economy¹¹. In 2012, the country's three largest political parties agreed on the *Pacto por Mexico*¹², a structural reform package aimed at delivering economic prosperity through reforms to a range of sectors, including telecommunications. The OECD estimates that the reforms have the potential to substantially increase annual trend GDP per capita growth by as much as 1% over the next ten years¹³.

The commitments made in the *Pacto por Mexico* were incorporated in the National Development Plan 2013-2018. This sets out a national digital strategy to promote usage and development of ICTs and transform Mexico into an information and knowledge society¹⁴. Mobile makes an important contribution to these government objectives and has the potential to make an even greater contribution with the growth of 3G and 4G mobile broadband.

1. Mobile services promote digital inclusion and the growth of a knowledge-based economy

Digital inclusion means that the benefits of Information and Communication Technology (ICT) should be available to all, regardless of location or socioeconomic status. Mobile services provide the most cost-effective way of achieving digital inclusion and, by facilitating the exchange of ideas and information, can support a move towards a knowledge-based economy. The World Bank¹⁵ has stated that the movement towards a knowledge-based economy should be the aim of all governments, as knowledge

becomes increasingly crucial to preserving national competitiveness. It identifies four pillars of knowledge-based economies, one of which is information infrastructure, with technology such as mobile phones required to facilitate effective communication and the dissemination and processing of information.

2. Mobile services enhance productivity, innovation and social development

By enabling businesses and government to deliver their services faster, and at a lower cost, mobile services increase productivity across the Mexican economy. Mobile services can

8. A unique subscriber penetration rate is unavailable for fixed line telephony; therefore, total penetration (i.e. the total number of connections as a percentage of population) is referenced here for the purposes of comparison. This rate is significantly higher than the 38% unique mobile subscriber penetration referred to elsewhere throughout the report. This is due to the fact that a subscriber may have more than one connection (i.e. SIM card). ITU statistics, see <http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>.

9. According to the telecommunications regulator, Instituto Federal de Telecomunicaciones (Ifetel), the mobile penetration rate was 85.4% in the third quarter of 2014 (mobile penetration rate includes all connections, including multiple connections for individual subscribers); see: <http://www.itf.org.mx/sites/default/files/contenidogeneral/comunicacion-y-medios/informe3ertrimestre2014.pdf>.

10. ITU, Measuring the Information Society 2014.

11. OECD - Economic Surveys: Mexico overview, 2015 and McKinsey Global Institute – A tale of two Mexicos: Growth and prosperity in a two-speed economy.

12. Pacto por Mexico, 2012. <http://pactopormexico.org/PACTO-POR-MEXICO-25.pdf>.

13. OECD - Economic Surveys: Mexico overview, 2015.

14. Government of Mexico – National Digital Strategy, 2013. <http://embamex.sre.gob.mx/italia/images/pdf/national%20digital%20strategy.pdf>.

15. World Bank, The four pillars of a knowledge-based economy, 2009.

reduce transaction costs, making it less costly for Mexicans to communicate and conduct everyday business operations, supporting the expansion of businesses and enterprises. The ITU has estimated that in 2015, the global average price of a basic fixed broadband plan is 1.7 times higher than the average price of a comparable mobile broadband plan.¹⁶ Through wider effects on the economy, mobile broadband helps to increase living standards in Mexico and improve Mexico's international competitiveness.

Mobile services also create opportunities for investment, innovation and employment in the mobile sector and in a variety of other jobs that form part of the mobile ecosystem, such as equipment providers, workers in the network engineering and maintenance industry, and providers of related business services.

Mobile can also enable more effective delivery of public services and support social development. In particular, mobile and broadband communication offers an effective means of bringing healthcare and education services to remote and under-served areas, through m-Government initiatives and mobile applications.

Many initiatives have been launched in Mexico and around the world that harness the potential of mobile to support social development, innovation and productivity. Examples include:

- **Mi bebe** provides mobile health monitoring services that allows health practitioners to remotely monitor women with high-risk pregnancies and to provide warnings of abnormalities and to direct women to specialized clinics when needed.
- The **TELMEX Digital Education and Culture Program** consists of several educational initiatives that promotes the digital inclusion of children, young people and adults. The programmes have identified educational needs, developed content, have training and follow-up to educational strategies and support for ICTs. More than 3.5 million people have benefited from the programs since their start¹⁷.

- **M-Inclusion** is a social inclusion platform using mobile solutions in Europe and Latin America. The aim of the programme is to promote cooperation between developers of mobile solutions in Europe and Latin America, and promote digital inclusion through mobile for people with disabilities, low incomes, and those living in remote areas¹⁸.

- **Transfer & Fondo Personal MiFon** are mobile banking services that are designed to extend banking services to the unbanked. The services allow users to open bank accounts without needing to visit a bank, make payments, send money and withdraw money from ATMs and make airtime purchases using SMS¹⁹.

- **PayClip** is a startup mobile payment system that allow individuals and merchants to use iOS or Android smartphones to accept debit and credit card payments. PayClip thus allows small businesses to conduct transactions and payments in a safe and efficient manner, reducing the reliance on cash payments²⁰.

- **Aldea Digital** is the world's biggest digital inclusion event that takes place in Mexico City, with over 154,000 attendees in 2013. The event organises workshops and training sessions where people can use the latest technology, such as smartphones, tablets and computers²¹.

3. Mobile services promote long-run economic growth

A number of studies have already recognised the economic growth potential of mobile. In particular:

- Mobile generates significant economic impacts as a result of the value add and employment generated by operators and by operators' expenditure across the mobile ecosystem. GSMA/Deloitte carried out a study of these impacts in 2012²² and estimated that operators directly created USD 2.7 billion in value add in Mexico in 2011. Operators' expenditure across the mobile ecosystem – including payments to airtime and handset

16. ITU, ICT Facts and Figures, 2015.

17. <http://www.americamovil.com.mx/investors/reporte2014/DS2ENG.html>.

18. <http://www.m-inclusion.eu/>.

19. www.mifon.mx, <https://businesspartnershiphub.org/social-enterprise/projects/view/39/>, <http://www.banamex.com/transfer/>, and <http://mex.mobilemoneylatam.com/transfer-mexico-la-alianza-exitosa-entre-telcel-banamex-e-inbursa-ofrece-pagos-moviles-via-sms-2/>.

20. See <http://clip.mx/en-us> and Zuccolotto Soto & Valenti, 2013.

21. <http://www.americamovil.com.mx/investors/reporte2014/DS2ENG.html>.

22. GSMA/Deloitte (2012): "Mobile telephony and taxation in Latin America".



retailers, network equipment suppliers and handset manufacturers with offices in Mexico, as well as local suppliers of network equipment, capital items, and support services – contributed a further USD 4.6 billion in 2011. The induced impacts resulting from subsequent rounds of expenditure created by these direct and indirect spend was estimated at USD 2.9 billion in 2011. Direct, indirect and induced employment created in the economy was estimated at nearly 183,000 full time equivalent employees (FTEs) in 2011.

- The same study found that mobile services have led to productivity increases for businesses and consumers using mobile services, as well as due to M2M services. If mobile workers achieved a 5% increase in their productivity as a result of using mobile services, the potential productivity impact in Mexico would have been over USD 20 billion in 2011.
- Studies by the GSMA and the World Bank have estimated that a 1% increase in mobile penetration could lead to an increase in the GDP growth rate of 0.28%, while a 1% increase in internet user penetration in high-income countries can lead to an increase of up to 0.077% in the GDP growth rate²³.
- The World Bank has found that in developing economies, such as Mexico, every 10% increase in broadband subscriber penetration²⁴ accelerates economic growth by 1.38%²⁵.
- A 2012 GSMA/Deloitte/Cisco study found that substitution from 2G to 3G connections resulted in significant economic benefits²⁶. For a given level of total mobile penetration, a 10 per cent substitution from 2G to 3G penetration was found to increase GDP per capita growth by 0.15 percentage points. The study also found that mobile broadband usage supports growth and that this impact is larger at higher levels of usage. This means that countries with low usage like Mexico have considerable scope for accelerating growth through increased mobile broadband usage.

- Other research suggests that for every new job created in the mobile sector in countries like Mexico, 6 are generated in the wider economy²⁷.

4. Mobile services support Mexico's development objectives

Through these positive impacts, the mobile industry can support many of the government's objectives:

- The **National Development Plan 2013–2018** sets out the government's plan to transform the Mexican economy through structural reforms aimed at maximising the country's potential. The plan involves five national goals (Mexico in Peace, Inclusive Mexico, A Mexico with Quality Education, Prosperous Mexico, and Mexico with Global Responsibility) and three strategies. The plan aims to deliver more democratic and inclusive institutions, better education, sustainable and inclusive economic growth, and to ensure Mexico's role as a positive force in the world²⁸.
- The **National Digital Strategy** forms a part of the National Development Plan and serves to emphasise the importance of establishing a national strategy for promoting usage and development of ICTs and transform Mexico into a modern and well integrated information and knowledge society. The strategy includes five enablers – Connectivity, Digital skills inclusion, Interoperability, Legal framework, and Open data. The “Connectivity” and “Digital skills inclusion” enablers aim to increase usage and capacity of existing network infrastructure as well as to promote development of technologies and digital skills.
- The **UN Sustainable Development Goals (SDGs)** to guide policy to end poverty and hunger, ensure inclusive and equitable economic growth, quality education, achieve economic and gender equality, and improve well-being of people of all ages. The SDGs are at proposal stage²⁹, and Mexico is a member of the Working Group. The SDG agenda is set

²³ This is based on a study of 40 economies over the period 1996–2011; for full details of the methodology, see <http://www.gsma.com/publicpolicy/wp-content/uploads/2012/11/gsma-deloitte-impact-mobile-telephony-economic-growth.pdf>; Qiang, C. Z. W., Rossotto, C.M., 2009. Economic Impacts of Broadband, in Information and Communications for Development 2009: Extending Reach and Increasing Impact, World Bank, Washington D.C., 35–50.

²⁴ The distinction between users and subscribers of telecommunications services should be noted. Users refer to individuals who do not necessarily own or pay for telecommunications services, but who have access to such services through work, family etc. Subscribers, on the other hand, are individuals who pay for subscriptions to such services, to which a number of individuals may have access. Based on ITU, 2014. Manual for measuring ICT Access and Use by Households and Individuals.

²⁵ Qiang, C. Z. W., Rossotto, C.M., 2009.

²⁶ GSMA/Deloitte/Cisco (2012): “What is the impact of mobile telephony on economic growth?”.

²⁷ This figure was based on a number of studies conducted in developing and developed countries; see, for example, Moretti, 2010, O2 for ONS, 2002, Ovum, 2010; Jain, Ericsson, 2009; Kaliba et al, 2006.

²⁸ Government of Mexico – National Development Plan 2013–2018.

²⁹ For the SGD proposal, see: <https://sustainabledevelopment.un.org/sdgsproposal>.



to be finalised and agreed upon in September 2015. It is expected that the SDGs will build on the UN Millennium Development Goals (MDGs) that have been adopted by Mexico.

The role of mobile in driving economic growth in Mexico

Government policies	National Development Plan 2013-2018	National Digital Strategy	Sustainable Development Goals (SDGs)
Summary of policies	Transform the economy through structural reforms aimed at maximising the country's potential. The plan aims to deliver more democratic and inclusive institutions, better education, sustainable and inclusive economic growth, and to ensure Mexico's role as a positive force in the world. The plan involves five national goals and three strategies.	Part of the National Development Plan. Emphasises the importance of establishing a national strategy for promoting usage and development of ICTs and to transform Mexico into a modern and well integrated information and knowledge society.	End poverty and hunger, ensure inclusive and equitable economic growth and quality education, achieve economic and gender equality and improve well-being.
MOBILE CAN SUPPORT THESE OBJECTIVES			
Benefits of mobile services	Promote digital inclusion and the growth of knowledge-based economy	Enhance productivity, innovation, and social development	Promote long-run economic growth
How mobile can help	By providing access to learning resources and fostering information sharing, mobile access can promote primary and secondary education and increase literacy rates.	By supporting a large ecosystem of industries and small businesses, mobile services improve labour and capital productivity, thus contributing to increase economic growth, decrease poverty and foster investment.	Promote economic growth and enhance productivity and social cohesion
	Increased broadband access promotes job creation, economic growth and innovation.	The development of e-government	Support e-health
	Mobile services and m-Government initiatives contribute to administration efficiency at local and national government levels, improving ease of doing business and making FDI more attractive.	Education	Increased access to information promotes better health education and health outcomes.

Source: Mexican government and Deloitte

Figure 6

A report by ITU/Broadband Commission/Cisco found that mobile broadband may be more effective than fixed line in helping countries to deliver their national broadband plan. The report found that the introduction of a national broadband plan is associated with a 7.4% increase in mobile broadband penetration, compared to a 2.5% increase in fixed line broadband penetration on average³⁰.

30. ITU/Broadband Commission/Cisco, 2013. Planning for progress: Why national broadband plans matter.

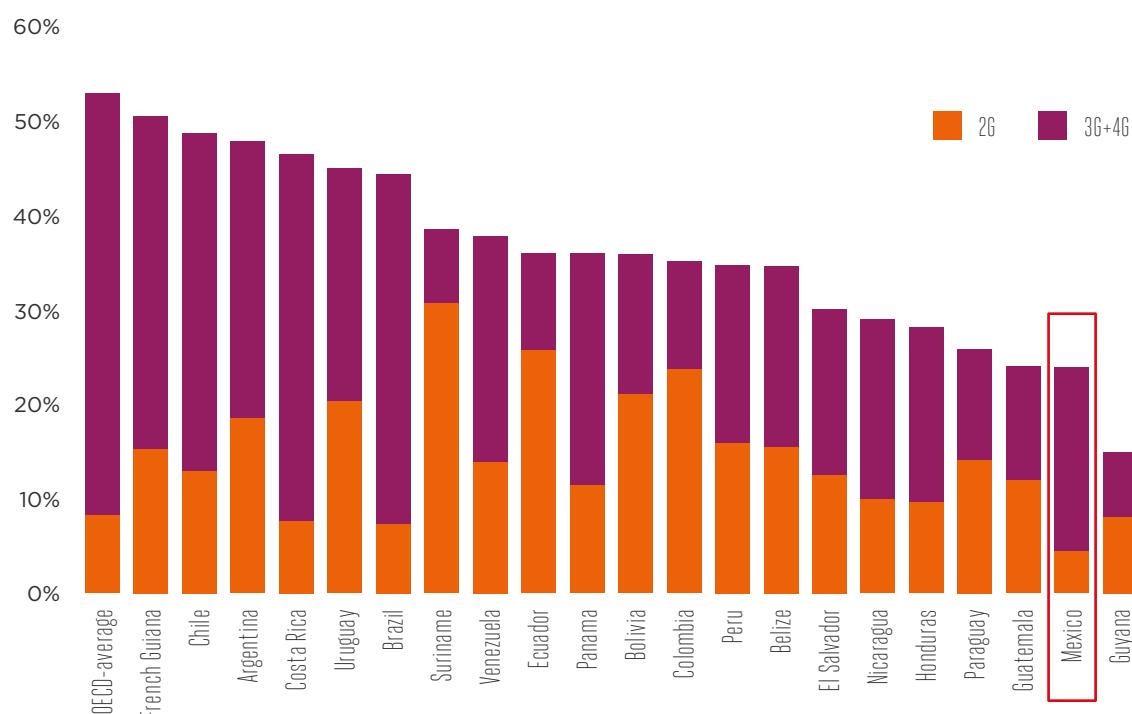
1.3 Current gaps in digital inclusion

Mobile makes an important contribution to socio-economic development and to the achievement of the government's growth targets. Despite the digital inclusion that mobile has enabled, gaps in access to and availability of services remain.

The majority of Mexicans do not have a mobile connection. 62% of the population do not own mobile phones, leaving approximately 54 million adults with limited or no access to the benefits of even basic mobile phones³¹. Despite having the second largest economy in Latin America and the 6th highest GDP per capita, Mexico's total mobile penetration rate in terms of unique subscribers is the lowest in Latin America and well below the OECD average³². Growth in connectivity has especially been slow since the 2009 financial crisis.³³

Few Mexicans access mobile broadband services. Mexico's mobile internet penetration rate is only 24% in terms of unique subscribers, which is the second lowest penetration rate in Latin America, well behind regional leaders like Chile and Argentina, at 49% and 48% respectively³⁴. Even fewer Mexicans can access the benefits of higher-speed mobile broadband services; despite 3G coverage of 95%³⁵ and rollout of 4G networks, uptake of mobile broadband services has remained limited. Currently, only 35% of mobile connections are 3G or 4G. Greater access to 3G and 4G would enable more Mexicans to access faster mobile broadband services and the greater economic benefits enabled by mobile broadband.

Mobile internet unique subscriber penetration in Latin America, Q1 2015



Source: GSMA Intelligence Database

Figure 7

31. Assuming all subscribers are age 15 or over. Based on data on population by age group from the World Bank.

32. GSMA Intelligence database and Economist Intelligence Unit (EIU) – Telecommunications report Mexico.

33. GSMA Intelligence database, Q1 2015. There are 102 million total connections; the mobile penetration rate in terms of total connections is 82%.

34. GSMA Intelligence database, measured in terms of unique subscribers.

35. In terms of population covered. GSMA Intelligence database.

The rural poor and rural women are digitally excluded. Even though 2G and 3G coverage is widespread in Mexico, there are still gaps in coverage, and the rural poor and women are particularly prevented from accessing mobile services. There are 30 million people living in rural areas in Mexico, and around 4,000 communities, with a population of between 1,000 and 5,000 inhabitants, are not covered by mobile networks³⁶. This contributes to a mobile penetration gap between urban and rural areas; for example, the North East region of Mexico had a penetration rate of 103% in 2014, compared to 72% in the less densely populated Gulf and South East region³⁷. Although the overall gender gap in mobile ownership between men and women is relatively low in Mexico at 6%, there exists a considerable gap between men and women in rural areas. Rural women are 26% less likely to own a phone than men, compared to a mobile gender gap of only 2% in urban areas³⁸. Service affordability problems may impact particularly on these groups as well, because rural populations and women have relatively lower incomes³⁹.

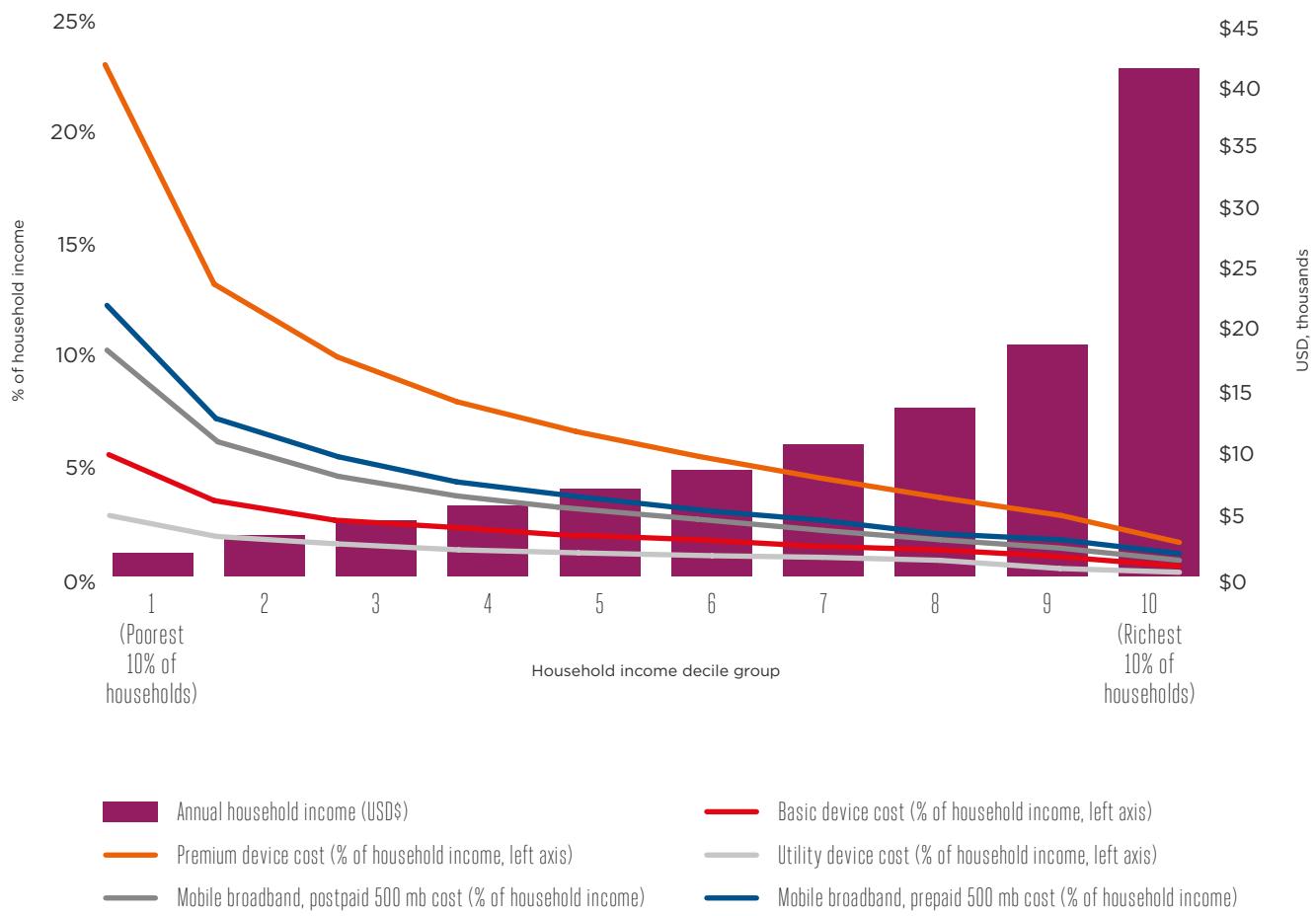
Affordability barriers prevent many Mexicans from accessing mobile services

One issue contributing to these gaps in digital inclusion is the cost of mobile services and devices, which can act as a barrier to mobile access and usage.

Affordability of even basic devices is a particularly important issue for poorer Mexicans. The price of an average basic device accounts for 5.2% of annual income for the poorest 10% of households, and 2.9% of income for the second-poorest 10%.

36. EIU – Telecommunications Report Mexico, 1st Quarter 2015.
37. Subscriptions per 100 inhabitants for regions was drawn from <http://siemt.ift.org.mx/>. The North East region refers to Noreste and the Gulf and South region refers to the Golfo y Sur in Spanish.
38. GSMA – Bridging the gender gap: Mobile access and usage in low- and middle-income countries.
39. The gender wage gap was 15.4% in 2013, see *OECD Statextracts*.

Affordability of mobile services and devices by income group (2012)



Source: Deloitte analysis based on income statistics from Instituto Nacional de Estadística y Geografía (INEGI), device prices from Gartner and mobile broadband prices from the ITU Measuring the Information Society 2013

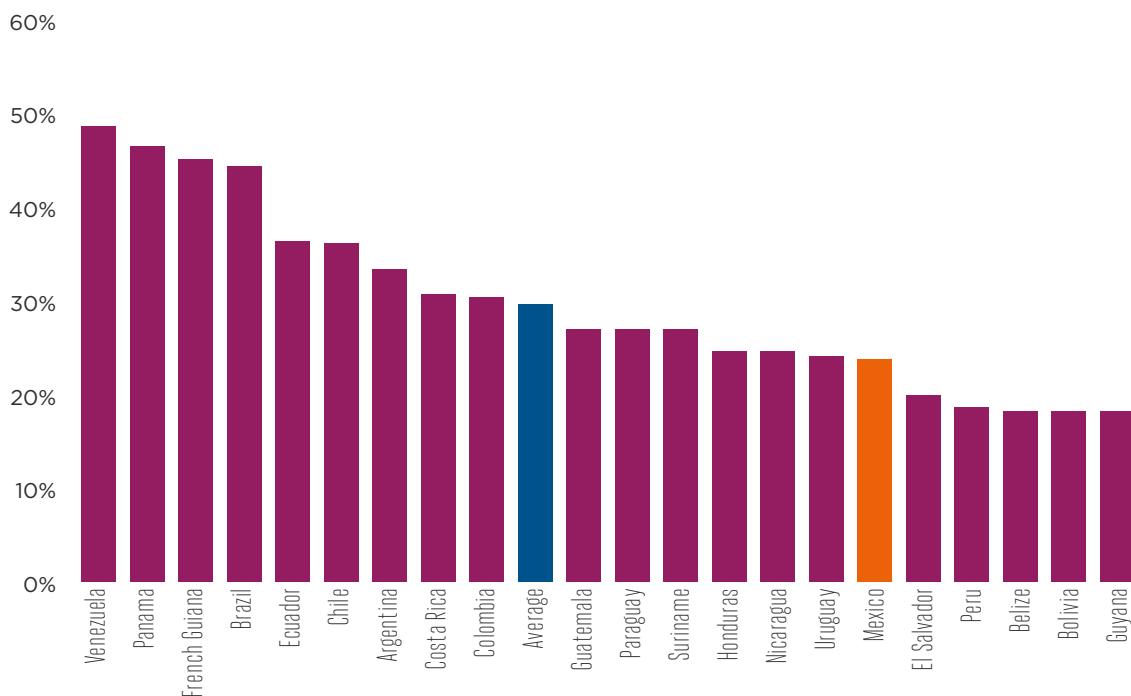
Figure 8

Premium devices such as smartphones account for a substantial fraction of annual income for all but the richest 10% of households. The average price of a premium device accounts for over 5% of annual income for 60% of households, and up to 22.8% for the poorest.

In terms of usage, the cost of 500 MB of data for mobile broadband accounts for a substantial fraction of annual household income, at over 10% for the poorest 10% of households. As a result, for a large proportion of the population, access to enhanced mobile services through 3G/4G connections or smartphone is limited, preventing high-speed connectivity through mobile broadband.

Mexico has one of the lowest levels of smartphone adoption in Latin America, so improving device affordability – particularly for the poorest groups – could help bring access in line with regional leaders.

Smartphone adoption rates in selected markets, Q1 2015



Source: GSMA Latin America Mobile Economy 2014

Figure 9

Affordability of mobile services and devices is especially important in Mexico because fixed line services are characterised by high prices,⁴⁰ making mobile the most affordable means of connectivity. In a report by the ITU that measures the cost and affordability of ICT services, it was found that the price of a representative fixed telephone basket cost 2.27% of gross national income (GNI) per capita compared to 1.4% of GNI for the mobile basket⁴¹.

Mexico has high levels of poverty and income inequality, as well as a high rural population concentration, and so affordability is an important consideration, in particular for the rural population. According to World Bank statistics, over 52% of the population were below the national poverty line in 2013, compared to nearly 64% of the rural population. In addition, economic inequality in Mexico, as measured by the Gini-coefficient, was the fifth highest in Latin America in 2012⁴².

40. OECD (2012): "OECD Review of telecommunication policy and regulation in Mexico".

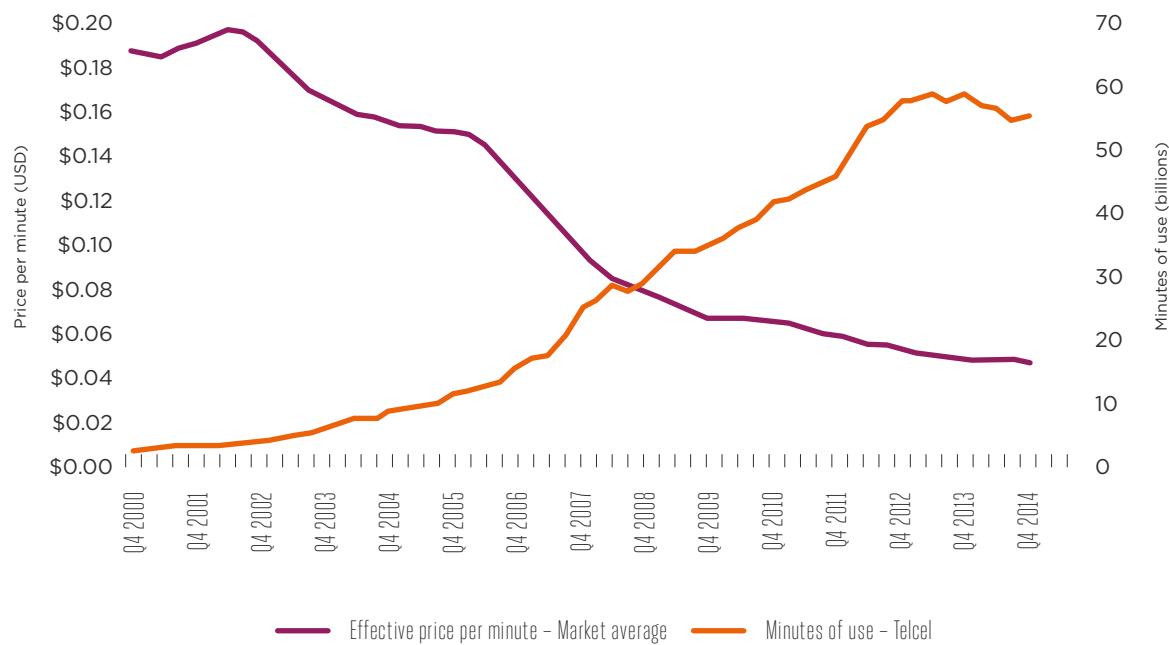
41. ITU – Measuring the Information Society, 2014.

42. World Bank Development Indicators. Data was available for 11 countries in Latin America – in order of decreasing economic inequality, these are Colombia, Brazil, Panama, Costa Rica, Mexico, Paraguay, Bolivia, Ecuador, Peru, El Salvador, and Uruguay.



Analysis of how mobile usage has responded to decreases in prices for airtime shows that Mexican consumers are very sensitive to prices. This suggests that continued improvements in affordability could help boost digital inclusion.

Airtime prices and minutes of use in Mexico



Source: GSMA Intelligence database

Figure 10

Investment in Mexico's network and services is required

Closing the gaps in digital inclusion also requires addressing the critical need for greater network investment. Investment in mobile networks is crucial because of the relatively limited coverage of fixed lines in Mexico. Investment in improved capacity is also required to ensure quality of service and to provide bandwidth for mobile data services, particularly as demand for mobile data increases over time. Currently, the average mobile data download speed of 8.6 Mbps is slightly above the regional average of 8.5 Mbps but lags far behind regional leader Uruguay and the global average, as shown below.

Mobile data download speed, 2015 (Mbps)



Source: Netindex.com. Accessed 17 June 2015.

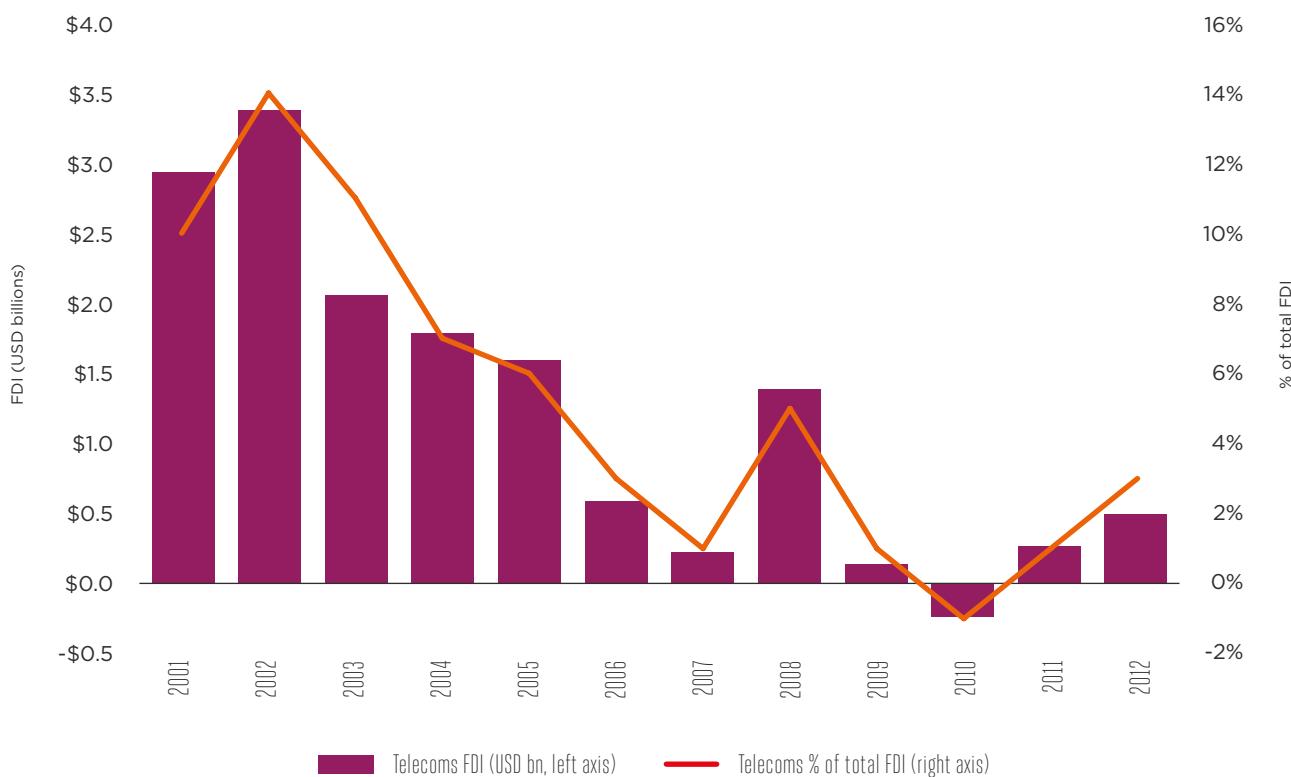
Figure 11

Network infrastructure investment is lagging behind neighbouring countries and countries at a similar level of development. Mexico has the lowest level of mobile investment per capita among the OECD countries⁴³. Data from Mexico demonstrates that the trend of FDI inflows to the telecoms sector has declined in absolute terms as well as relative to total FDI since 2001. Low levels of investment may contribute to low coverage, particularly in rural areas where network expansion is more expensive, as well to reduced quality of service.

43. Economist Intelligence Unit (EIU) – Telecommunications report Mexico and OECD (2012): "OECD Review of telecommunication policy and regulation in Mexico".



Telecoms FDI inflows in Mexico



Source: Deloitte analysis based on OECD StatExtracts

Figure 12

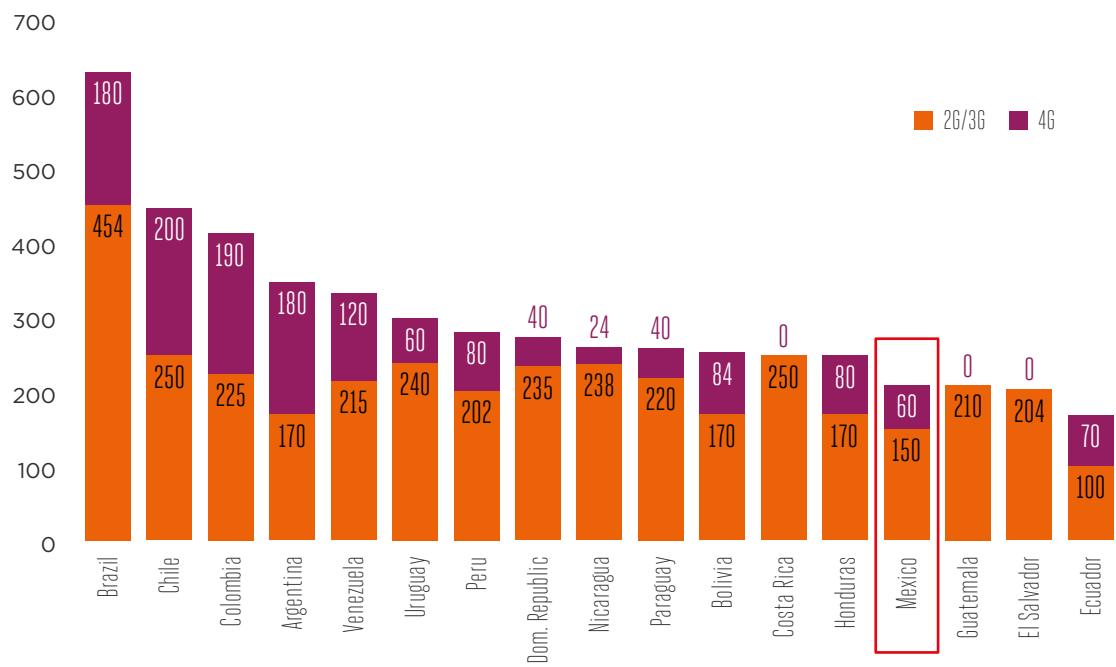
Mobile investment is limited by a number of policy barriers. In 2012, the OECD identified barriers to competition and provision of capacity as the two key challenges to telecommunications infrastructure investment in Mexico. In particular, infrastructure sharing is prevented by a lengthy permit process, the need to request rights of way, and a lack of passive infrastructure sharing requirement⁴⁴.

Operators are relatively restricted in their ability to invest in mobile networks and in the quality of service they can offer because of the limited spectrum allocated to them. According to GSMA Mexico has the fourth lowest total amount of spectrum allocated to operators in Latin America, and those countries with less spectrum allocated are significantly smaller both in terms of population and geographic area. Mexico also has a low amount of spectrum relative to population in Latin America, with just 1.68 MHz per million people compared to the regional average of 24 MHz per million people⁴⁵.

44. OECD (2012): "OECD Review of telecommunication policy and regulation in Mexico".

45. GSMA Latin America Mobile Economy 2014 and GSMA Intelligence database.

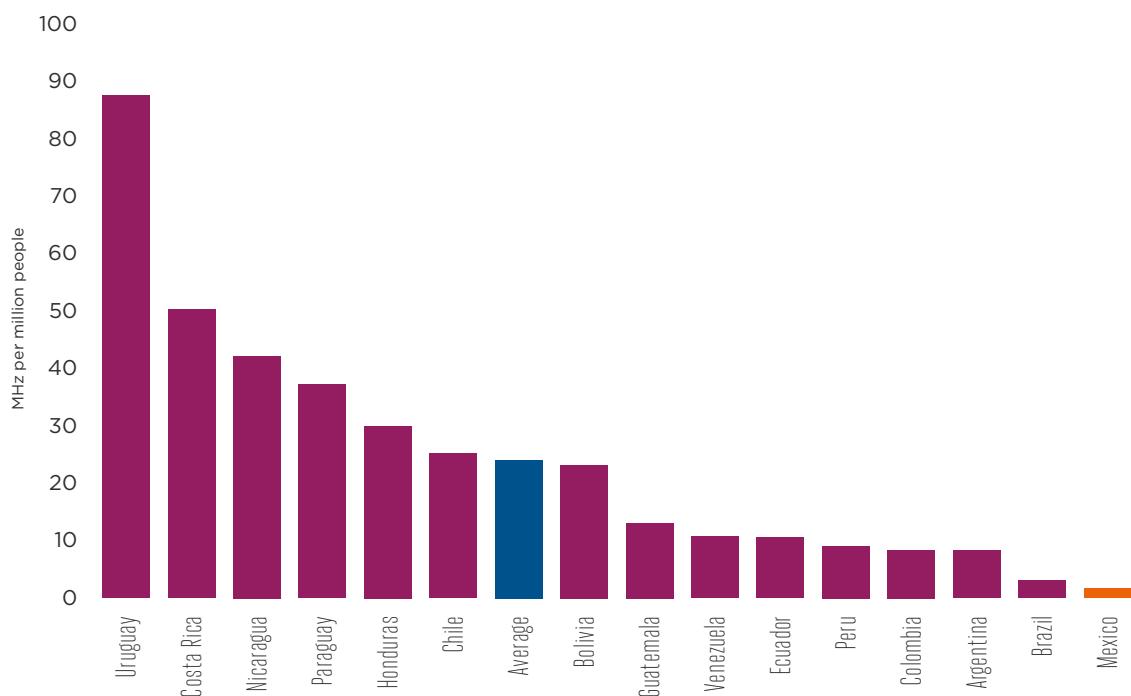
Total MHz licensed to mobile operators, December 2014



Source: GSMA Latin America Mobile Economy 2014

Figure 13

Amount of mobile spectrum per million people in selected Latin American countries where data is available, December 2014



Source: GSMA Latin America Mobile Economy 2014 and GSMA Intelligence database.

Figure 14



1.4 Policy reforms and the future of mobile

A 2012 report by the OECD⁴⁶ highlighted the importance of regulatory reform in boosting the sector's socio-economic contribution. The study found that across the telecommunication sector as a whole (including fixed, mobile and broadcasting industries), Mexico experienced an annual welfare loss of 1.8% of GDP per annum, at a cost of USD 129.2 billion between 2005 and 2009.

The key issues identified by the OECD contributing to this welfare loss were:

- High barriers to entry, and in fixed telecommunications, restrictions on foreign investments;
- A need for regulatory reform to ensure that regulations and regulatory processes are transparent, non-discriminatory, and effective;
- A need for the regulator to have greater independence in carrying out its mandate; and
- A need for regulatory reform in order to promote competition.

The Mexican government has recently introduced a series of regulatory and policy reforms that are intended to address these issues. Constitutional amendments were passed in 2013 to introduce wide-ranging reforms to the telecommunications sector in Mexico, with the goal of increasing investments and the competitiveness of the sector. These reforms have three pillars – national coverage, competitive prices and quality of service⁴⁷. The reforms involve substantial changes to the mobile market, including:

Regulatory changes:

The Federal Telecommunications Institute (Ifetel) replaced the previous telecommunications regulatory authority Cofetel, and is tasked with ensuring competition in the sector. Its powers include: regulation and competition enforcement in the telecommunications and media industries, granting of telecommunication and broadcasting

licences and other regulatory powers to promote competition, such as regulating prices and imposing fines⁴⁸. Investors anticipate that by regulating the telecommunications sector in a single law covering services, networks and spectrum, the updated legal framework will provide better regulatory certainty.

Public-private partnership network infrastructure:

The government is planning to launch a public-private partnership wholesale mobile network in 2018. The network is intended to be made available to all operators and therefore limit the need for operators to build their own network infrastructure and make it easier for new firms to enter the market⁴⁹.

“Universal digital inclusion” policy:

The federal government adopted a policy aimed at promoting broad use of digital technology by developing infrastructure, access and high-speed connectivity.

As a result of these changes, new regulations have been introduced in the mobile market: several wholesale services (mobile call termination, SMS termination, national roaming, and MVNO access) are now subject to regulation and will be subject to lower rates, national long-distance telephony tariffs will be removed, carriers will have to compensate users for service failures, infrastructure sharing is enforced, and mobile phones will be sold unblocked⁵⁰. These regulations are intended to result in lower usage prices for consumers and to provide mobile operators with incentives to increase service quality. If successful, the reforms have the potential to increase subscription, usage and economic growth⁵¹. However, there is considerable debate over aspects of these reforms⁵².

46. OECD (2012): “OECD Review of telecommunication policy and regulation in Mexico”.

47. PWC – Telecommunications sector: Nordic investment in Mexico, 2014.

48. PWC – Telecommunications sector: Nordic investment in Mexico, 2014 and OECD – Economic Surveys Mexico, 2015.

49. PWC – Telecommunications sector: Nordic investment in Mexico, 2014 and Economist Intelligence Unit (EIU) – Telecommunications report Mexico.

50. PWC, Telecommunications sector: Nordic investment in Mexico, 2014.

51. IMF, Article IV Consultation – Staff report; and Press Release, 2014.

52. See, e.g. GSMA Press Release, GSMA Report Favours Competition Over Single Wholesale Networks, 2014, and Frontier/GSMA, Assessing the Case for Single Wholesale Networks in mobile communications, 2014.

1.5 Assessing the impact of taxation on digital inclusion in Mexico

Section 1.3 identified considerable potential for growth, in particular in the market for mobile broadband. In order for Mexico to realise the full benefits of mobile services and to promote sustainable and long-term economic growth, further steps need to be taken to promote digital inclusion and extend access to mobile services to the remainder of the population.

The telecommunications reform package has the ambitious goal of improving digital inclusion and helping more people to gain access to mobile services. However, the issue of mobile-specific taxation is one barrier not addressed by these reforms. Previous Deloitte studies on mobile taxation suggest that increases in tax rates in Mexico were followed by declining mobile penetration as poorer segments of the population were priced out of the market⁵³. Declining penetration would have negative impacts on the wider economy: increased mobile penetration and data usage has been demonstrated to have positive effects on economies and the growth rate of GDP per capita⁵⁴. Further, there is evidence that lower taxes may increase telecom investment and broadband adoption, and deliver increased tax revenues and GDP⁵⁵. To realise the full economic potential of mobile connectivity, it is important that the issue of tax is not overlooked.

The rest of this report assesses how mobile taxation impacts on digital inclusion and how addressing mobile-specific taxation could be complementary to the government's current reforms. It utilises an economic model of the Mexican mobile sector and economy and suggests a number of options for the government to transition to a tax structure where mobile is

taxed equally to other goods, in a way that promotes economic growth and protects the government's tax revenue position in the medium term.

- Section 2 describes the taxes levied on the mobile sector in Mexico, and the implications of these taxes for the mobile sector and the wider economy. It also compares the taxes levied in Mexico with international benchmarks and with best practice on taxation principles as recommended by leading international organisations.
- Section 3 provides a number of case studies that demonstrate how mobile taxation changes have impacted sector growth internationally.
- Section 4 considers effective alternatives for rebalancing taxes on the mobile sector. These policies can support the Mexican government's goal of digital and financial inclusion, while increasing economic growth and productivity.
- Section 5 concludes, illustrating the contribution to fiscal stability of the policies presented in Section 4 and presents guidelines to align mobile taxation to standard goods taxation.
- The Appendix describes the economic model of the Mexican mobile sector and economy that has been used in the analysis to estimate the impacts of rebalancing mobile sector taxes.

53. Deloitte, Mobile telephony and taxation in Latin America, 2012.

54. See GSMA/Deloitte/Cisco (2012): "What is the impact of mobile telephony on economic growth?" It is estimated that a 10% substitution from 2G to 3G penetration increases GDP per capita growth by 0.65% for Mexico, and a doubling in data usage per user would increase GDP per capita growth by 0.36%.

55. Katz, R., 2014. The impact of taxation in the supply of and demand of broadband services. Presentation to the Intel Latin America Broadband and USF Leaders forum, Guadalajara, Mexico.



2

Taxation on the mobile sector in Mexico

The Mexican mobile sector is subject to a set of taxes levied both on operators and consumers. The extent to which these charges ultimately fall on operators or consumers depends on the type of tax and market conditions. Some taxes and fees may be absorbed by operators in the form of lower profits, whilst others may be passed through in terms of higher prices for consumers, or a combination of the two.

This section reviews the taxes applied to mobile consumers and operators in Mexico, focusing on those that are mobile-specific, i.e. those which do not apply to other goods in the economy. It also compares the mobile taxation system with similar countries and with other Mexican industries.

2.1 Taxes on mobile consumers in Mexico

Consumer taxes in Mexico apply to devices, usage of services, SIM cards and mobile broadband. In addition to standard taxation, some mobile services are subject to the mobile-specific IEPS tax applied ad valorem on the value of the service.

Consumer taxes on mobile devices and services in Mexico

PAYMENT BASE	TYPE	TAX RATE
Devices	VAT	16%
Activation/SIM cards, Calls, SMS	VAT	16%
Calls and SMS	IEPS	3%
Mobile Broadband	VAT	16%

Source: International Bureau of Fiscal Documentation (IBFD) and mobile operator data

Table 2

The VAT on mobile devices and services

All mobile services, including calls, SMS, mobile broadband, m-Money and devices are subject to the standard VAT rate of 16%. The VAT rate was increased from 15% to 16% in 2010, above the regional average of 14%. Previously, regions bordering the USA were subjected to a lower VAT of 11%, but this lower rate was eliminated in 2013⁵⁶.

The IEPS on mobile services

A mobile-specific tax is applied to mobile calls and SMS. The IEPS is a special tax on production and services that is levied on certain goods and services such as sales of alcoholic beverages, tobacco, gasoline, diesel, gambling and betting, and telecommunication services⁵⁷. The IEPS tax was extended to include mobile services in 2010 and is levied at a rate of 3%.

The IEPS tax was criticised by the OECD in its Review of Telecommunications Policy and Regulation in Mexico, stating that “It is difficult to justify a specific sectoral tax, such as the IEPS, as it places a needless burden on the telecommunications industry unless used to support the sector in some form (universal service, the regulator, etc.).”⁵⁸

The IEPS could potentially have distortive effects on the consumption of mobile services:

- It can potentially reduce demand for mobile services, slowing the growth of the sector. Taxes on consumers can be particularly distortionary when they are mobile-specific, as is the case of the IEPS, in contrast with broad-based taxes.
- By adding to the final prices of mobile services, it has the potential to create affordability barriers that may constrain usage and take-up of new services such as mobile broadband.

Taxation in Mexico accounts for a significant proportion of the total cost of purchasing and using a mobile phone for the average consumer. Total taxes on consumers, including VAT and the IEPS, were found to account for 18.9% of the Total Cost of Mobile Ownership (TCMO) in Mexico in 2014⁵⁹.

In an international study by McKinsey on barriers to internet adoption, Mexico ranked in the third quartile on the sub-index “Low incomes and affordability”, indicating that affordability issues pose high barriers to internet adoption⁶⁰.

56. Deloitte – Taxation and investment in Mexico 2014.

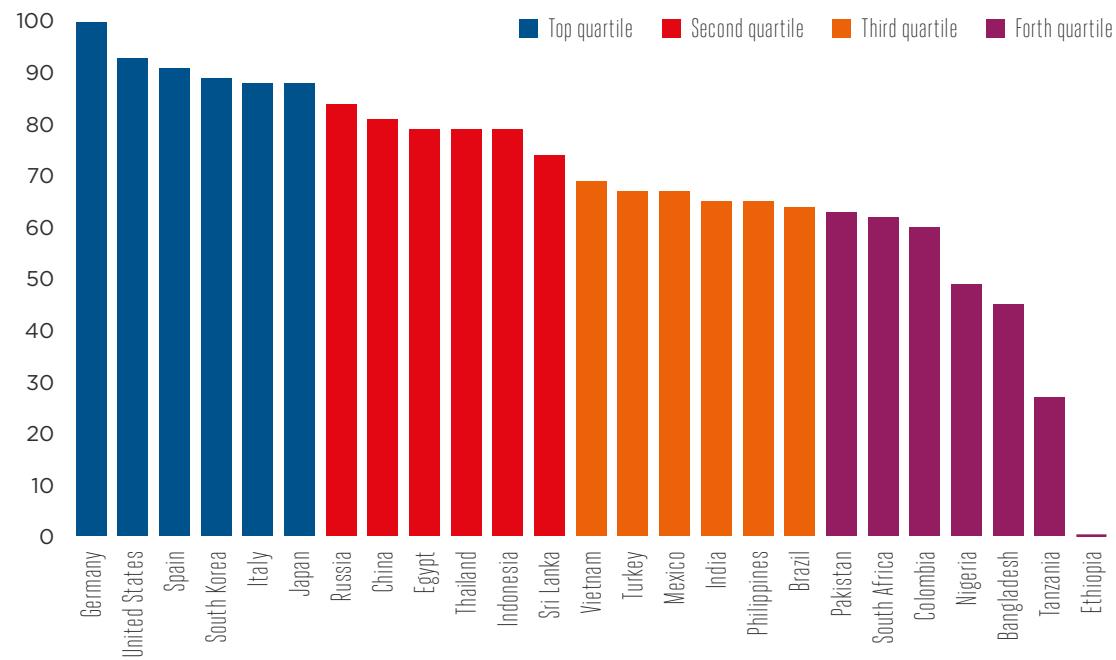
57. KPMG - Investment in Mexico, 2012 and Anatel, 2012. *Telecomunicaciones e Impuestos: Incentivos fiscales para su desarrollo*.

58. OECD (2012): “OECD Review of telecommunication policy and regulation in Mexico”.

59. GSMA/Deloitte, Digital Inclusion and Mobile Sector Taxation, forthcoming.

60. McKinsey&Company, 2014. Offline and falling behind: Barriers to internet adoption.

International “Low incomes and affordability” sub-index 2014



Source: McKinsey&Company, 2014: “Offline and falling behind: Barriers to internet adoption”

Figure 15

2.2 Taxes and fees levied on mobile operators in Mexico

Mobile operators in Mexico are subject to general taxes such as the corporation tax, customs duties and customs processing fees. Additionally, operators may subsidise part of the taxes that are applied to consumers in order to improve affordability and expand market demand. Operators are subject to various regulatory fees, including both annual and non-recurring fees.

Taxes and fees levied on mobile operators in Mexico

	PAYMENT BASE	TYPE	TAX RATE
Taxes	Imported network equipment	VAT	16%
		Customs duty	0-15%
		Customs processing fee	0.8%
Regulatory fees	Imported SIM cards and vouchers	VAT	16%
		Customs processing fee	0.8%
	Profits	Corporation tax	30%
Regulatory fees	Flat fees	Annual spectrum fee	Fixed amount per MHz based on band & coverage
		One-time licence fee	Varies
		One-time spectrum fee	Varies

Source: IBFD and operator data

Figure 16

General taxation on mobile operators

A corporation tax is applied on incomes derived by Mexican resident companies. The rate of the corporation tax in Mexico is 30%, the 6th highest rate in Latin America⁶¹. The corporation tax rate was raised from 28% to 30% in 2010 and was set to be reduced to 29% in 2013 and 28% in 2014, although this rate decrease has not been put in place⁶².

Mobile operators pay the standard VAT rate of 16% on imported network equipment as well as SIM cards and vouchers. A customs processing fee of 0.8% is also levied on imports. While most of the network equipment imports are exempt from customs duties, mobile operators are required to pay customs duties on selected network equipment.

61. IBFD.

62. Based on discussions with operators.



Customs duty rates levied on network equipment

NETWORK EQUIPMENT	TAX RATE
Ultra-high frequency reception apparatuses (300-570 MHz)	5%
Ultra-high modulated frequency reception apparatuses	15%
Super-high frequency or microwave (over 1GHz) reception apparatuses	15%
Reception apparatuses for 26.2-27.5 MHz frequencies	15%

Source: GSMA/Deloitte - Mobile telephony and taxation in Latin America, 2012.

Table 3

Mobile-specific fees on mobile operators

Operators pay a number of different regulatory fees to the Ministry for Communications and Transport (SCT), which include recurring and non-recurring spectrum and licence fees.

Recurring spectrum and licence fees

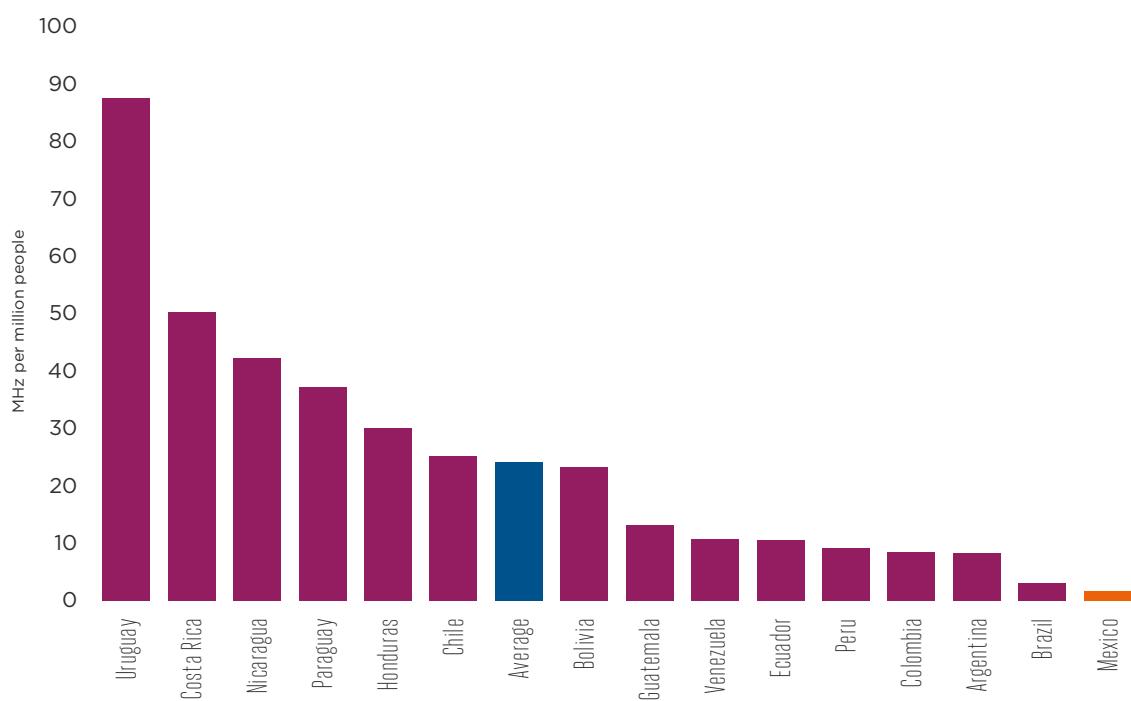
Mobile operators are subject to recurring spectrum fees, which represent a significant part of operators' payments. These are intended to cover the costs of spectrum management and ensure the efficient use of spectrum⁶³. A flat fee is paid annually in spectrum fees. The fee is determined per MHz based on band and coverage. In 2014, the mobile operators in Mexico are estimated to have paid over USD 484 million in annual spectrum fees, circa 11% of all taxes and fees paid⁶⁴.

A significant portion of operators' revenue is contributed to the government through recurring regulatory fees, and this contribution is amongst the highest globally. The share of operators' revenues spent on regulatory fees in Mexico is the third highest amongst 26 countries for which data were available.

⁶³ ITU, ICT Regulation Toolkit, <http://www.ictregulationtoolkit.org/5.5>.

⁶⁴ Deloitte analysis based on operator data.

Recurring regulatory fees as a percentage of revenues



Source: Deloitte analysis based on Mexican operator data for 2014 and GSMA/Deloitte (2015): "Digital inclusion and mobile sector taxation" which uses 2013 data

Figure 17

Non-recurring spectrum and licence fees

In addition to annual fees, operators pay non-recurring fees in order to be licensed to provide services and to acquire spectrum. Operators paid a combined amount of MXN 41.49 billion⁶⁵ in 2010 for 3G licenses in the 1.9GHz spectrum for the 20 years duration of the licences: Telcel paid MXN 16.49 billion for 21 spectrum blocks of 10MHz each, Movistar paid MXN 6.7 billion for six spectrum blocks of 10MHz each and Nextel/Televisa paid MXN 18.3 for a single 30MHz block⁶⁶. In 2012 the regulator decided against renewing a number of licences in the 2.5GHz spectrum and instead reassigned the spectrum for 4G/LTE usage, upon which Telcel and Movistar launched commercial LTE services in October and November respectively the same year⁶⁷. 4G spectrum auctions are planned to be held in 2015⁶⁸.

Total recurring mobile tax and fee payments in Mexico

As a result of these taxes and fees, the total recurring payments paid by Mexican operators and consumers represent 27% of market revenues. This excludes the one-off fees that mobile operators paid for spectrum and licences in order to provide services; if these were included, the total tax burden measurement would be higher.

65. Buddecomm – Mexico: mobile market insights, statistics and forecast, 2015. Equivalent to circa USD 236 million.

66. Buddecomm – Mexico: mobile market insights, statistics and forecast, 2015.

67. Buddecomm – Mexico: mobile market insights, statistics and forecast, 2015.

68. <http://www.developingtelecoms.com/business/regulation/5642-mexico-approves-iusacell-acquisition-confirms-4g-auctions.html>.



Mobile taxation on operators and the impact on investment

These taxes could potentially have distortive effects on the investment decisions of mobile operators. Taxes and fees represent the largest category of expenditure to mobile operators and are a key determinant of investment in the sector. Taxes could reduce incentives to invest, thus delaying network upgrades and rollouts, and create distortions across industries.

There are indications that mobile investment in Mexico is lower compared to other Latin American countries. Almost every year since 2005, investment in mobile telecommunications has represented a smaller share of national GDP than the Latin American average⁶⁹.

2.3 Best practice in taxation policy

An effective tax policy has to balance a number of potentially competing factors. These include the government's revenue needs, supporting key sectors and the practicalities of enforcement and collection, as well as the desire to minimise any detrimental impact on the wider economy. Consequently tax policy frequently must strike a balance between the theoretically correct response and one that recognises the practicalities of taxation in a market⁷⁰.

There are however a number of principles that are generally recognised as contributing to an effective tax system and if applied in Mexico, these principles have the potential to expand investment in the mobile sector and lead to significant economic growth and increased tax revenues for the government. The following principles have been indicated by organisations such as the IMF:

1. In general, taxation should be broad-based: Taxation alters incentives for production and consumption, and so economic distortions will generally be minimised where the burden of taxation is spread evenly across the economy. In practice this equates to adopting broadly defined bases for taxation, limiting rate variations and effectively enforcing tax compliance.

2. Taxes should account for sector and product externalities: The case for taxation to address negative externalities⁷¹ (such as those arising from tobacco consumption) is recognised. The same logic also applies to sectors and products with positive externalities. Taxation policy should encourage sectors, such as mobile, that create positive externalities in the wider economy. Higher taxation on mobile may discourage consumption of mobile services and prevent the realisation of the positive spillovers from the sector.

3. The tax and regulatory system should be simple, easily understandable and enforceable: Uncertainty and lack of transparency over taxation systems and liabilities may deter investors and are also likely to increase enforcement costs for government.

4. Dynamic incentives for the operators should be unaffected: Taxation should not disincentivise efficient investment or competition in the ICT sector. In situations where the tax system does provide disincentives, tax revenue could be significantly reduced in the long run.

69. Economist Intelligence Unit. Other countries include Argentina, Brazil, Chile, Colombia and Peru.

70. IMF, Tax policy for developing countries, 2001.

71. An externality refers to an impact on the wider economy that is not accounted for by the consumer purchasing the good. For example, consumers of tobacco create an additional cost for others through second-hand smoke, but do not take into account this impact when choosing whether to smoke.

5. In addition, it is widely accepted that **taxes should be equitable, and that the burden of taxation should not fall disproportionately on the poorer members of society.**

6. Spectrum prices and other regulatory fees should cover the cost of spectrum management and reflect the rent associated with this scarce resource. At the same time, they should maintain the incentives to invest, by appropriately incorporating all costs incurred during the duration of a licence, including taxes⁷².

In addition to general and specific taxes levied on the mobile sector, spectrum and licence fees are intended to correct the externalities related to the use of these scarce resources and cover the costs related to spectrum management, while at the same time maintaining the incentives on investment. In particular, these fees should achieve the following objectives⁷³:

- Cover the costs of spectrum management.
- Ensure the efficient use of the spectrum scarce resource by ensuring sufficient incentives are in place.
- Maximise the economic benefits to society obtained from telecommunication services.
- Ensure that users benefiting from the use of the spectrum resource pay for the cost of using spectrum.

These principles are intended to minimise the inefficiencies associated with taxation and regulatory fees and the distortive impacts that they may have on the wider economy. The table below summarises how the taxes and fees levied in Mexico align with these principles.

Alignment of taxes and regulatory fees on the mobile sector in Mexico with the principles of taxation

Tax	Broad-based	Accounts for externalities	Transparent and enforceable	Incentives for competition and investment	Equitable (not regressive)
Corporation tax	✓	✗	✓	✓	✓
VAT	✓	✗	✓	✓	✓
IEPS	✗	✗	✓	✗	✗
Customs Duty	✓	✗	✗	✗	✗
Customs Processing fee	✓	✗	✗	✗	✗
Licence fee	✗	✗	✓	✗	✗
Spectrum fee	✗	✗	✓	✗	✗

Source: Deloitte analysis

Table 4

72. ITU, ICT regulation toolkit, 2014.

73. ITU, ICT Regulation Toolkit, <http://www.ictregulationtoolkit.org/5.5>.



As shown in the table above, many of the taxes levied on the mobile sector in Mexico do not appear to fully align with these key principles of efficient taxation, which has ramifications for the development of the sector and the wider economy. In particular, those taxes that are mobile-specific have the highest negative impact and lack of alignment with the established principles of taxation:

Mobile-specific taxes such as the IEPS increase barriers to access and hit the poorest consumers hardest: Mexican mobile consumers are subject to mobile-specific taxes, in the form of the IEPS on calls and SMS. This tax is not broad-based, as it is specific to mobile services and a limited number of “luxury” goods and services, and as such may create distortions in consumers’ purchasing decisions. By increasing the final price of mobile services, it creates a barrier to affordability and to mobile access. This barrier is greater for low income consumers and therefore risks excluding them from the benefits of mobile and the internet.

All mobile-specific taxes and fees fail to account for positive externalities and discourage consumption: In addition to IEPS, mobile is subject to a number of sector-specific regulatory fees. Mobile has positive impacts in the wider economy through positive spillover effects and facilitation of innovation and productivity in other sectors such as agriculture, healthcare and education. Taxing mobile in a disproportionate manner would discourage rather than encourage consumption.

High spectrum and other regulatory fees could distort operators’ investment decisions: Regulatory fees represent a significant part of operators’ tax and fee payments and are a key determinant of investment in the sector. They could reduce incentives to invest and create distortions across industries. Moreover, fees that are subject to frequent changes increase uncertainty and discourage investment both domestically and internationally.

Efficient, equitable and stable pricing of spectrum and licence fees could incentivise the development of new technologies and encourage mobile operators to invest in new spectrum and network roll-out, while covering the cost of spectrum management, ensuring efficient use of spectrum and providing a source of revenue to the government.

VAT is levied on international roaming:

Currently, VAT is applied when Mexican consumers use their phones to roam internationally, potentially subjecting them to multiple taxation and raising costs⁷⁴. This is out of line with international precedent, as international roaming is typically treated as exports and are exempt from VAT. For example, in the UK, VAT has not been applied on roaming outside of the EU since 1992⁷⁵.

The potential inefficiencies created by these various mobile taxation issues may not only limit the development of the mobile sector, but also hinder economic growth and the realisation of the positive externalities created by mobile services. In the medium term, the Mexican government has the potential to generate more tax revenue by complementing the wider sector reforms that are currently being implemented with a transition towards a more equitable and balanced taxation structure that treats mobile equally to other industries.

Economic theory suggests that there exists an optimal level of taxation which will maximise government revenues, so that if at any point taxation is excessive, it will be beneficial for government policymakers to reduce the burden of taxation in order to widen the tax base.

At low levels of taxation, buyers and sellers may not be substantially affected by the change in price. At high levels of taxation however, buyers and sellers may substitute away from a given good or service. At a high level of taxation, it may be optimal to reduce taxes to increase tax revenue.

74. Anatel, 2012. *Telecomunicaciones e Impuestos: Incentivos fiscales para su desarrollo.*

75. <http://www.moneysavingexpert.com/news/phones/2015/01/ee-refunds-lm-after-mistakenly-charging-vat-on-non-eu-data>.

3 Case studies: impacts of mobile taxation changes

Tax increases in other countries have been associated with decreases in mobile usage and investment. The example below illustrates the impacts that changes in mobile sector taxation can have on usage and other relevant variables.

Case study:

INCREASED MOBILE-SPECIFIC TAXATION AFFECTED INVESTMENT AND USAGE IN CROATIA

After years of growth, Croatia suffered from a recession in 2009 following the global financial crisis. In addition to the direct impact of the recessionary environment on the mobile industry, in June 2009 the Government introduced a 6% tax on mobile operators' gross revenue from mobile calls and SMS.

Following the introduction of this tax, the tax pressure on mobile increased to 28% of the cost of mobile ownership, the highest at the time in Europe^I. During the same period:

- Volumes of mobile calls and SMS decreased in 2010 by 4% and 14% respectively.
- Mobile-specific taxation as a proportion of mobile operators' revenue increased significantly after 2008. The total tax burden on mobile grew by 2% in 2009 and by 10% in 2010.
- Reductions in operator revenues led to decreases in mobile operator capital expenditure^{II}.

The Croatian government removed the 6% tax on calls and SMS in 2012. Mobile operator capital expenditure increased by 5% between 2012 and 2013.

I Deloitte/GSMA, Mobile Taxes and Fees: A toolkit of principles and evidence, 2014.
II GSMA Intelligence Database.

However, countries worldwide have started to recognise the upside of an equitable and balanced taxation on the mobile sector and the potential to improve affordability and unlock digital inclusion, as illustrated by the examples below.



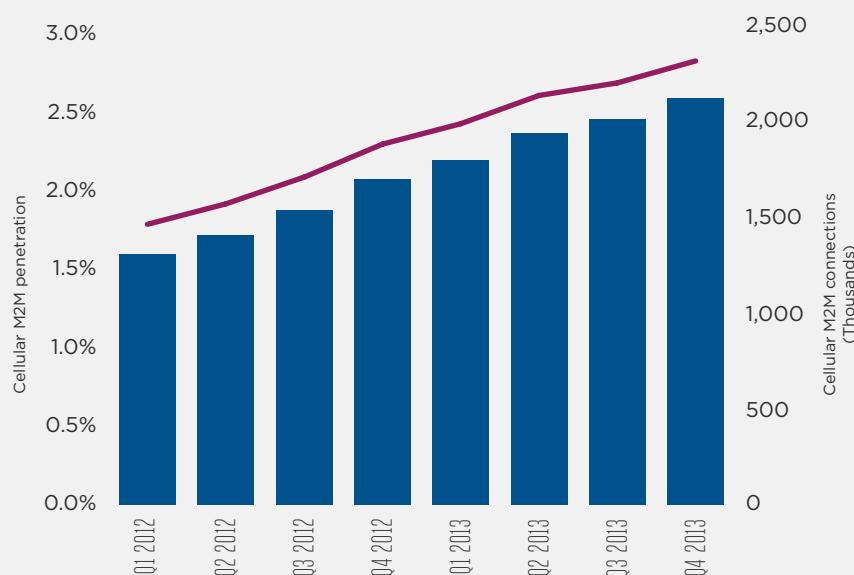
Case study:

REDUCTION OF SIM TAXES ON CELLULAR M2M SERVICES IN TURKEY AND BRAZIL

In July 2012, M2M SIM cards were exempted from the TRY 37 connections tax that applies to standard SIM cards in Turkey^I. Prior to the tax exemption, mobile operators in Turkey had identified the connection tax as one of the biggest obstacles to growth in the cellular M2M market due to the low ARPU of these services^{II}, which would otherwise present considerable potential for growth^{III}.

The number of cellular M2M connections in Turkey increased from 1.3 million in March 2012 before the tax exemption to 2.1 million connections in December 2013. This represents an overall increase of 25% in cellular M2M connections^{IV}.

Cellular M2M market growth in Turkey



Source: GSMA Intelligence Database and Deloitte analysis

Similarly, recognising the tax pressure on cellular M2M services in Brazil^V, the Brazilian government decided to introduce tax reductions on M2M SIM over the time period 2012-2014. The reductions were approved in 2012^{VI} and came into effect in April 2014^{VII}. The SIM card tax for new connections was reduced from BRL28.63 (USD 11.56) to BRL5.68 (USD 2.29) for M2M SIM and the annual connection tax was lowered from BRL 8.94 (USD 3.61) to BRL1.89 (USD 0.76)^{IX}. This equates to a combined reduction of 80 per cent^X.

The tax cut is likely to have a significant positive impact on the development of the Brazilian cellular M2M market, providing a positive stimulus for mobile operators to develop these services. Shortly after the tax cut was enacted, mobile operators invested BRL 13 billion (USD 6 billion) in development of M2M services^{XI}. The Brazilian Communications Minister estimates that as a result of the tax cut the number of M2M devices in Brazil will increase by 33%, from 17.5m to 23.3m in 2016^{XII}.

I Mobile Marketing Magazine, July 16th 2012, "Turkey lifts SIM tax".

II Wall Street Journal, March 21st 2011, "Turkcell targets smartphones as key to growth".

III Ibid.

IV GSMA Intelligence Database.

V TechPolis, July 23rd 2013, "The take-off of M2M in Brazil".

VI Ibid.

VII GSMA, May 9th 2014, "GSMA welcomes Brazilian government decision to reduce machine-to-machine taxation".

IX GSMA, 2014, "The Mobile Economy Latin America 2014".

X GSMA, May 9th 2014, "GSMA welcomes Brazilian government decision to reduce machine-to-machine taxation".

XI TelecomEngine, May 7th 2014, "Brazilian operators invest USD 6 billion in M2M".

XII Telefonica, June 4th 2014, "Brazil tax reductions: A movement to the leadership".

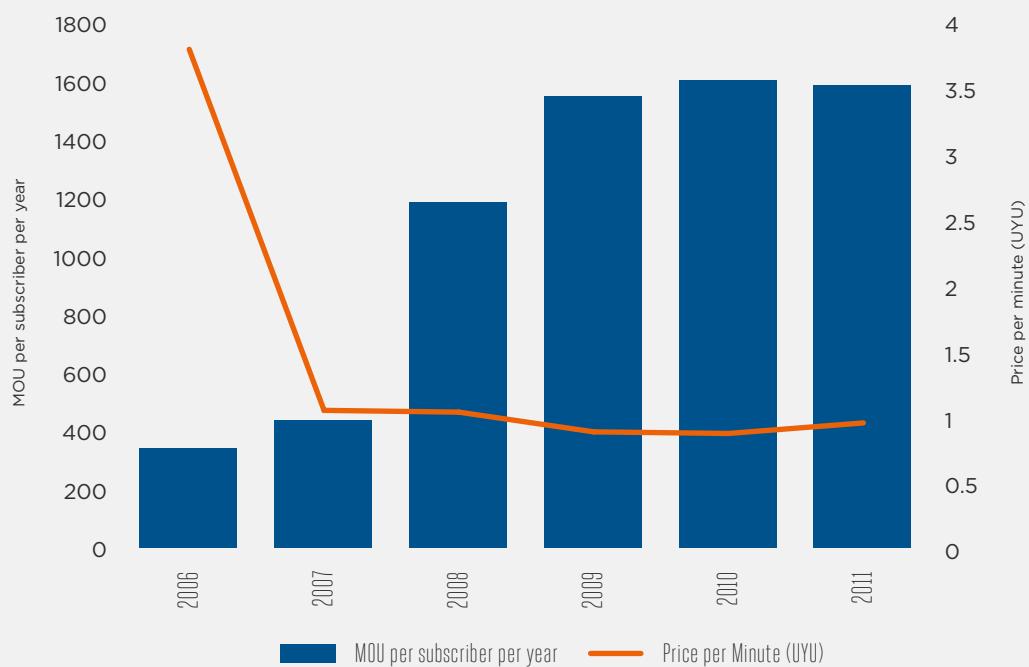
Case study:

REDUCED AIRTIME TAXATION IN URUGUAY

In 2007, the Uruguayan government abolished an airtime tax that had accounted for between 30 and 50% of calling costs^I.

In the year immediately following, prices fell by over two thirds from UYU 3.75 per minute to around UYU 1.00 per minute. Penetration more than doubled from 65% in 2006 to 141% in 2011. Alongside increased penetration, mobile usage rose from just under 400 annual minutes per subscriber in 2006 to 1,600 in 2011^{II}. This contrasts to Brazil where taxes remained considerably higher and minutes of use per subscriber were less than 1,000 in 2011.^{III}

Increase in mobile usage per subscriber and decrease in prices following removal of an airtime tax in Uruguay



Source: GSMA/Deloitte 2012

I GSMA/Deloitte (2012): "Mobile telephony and taxation in Latin America"

II GSMA, Taxation of mobile telecoms: Sector-specific taxes on consumption and international traffic, 2012.

III Deloitte, 'Mobile telephony and taxation in Kenya, 2011.'



4 Economic impacts of reforming mobile taxation in Mexico

This section discusses the impacts of reforming taxation through three tax policy changes, using a combination of qualitative evidence and a quantitative model of the mobile sector and its impact on the wider economy in Mexico. After discussions with Mexican operators, the quantitative impacts for the following alternatives of tax reform are estimated:

- Reduction of the IEPS on mobile services from 3% to 1.5%.
- Abolition of the IEPS on mobile services.
- Reduction of annual regulatory fee payments by 10%.

4.1 How mobile taxation in Mexico impacts the economy

The IEPS and regulatory fees are mobile-specific taxes that put the mobile industry at a competitive disadvantage with respect to other industries, potentially reducing investment and failing to recognise the positive spillovers of mobile.

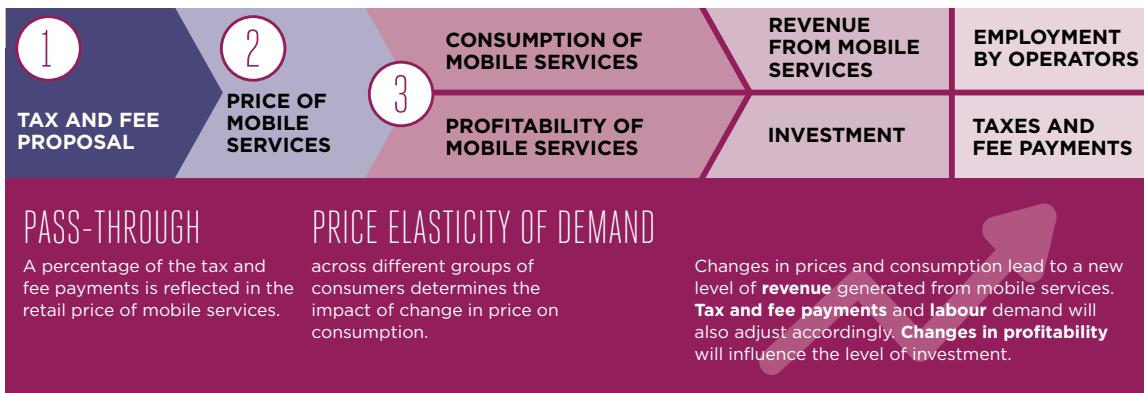
By reforming mobile taxation and transitioning to a more balanced taxation structure where mobile is taxed equally to standard goods and services, the government of Mexico can complement its current reform programme and further its National Development Plan and National Digital Strategy of promoting usage and development of ICT and transforming Mexico into a knowledge-based society, while potentially benefitting from increased tax revenues in the medium term as a result of GDP growth.

To estimate the quantitative impacts of tax reform, an economic model of the Mexican economy and mobile sector was constructed, using sector-specific data from the GSMA and mobile operators in Mexico, together with macroeconomic data from the IMF and World Bank. This allows the model to represent both the mobile sector and its impacts on the economy as a whole. This approach also enables comparison between a base case that uses current projections for the sector and several tax reduction scenarios; other potential impacts on the sector that may arise from the government's current reform programme are not explicitly modelled but may have been considered in projections by the GSMA or third party sources and may therefore have been taken into account in the base case.

The figure below illustrates the impacts of tax reform on key economic and sector variables.

SCHEMATICS FOR MODELLING THE ECONOMIC IMPACTS OF MOBILE TAXATION CHANGES

Sector impacts



PASS-THROUGH

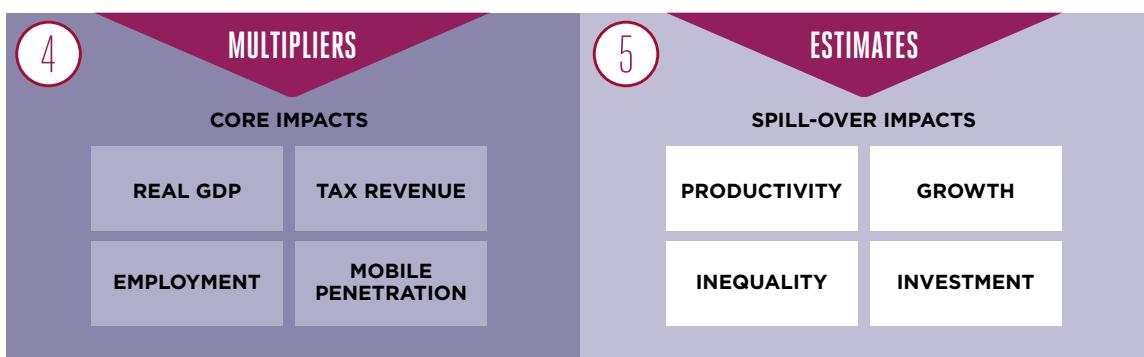
A percentage of the tax and fee payments is reflected in the retail price of mobile services.

PRICE ELASTICITY OF DEMAND

across different groups of consumers determines the impact of change in price on consumption.

Changes in prices and consumption lead to a new level of **revenue** generated from mobile services. **Tax and fee payments** and **labour** demand will also adjust accordingly. **Changes in profitability** will influence the level of investment.

Economy-wide impacts



Direct impacts are extrapolated onto the economy using multiplier factors, adjusted for the size of the country and market structure.



Other metrics use concepts well-developed in research, including previous GSMA/Deloitte work on the impact of penetration on economic growth, to quantify spill-over effects.

Source: GSMA analysis

Figure 18

The modelling involves several steps which encompass the impacts outlined in the figure above:

1 The levies, fees, and royalties applied to the mobile sector are reflected in the retail prices mobile operators charge for using their services. A reduction of such payments to government will lead to a reduction in the retail price of the mobile service according to an assumed pass-through rate. A pass-through rate represents what percentage of the levy and fee payments are reflected in the retail price of mobile services.

2 The price of mobile services determines the demand and therefore the aggregate consumption of mobile services. The price elasticity of demand describes the responsiveness of demand to a change in the price and is calculated as the percentage change in demand resulting from a given percentage change in price.



3 Changes in the level of consumption of mobile services lead to a new level of revenue generated by operators, which changes the level of taxes and fee payments and labour demand accordingly.

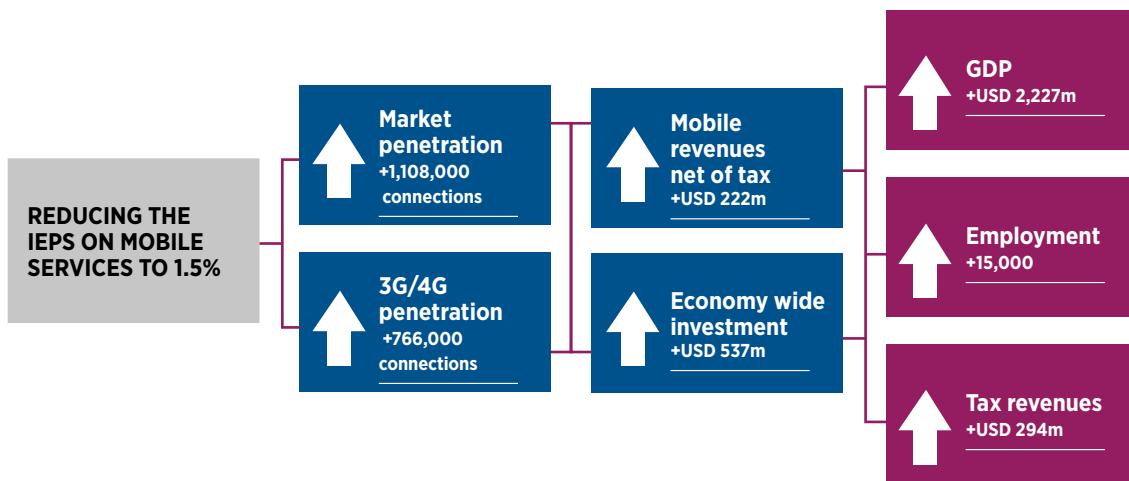
4 These changes to the mobile sector lead to direct impacts on value-add and employment and, through spill over effects, on the wider economy, in particular on real GDP, tax revenues, employment and investment.

5 An elasticity determines the impact of a change in mobile penetration on GDP growth. Multipliers are assumed which allow changes in mobile sector employment to affect the wider Mexican labour force. Productivity is calculated using the total factor productivity impact, described in the appendix.

4.2 Reducing the IEPS on mobile services to 1.5%

The IEPS currently applied on calls and SMS at 3% results in an increase in the cost of accessing and using mobile services and a constraint on the overall mobile penetration and the range of uses. It is estimated that reducing the IEPS on mobile services to 1.5% could potentially drive the following impacts:

Potential impact of reducing the IEPS on mobile services to 1.5% relative to the base case, 2020



Source: Deloitte analysis based on operator, GSMA intelligence database, IMF and World Bank data

Figure 19

- In 2020 alone, increased demand for mobile services has the potential to add more than 1.1 million extra connections, including 0.77 million 3G and 4G connections. Over the period 2016-2020, a cumulative 4.6 million mobile connections could be added, of which 2.9 million are expected to be mobile broadband connections.
- This uptake in mobile penetration could increase mobile revenues by up to an additional USD 222 million in 2020 and the productivity of Mexican workers and businesses, potentially leading to the Mexican economy being 0.1% more productive.
- Through the direct impacts of the mobile operators and the indirect impacts generated by the activities enabled by mobile operators, increased mobile usage could lead to additional GDP growth, delivering up to an additional USD 2.23 billion in 2020 alone and potentially providing employment for an additional 15,000 Mexicans. Over

the period 2016-2020, a total of USD 7.1 billion could be added to the economy, and employment could be provided to an additional 42,000 Mexicans.

- Moreover, despite an initial fall in tax revenues after the reduction in tax, the government could potentially achieve tax neutrality within two years and in 2020 the increase in GDP growth has the potential to enable up to an additional USD 294 million in tax revenues to be collected through more broad-based taxation. Over the period 2016-2020, and including the initial loss in revenues, the government could gain an additional USD 647 million.

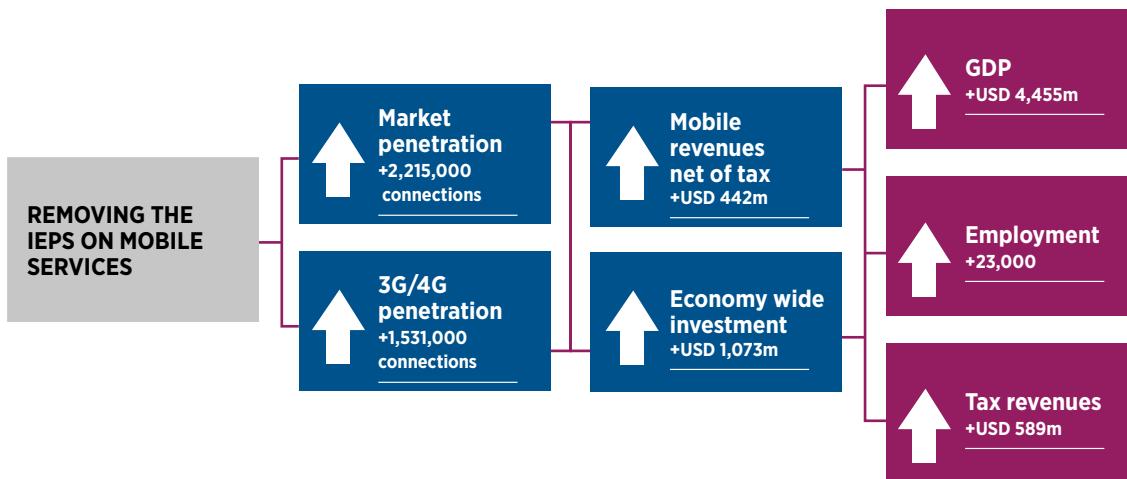
Reducing the IEPS on mobile services has the potential to encourage consumption and increase access to mobile, thus promoting higher mobile penetration in Mexico. This could have large positive impacts in terms of digital inclusion and adoption of new 3G technologies, while at the same time increasing GDP growth and investment.

4.3 Removing the IEPS on mobile services

Rather than reducing the IEPS by half, the government could fully abolish the IEPS on mobile services. It is estimated that removing the IEPS on mobile services could potentially double the impacts of halving the IEPS and drive the following impacts:



Potential impact of removing the IEPS on mobile services relative to the base case, 2020



Source: Deloitte analysis based on operator, GSMA intelligence database, IMF and World Bank data

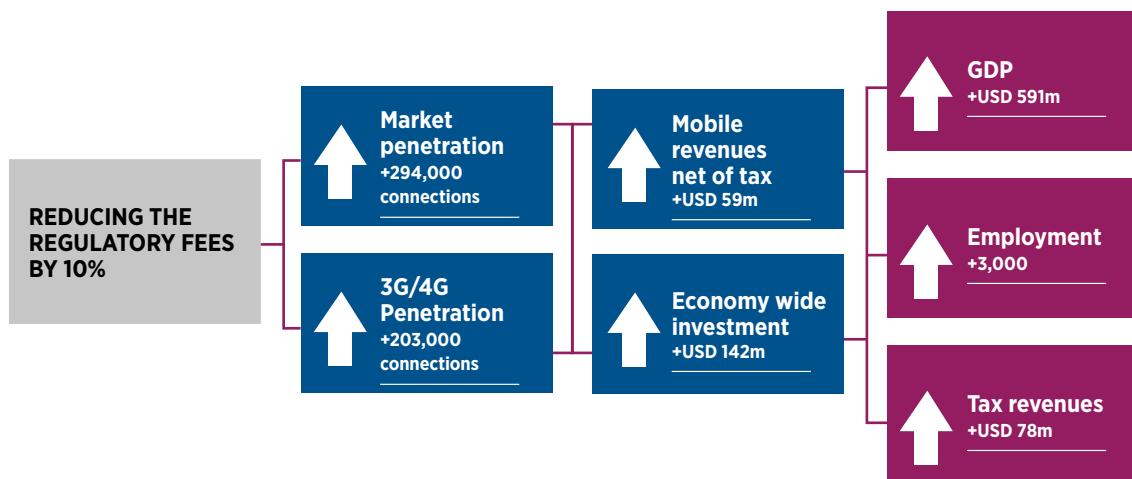
Figure 20

- In 2020 alone, increased demand for mobile broadband has the potential to add an extra 2.2 million connections, including 1.5 million 3G and 4G connections. Over the period 2016-2020, a cumulative 9.2 million mobile connections could be added, of which 5.9 million are mobile broadband connections.
 - This uptake in mobile penetration could increase mobile revenues by up to an additional USD 442 million in 2020 and the productivity of Mexican workers and businesses, potentially leading to the Mexican economy being 0.21% more productive.
 - Through the direct impacts of the mobile operators and the indirect impacts generated by the activities enabled by mobile operators, increased mobile usage could lead to additional GDP growth, delivering up to an additional USD 4.4 billion in 2020 and potentially providing employment for an additional 23,000 Mexicans. Over the period 2016-2020, a total of USD 14.1 billion could be added to the economy and employment could be provided to an additional 62,000 Mexicans.
 - Moreover, despite an initial fall in tax revenues after the reduction in tax, the government could potentially achieve tax neutrality within two years and in 2020 the increase in GDP growth has the potential to enable up to an additional USD 587 million in tax revenues to be collected through more broad-based taxation. Over the period 2016-2020, and including the initial loss in revenues, the government could gain an additional USD 1.3 billion.
- Eliminating the IEPS on mobile services fully could result in an even greater impact on digital inclusion and take-up of mobile internet, delivering greater socio-economic benefits and spurring domestic and international investment.

4.4 Reducing the regulatory fees by 10%

Regulatory fees applied on the mobile sector in Mexico can have a distortive effect on investment as they impact equally companies with high and low capital expenditure. Therefore, this type of tax can further discourage network investment and the roll-out of new generation infrastructure. In 2014, operators paid USD 485 million in recurring regulatory fees. Under the assumption that a proportion of the savings to the regulator would be passed onto consumers in the form of lower prices, reducing the total value of regulatory fee payments by 10% has the potential to generate the impacts illustrated below.

Potential impact of reducing regulatory fee payments by 10% relative to the base case, 2020



Source: Deloitte analysis based on operator, GSMA intelligence database, IMF and World Bank data

Figure 21

- In 2020 alone, increased demand for mobile services could add an extra 0.3 million connections, including 0.2 million 3G and 4G connections.
- This uptake in penetration could increase the revenues received by the mobile sector by USD 59 million in 2020 and aggregate investment in Mexico by up to USD 882 million over the period 2016-2020.
- Through the direct impacts of the mobile operators and the indirect impacts generated by the activities enabled by mobile operators, increased mobile usage could lead to additional GDP growth, potentially delivering an additional USD 591 million in 2020 and providing employment for an additional 3,000 Mexicans.
- Moreover, despite an initial fall in tax revenues after the reduction in tax, the government could potentially achieve tax neutrality within two years and in 2020 the increase in GDP growth could enable up to an additional USD 78 million in tax revenues to be collected through more broad-based taxation.

By incentivising investment, the reduction of regulatory fees could further encourage network roll-out and FDI in Mexico. At the same time, it could spur mobile penetration and reduce barriers to affordability, as operators pass on their savings to consumers. This has wider economic impacts: specifically higher economic growth, greater productivity and growth in employment.



4.5 Pricing of spectrum and other regulatory fees

As seen in Section 2, the recurring tax and fee payments that mobile operators pay in Mexico were found to represent almost 27% of market revenue. In this context, the government could consider balancing non-recurring spectrum fees against the burden of recurring taxation in order to maintain the incentives to investment and competition in the market, while capturing the economic rent associated with spectrum ownership and covering the costs related to spectrum management⁷⁶.

Mobile operators are estimated to have paid circa USD 1.27 billion since 2010 in non-recurring payments for licence renewals, 3G and 4G spectrum. At the same time, annual spectrum fees amount to circa USD 485 million per year⁷⁷, nearly 11% of all taxes and fees paid in 2014⁷⁸.

Excessive spectrum payments and other regulatory fees could negatively affect the roll-out of network infrastructure⁷⁹, through:

- Reduced incentives to invest due to lower returns on the capital employed.
- Increased uncertainty on future tax liability, which is also likely to impact investment decisions.
- Distortions across industries and within ICT sector due to higher costs for mobile operators, further driving (local and foreign) investment away from mobile.
- Fees that are subject to frequent changes increase uncertainty and discourage investment both domestically and internationally.

Furthermore, when a licence or spectrum band is awarded, the final price paid reflects operators' expectations on future cash flows, including tax disbursements, at the time the

investment decision is made. If new taxes are introduced or increased after the auction or during the duration of a licence, this negatively impacts the operators' business case and can have adverse effects on consumers if some operators were to hold off investment due to taxation uncertainty. In Mexico, after the significant investment incurred by operators to acquire 3G licences, the IEPS was extended to mobile services and the corporation tax increased from 28% to 30% in 2010.

In particular, high annual fees may discourage operators' investment in the upcoming spectrum auction in 2016. Different ways of spectrum licencing could be considered. Currently, the annual fees for spectrum in Mexico do not vary between frequency bands; a flat fee is charged across all and does not reflect the lower value of higher frequency bands. Allowing for variable fees could potentially improve the efficiency of auctions, by making it more affordable for smaller operators to participate and improving competition.

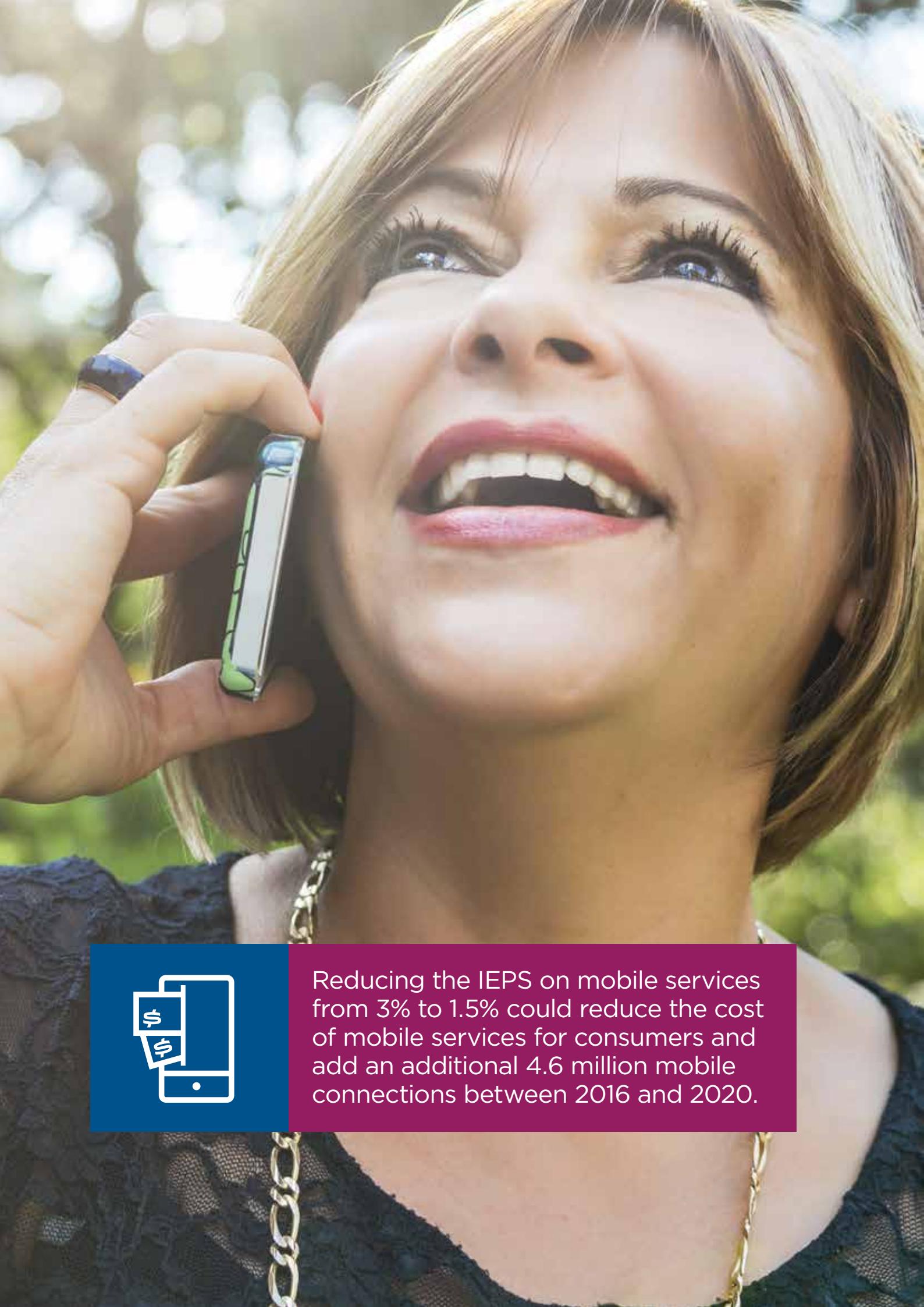
Efficient, equitable and stable pricing of spectrum and licence fees has the potential to support government revenues while ensuring the development of new technologies and encourage mobile operators to invest in new spectrum and network roll-out. Appropriate pricing of spectrum appears a key issue if Mexico is to embrace further uptake of mobile broadband services.

76. Ofcom. Spectrum pricing. A statement on proposals for setting Wireless Telephony Act prices, 2005.

77. As estimated for 2014.

78. Deloitte analysis based on operator data.

79. Gorecki, Hennessy, Lyons, How impact fees and local planning regulation can influence deployment of telecoms infrastructure, 2011.



Reducing the IEPS on mobile services from 3% to 1.5% could reduce the cost of mobile services for consumers and add an additional 4.6 million mobile connections between 2016 and 2020.



5 Mobile Taxation in Mexico: An Agenda for Reform

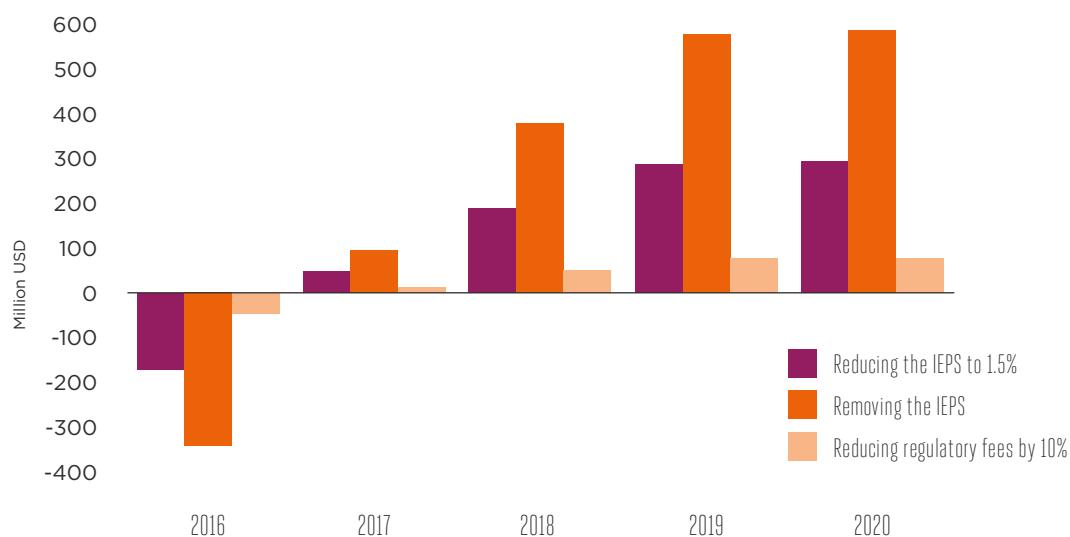
5.1 Contribution to fiscal stability

Total taxes and fees on mobile consumers and operators in Mexico add to the cost of owning and using a phone and investing in mobile networks. Reducing the level of taxation on the mobile sector may impact government revenues in the short-term. However, by increasing mobile penetration and promoting economic growth, reducing the tax burden on mobile could also increase the tax base, presenting the potential for the government to recover these revenues.

The additional economic growth arising from the reduction of the IEPS or the regulatory fees could create more revenue for the government and potentially enable the government to reach tax neutrality within two years.

The impact on government revenues of the tax policy alternatives analysed in this report are illustrated in Figure 22. The impacts of each policy are estimated independently and their interaction is not considered.

Potential additional tax revenues compared to the base case under tax policy alternatives (USD millions)



Source: Deloitte analysis based on operator, GSMA intelligence database, IMF and World Bank data

Figure 22

5.2 Options to align mobile taxation to standard goods taxation

By transitioning to a taxation structure where mobile is taxed equally to other goods and sectors, the government of Mexico can promote digital inclusion, increase productivity and generate economic growth, whilst also benefitting from increased tax revenues. This could produce positive spillovers throughout the Mexican economy and society: the government, mobile operators, consumers and the economy as a whole. Moreover, the subsequent spread of mobile services could contribute to the economic and social objectives of Mexico, improving access to life-enhancing services such as education and health applications and facilitating the country's transition to a knowledge-based economy.

Interviews with the mobile sector demonstrated a recognition of its role in supporting Mexican government revenues and contribute to public services. However, while higher than standard taxation on the mobile sector can potentially deliver short-term benefits to the government, it would need to be balanced with the impacts on the cost of long-run socio-economic development.

By working in partnership with the mobile operators to minimise the distortions and inefficiencies created by sector-specific taxation, the Mexican government has the opportunity to make progress on its key ICT and development ambitions.

Development of ICT usage across sectors:

By reducing mobile-specific taxation, the government could increase the number of mobile broadband connections, promoting digital inclusion. This has the potential to enable the widespread use of ICT across areas such as healthcare, education and the provision of government services. Moreover, this could provide new opportunities for innovation and the development of new applications and content, fostering further growth within the sector.

Increased economic development:

Based on the modelling described above, the tax reform alternatives examined have the potential to increase the usage of mobile services and uptake of mobile broadband and generate up to USD 532 million in additional investment and increase GDP by up to USD 2.22 billion in 2020 if the IEPS on mobile services were halved.

Support in the transition towards a knowledge-based economy:

Reforming mobile sector taxation has the potential to encourage wide spread use of mobile broadband and the development of mobile applications for use in agriculture, healthcare and education, and the creation of local content can also promote higher-skilled employment and the transition to a knowledge-based economy.



Improved network infrastructure:

Ensuring an equitable structure of regulatory fees has the potential to increase the investment required to further improve mobile broadband network infrastructure. Moreover, further international investment could allow for economies of scale for mobile operators, allowing reduced prices for consumers in the longer term and facilitating the spread of mobile broadband.

Sustainable government revenues:

Achieving the government's ICT objectives need not result in a reduction in government revenues in the medium to long term. By increasing productivity and economic growth, a reduction of the IEPS on mobile services has the potential to generate up to over USD 647 million in additional tax revenues cumulatively over the period 2016-2020 through the expansion of the tax base.

Based on evidence from a series of studies⁸⁰ and the best practice principles outlined in Table 4⁸¹, as well as on consultation with GSMA and mobile operators, a number of areas for tax reform have been identified which could support the mobile sector to further contribute to economic growth and government revenues over and above its current impact:

Reduce specific taxation of the mobile sector:

Higher than normal taxation on mobile operators and consumers distorts production and consumption behaviour; it may limit usage of digital services, reduce the ability of mobile operators to finance investment in digital infrastructure, and can in the long term reduce government revenues.

Apply phased reductions of taxes on established services:

A phased reduction of mobile specific taxes offers the government the opportunity to benefit from the economic contribution from mobile whilst limiting short-term fiscal costs.

Facilitate the development of emerging services through supportive taxation:

The growth of mobile data and other innovative services such as M2M applications open up the possibility for the sector to increase its economic value through a whole new generation of products and services ranging from health care services to education and finance.

Reduce complexity and uncertainty of mobile taxation:

Taxation on the mobile sector has increased over the years in Mexico. Any unpredicted tax change that occurs after investment in spectrum licence is made may negatively impact an operator's business plan. The risk of future tax rises is priced into investment decisions and can therefore be expected to reduce both FDI and domestic investment in the medium-term.

80. GSMA/Deloitte, studies on digital inclusion and mobile taxation in Ghana, Tanzania, Pakistan; GSMA/Deloitte, Mobile taxes and Fees - A Toolkit of Principles and Evidence, 2014.
 81. IMF, Tax policy for developing countries, 2001.

Appendix A: Methodology

A.1 Estimation of the economic impact of a tax change

In order to conduct the tax scenario analysis, an economic model was created to describe the mobile sector and the macro-economy of Mexico. This model is able to forecast the impacts of more than 25 sector-specific and macroeconomic variables up to 2020, which can be driven either by removing or changing current taxes and fees or by the introduction of a new tax or fee.

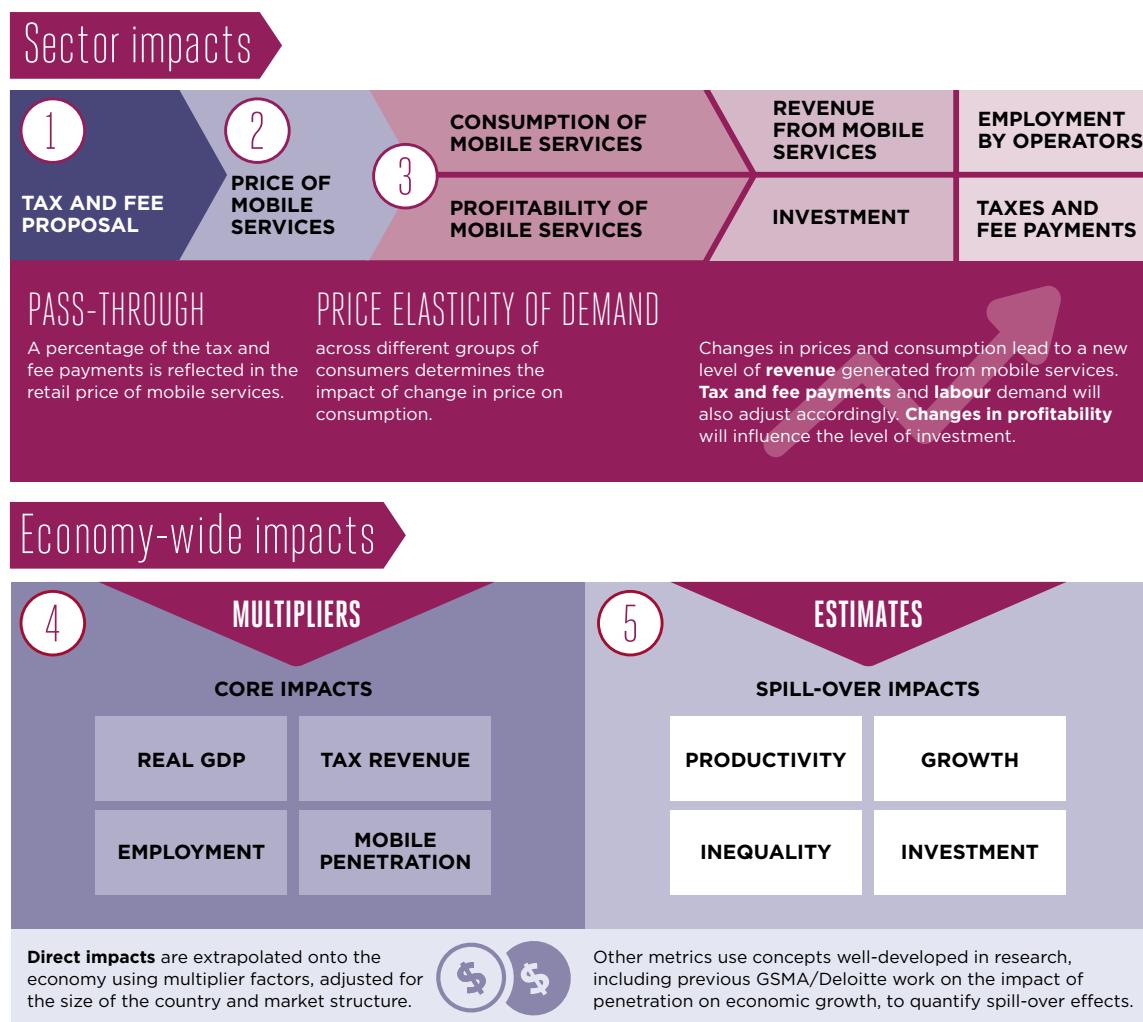
Firstly, a base case scenario is developed for the mobile sector and economy, where taxes and fees remain at their current level throughout the period 2016-2020. Then, a simulation of alternative policy scenarios quantifies the economic impact of reformed mobile sector taxation. It is assumed that the tax policy is implemented in 2016 and the model estimates the effects up to 2020. The impacts of each policy are estimated independently and their interaction is not considered.



Modelling the macroeconomic impact of changes to mobile taxation in Mexico

As illustrated in Figure 23, the following steps are involved in the modelling process:

Schematics for modelling the economic impacts of mobile taxation changes



Source: GSMA analysis

Figure 23

- The tax or fee change affects the price of mobile services. This depends on the extent to which the tax reduction is passed on to consumers, modelled by a pass-through rate which determines the percentage of the tax and fee payments that is reflected in the retail price of mobile services. All assumptions in the
- model are described in more detail in the section below.
- Changes to the price of mobile services affect their consumption. In order to estimate this, assumptions are made on the price elasticity of demand⁸², which measures how much demand for mobile

82. An elasticity describes the quantitative impact of a variable on another variable; the usual notation is that a 1% increase in a variable will lead to an x% change in another variable.

services will change in response to a price change.

- Changes in prices and consumption alter the amount of revenue generated from mobile services. Increased demand generates additional employment opportunities in the sector, while increased operator revenues enable additional capital expenditure on the development of network infrastructure.
- These sector impacts lead to economy-wide impacts, which are estimated through assumptions that describe the impact of the mobile sector on the wider Mexican economy. These effects include the impact on GDP, calculated through a multiplier that links mobile and 3G penetration rates to economic growth, and the effect on employment, calculated through a multiplier which estimates the number of jobs created across the economy for every job created within the telecom sector.

The proliferation of mobile services is captured by an increase in productivity, quantified through the change in Total Factor Productivity (TFP).

- Thanks to additional GDP growth from reformed taxation on mobile, the potential short-term loss of tax revenues from the mobile industry can be offset by tax revenues from more broad-based consumer and operator taxes.

The inputs for the model are provided by operators in Mexico, the GSMA and publicly available statistics from the World Bank and the IMF and include forecasts for 2015 and subsequent years. The outputs are derived based on estimates of the elasticity of demand for mobile services from a number of developing markets, while the impacts of mobile and broadband penetration on GDP have been derived from econometric studies of similar developing markets.

A.2 Key assumptions behind the model

The assumptions underlying the model have been researched from a review of academic literature and previous studies in this area. These are discussed in more detail below.

Pass-through rates

Taxes and fees paid by mobile operators and consumers may be completely or partly passed-through to the end-consumer prices. The level of pass-through of taxes and fees to final prices will depend on market power and the price elasticity of demand, among other factors. For this analysis, an average pass-through rate of 75% has been assumed for taxes that fall directly on retail prices. A pass-through rate of 75% takes into account the positive effects on competition

expected to be generated by the Mexican telecommunication reforms. These assumptions were based on conversations with mobile operators and Deloitte analysis of telecoms markets worldwide.

Price elasticity of demand

A change in the price of mobile services leads to a change in the consumption of these services, both in terms of ownership and usage. Consumption changes depend on the price elasticity of demand, that is, the responsiveness of consumers to price changes. The assumptions regarding elasticity of demand are based on a review of studies conducted in a number of developing markets on the elasticity rates observed in recent. The elasticity of demand for mobile subscriptions is



assumed to be -1.03⁸³. For those that own mobile devices, demand for mobile services is more elastic: the elasticity of demand for mobile services is assumed to be -1.19, based on a number of studies within the field⁸⁴.

Employment multiplier

The employment multiplier is used to estimate the impact of a change in employment in the sector on total employment in the economy. The magnitude depends on the economic features of the sector, such as the degree of interconnection across the supply chain. The employment multiplier is assumed to be 6.21⁸⁵. That is, for every additional job created within the mobile sector, an additional 6.21 jobs are generated in the wider Mexican economy.

Market penetration Impact

There is substantial evidence in the literature on the impact of mobile penetration on GDP growth. Analysis

conducted by the GSMA on the impact of mobile and 3G penetration on GDP growth estimated that a 1% increase in market penetration leads to an increase in GDP growth of 0.14 percentage points⁸⁶. In terms of the impact of internet penetration, it is assumed that a 1% increase in internet penetration increases the GDP growth rate by 0.077 percentage points⁸⁷. This model does not consider switching between 2G and 3G services and so these impacts are treated separately⁸⁸.

Total Factor Productivity Impact

The impact on TFP is calculated based on the change in GDP, employment and investment. TFP is a measure of economic productivity that accounts for changes in output over and above those expected as a result of increased employment and investment. It is defined as follows:

$$TFP = \frac{GDP}{Capital^{\alpha}Labour^{\beta}}$$

where it is assumed that $\alpha = 0.3$ and $\beta=0.7$ ⁸⁹.

A.3 Scenario simulation results

This report uses a macroeconomic model in order to assess the impacts of a change in taxation policy on the mobile sector and the wider economy. Three scenarios were addressed and each compared against the base case scenario, where there is no change in tax policy. The overall findings of each scenario are described in more detail in the sections below, on the assumption that the change in tax policy is implemented in 2016.

83. Baigorrí and Maldonado (2010); UK Competition Commission, 2003.

84. See, for example: Gruber and Kontroupis, 2010, Mobile telecommunications and the impact on economic development; Wheatley, J. J., 1998, Price elasticities for telecommunication services with reference to developing countries; GSMA, 2005, Tax and the digital divide: How new approaches to mobile taxation can connect the unconnected. London: GSMA.

85. This figure was based on a number of studies conducted in developing and developed countries; see, for example, Moretti, 2010; Q2 for ONS, 2002; Ovum, 2010; Zain, Ericsson, 2009; Kaliba et al, 2006.

86. This is based on a study of 40 economies over the period 1996-2011; for full details of the methodology, see <http://www.gsma.com/publicpolicy/wp-content/uploads/2012/11/gsma-deloitte-impact-mobile-telephony-economic-growth.pdf>.

87. Qiang, C. Z. W., Rosotto, C.M., 2009, Economic Impacts of Broadband, in Information and Communications for Development 2009: Extending Reach and Increasing Impact, World Bank, Washington D.C., 35-50.

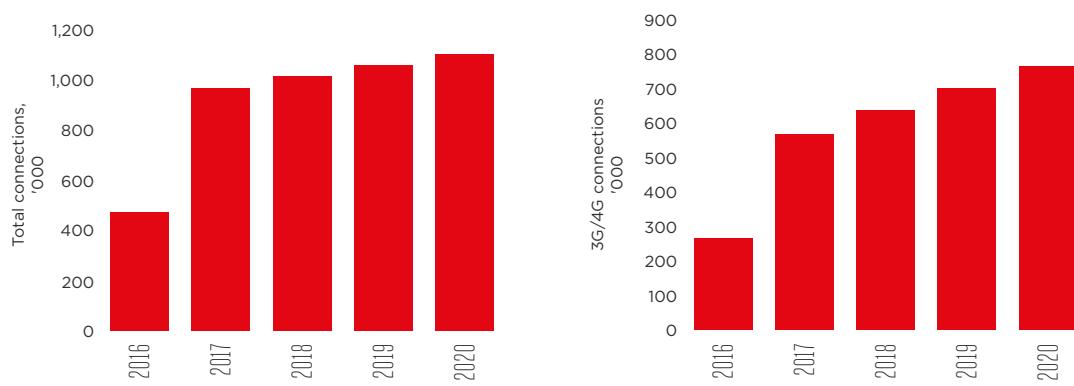
88. That is, given that it is not known whether a new 3G subscriber may previously have been a mobile user, this is treated as an increase in internet penetration only, not as an increase in mobile and internet penetration.

89. Bassanini A and Scarpetta S, 2001, "The Driving Forces of Economic Growth: Panel Data Evidence for the OECD countries".

Scenario 1

Scenario 1 models the reduction of the IEPS on mobile services from 3% to 1.5%. In particular, the reduced cost of usage following such reduction in the IEPS could stimulate an additional 1.1 million mobile connections in 2020, with a forecasted increase by 1.8 billion minutes of use relative to the base case. This could raise total market penetration by 0.82% relative to the base case in 2020, extending access to mobile telephony across Mexico. The increased affordability has the potential to encourage consumers to take-up new services and additional 3G/4G connections could be up to 763,000 in 2020.

Potential additional impact on total mobile penetration (left) and mobile broadband penetration (right) in Scenario 1 relative to the base case



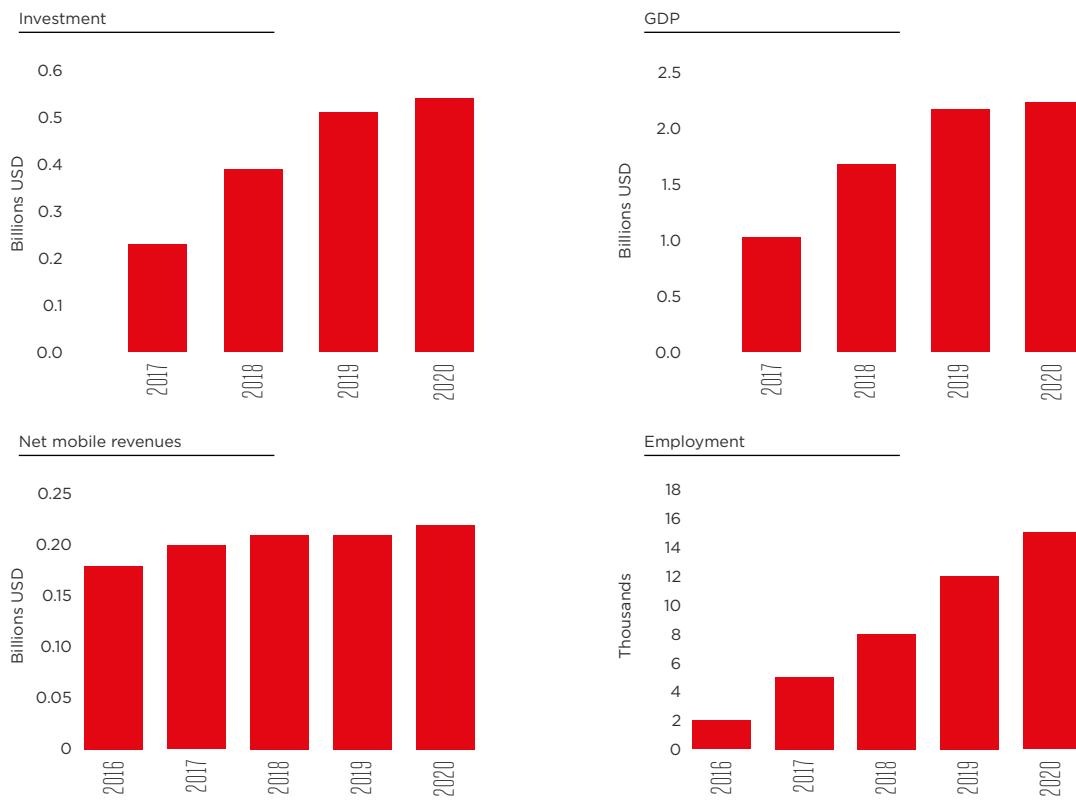
Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 24

The increase in connections could subsequently benefit both the mobile sector and wider economy. Increased usage could increase operator revenues by USD 0.22 billion, enabling an additional USD 17 million of capital expenditure, which could be used for expanding additional sites across Mexico, further increasing coverage of mobile broadband services. Increased economic activity and the development of technology and innovation as a result of the growth of the mobile sector could then be reflected in an additional USD 2.22 billion and USD 0.53 billion in GDP and investment respectively relative to the base case in 2020, whilst employment could also rise by over 15,000 relative to the base case.



Potential additional impact on macroeconomic indicators in Scenario 1 relative to the base case

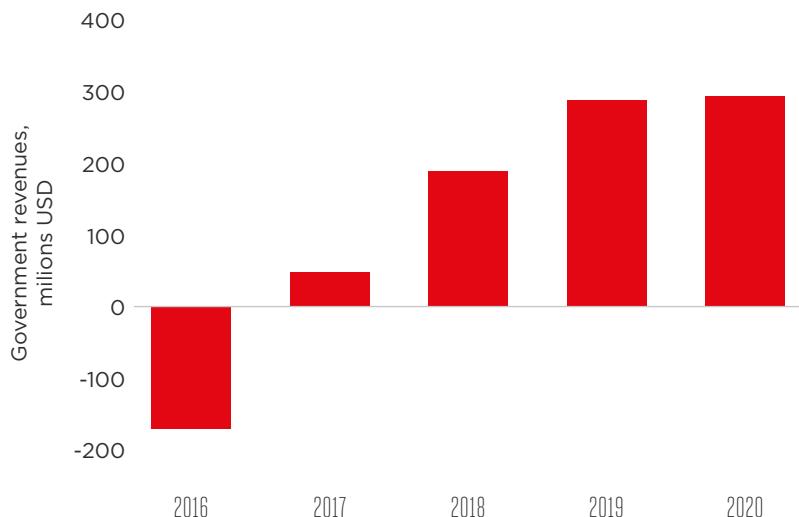


Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 25

As a consequence of wider economic growth, it is estimated that the government of Mexico could also benefit from increased tax revenues in 2020 relative to the base case. Although tax revenues could fall in the first years following the reduction in the IEPS, the expansion of the tax base following wider economic growth could allow for tax neutrality in 2017 and an increase in tax revenues by over USD 294 million relative to the base case in 2020.

Potential tax revenues in Scenario 1 relative to the base case



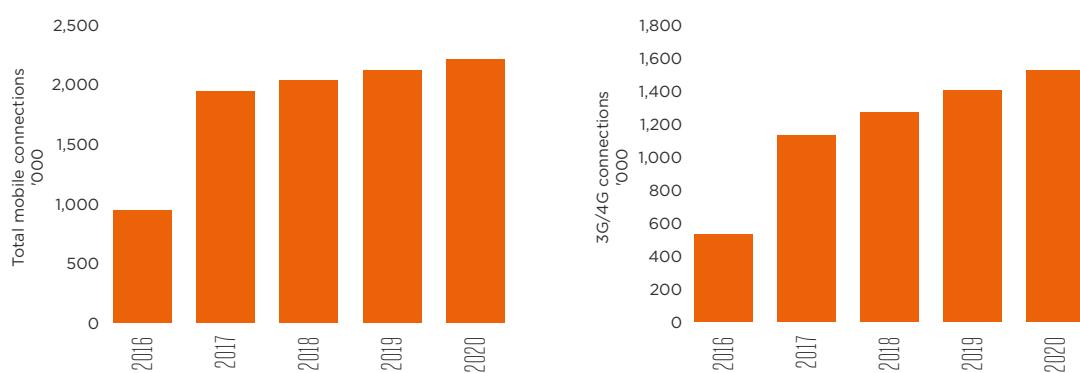
Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 26

Scenario 2

Scenario 2 models the abolition of the IEPS on mobile services. It is estimated that the reduction in the cost of mobile services could stimulate an additional 2.2 million mobile connections in 2020 relative to the base case. This represents a 1.63% increase in total mobile penetration relative to the base case. Furthermore, the reduced cost of mobile usage could generate an additional 3.6 billion minutes in 2020 compared to the base case scenario.

Potential additional impact on total mobile penetration (left) and mobile broadband penetration (right) in Scenario 2 relative to the base case



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

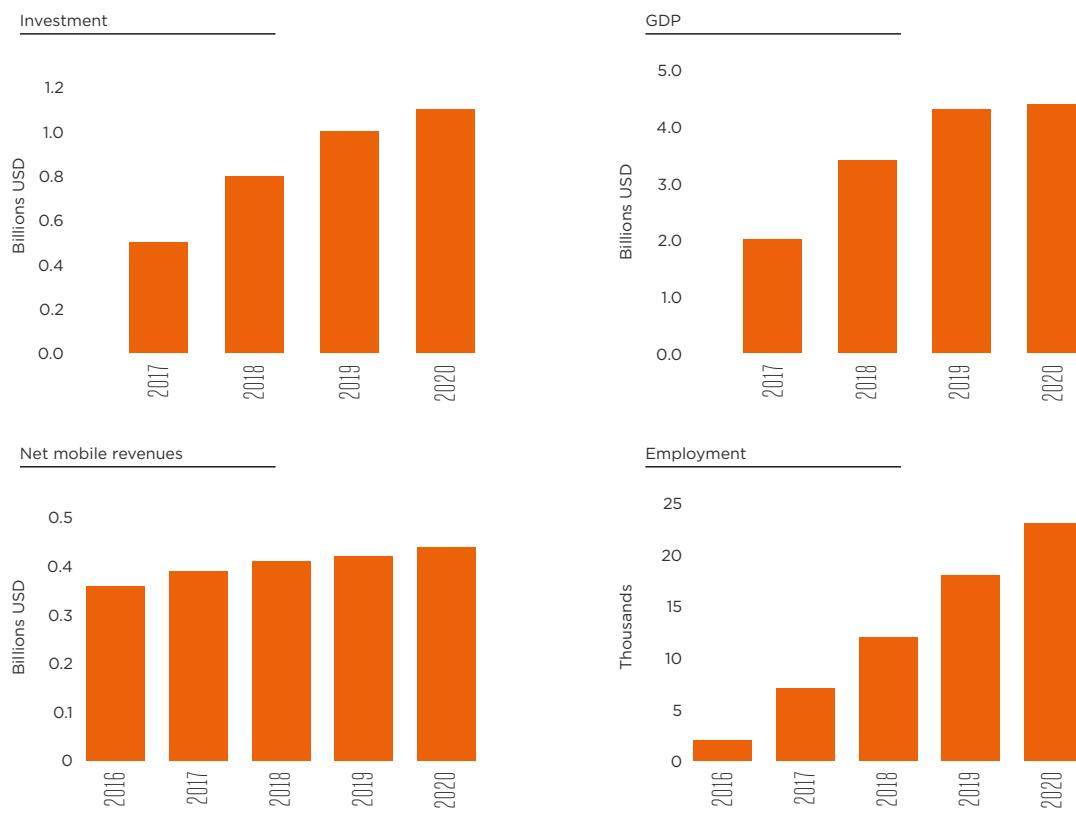
Figure 27

Positive spillovers across the economy as a consequence of this growth could stimulate an additional USD 4.4 billion in GDP and USD 1.1 billion worth of investment in 2020 relative to the base case. This could create employment opportunities for over 23,000 Mexicans, whilst this workforce could also be 0.21% more productive.

The increase in usage and take-up of new services could also benefit mobile operators in the form of an additional USD 0.44 billion in total sector revenues. This could allow mobile operators to increase capital expenditure on the development of network capacity by USD 26 million relative to the base case in 2020, which could deliver additional mobile broadband sites across the region.



Potential additional impact on macroeconomic indicators in Scenario 2 relative to the base case

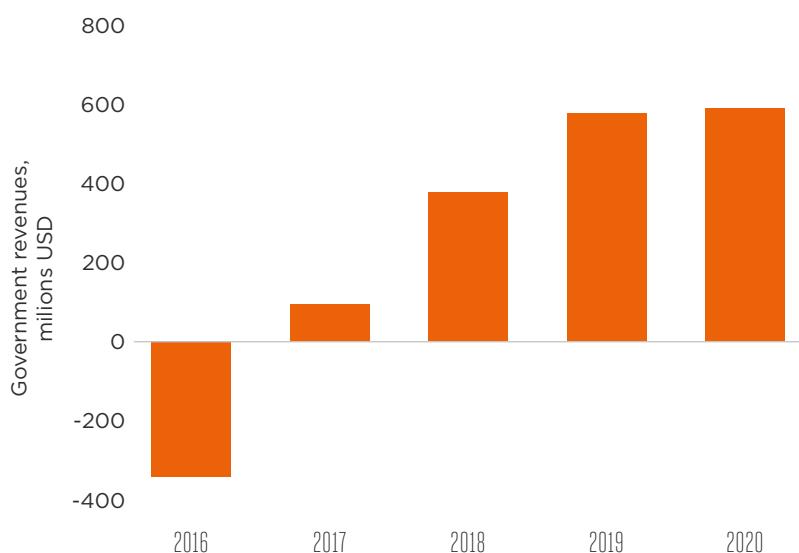


Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 28

Together with this macroeconomic improvement, the government of Mexico stands to benefit from increased tax revenues as a result of wider economic growth and the expansion of the tax base. It is estimated that the government could achieve revenue neutrality by 2017 with tax revenues of USD 588 million in 2020.

Potential tax revenues in Scenario 2 relative to the base case



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 29

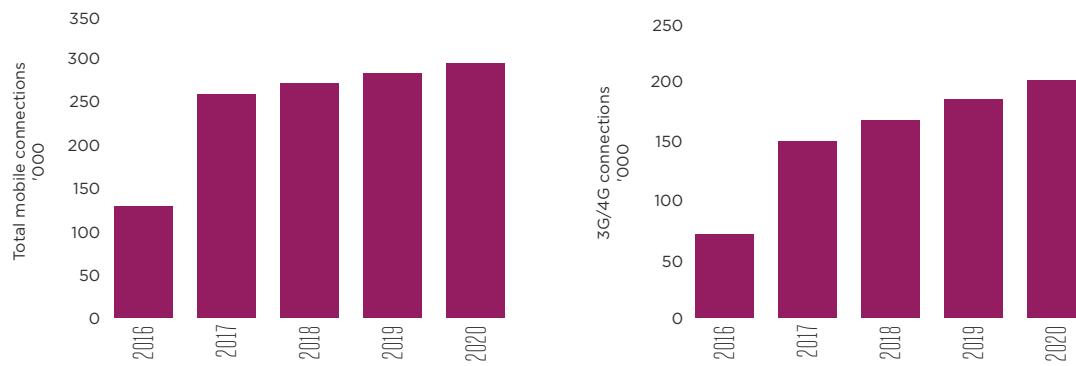
Scenario 3

The third scenario models the reduction of the regulatory fees by 10%. Through the savings achieved by mobile operators, this could increase investment and demand for mobile services, meanwhile decreasing barriers to affordability and thus further sustaining penetration and economic growth.

The tax reduction could decrease the cost of accessing mobile services, increasing total connections by 294,000 of which 203,000 could be mobile broadband enabled. It is estimated that this could represent an increase in total mobile penetration of 123,000 unique subscribers relative to the base case in 2020.



Potential additional impact on total mobile penetration (left) and mobile broadband penetration (right) in Scenario 3 relative to the base case

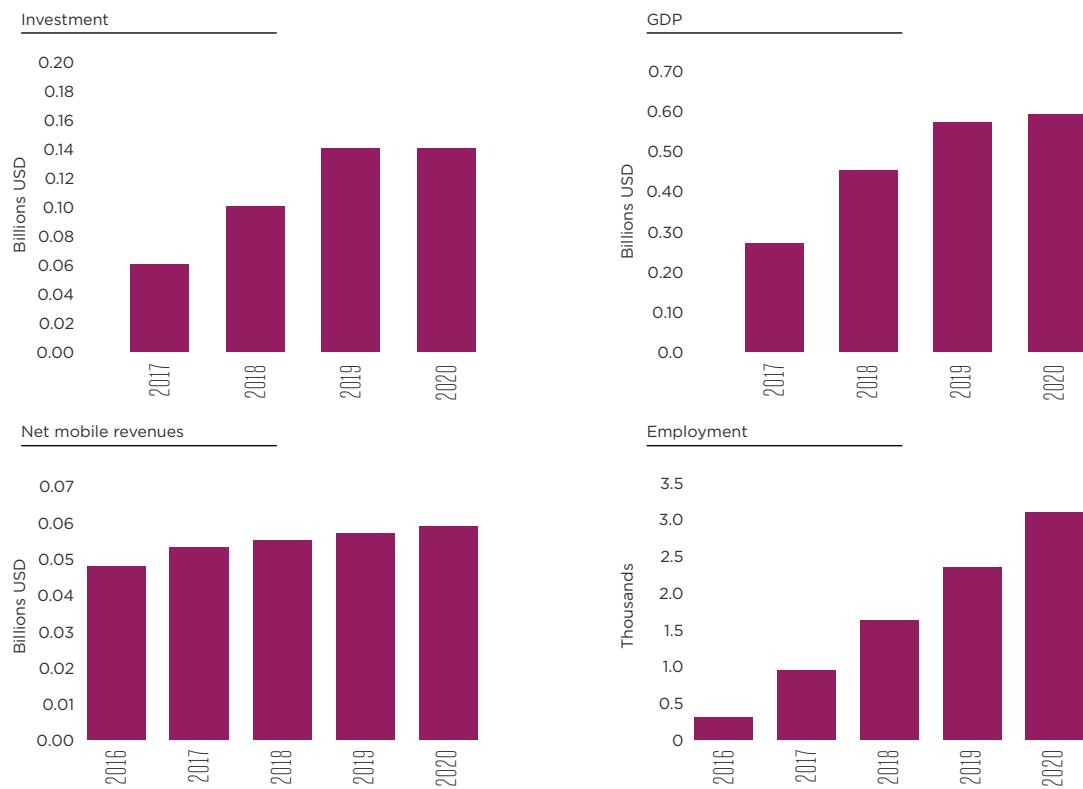


Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 30

The increase in usage of mobile services could increase net operator revenues by USD 59 million relative to the base case in 2020. The positive spillovers from the mobiles sector, particularly towards the development of technology and knowledge-based sectors in Mexico, have the potential to increase GDP and investment across Mexico by USD 591 million and 142 million respectively, whilst also increasing employment by over 3,000 relative to the base case in 2020.

Potential impacts on macroeconomic indicators in Scenario 3 relative to the base case

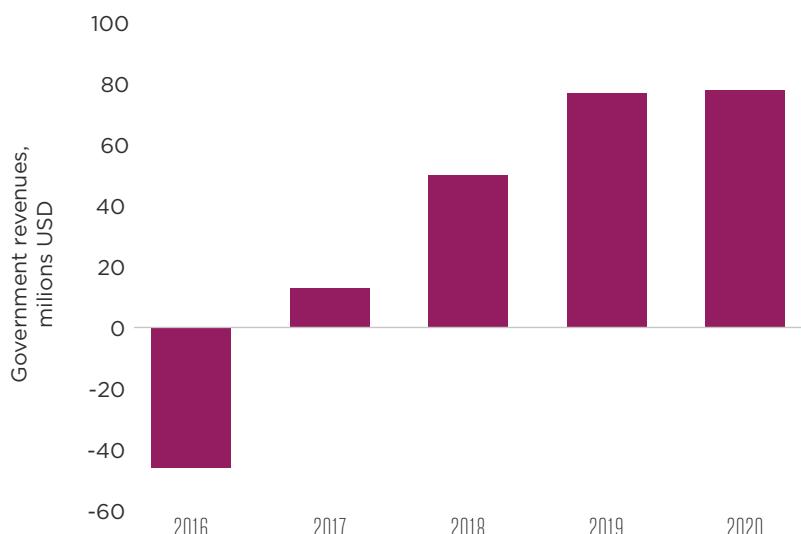


Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 31

The increase in growth of the mobile sector and wider economy, following the reduction in regulatory fees, could subsequently broaden the tax base and hence government tax revenues over time. It is estimated that by 2017 the government of Mexico could start gaining tax revenues following an initial loss of USD 46 million in 2016. Indeed in 2020, the government could potentially gain USD 78 million in tax revenues in 2020.

Potential tax revenues in Scenario 3 relative to the base case



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 32



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