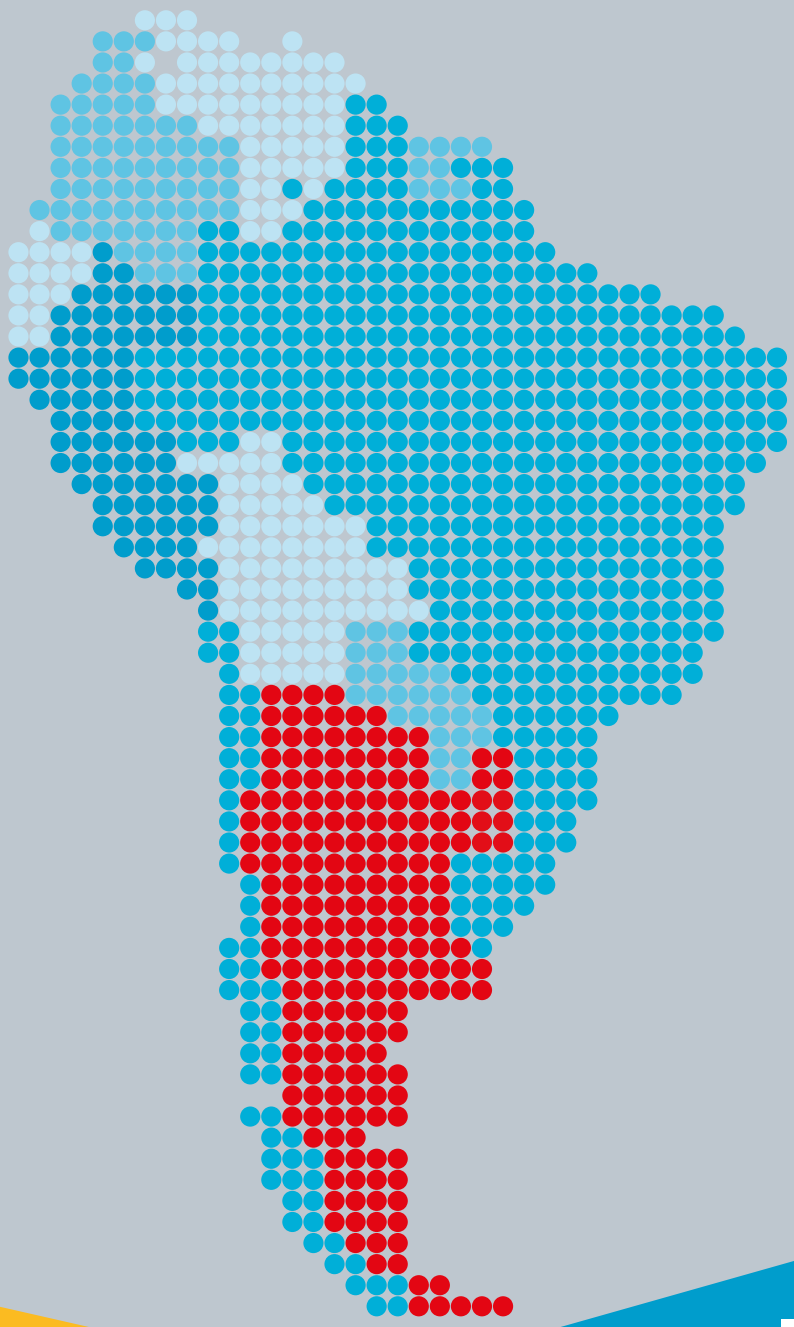
Reforming mobile sector taxation in Argentina:

A path towards a more efficient tax system, greater digital inclusion and increased prosperity



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Executive summary

Mobile telephone services play an increasingly important role in supporting and delivering development, economic growth and social inclusion. Mobile penetration and affordability enhance digital connectivity by expanding internet and broadband access, which in turn facilitate the reduction of barriers for trade, commerce, communication, service delivery, and human development. Examples of these benefits are seen in the form of financial inclusion via mobile payment platforms, digitally enabled local entrepreneurship, innovative health and education delivery systems, and growing numbers of e-government initiatives.

The mobile industry needs supportive regulatory conditions in order to thrive and maximise the opportunities available to consumers, businesses, and governments. Within this, taxation is an important factor with the need to achieve the right balance between revenue maximisation and economic growth and social development being at the heart of the policy.

In Argentina, the lack of affordability of mobile services, particularly for low-income groups, is constraining the potential for further growth due to high levels of taxation in comparison to other sectors and regional benchmarks. Despite the widespread use of basic technologies, affordability issues are a barrier to usage and migration to new technologies. In order to assess the potential benefits of a more efficient tax structure in the mobile sector, one which focuses on increasing mobile affordability and unlocking digital inclusion, the GSM Association[1] has commissioned EY to undertake a study of the economic impact of potential tax reforms on the Argentine mobile sector.

This report analyses developments in the mobile sector and its tax treatment in Argentina, sets out potential options for tax policy reform, and estimates the impacts of these policy options on: the mobile sector, the wider economy and the government's fiscal position.

The mobile sector in Argentina contributes significantly to the economy and it will be key to the country's digital future, but reduced affordability for handsets and mobile services represents a constraint on further growth

The Argentine mobile market is well developed, with unique subscriber penetration[2] of 92% (and over 140% penetration in total connections), and contributes US$5.7bn (0.6%)[3] to the country's total output. However, the relative lack of affordability of smartphones and mobile services is constraining the potential for further growth. This in turn reflects comparatively high levels of taxation on both mobile services and handsets.

Argentina has the third highest total cost of mobile ownership (TCMO) for a basic 500MB basket in the Latin American region, equivalent to over US$21 per month. This cost represents a barrier, particularly for those at the bottom of the income pyramid, representing more than 8.5% of the monthly income for those individuals within the bottom 20% of Argentina's income distribution and much higher than the affordability threshold of 5% recommended by the UN Broadband Commission for Sustainable Development. For the same group, tariff costs represent more than 7.3% of monthly income and 25% of this cost is due to taxation. Migration to more sophisticated usage profiles would present an even greater affordability challenge with consumers having to spend up to 9.1% of their income for a 1GB basket and 17% for a 5GB basket.

Taxes on the mobile sector are disproportionately high, compared to levels in other sectors and international benchmarks

The total tax contribution of the mobile sector in Argentina represents 44% of its total market revenue, which is high compared to regional peers. In 2016, the total tax contribution is estimated at US$2.3bn, which is 0.3% of Argentina's output and 2% of Argentina's net tax revenue. In comparison,

1. GSMA, https://www.gsma.com/latinamerica/es/
2. Unique subscribers are defined as unique users who have subscribed to mobile services. Subscribers differ from connections such that a unique user can have multiple connections
3. GSMA Intelligence database and companies' annual accounts data. The Gross Value Added (GVA) contribution of the mobile operators has been calculated as a difference between their total revenue and their operating expenditure, excluding wages and salaries

the mobile market revenues in Argentina account for approximately 1.2% of GDP, which means that the sector over-contributes to tax revenues with respect to its size in the economy.

In fact, the mobile sector is more heavily taxed than some other sectors in the economy. For instance, the mobile sector has the fourth highest corporate tax burden in comparison to other sectors of the economy (4.6% of GVA), and the second highest tax burden in terms of VAT (6% of GVA).

This is the result of a significant number of taxes on the consumption of mobile phone services – including both an excise duty (*Impuesto Interno al servicio*) and a turnover tax (*Ingresos Brutos*). Unlike VAT, these levies impose tax on the intermediate use of mobile phone services by other businesses, distorting production decisions as well as consumer choices. Moreover, this causes complexity in the system, requiring relief from double taxation across provincial borders, and imposing an unnecessary and inefficiently large number of taxes on mobile operators. Furthermore, an excise duty (*Impuesto Interno a dispositivos*) on electronics produces higher mobile handset prices for Argentinian subscribers, and inhibits the electronics sector's full integration into the world economy.

Through policy reform, the Government of Argentina has the opportunity to simplify and rebalance the current tax system applicable to the mobile sector, and realise its wider tax agenda, leading to increased productivity across the economy and a more inclusive, digital society

Reforming taxation applied on the mobile sector towards a more balanced and efficient structure has the potential to provide significant economic benefits and would align with the government's tax reform objectives of making the tax system more equitable, efficient and modern[4]. Furthermore, it would support Argentina to advance the objectives of the OECD Ministerial Declaration on the Digital Economy undersigned in Cancun in 2016[5].

Reducing higher-than-standard taxation on the mobile sector could encourage higher penetration, faster technology migration and greater usage. This in turn has the potential to lead to increased economic growth, thanks to the positive effects of mobile penetration and mobile broadband on productivity across the economy.

Ultimately, it will generate higher revenues for the Government, and significant wider social benefits in terms of digital inclusion and access to key public and financial services.

With a view to achieving these goals, and based on internationally recognised general principles for tax policy making as well as the broad principles for reform set out by the Argentine government, this report identifies three potential scenarios for tax reforms that would benefit the broader economy and the government's fiscal position:

- Elimination of the 4.2% excise duty on mobile services (*Impuesto Interno al servicio*);
- Elimination of the 6.7% provincial turnover tax (*Ingresos Brutos*); and
- Elimination of the 20.5%[6] excise duty on electronics (*Impuesto Interno a dispositivos*).

For the purpose of this report, we have analysed each of these policy options for tax reform separately. This allows us to consider the impacts of each tax reduction on the mobile market and the wider economy based on their individual merits. We do, however, recognise that a combination of these tax reforms will likely result in extra benefit[7].

Reforming and reducing the tax burden on the sector would lead to considerable growth in mobile penetration, usage and migration to new generation technologies, particularly amongst low-income groups

Each of these reforms would lead to a growth in penetration, increased technology migration to smartphones and 4G connections, and increased usage per subscriber:

- By eliminating the excise duty on mobile services (*Impuesto Interno al servicio*), mobile penetration would increase by 1 million unique subscribers (2.1%), equivalent to 1.6 million new connections, and mobile service volumes[8] would grow by 5.7%. The number of mobile broadband unique subscribers would increase by 0.93 million. This would increase sector revenues by US$99m (1.7%);

- By eliminating the provincial turnover tax (*Ingresos Brutos*), mobile penetration would increase by 1.6 million unique subscribers (3.4%), equivalent to 2.7 million new connections, and mobile service volumes would grow by 9.3%. The

4. Ministerio de Hacienda (October 2017). *Proyecto de reforma tributaria*.
5. https://www.oecd.org/internet/Digital-Economy-Ministerial-Declaration-2016.pdf
6. The nominal rate on electronic products is 17%. The effective rate is 20.5% as per the following formula: effective rate = 100 x nominal rate/ 100 – nominal rate. *Tributos Vigentes en la Republica Argentina a Nivel Nacional (Actualizado al 30 de septiembre de 2017). Ministerio de Economia, Argentina.*
7. For clarity, one cannot simply sum the economic benefits expected from each tax policy reform in order to determine the combined benefit.
8. Growth in mobile service volumes is defined as a weighted average growth in usage of voice, data and other non-voice services.

number of mobile broadband unique subscribers would increase by 1.5 million. This would increase sector revenues by US$156m (2.7%); and

- By eliminating the excise duty on electronics (*Impuesto Interno a dispositivos*), mobile penetration would increase by 0.4 million unique subscribers (1.0%), equivalent to 0.75 million new connections, and mobile service volumes would grow by 1.2%. The number of mobile broadband unique subscribers would increase by 0.65 million. This would increase sector revenues by US$65m (1.1%).

The growth in the sector, under all scenarios, would also lead to wider societal benefits, through increasing access to mobile data and broadband, particularly amongst lower-income rural communities as more than 60% of new subscribers come from low-income groups in all scenarios.

Tax reforms would boost productivity, leading to higher GDP and taxation revenue in the medium-term

The boost to mobile penetration would lead to growth in productivity across the economy, and hence an increase in GDP. Household incomes, employment and investment also increase. Sectors that either use mobile services intensively in their own business or supply the mobile industry will gain most, but all sectors will benefit as greater wealth is produced across the economy.

Moreover, these reforms are shown to be self-financing in terms of their impact on government revenues in the medium-term. The Government may face an initial cost in year 1 following the reform, but the expansion of the sector and wider economy as a consequence of the reforms will increase government revenues in subsequent years.

- By eliminating the excise duty on mobile services (*Impuesto Interno al servicio*), GDP grows by US$1.83bn, and tax receipts grow by over US$980m, a cumulative fiscal gain of over US$3.3bn over five years;

- By eliminating the provincial turnover tax (*Ingresos Brutos*), the impacts are proportionately larger; GDP grows by almost US$2.9bn, and tax receipts grow by US$1.58bn, a cumulative fiscal gain of US$5.3bn over five years; and

- By eliminating the excise duty on electronics (*Impuesto Interno a dispositivos*), GDP grows by US$1.2bn, and tax receipts grow by US$192m, a cumulative fiscal gain of US$442m over five years. As this scenario affects the majority of electronics products, the economic gains arising from this reform are felt more widely compared with the other two scenarios.

The tax proposals analysed in this report are closely aligned with the range of tax reforms recently announced by the Government, namely the reduction in excise duty on electronics and the gradual rate decline in the provincial turnover tax. The policy options for reform outlined in this report contain the same underpinning objectives, namely, increasing the affordability of mobile products and services, reducing the tax burden on consumers, and as a result, increasing the productivity of Argentina.



1. The Argentine economy, the role of mobile and opportunities for growth

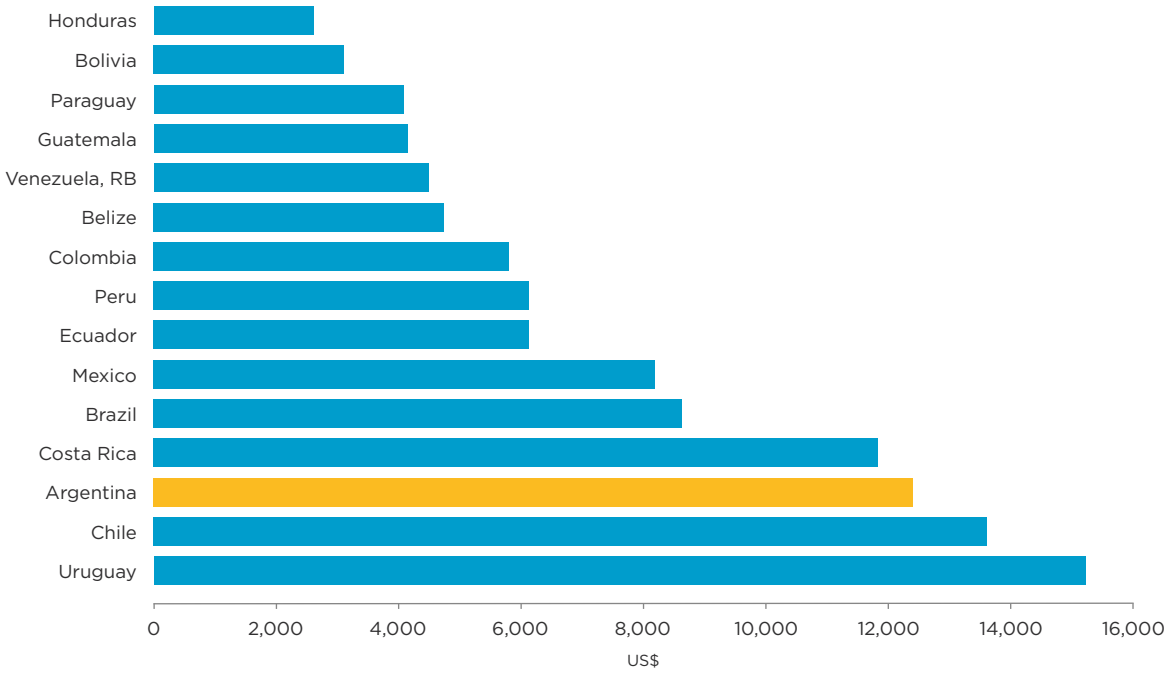
1.1 Macroeconomic overview

Argentina is a wealthy country compared to regional peers and is recovering from economic instability of the past

Argentina is an 'upper-middle-income' nation, with the third highest Gross Domestic Product (GDP) in Latin America of US$545bn in 2016, representing 12% of the region's total[9]. As shown in Figure 1 below, Argentina also has the third highest Gross Domestic Product (GDP) per capita in the region, totalling US$12,409 in 2016[10].

Figure 1

GDP per capita in Latin American countries, 2016



Source: Oxford Economics database

9. Oxford Economics database. All figures relate to 2016 unless stated otherwise
10. World Bank databank (http://databank.worldbank.org)

Despite its regional success, Argentina's recent economic performance has been impacted by macroeconomic instability, including periods of hyperinflation and devaluations of the Argentine Peso. The sovereign debt default of 2001 also meant that until recently, Argentina had very limited access to international capital markets[11].

A new Government, elected in 2015, has deployed fiscal consolidation and contractionary monetary policy to stabilise Argentina's economic outlook. Interest rates have been raised to control inflation and the import tariff system has been reformed, with taxes on most agricultural exports being removed. Tariffs on electricity, natural gas, water and transportation have also been increased to improve public finances[12].

Real GDP per capita is expected to grow 2% in 2017, driven by a more stable macroeconomic environment encouraging inward investment, as well as strong private consumption[13]. The mobile industry is likely to be positively impacted by growing household incomes and increased consumer spending.

1.2 Fiscal overview

The Argentine Government since its election in 2015 (as discussed above), has taken steps to stabilise Argentina's macro-economic outlook. This has included a rise in interest rates in order to curb inflation, and increases in tariffs for natural gas, water and transportation designed to improve public finances.

Importantly, agreements have also been made in relation to sovereign debt, providing the Argentine government with additional fiscal flexibility in the coming years. The new Argentine Government reached an agreement with all their creditors in April 2016, which allowed markets to open up to the country for a new, successful bond issue[14]. This agreement also included paying down disputed debts to hedge-funds holding Argentine bonds. These pay-outs contributed to the growth of Argentina's external debt-to-GDP from 28% in 2014 to 34% by the end of 2016. Fiscal contraction is expected to reverse these increases, with the external debt-to-GDP ratio to fall to 32.5% by 2018[15].

In addition to these agreements, the Argentine Government announced a tax amnesty in June 2016, which allowed residents to repatriate funds under reduced penalties, or no penalty if they invested in the new government bonds. The Government initially estimated that this amnesty would generate US$2.3bn of additional revenue. However, expectations were exceeded with US$9.6bn being recorded by March 2017[16].

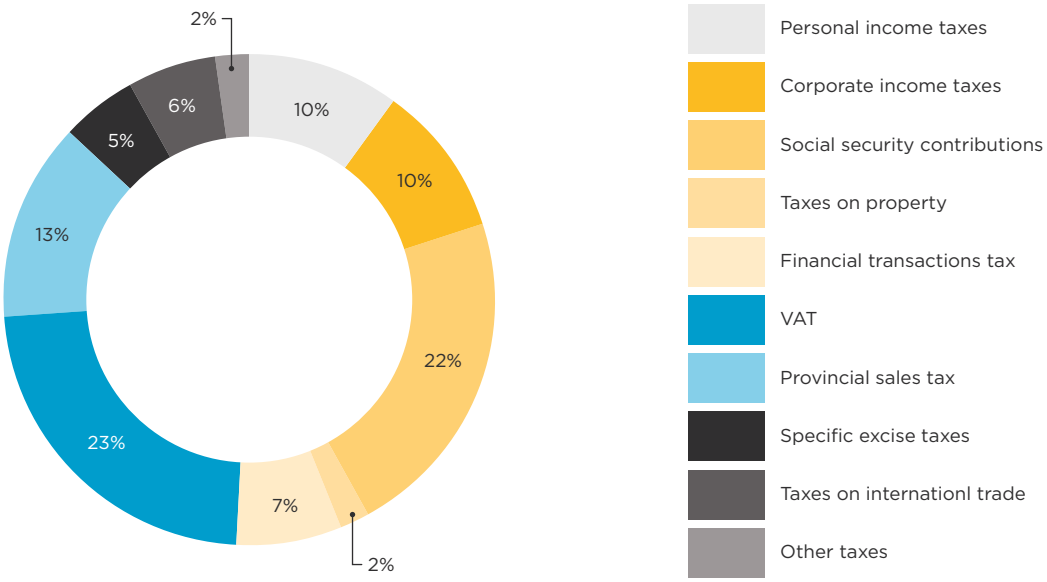
Markets have responded well overall to Argentina's fiscal reforms, with S&P upgrading Argentine government bond ratings from B- to B[17].

Total Government revenue in 2016 amounted to approximately US$110 billion, corresponding to 20.1% of Argentina's GDP[18]. The breakdown of tax revenues is provided in Figure 2 and shows that value added tax (VAT) generated the most tax revenue for Government during the period, accounting for approximately 23%. Social security contributions accounted for 22% of tax revenue, while tax proceeds from international trade account for 6% of the total.

11. Economist (2014) A Century of Decline (https://www.economist.com/news/briefing/21596582-one-hundred-years-ago-argentina-was-future-what-went-wrong-century-decline)
12. FT (2017) Argentina raises electricity tariffs by up to 148% to fight deficit
13. IMF (2017) World Economic Outlook – April 2017
14. BNP Paribas (2016) Argentina: A radical change
15. Ibid
16. Reuters (04 April 2017) – Argentina says $116 billion declared in record tax amnesty
17. FT (2017) S&P upgrades Argentina as outlook improves
18. Oxford Economics database

Figure 2

Composition of tax revenue, Argentina, 2015



Source: OECD

In 2016, government expenditure in Argentina amounted to approximately US$134 billion, equivalent to 24.3% of GDP[19]. Education accounted for 15% of total government spending in 2014, while health and military expenditure accounted for 7% and 3% respectively.[20]

1.3 Demographic overview

Argentina has a large, urban population but suffers from income inequality and rural poverty

Income inequality disproportionally affects Argentina's rural areas, accentuating the urban-rural divide in the country. This has implications for the population in rural areas, where lower paid agricultural work is the dominant employment.

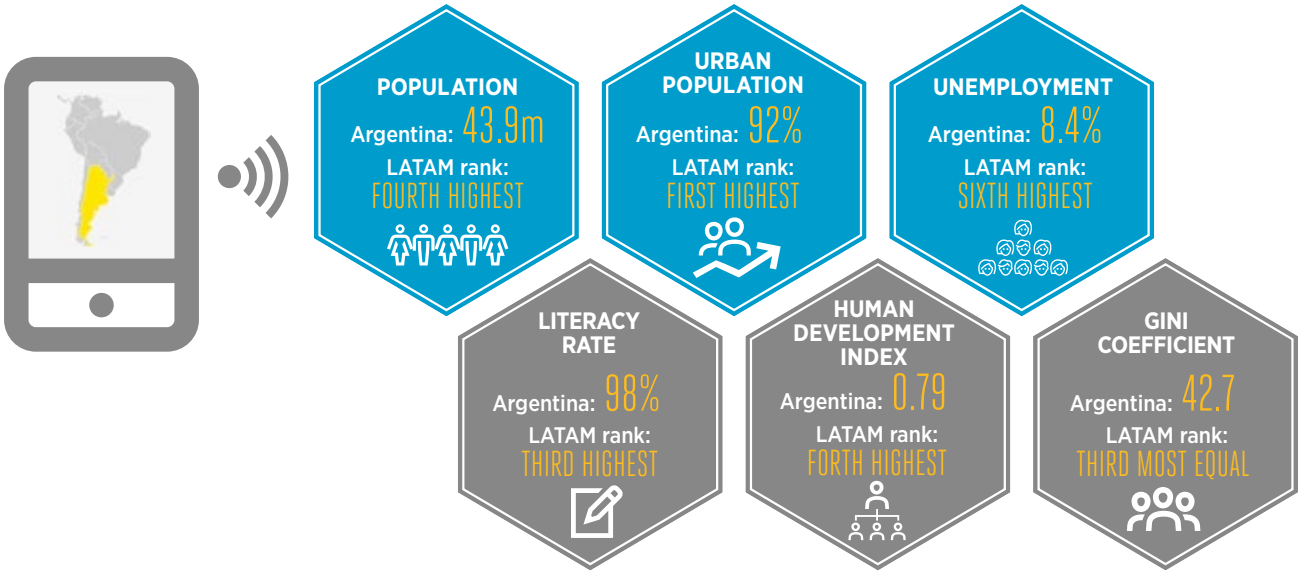
Figure 3 provides a demographic overview of Argentina. Relative to its Latin American peers, Argentina performs well in terms human development, literacy and equality. The country has the fourth largest population with 92% of people estimated to live in urban areas, a higher proportion than any other country in the region.

19. Oxford Economics database
20. World Development Indicators, World Bank databank



Figure 3

Overview of Argentine demographics[21 22 23]



Source: Oxford Economics database, World Bank databank, UNDP[24], EY analysis

1.4 Mobile market in Argentina

The Argentine mobile market is large and mature with future growth coming from increased data usage and new services

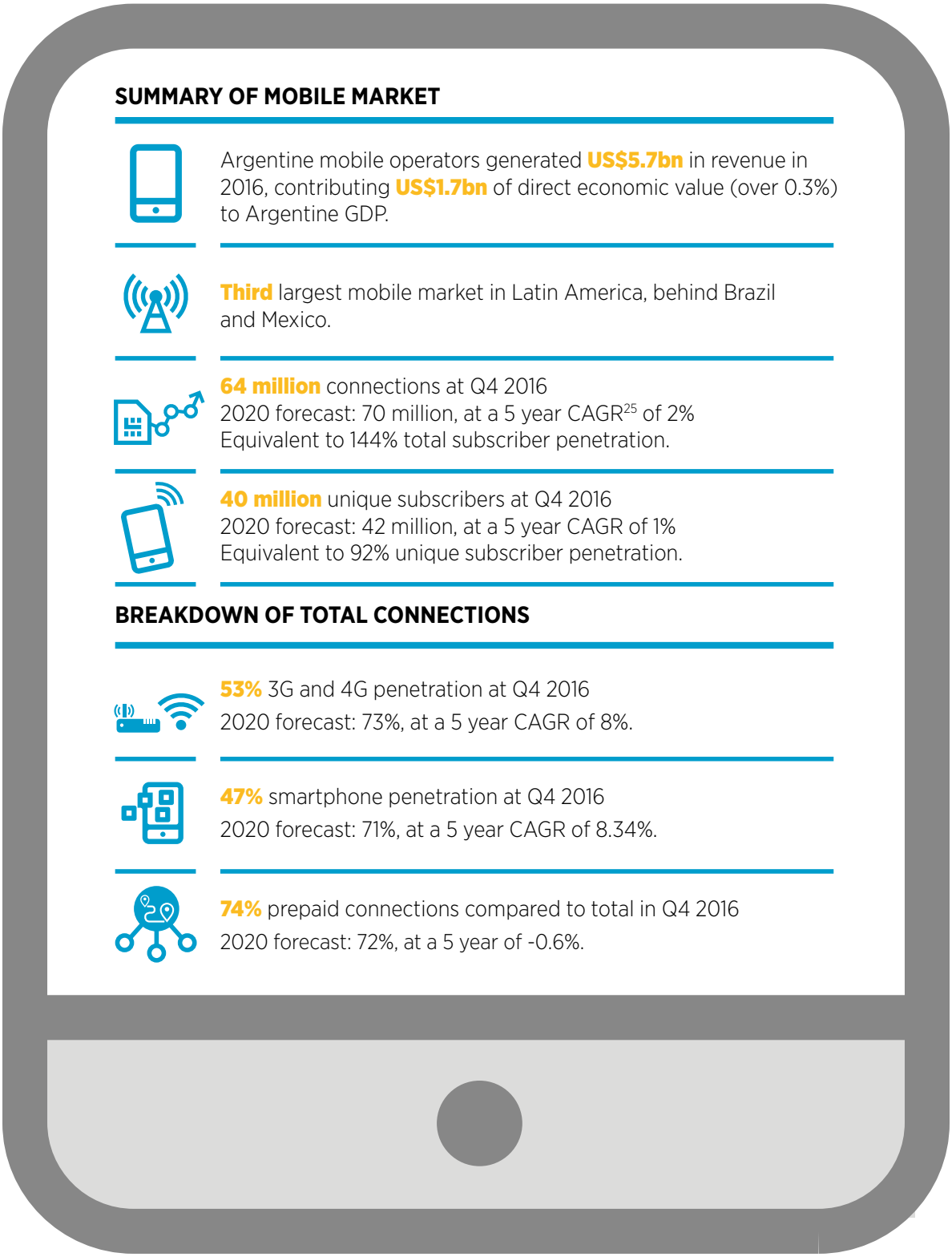
As shown in Figure 4, the Argentine mobile market is relatively well developed with a unique subscriber penetration of 92% (equivalent to over 140% penetration in total connections), second only to Chile (93%) in Latin America.

Therefore, while there is some remaining scope to increase penetration, particularly amongst low-income groups, revenue growth for mobile operators is likely to be focused on migrating existing subscribers to newer technologies (from 2G to 3G and 4G) and increasing usage of mobile services, and specifically data services.

21. This infographics is based on data (where available) for 20 countries of the region, including Argentina, Chile, Uruguay, Brazil, Costa Rica, Peru, Mexico, Colombia, Venezuela, Bolivia, Honduras, Paraguay, Ecuador, Belize, Guatemala, Haiti, Nicaragua, Dominican Republic, Panama, Cuba
22. Gini coefficient is a measure of income inequality. A zero value of the Gini coefficient expresses perfect equality and 100 expresses maximal inequality
23. Human Development Index (HDI) is a composite measure of life expectancy, education and GDP per capita. A country scores has a high HDI when the lifespan is higher, the education level is higher, and GDP per capita is higher
24. UNDP (2016) Human Development Index 2016

Figure 4

Argentine mobile market in figures



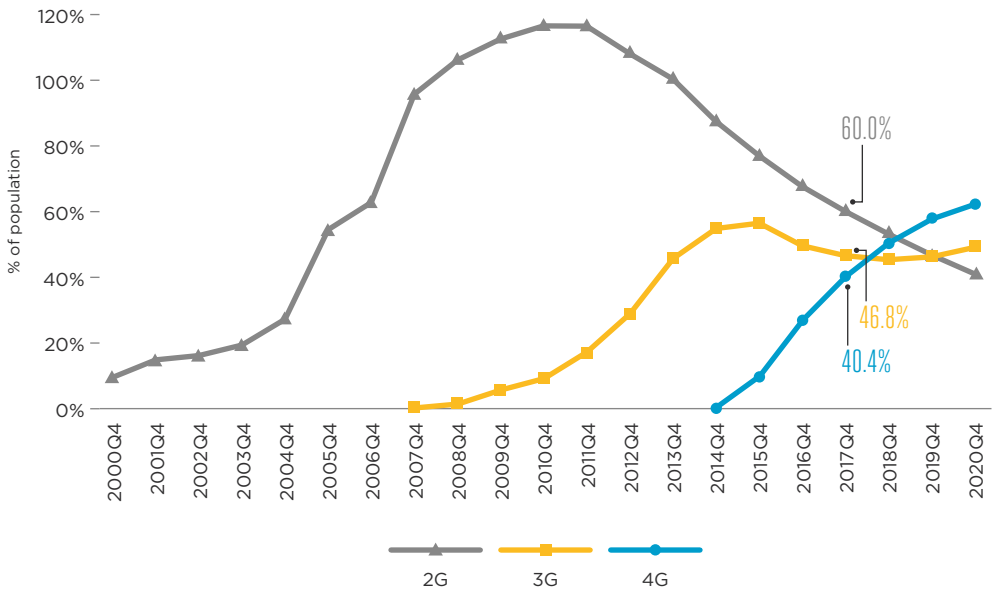
Source: GSMA Intelligence, EY analysis

25. Compound annual growth rate (CAGR) is the mean annual growth rate for the period

As demonstrated in Figure 5, market penetration of 4G is forecast to reach 51% by the end of 2018, becoming the dominant mobile standard. Growth in the availability of 4G services has been strong with 11.9 million 4G connections at the end of 2016, representing 18.7% of total mobile connections. Argentina has been the fastest growing 4G market in Latin America. Six months after the 4G spectrum auction, the number of 4G subscribers reached 1 million, which is equivalent to around 1 new 4G subscriber every 10 seconds.[26]

Figure 5

Market penetration rate by technology



Source: GSMA Intelligence database

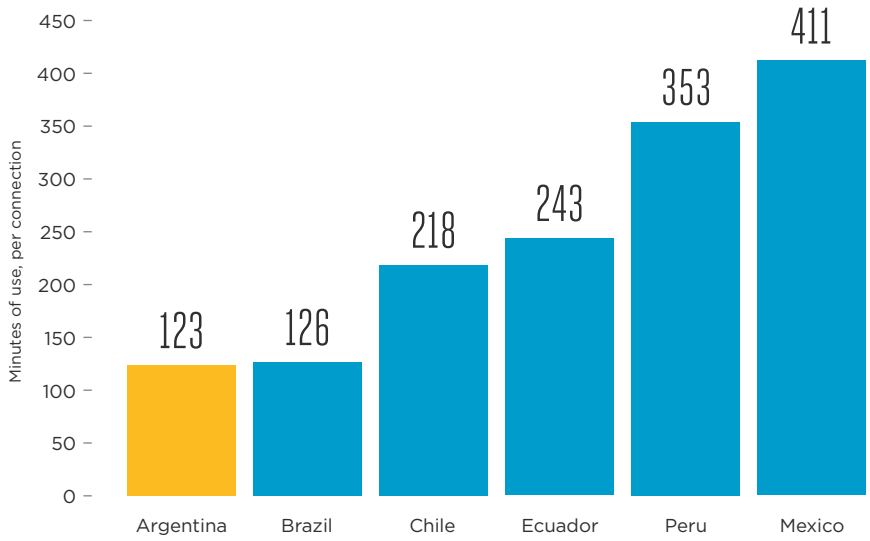
While this growth in 4G services is strong, particularly in a regional context, penetration of 51% in 2018 will still leave half of the market without 4G services. There is therefore scope to continue to migrate existing subscribers to newer technologies, particularly to 4G. Further growth can be facilitated by Argentina's comprehensive network coverage for both 3G and 4G technologies. In 2016, the network coverage for 4G services was 75%, while 2G and 3G services had a coverage of 98% and 94% respectively.

Despite high penetration, usage of mobile services remains low in Argentina when compared to regional peers. Figure 6 demonstrates the minutes of use per connection across Latin American countries. In Argentina, voice usage is approximately 123 minutes per connection, which equates to just over half of the usage in Ecuador, and less than a third of the usage observed in Mexico.

26. GSMA (2016) Country overview: Argentina

Figure 6

Minutes of usage per connection, per month, 2016

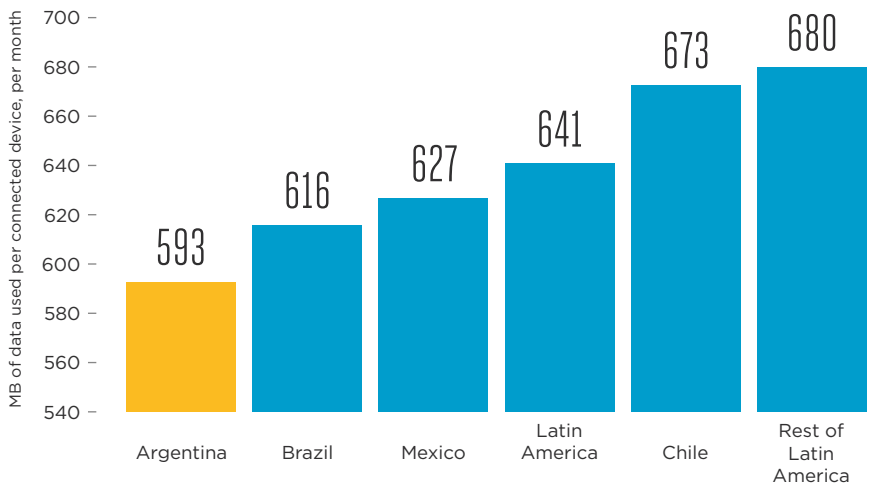


Source: GSMA Intelligence database

Compared to the rest of Latin America, Argentina also has relatively low data usage per month. As illustrated in Figure 7, the average mobile-connected end-user device in Argentina generated 593 MB of mobile data traffic per month, over 8% lower than the Latin American average[27].

Figure 7

Data usage (MB) per connection, per month, 2016



Source: Cisco VNI Mobile Forecast Highlights, 2016-2021

27. Ibid

1.5 Affordability of smartphones and mobile services in Argentina

The lack of affordability of mobile services and devices is a key barrier to the migration to new mobile technologies

Lack of affordability can represent a significant connectivity barrier, particularly so for those in the bottom of the economic pyramid. The cost of purchasing and using a mobile phone affects take up and usage of mobile services through both the price of devices and the price of data, voice and SMS services. The GSMA analysis highlights that countries with a high cost of mobile ownership (including both device and airtime/data) as a share of income per capita[28] typically have lower penetration rates[29], while a lack of affordability has been cited by up to 80% of people in developing countries as the main barrier to mobile access and usage[30].

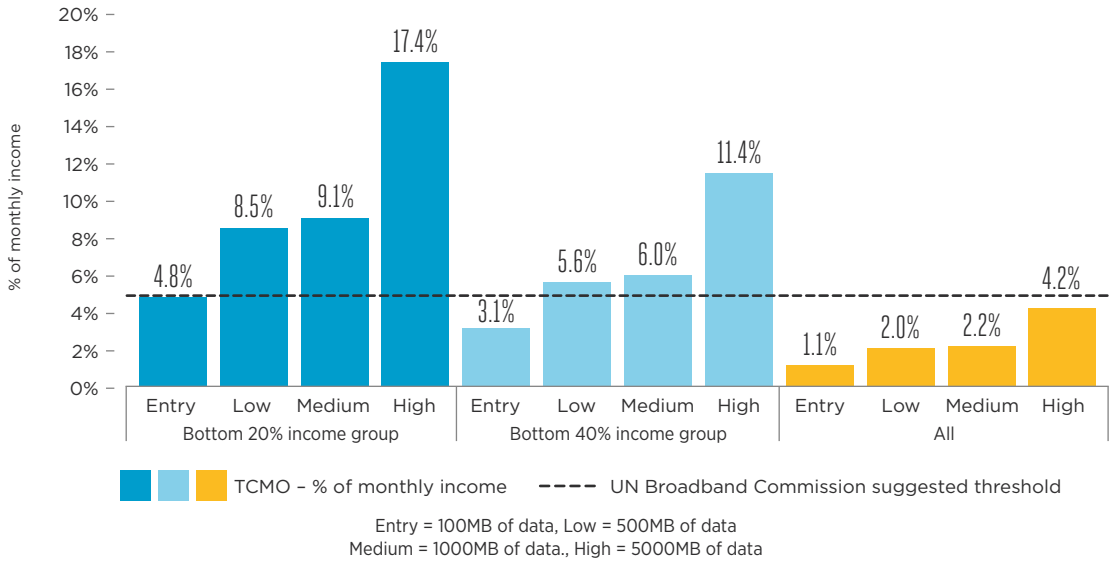
A basic measure of affordability of mobile services is the proportion of monthly income which is spent on mobile services and devices. For a range of countries, income groups and consumption baskets, the GSMA estimate the total cost of mobile ownership (TCMO), which assists in identifying the elements which affect the affordability of mobile services and devices[31].

Figure 8 shows the TCMO as a proportion of monthly income for the two lowest income quintiles in Argentina, compared to the entire population. For a low consumption basket (500MB of data), those individuals within the bottom 20% of Argentina's income distribution spend more than 8.5% of their monthly income on mobile ownership, which is higher than the affordability threshold of 5% suggested by the UN Broadband Commission[32]. Indeed, for the bottom 40% of the income distribution, the medium and high baskets (over 1000MB of data) are all above this 5% threshold.

Given the average level of data usage per connection in Latin America currently exceeds 640MB, the lack of affordability for a low consumption basket (500MB) in Argentina represents a significant barrier to mobile connectivity for those at the bottom of the income pyramid. For future periods, as usage is forecast to reach approximately 3000MB for Argentina and the wider Latin American region by 2021, the lack of affordability for medium and high baskets at present may also be of concern.

Figure 8

TCMO as a proportion of monthly income in Argentina, 2016[33]



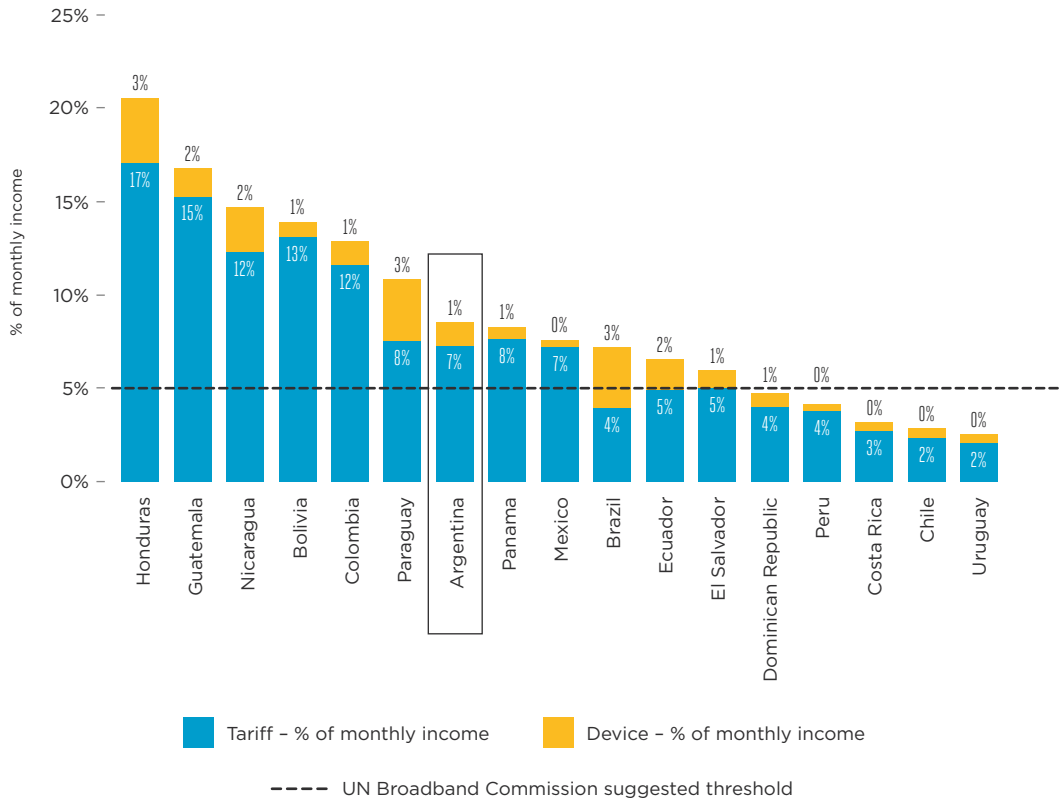
Source: GSMA Intelligence, Tarifica

28. Defined as Gross National Income (GNI) per capita
29. GSMA (2016) Digital Inclusion and Mobile Sector Taxation
30. GSMA (2015) Connected women 2015 – bridging the gender gap: mobile access and usage in low- and middle-income countries
31. TCMO consists of the cost of a handset, activation and usage costs. It is typically calculated as a cost per month, and assumes a life expectancy of a device of 36 months for medium and low-income countries, and 24 months for high and very high income countries
32. UN Broadband Commission (2017). ICT expenditure reflects Mobile Broadband prices, prepaid handset-based 500 MB. For further information: http://broadbandcommission.org/Documents/ITU_discussion-paper_Davos2017.pdf
33. The entry, medium, high and premium baskets provide consumers with 100MB, 500MB, 1000MB and 5000MB or data respectively

The lack of affordability of mobile devices and services in Argentina reflects the broader affordability issue in Latin America. As shown in Figure 9, the TCMO in a number of countries in the region are above the 5% affordability threshold suggested by the UN Broadband Commission. Of the total costs, tariffs represent the largest proportion in all countries. For a low basket (500MB) in Argentina, the bottom 20% of the income distribution spend approximately 7.3% of their monthly income on tariffs, an amount that is greater than the 5% affordability threshold. In Figure 9, each of the countries with a larger share of income spent on mobile ownership have a lower GDP per capita than Argentina, which can partially explain their position relative to Argentina using this metric.

Figure 9

TCMO as a proportion of monthly income, bottom 20% income group (500MB basket)[34, 35], 2016



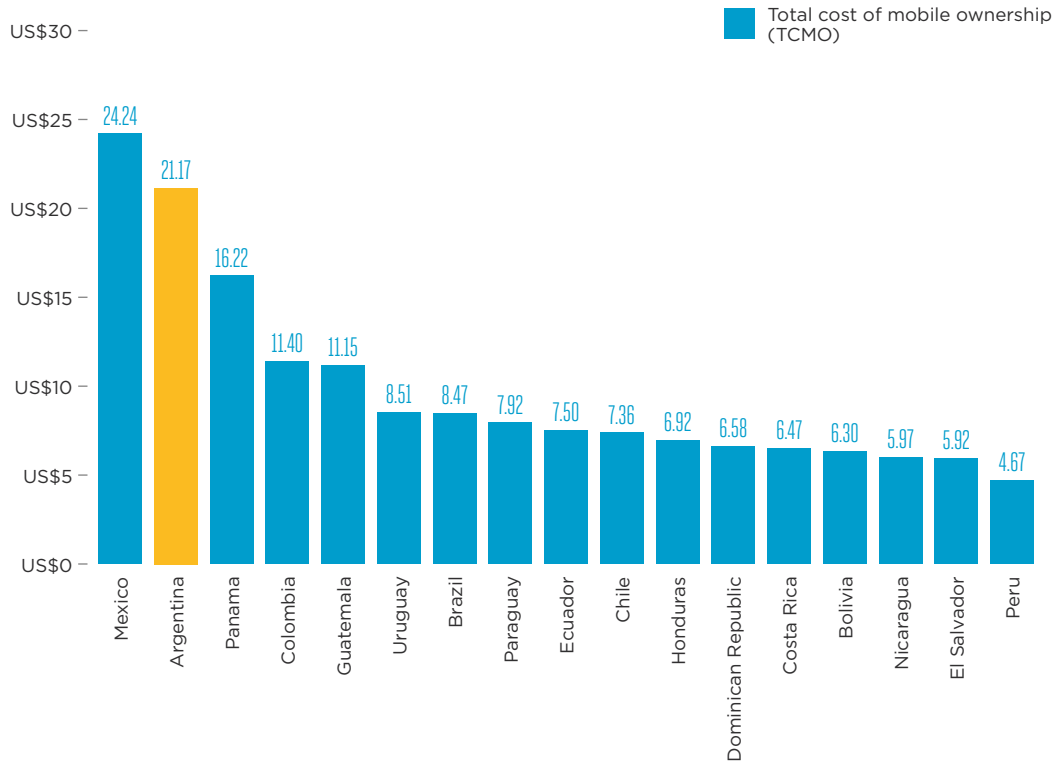
Source: GSMA Intelligence, Tarifica

While expenditure on mobile ownership as a proportion of income is higher for a number of countries in the region, this is largely driven by relatively lower-incomes. Argentina has the second highest TCMO for a 500MB basket in the Latin American Region. As shown in Figure 10, TCMO is just over US$21 per month for Argentina, behind only Mexico in terms of absolute cost[36].

34. Device prices refer to the cost of the cheapest mobile broadband enabled handset available in the market. Life expectancy of a device is assumed to be 36 months for medium and low-income countries, but 24 months for high and very high-income countries
35. Venezuela has been excluded from this analysis, as exchange rate fluctuations make cost comparisons unreliable
36. Venezuela has been excluded from this analysis, as exchange rate fluctuations make cost comparisons unreliable

Figure 10

Total cost of mobile ownership (TCMO) by country (500MB data basket), 2016



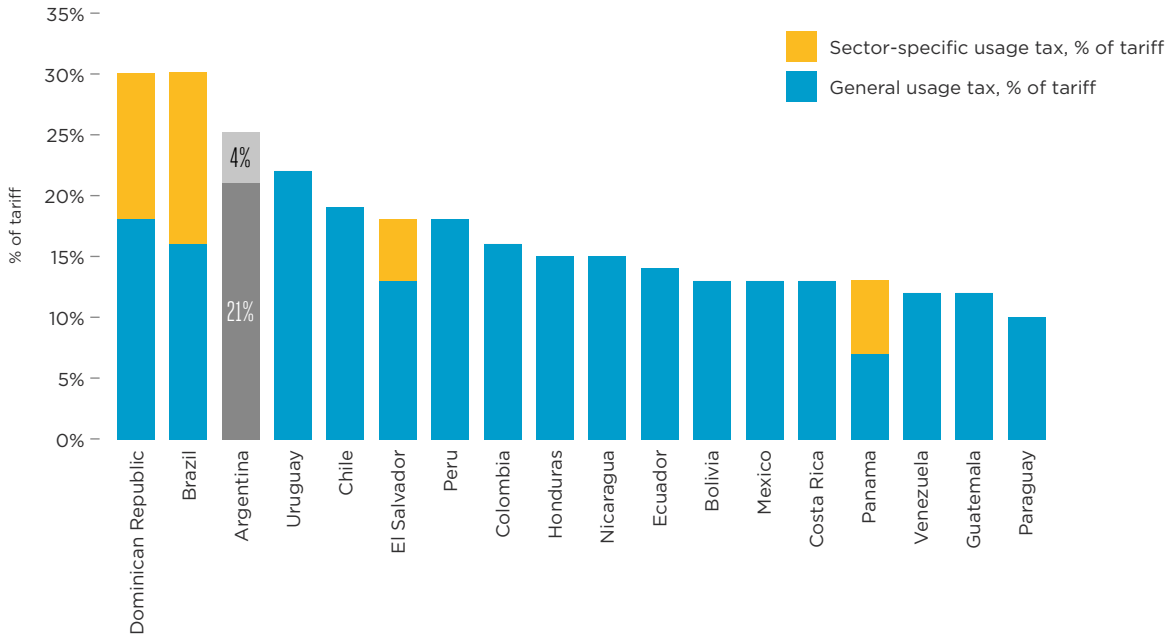
Sources: GSMA Intelligence, Tarifica

Usage and device taxes account for a significant proportion of the total cost of mobile ownership, exacerbating the affordability barrier

The proportion of consumer usage taxes in the cost of mobile services (500MB basket) in Argentina is third highest in the region, behind only the Dominican Republic and Brazil. Moreover, Argentina is one of only five countries in the region (for which data are available) which apply sector specific taxation to mobile services. As shown in Figure 11, usage taxes represent a quarter of the mobile tariff cost in Argentina applying upward pressure to the cost of mobile services.

Figure 11

Usage taxes as a proportion of tariff costs (500MB data basket), 2016

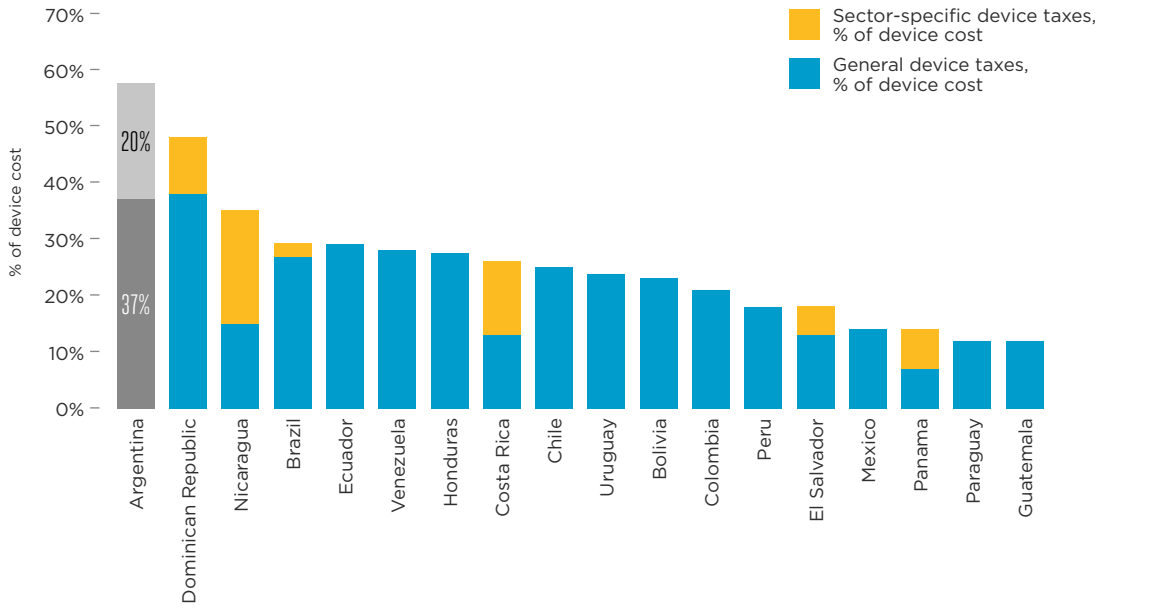


Sources: GSMA Intelligence, Tarifica

Sector specific taxes on mobile devices in Argentina also represent a significant share of the total cost of devices per month. As shown in Figure 12, device taxes in Argentina make up approximately 57% of the monthly cost of devices, the highest in the Latin American region.

Figure 12

Device taxes as a proportion of device costs, 2016



Sources: GSMA Intelligence, Tarifica

1.6 The socio-economic contribution of the mobile sector

Mobile operators directly contributed US$1.7bn in value added to the economy in 2016

Total mobile sector revenues were US$5.7bn in 2016[37]. This generated US$1.7bn of direct economic value; over 0.3% of Argentine GDP[38].

Furthermore, the benefits to the economy go beyond this direct impact. The mobile operators support a much wider mobile ecosystem, including mobile applications and mobile content developers, mobile infrastructure providers, mobile distribution and retail companies and mobile device manufacturers. These companies create further economic activity in Argentina by buying products and services from the firms in their supply chain (indirect effects) and by generating employee income which leads to increased consumer spending, generating demand in consumer goods markets (induced effects).

CASE STUDY
The emerging "App Economy"

Mobile broadband supports entrepreneurship through the development and distribution of mobile applications that run on smartphones. A study by the Progressive Policy Institute finds that, as of March 2016 an estimated 33,250 jobs had already been generated in the Argentine's new 'App Economy'. Technology start-ups such as MercadoLibre, Despegar, Globant and OLX were all founded in Argentina, and have grown rapidly. Argentina is therefore emerging as an attractive 'offshore' destination for app-developing U.S and European companies[39].

Mobile connectivity promotes productivity improvements in the economy

Greater access to mobile services has transformed economies globally, accelerating economic growth and development in countries worldwide. The effects of mobile connectivity on the economy are largely delivered through their impact on productivity. Improvements in mobile connectivity can improve communication and trade within the economy, while also making a region more attractive for foreign investment. In addition, added connectivity can boost tourism, and allow firms to access a broader pool of labour[40]. The benefits of mobile connectivity – and how it translates to the wider economy – have been widely studied. For example, a recent literature review by the International Telecommunication Union (ITU) finds that a 10% increase in mobile broadband penetration leads to a 0.25% to 1.38% increase in GDP[41]. Further, a number of studies have shown a strong relationship between mobile penetration and productivity; these show that a 10% increase in mobile penetration increases productivity by 1.0% to 1.3%[42].

Mobile networks promote digital inclusion and can bridge the digital divide

Where fixed broadband coverage is low, mobile networks are central to promoting digital inclusion due to the lower cost of network rollout. Mobile services can enhance digital inclusion in the economy by ensuring equal opportunity and access to information. For example, Argentina's large rural communities can gain greater access to the knowledge and digital economy. Mobile technology also removes other barriers to access to broadband services including the need of a permanent address, affordability of ownership of a PC or laptop, and access to a bank account.

As of 2015, fixed broadband penetration in Argentina was approximately 50% of households[43] which leaves a significant proportion of the population with no access to home broadband unless it is via a mobile phone.

37. GSMA Intelligence database
38. GSMA Intelligence database and companies' annual accounts data. The direct GVA contribution of the mobile operators has been calculated as a difference between their total revenue and their operating expenditure, excluding wages and salaries
39. Progressive Policy Institute (2016) Argentina: the road to the App Economy
40. Oxford Economics (2013): The Economic Value of International Connectivity
41. ITU (2012) The Impact of Broadband on the Economy: Research to Date and Policy Issues
42. LECG (2009) Exploring the Relationship Between Broadband and Economic Growth and Waverman et al. (2009) Economic Impact of Broadband: An Empirical Study
43. World Development Indicators, World Bank databank

Mobile phones have proven to be a significant transformational technology, allowing access to innovative mobile applications and services

Mobile technology has the ability to enable more efficient delivery of public services, and to improve access to healthcare and education services for under-served and remote populations. Its portability, traceability and affordable computing power means mobile technology is well positioned to deliver wide ranging and highly personalisable services to large numbers of people.

Mobile Health

Mobile health (m-Health) applications can improve health systems through reducing the cost of service delivery, providing distribution channels for public health information, streamlining health administration and data management, and even aiding real-time supply chain management[44]. Mobile healthcare has already been shown to be effective for triaging rural patients who cannot reach urban tertiary care centres, and for enabling video-based consultations using mobile broadband thereby making healthcare accessible to this underserved population[45].

CASE STUDY
ConsultorioMovil.net (m-Health)

ConsultorioMovil.net is an Argentine cloud-based platform designed to reduce inefficiencies in the running of medical clinics. Founded in 2015, this start-up provides 24-7 access to digitised patient data from any mobile device, and creates personalised reminders of upcoming appointments, helping reduce absenteeism whilst improving compliance and adherence with treatment programmes. This platform records patients' clinical histories in a centralised manner reducing the administrative burden of medical record keeping. Its data management system allows doctors to produce clinical statistics reports on patients, and the functionality allows sharing of health education materials that are tailored to the patient.

Mobile learning

Mobile learning (m-Learning) has the ability to reduce inequalities in educational systems by widening access to learning materials, improving literacy and reducing drop-out rates. Whilst Argentina has high adult literacy, research indicates educational inequalities disfavour those at the bottom of the income pyramid and in rural areas[46].

CASE STUDY
Conectar Igualdad (m-learning)

Conectar Igualdad, instituted by the Argentine Government in 2010, aims to connect all young Argentines to the internet through distributing netbooks to all high school aged children. This programme aims to promote digital equality in the country and guarantee access to "the best technological resources and information" for all, regardless of socioeconomic status. Over five million netbooks have been distributed to students and teachers since the programme's inception.

Mobile Money

Mobile Money services have the power to transform financial systems[47] and promote a move away from cash based economies. They provide affordable financial services to low-income subscribers and enable safety, security and convenience for financial transactions for those who do not have access to traditional financial services.

Almost 50% of the Argentine population aged 15+ reported not having an account with a financial institution in 2014, while only 0.4% reported owning a mobile banking account[48]. As a result, a significant proportion of the population are excluded from the traditional financial system.

Mobile Money services have a significant potential to improve the financial inclusion of Argentines who are currently excluded from the traditional financial system, especially those at the bottom of the income pyramid. Mature mobile money markets, such as Kenya, demonstrate the potential to drive significant growth in the uptake of mobile credit accounts. For example, M-Shwari in Kenya had approximately 15 million accounts as of June 2016, equivalent to approximately 31% of the population, having established in 2012[49].

44. University of Cambridge (2011) Mobile Communications for Medical Care
45. PWC – Emerging mHealth – Paths for Growth
46. UNESCO – Turning on Mobile learning in Latin America
47. The most prominent example of Mobile Money transforming economies is Kenya, the largest economy in East Africa. There were 34 million Mobile Money accounts in June 2017 (penetration of around 70%) and the 1.7 billion cash transactions in the year to June 2017 amounted to over USD $34.4 billion – equivalent to 49% of the country's GDP. Source: Central Bank of Kenya, reported at allafrica.com
48. World Bank databank
49. GSMA (2017): The future of mobile money in Sub-Saharan Africa: A foundation for greater financial inclusion

2. Mobile sector taxation in Argentina

The Argentinian tax system is complex and, as a result, the mobile sector is heavily taxed by different levels of Government (federal, provincial and municipal). In comparison to other sectors in the economy, the tax burden of the mobile market is high. The total tax contribution of the mobile sector is also higher in Argentina than other countries in the region.

2.1 Overview of mobile taxation in Argentina

Under the current federal system, there are three different levels of taxation: national, provincial, and municipal. Tables 1, 2 and 3 below set out the tax schedule applicable to the mobile sector in 2016[50].

Mobile subscribers in Argentina are subject to taxes on the usage of services and mobile handsets while imported handsets are also subject to a customs duty.

Table 1

Key taxes on mobile consumers, 2016

Federal taxes	
Customs duty	0 – 35%[51]
VAT	21 – 27%
VAT paid at customs	10.5% – 21%
Excise duty on mobile services	4.2%
Excise duty on handsets	17% (nominal rate) 20.5% (effective rate)[52]
Excise duty on mobile phone plans (ENARD)	1%

Higher rates for mobile activities than the average

Specific taxes on mobile

VAT

The standard value-added tax (VAT) rate in Argentina is 21% and it applies to mobile services provided to non VAT taxpayers (i.e. business to consumers transactions). An increased rate of 27% applies to the provision of telecommunication services to VAT taxpayers (i.e. business to business transactions).

50. For this section, the following sources have been consulted: *Tributos Vigentes en la Republica Argentina a Nivel Nacional (Actualizado al 30 de septiembre de 2017). Ministerio de Economia, Argentina.* https://www.economia.gob.ar/sip/dniaf/tributos_vigentes.pdf A.E. Messineo, *Argentina – Corporate Taxation*, Country Analyses IBFD (accessed 31 Oct. 2017). We have also included data provided by the operators.
51. The duty varies across telecommunications products, depending on the tariff code.
52. The nominal rate on electronic products is 17%, but the effective rate is 20.5% as per the following formula: effective rate = 100 x nominal rate/ 100 – nominal rate. Tributos Vigentes en la Republica Argentina a Nivel Nacional (*Actualizado al 30 de septiembre de 2017*). Ministerio de Economia, Argentina.

Excise duties

There are two main excise duties applying to mobile products:

- **Excise duty (*Impuesto Interno*):** This excise tax was introduced in 1996 and it is levied on the transfer and importation of goods specified by the excise duties law, and on the rendering of specified services. Taxable products include tobacco, alcoholic beverages, wine, non-alcoholic beverages, syrup, extracts, vehicles and motors, luxury objects, recreation and sports craft, spaceships, and electronic products. The tax is levied at ad valorem rates based on the price of goods or services, at rates which vary for different items and range from 0.1% to 60%.
  - **Cellular and satellite phone services** are taxed at a rate of 4.1667%.
  - **The local production and importation of electronic products,** outside *Tierra del Fuego*[53], is taxed at the general rate. Mobile handsets are considered electronic products, and therefore, they are taxed at an effective rate of 20.5%, which is slightly higher than the nominal rate of 17%.[54] According to the Decree No. 252/2009, electronic products "exported" from *Tierra del Fuego* to the Argentine continental territory are subject to a reduced effective rate of c.7%[55].
- **Excise duty on mobile services (ENARD):** An excise of 1% is levied on mobile phone plans only (pay-as-you-go services are exempted). This tax was introduced in 2010 and the revenue raised is hypothecated to ENARD, which is the department in charge of promoting and supporting Olympics athletes in Argentina.

Customs duty

The duty varies across telecommunications products, depending on the tariff code. Originally, customs duties were introduced as protectionist measures. However, a progressive liberalisation process has just started and computer components, laptops and tablets are now free of custom duties[56]. Nevertheless, mobile handsets are still taxed at 35%.

Table 2

Key taxes on mobile operators, 2016

Federal taxes	
Corporation tax	35%
Minimum corporation tax	1%
Personal income tax (on wages)	35% (top rate)
Social security contributions (employers)	23%-27%
Social security contributions (employee)	17%
Personal tax on equity and shares	0.75%
Tax on debits and credits on bank accounts	1.2%
Customs control fee	0.5%
Provincial taxes	
Real estate tax	1%-4%
Stamp duty	1%
Corporate turnover tax (Services)	6.7%
Corporate turnover tax (Sale of equipment)	4.5%
Municipal taxes	
Safety and hygiene duty	0.1-6%
Advertising rates	Different rates

Higher rates for mobile activities than the average

Specific taxes on mobile

53. Under the Law 19,640, the production of electronic products in the Province of Tierra del Fuego, Antarctica and the South Atlantic Islands are exempt of taxation.
54. As mentioned above, the nominal rate on electronic products is 17%. The effective rate (20.5%) is calculated as per the following formula: effective rate = 100 x nominal rate/ 100 – nominal rate.
55. Decree No. 252/2009 establishes the reduction of the general rate of excise tax by 38.53%. As a result, the reduced nominal rate is 6.55%.
56. Decree 117/2017.

Corporation tax

All corporate taxable income and gains are subject to corporate tax, unless explicitly exempt from tax. The rate is 35%, which is the highest corporate statutory tax rate in the whole OECD, and also the highest in Latin America[57].

Corporate turnover tax

The corporate turnover tax (*impuesto sobre los ingresos brutos*) is levied on the usual exercise of certain activities. As it is a local tax, each province and the city of Buenos Aires have their own rules. As a general rule, the tax is levied on gross receipts excluding:

- VAT, excise and some other taxes.
- The reimbursement of capital from loans, deposits, financing and similar transactions.
- Government subsidies and subventions.
- Reimbursements granted by the government to exporters.
- Receipts from the sale of fixed assets.
- Bad debts provided they were included in the taxable base of a preceding period and subject to statutory limits.
- Sums corresponding to containers and merchandise handed back by the purchaser.
- Imports.

Rates vary depending on the province and activity, ranging generally from 1% to 6%. The average rate for sales and services is 3% and the highest (6%) is applicable to intermediation activities. Primary activities like farming, mining, international transportation, and manufacturing activities are generally more favourably taxed or not taxed at all.

The tax is paid annually, but monthly advance payments must be made during the tax period, depending on the type of taxpayer (local, multi-province and special activities). In the province of Buenos Aires the tax is withheld by banks at a rate ranging from 0.01% to 5% on the total amounts of the payments credited to a taxpayer's bank account, depending on the activity carried out by the relevant taxpayer. The amounts withheld are considered a payment on account of the tax liabilities arising from the filing of the relevant tax return[58].

Other taxes

- Personal income tax. Resident individuals are subject to income tax on their worldwide income. Employers are obliged to act as withholding agents applying progressive rates on a monthly aggregated basis. The top rate is 35%.
- Social security contributions. Employers must contribute to the social security system. The total rate varies between 23% and 27%.
- Minimum corporation tax. It is levied at the rate of 1% on the value of the worldwide assets held by companies at the end of the tax period. Law 27,260, published in the Official Gazette of 22 July 2016, abrogated the tax for fiscal years starting from 1 January 2019.
- Personal tax on equity and shares. A net wealth tax (*impuesto sobre los bienes personales*) is levied on all assets owned by individuals, without a right to deduct liabilities including shares and equity.
- Tax on debits and credits on bank accounts. The tax is levied on the total of the credits and debits (i.e. deposits and withdrawals) in current accounts. It is assessed and withheld by the banks.
- Customs control fee. A fee is levied in order to cover the costs of registering the imports for statistical purposes. It is an ad valorem tax applied on the customs value of the merchandise.
- Real state tax. In general, urban and rural land are subject to the immovable property tax (*impuesto inmobiliario o contribución territorial*), which is a tax governed by provincial regulations. The tax is usually levied on the fiscal value of immovable property. Under a "fiscal agreement", the City of Buenos Aires and the provinces have agreed to assess the tax at a taxable base not exceeding 80% of the market value. The tax rates vary per jurisdiction and are limited to a maximum of 1.2% for rural property, 1.35% for sub-rural or suburban property and 1.5% for urban property.
- Stamp duty. A local tax is levied on contracts that are either signed or have effect in any of the Argentinian provinces or the Buenos Aires city jurisdiction. The taxable base for the stamp duty is the economic value of the transaction. The stamp duty is payable in the province in which the instrument is executed, but it may also be applicable in the province in which the transaction has effect. The rate varies between the provinces (usually around 1%).

57. OECD and CIATData.
58. A.E. Messineo, *Argentina – Corporate Taxation* sec. 14., Country Analyses IBFD (accessed 30 Oct. 2017).

- Safety and hygiene duty. It is paid for inspection services aimed at preserving safety, health and hygiene in shops, industries, services and similar activities.
- Advertising rates. A fee is paid on advertising, either internal or external, of a trade established in the jurisdiction of the municipality.

Table 3

Key regulatory fees on mobile operators, 2016

Federal regulatory fees	
Universal Service Fund (USF) fee	1%
Control and verification recurring fee	0.5%
Spectrum recurring fee on subscribers	**Mobile plans:** • 0.05 x UTR value • 0.075 x UTR value **Pay-as-you-go:** • 0.0014 x UTR value UTR value: 25.5107
Telecommunications licence (one-off)	ARS 5,000
Multidigit fee	Different rates according to number of stations and subscribers
Provincial regulatory fees	
Emission control tax	Different rates
Municipal regulatory fees	
Tax on telecommunication structures	Different rates
Permits for Works	2%

Higher rates for mobile activities than the average

Specific taxes on mobile

Source: Ministry of Finance of Argentina, 2017 EY Worldwide Corporate Tax Guide, operators' data

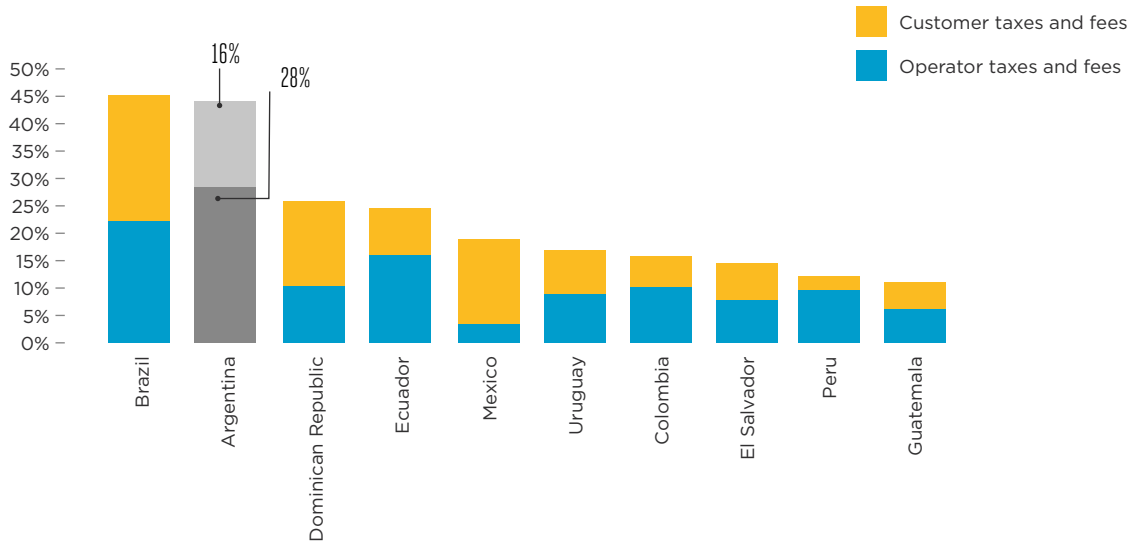
2.2 Tax contribution of the mobile sector

The total tax contribution of the mobile sector is equivalent to 44% of their total market revenue. In 2016, the total tax contribution is estimated at US$2.3bn[59], accounting for 2% of the total tax revenues of Argentina[60]. Operators pay 64% of the total taxes, while consumers pay the remaining 36%. As shown in Figure 13, this tax burden is relatively high in Argentina (44%) compared with other countries, including other jurisdictions in Latin America, such as Colombia (16%), El Salvador (14%), Guatemala (11%), Mexico (19%), Peru (12%), and Uruguay (17%).

59. Source: *EY Analysis and operator data*.
60. The net tax revenue in 2016 was ARS $1,675,128,061,000 (US $113bn). Source: Administración Federal de Ingresos Públicos, Argentina.

Figure 13

Operator vs consumer taxes (as a share of total mobile revenue)

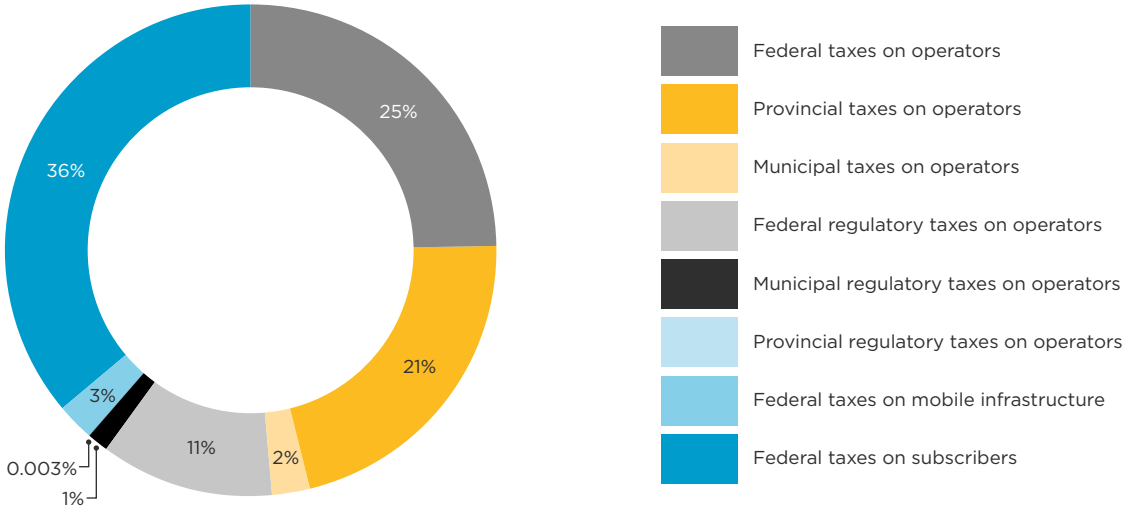


Source: GSMA Intelligence, EY Analysis and operator data

The top three sources of tax revenue are the subscribers' federal taxes (36%), as well as federal taxes (25%), and provincial taxes (21%) on operators. VAT is the main source of revenue (24%), followed by the Corporate Turnover Tax[61] (21%), and Corporation Tax (13%).

Figure 14

Disaggregated tax revenue from the mobile sector per category



Source: EY analysis

61. *Impuesto a los Ingresos Brutos*

The mobile sector made a large contribution relative to its economic footprint in 2016. Tax and fee payments from the sector as a share of total tax revenues were 1.7 times greater than the sector's revenue as a share of GDP[62]. While revenues from the mobile sector only accounted for around 1.2%[63] of Argentinian GDP[64], the sector's tax and fee payments accounted for around 2%[65] of total tax revenue[66].

In Argentina, corporate taxes are the most important source of tax payments from the mobile sector (34%), followed by VAT (26%). Mobile specific excises account for 11% of the total tax revenue. Spectrum fees (8%) and regulatory fees (4%) account for a total of 12%. All other taxes[67] amount to 14% of the total revenue, while customs duties only represent 1% of the total payments.

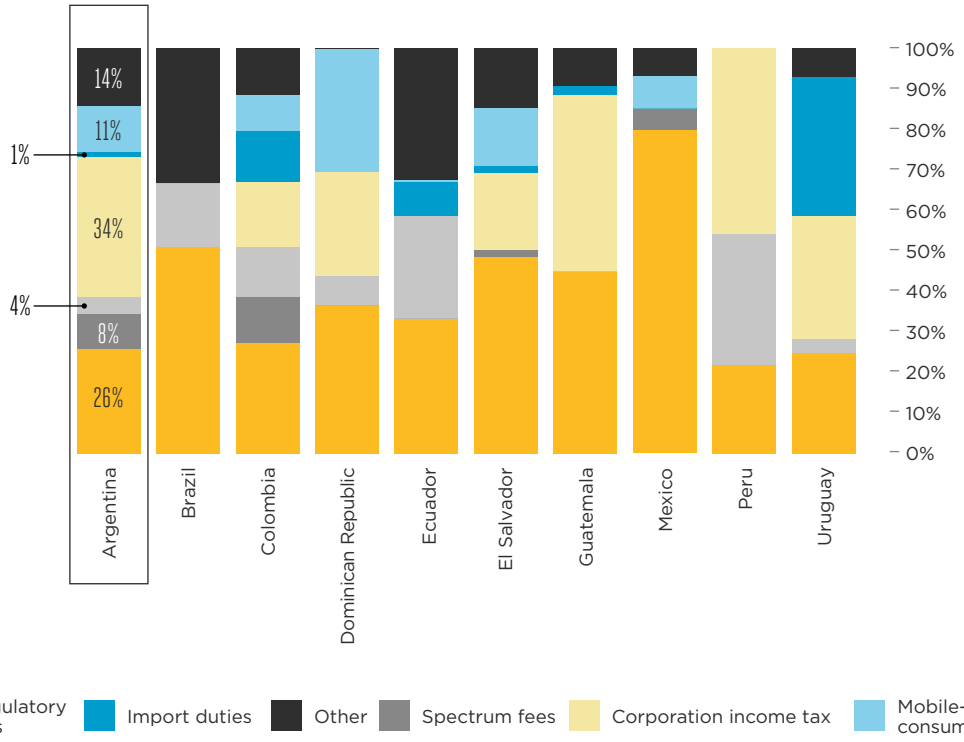
Figure 15 shows this distribution of the total tax payments of Argentina in comparison to other countries. In this regard, it is noted that the corporate tax payments in Argentina (34%) are higher than other countries in the region, such as Uruguay (30%), El Salvador (19%), and Colombia (16%). In addition, the share of VAT payments in Argentina (26%) is higher than in Uruguay (25%). The share of mobile-specific tax payments in Argentina (11%) is also higher than in Jamaica (9%), Colombia (9%), Mexico (8%), and Ecuador (1%).

The share of spectrum fees in Argentina is also higher than Mexico (5%) and El Salvador (2%). Similarly, the regulatory payments in Argentina are also higher than in Uruguay (3%).

Import duties are only 1% of the total tax payments in Argentina, as the importation of mobile phones is minimal due to the high level of custom duties. However, in other countries in the region with more liberalised economies such as Mexico, operators are not subject to import duties, and therefore the share of import duties is equal to zero.

Figure 15

Total tax breakdown



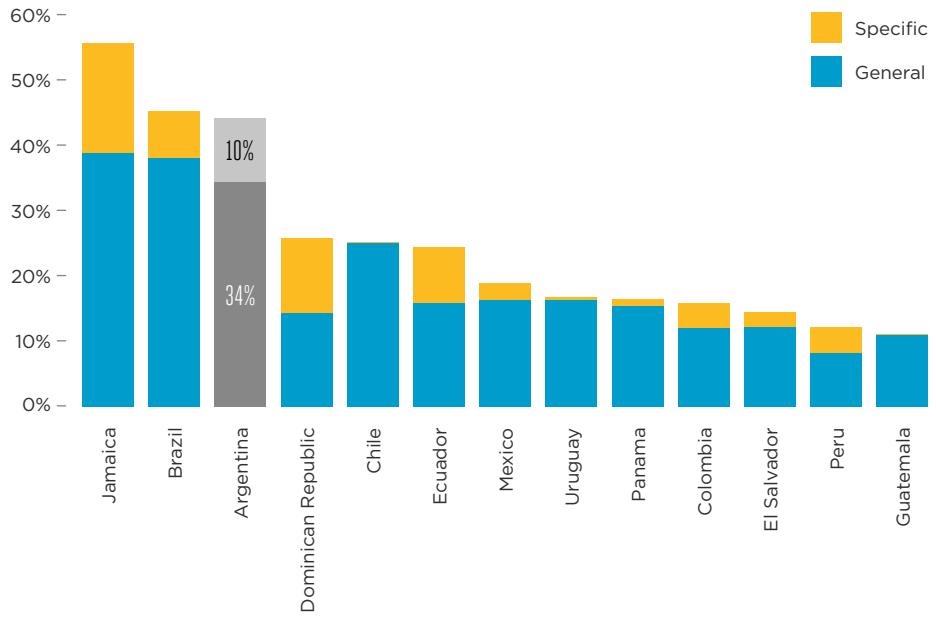
Source: GSMA Intelligence, EY Analysis and operator data

62. EY Analysis based on operators data for 2016.
63. Idem.
64. The GDP of Argentina in 206 was US $545.7. OECD.
65. EY Analysis based on operators data for 2016.
66. The net tax revenue in 2016 was ARS $1,675,128,061,000 (US $113bn). Source: Administración Federal de Ingresos Públicos, Argentina.
67. This includes all other tax payments made by operators in Argentina in 2016, which are not covered by a specific category (e.g. Personal Income Tax, Social Security Contributions, Personal Tax on Equity and Shares, Tax on Debits and Credits on Bank Accounts, Real estate tax, Stamp duty, Safety and hygiene duty, Advertising rates, Control fee).

Mobile specific tax payments are equivalent to around 10% of total mobile sector revenue. This is one of the highest shares in Latin America, surpassing other countries such as Ecuador (9%), Brazil (7%), Peru (4%), Colombia (3%), Mexico (3%), El Salvador (2%), Panama (1%), Uruguay (1%), Chile (0.1%), and Guatemala (0.02%), as shown in Figure 16.

Figure 16

General vs mobile sector-specific tax (as % of mobile revenue)



Source: GSMA Intelligence, EY Analysis and operator data

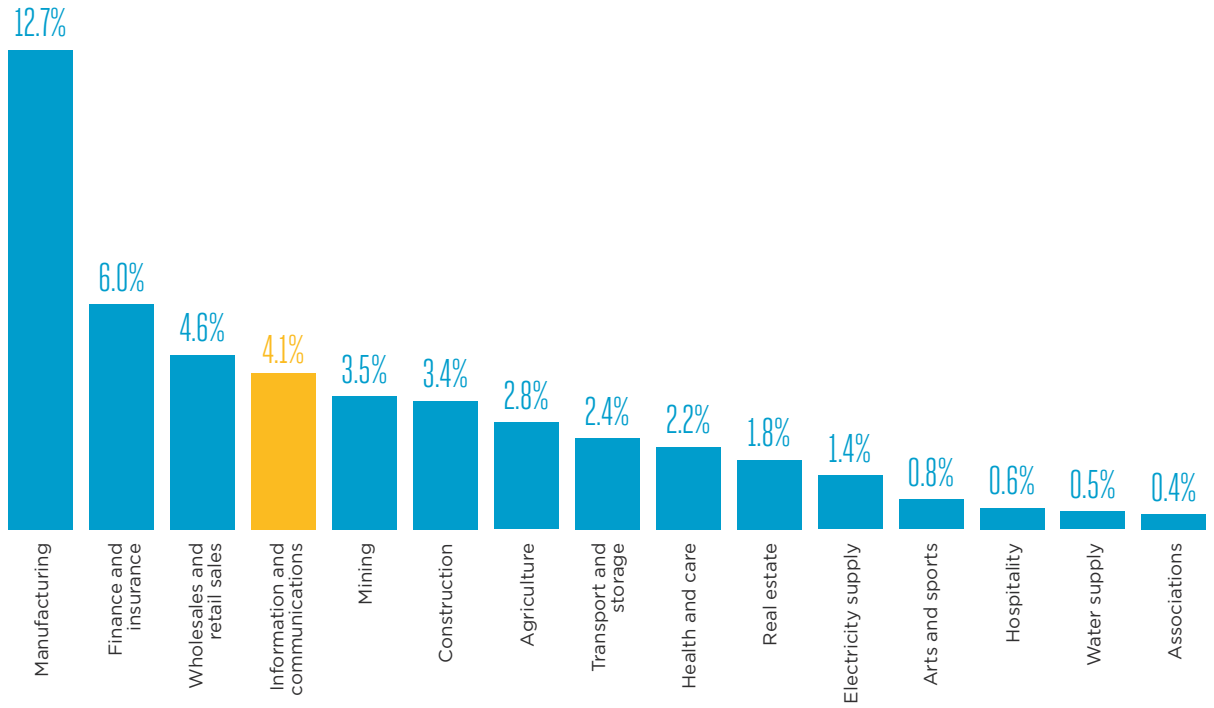


2.3 Tax burden in comparison to other sectors

While most main direct taxes in Argentina have general standard rates, the tax burden differs across sectors[68]. For instance, as shown in Figure 17 the corporate tax burden on information and communication activities represents 4.1% of its Gross Value Added (GVA). This is the fourth highest tax burden across all sectors of the economy.

Figure 17

Corporate tax as % of GVA per sector, 2015[69]



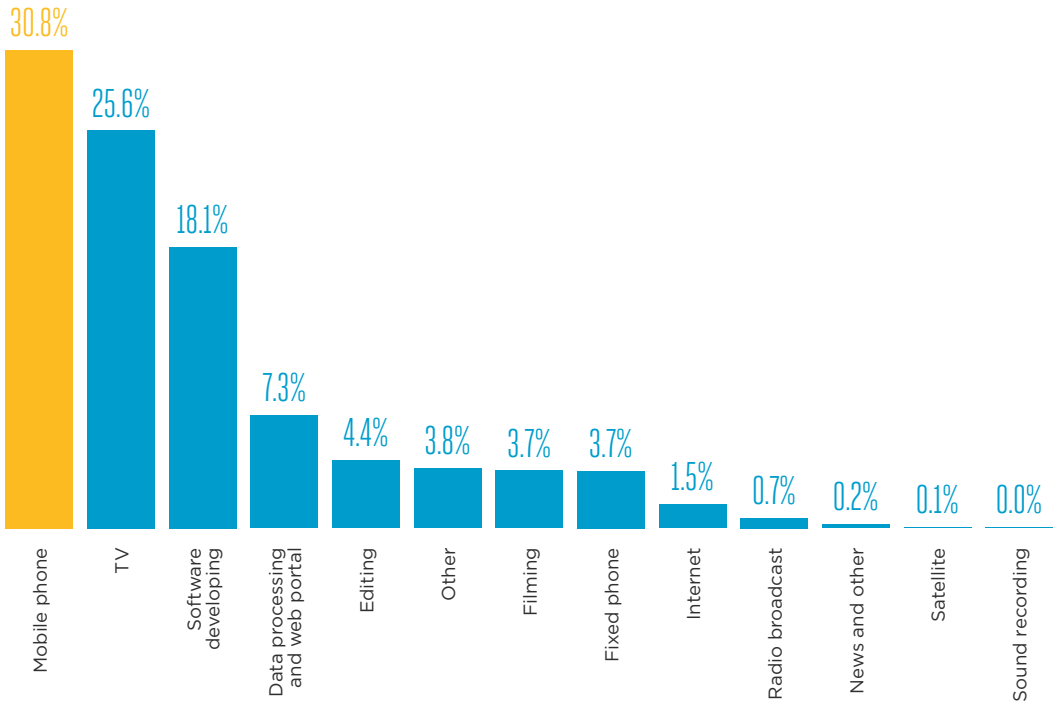
Source: Administración Federal de Ingresos Públicos, Argentina

68. In terms of direct taxes, the only exception is Impuesto a los Ingresos Brutos, as rates vary for different provinces and for different activities, generally ranging from 1% to 6%.
69. The corporate tax burden was calculated with the following formula: Impuesto a las Ganancias de Sociedades determinado/GVA. The figures on "impuesto determinado" per economic sector were taken from the officials statistics published by Administración Federal de Ingresos Públicos, Argentina in the "Anuario de Estadísticas Tributarias".

As shown in Figure 18, this is also the highest corporate tax burden across the whole communications sector (30.8%).

Figure 18

Corporate tax burden across information and communications, 2015



Source: Administración Federal de Ingresos Públicos, Argentina

Consumption taxes have standard rates, but are combined with reduced rates for different activities and products. Table 4 summarises the main different VAT and excise rates applying to different sectors.

While other industries such as agriculture, health, transportation, construction are subject to reduced rates of VAT, the standard rate of 21% applies to mobile consumers and an increased rate of 27% applies to the provision of telecommunication services to VAT taxpayers (i.e. business to business transactions). This makes mobile communication more expensive for businesses, particularly for small and medium enterprises (SMEs), which are 99.8% of the total enterprises employing people in Argentina[70].

70. Ministerio de Producción. Presidencia de Argentina. (2016). *GPS de Empresas: datos y análisis de las PyMEs argentinas.* http://gpsemp.produccion.gob.ar/

Table 4

Key indirect tax rates in Argentina, 2016

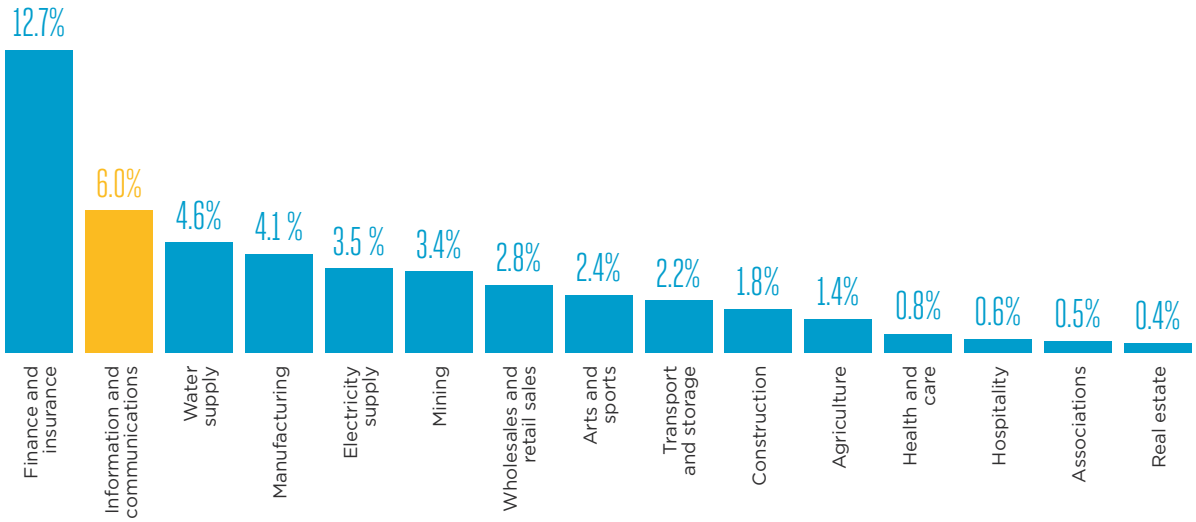
VAT (standard rate)	**21%**	
VAT (reduced rate)	**0%, 2.5%, 5%, 10.5%**	• Supply and import of food products • Supply of services related to the cultivation, growing and harvest of food products • Construction work in connection with housing and dwellings • Interest on loans when the debtor is a taxable person • Health related service • Supply of transportation services to persons • Newspapers, magazines and similar periodic printed matter supplied by publishers (supply to final consumers is exempt) • Advertising space in newspapers and magazines when the publisher has annual revenues between ARS 63 million and 126 million.
VAT (reduced rate)	**27%**	• The metered supply of natural gas, electricity and water, as well as sewage services, when the service is provided to places other than dwellings and the user/consumer is a taxable person • The increased rate also applies to the supply of telecommunications services – excluding internet services – and to services rendered to other telecommunication operators.
Excise		• The rates vary for different items and range from 0.1% to 60%.

Source: 2017 EY Worldwide Corporate Tax Guide, IBFD

As a result of these different rates, the indirect tax burden also differs across sectors and mobile is more heavily taxed. For instance, as shown in Figure 19, the VAT burden on information and communication activities is 6% as a share of GVA; this is the second highest tax burden across all sectors of the economy.

Figure 19

Net[71] VAT as percentage of GVA per sector, 2016



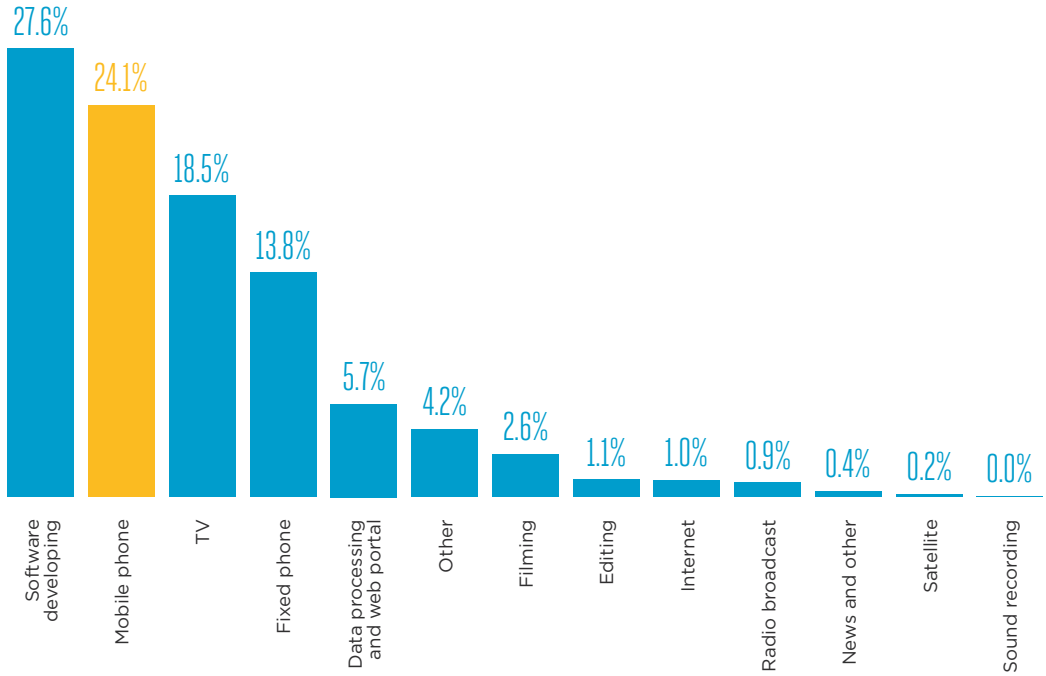
Source: Administración Federal de Ingresos Públicos, Argentina; EY analysis

71. The net VAT was calculated based on the following formula: (Débito fiscal por actividad económica – crédito fiscal por actividad económica) /GVA. The figures on "débito fiscal" and "crédito fiscal" per economic sector were taken from the officials statistics published by Administración Federal de Ingresos Públicos, Argentina in the "Anuario de Estadísticas Tributarias".

Within the entire information and communications sector, mobile is subject to the second highest VAT burden at 24.1% (see Figure 20 below).

Figure 20

Net VAT burden across information and communications sector, 2016



Source: Administración Federal de Ingresos Públicos, Argentina; EY analysis



3. Designing a more efficient tax policy framework for the mobile sector in Argentina

Tax revenues collected from the mobile sector are important sources of revenue. However, if the tax system is not designed properly, it can make mobile services less affordable, discourage technological development, and hinder investment and entrepreneurship in the sector. In order to prevent such unintended consequences, it is important to follow certain principles of tax policy design which have been consistently developed by international organisations such as the International Monetary Fund (IMF), the Organisation for Economic Cooperation and Development (OECD), the United Nations (UN) and the World Bank (WB).

In developing economies, tax policy makers need to take into account additional factors such as the structure of the economy with large informal sectors, the constraints on the tax administration, as well as institutional arrangements and practices which are different to the existing in more developed countries[72].

In addition, the mobile market presents distinctive particularities in comparison to other industries which also deserve consideration at the time of designing its tax regime. The access to the market is highly regulated and operators must incur high levels of long term capital investment. At the same time, telecommunications infrastructure is crucial for the development of any country (especially in developing economies) and mobile services bring benefits to consumers in terms of connectivity and digital inclusion.

In order to design an effective tax regime, which minimises distortions to the delivery and consumption of mobile services, policy makers will need to consider and balance the ideal principles of taxation, the practical challenges and needs prevailing in-country (especially in the case of developing countries), and the particular features of the mobile sector.

3.1 Considerations for a more efficient tax system in developing countries

As mentioned above, international organisations such as the IMF, the OECD, the UN, and the WB[73] have developed a number of principles to guide the tax policy making, with particular recommendations for developing countries considering their particular challenges.

The need for additional revenue is pressing in many developing countries, for example, to fund programmes against poverty or to improve infrastructure. However, improving revenue mobilisation is also important, since excessive levels of taxation to the formal sector of the economy can worsen distortions and perceived inequalities[74]. Hence, additional factors which for developing countries include:

72. V. Tanzi, and H.H. Zee. (2000) *Tax policy for emerging markets: developing countries*. IMF.
73. *Supporting the Development of More Effective Tax Systems. A Report to the G-20 Development Working Group by the IMF, OECD, UN, and World Bank* (2011)
74. *Revenue Mobilization in Developing Countries* (March 2011) Prepared by the Fiscal Affairs Department. Approved by Carlo Cottarelli, IMF.

- **The extent of informality.** The informal sector is usually extensive in developing countries, with income and sales escaping taxation.

- **The strength of the tax administration.** An efficient tax administration is key to mobilising domestic resources in developing countries. Yet many administrations continue to face capacity challenges, have structures which do not encourage an integrated approach to different taxes, and are marked by imbalanced service and enforcement functions[75].

- **The importance of tax certainty.** Clear laws and regulations are crucial for a smooth implementation of the tax system, with adequate safeguard and protection mechanisms for taxpayers[76].

- **The impact on long-term growth.** Some taxes can have long-term effects on investment, human capital, and innovation. Lower corporate tax rates are associated with faster growth, including in non-OECD countries. Reduced reliance on trade tax revenue can have also a positive effect on trade liberalisation to foster growth. Volatility of tax revenue is associated with less public investment in developing economies; that is why diversity of revenue sources is recommended for these countries[77].

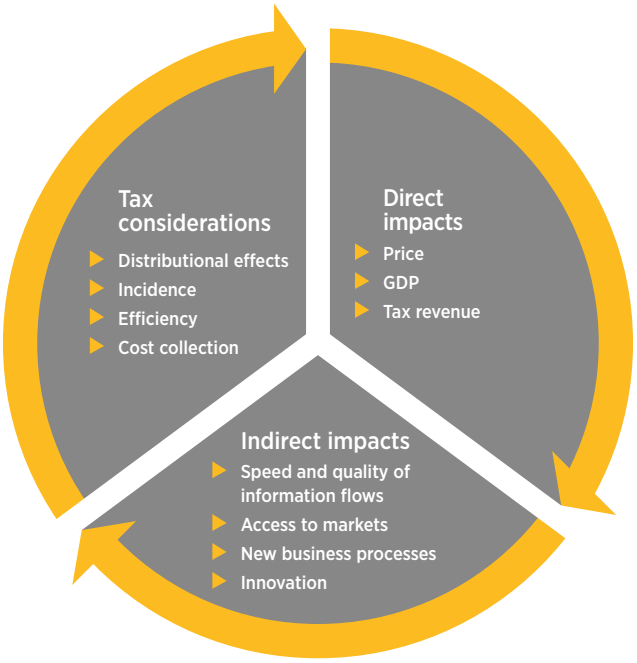
- **The importance of distributional effects.** Poverty relief and redistribution are major motivations for raising revenue. However, an excessive level of taxation on the lowest-income groups can undermine tax compliance, as the tax system can be perceived as unfair. Tax morale is an essential element for wider state-building, and the fairness of the tax system is crucial for the legitimacy of any state, especially in developing countries[78].

3.2 General tax policy considerations applying to the mobile sector

In addition to the specific challenges outlined above for developing countries, there are general factors which will generally need to be taken into account by any tax policy, including the design of mobile taxation. The tax system has a direct impact on business decisions, consumer choices, the efficiency of tax collection, and the performance of the overall economy. The diagram below illustrates the interactions between these different factors.

Figure 21

Factors shaping tax policy choices



75. *Supporting the Development of More Effective Tax Systems.* A Report to the G-20 Development Working Group by the IMF, OECD, UN, and World Bank (2011)
76. IMF, 2011.
77. Idem.
78. Idem.

Key considerations in the process of tax policy development include[79]:

- **Distributional characteristics.** The design of a tax can impact different cohorts of taxpayers in different ways, such as those in different income deciles;
- **Economic incidence.** Who bears the tax will depend on the market structure, the demand elasticity and the scope for tax cuts to be absorbed in prices. This incidence will, in turn, determine where in the economy and at what stages in the supply chain the impact of the tax is felt;
- **Efficiency.** Taxes have the capacity to distort decision-making by increasing costs of production and distribution. The efficiency of a tax can be assessed against the extent to which unwarranted and unintended distortions are avoided; and
- **Cost of collection.** The complexity of a tax and its conformity with existing models and procedures has a direct impact on the cost of collection (administrative burden) and the costs of compliance to the taxpayers.

Direct impacts
Taxes on mobile services can have the following direct impacts on the economy:

- **Price.** Tax rises can lead to price changes and therefore to changes in demand for mobile services;
- **Tax revenue.** A change in the design or rate of tax will have an impact on tax revenues, which may be positive or negative depending on the precise change and how it is implemented; and
- **Productivity.** To the extent that tax changes broaden or narrow access to the mobile technologies, they deliver or impede productivity gains across the economy.

Indirect impacts
Many indirect impacts are sector specific and, in the case of mobile, these will include impacts on the capacity of the economic agents to realise the full benefits of connectivity:

- **Speed and quality of information flows;**
- **Access to markets;**
- **New business processes and organisational structures; and**
- **Innovation.**

3.3 Specific considerations applying to the mobile sector

The broad theoretical framework outlined above, including the particular tax challenges of developing countries, constitute the starting point to develop an efficient tax policy framework for the mobile sector. The mobile sector has particular characteristics:

- **The tax system should be conducive to investment in the mobile sector.** As mobile data traffic continues to grow in all geographies, spectrum remains very much the "lifeblood" of the sector, and spectrum release and auction frameworks are key regulatory concerns. Operators incur high costs for the acquisition and use of spectrum. The spectrum is scarce, and its efficient allocation and usage is critical for the successful delivery of mobile services. However, sometimes this is affected by certain issues like high pricing of spectrum awards and inefficiencies in the optimum quantum of spectrum[80].

  In addition, mobile operators need to invest large amounts of capital expenditure on telecommunications infrastructure, mainly the underlying network, such as fibre and cell sites over which wireline and wireless services are provided.

  In a heavily regulated sector, global mobile operators are highly sensitive to uncertainties that may undermine incentives to invest[81]. The

79. There are a number of theoretical studies around the taxation of mobile services, including: ITU (June 2013). *Taxing Telecommunication/ICT services: an overview.*
80. EY (2015). *Global telecommunications study: navigating the road to 2020.*
81. Idem.

involvement of public bodies in the management of licenses, spectrum, and numbering is necessary to ensure an adequate provision of a public service. However, policy makers must keep in mind that operators need the right tax and regulatory conditions to maintain appropriate return on capital.

- **Positive externalities generated by the sector should be considered in the design of the tax system.** Greater access to mobile services can transform economies, and accelerate economic growth and development in countries worldwide. The effects of mobile connectivity on the economy are largely delivered through their impact on productivity. The benefits of the mobile connectivity – and how they translate to the macro economy – have been widely studied in the literature, as set out in section 1.6.

- **Tax rules should not become a barrier to universal access to technology.** According to a UN report, internet is currently only accessible to 35% of people in developing countries. The situation in the 48 UN-designated Least Developed Countries (LDCs) is particularly critical, with over 90% of people without any kind of internet connectivity[82].

  The UN 2030 Agenda for Sustainable Development sets, as one of its goals, significantly increasing access to information and communications technology, and striving to provide universal and affordable access to the internet in least developed countries by 2020[83]. The 2030 Agenda recognises the power of new technologies to accelerate human progress, to bridge the digital divide, to develop knowledge societies, especially in developing countries. This calls for stronger efforts by governments and all actors, in ensuring access, use and affordability[84].

  In this regard, an excessive level of taxation can hinder the access, use and affordability of mobile services, with negative consequences for the connectivity of developing countries in particular.

- **Tax challenges of the digital economy.** The digital economy is the result of a transformative process brought by information and communication technology, which has made technologies cheaper, more powerful, and widely standardised, improving business processes and bolstering innovation across all sectors of the economy. As set out in the G20/OECD Base Erosion Profit Shifting report, because the digital economy is increasingly becoming the economy itself, it would be difficult, if not impossible, to ring-fence the digital economy from the rest of the economy for tax purposes[85].

  The digital economy and its business models present however some key features which are potentially relevant from a tax perspective. These features include mobility, reliance on data, network effects, the spread of multisided business models, a tendency toward monopoly or oligopoly and volatility. The types of business models include several varieties of e-commerce, app stores, online advertising, cloud computing, participative networked platforms, high speed trading, and online payment services. The digital economy has also accelerated and changed the spread of global value chains in which multinational companies (MNEs) integrate their worldwide operations[86].

  The OECD has concluded that the broad tax policy considerations that have traditionally guided the development of taxation systems are still applicable in the context of the digital economy, namely[87]:

  - **Efficiency:** Compliance costs for taxpayers and administrative costs for the tax authorities should be minimised as far as possible.

  - **Certainty and simplicity:** The tax rules should be clear and simple to understand so that taxpayers can anticipate the tax consequences in advance of a transaction, including knowing when, where and how the tax is to be accounted.

  - **Effectiveness and fairness:** Taxation should produce the right amount of tax at the right time. The potential for tax evasion and avoidance should be minimised while keeping counteracting measures proportionate to the risks involved.

  - **Flexibility:** The systems for taxation should be flexible and dynamic to ensure that they keep pace with technological and commercial developments.

82. UN News Centre (2015). *Billions of people in developing world still without Internet access, new UN report finds*. 21 September 2015.
83. UN (2015) Transforming our world: the 2030 Agenda for Sustainable Development. A/RES/70/1.
84. UN News Centre (2015).
85. OECD (2015), Addressing the Tax Challenges of the Digital Economy, Action 1 – 2015 Final Report, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264241046-en
86. Idem.
87. OECD (2014), "Fundamental principles of taxation", Addressing the Tax Challenges of the Digital Economy, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264218789-en

- **Equity:** Horizontal equity suggests that taxpayers in similar circumstances should bear a similar tax burden. Vertical equity means that that taxpayers in better circumstances should bear a larger part of the tax burden as a proportion of their income.

Tax policy makers should assess the relative importance of each of these principles, taking into account the wider economic and social policy considerations which are applicable to each country, including the importance of the digital economy.

3.4 Principles of taxation for the mobile sector

Based on the broad theoretical framework outlined above, including the particular tax challenges of developing countries and the particularities of the mobile sector, below is a set of principles which are relevant for the taxation of the mobile sector.

- **Taxation should be as broad-based as possible.** Complex tax systems may be inefficient, particularly where special taxes are applied to the telecommunications sector that "crowd out" private spending[88]. On this basis, broad-based taxes with single and low rates, minimising the use of exemptions, would be favoured over specific-taxes. This should allow the maximisation of revenue with minimal distortions to the consumption and provision of mobile services.

  In particular, VAT has been adopted in most developing countries. However, its structure is not always ideal given the provision of sectorial exemptions, excessive restrictions to the credit mechanisms, or the adoption of multiple rates. As a result, such general consumption taxes often create distortions across sectors. Rectifying such limitations in the VAT design and administration should be given priority in developing countries, where their cost may be higher than in developed countries[89].

- **The use of specific taxes should be limited and based on a clear rationale of externalities.** The economic rationale of excise taxes is very different from that of general taxes. Specific taxes must be highly selective, narrowly targeting a few goods mainly on the grounds that their consumption entails negative externalities on society. The goods typically deemed to be excisable (e.g. tobacco, alcohol, petroleum products, and motor vehicles) are few and usually inelastic in demand.

  A good excise system is one that generates revenue from a narrow base and with relatively low administrative costs[90].

  However, mobile services are often subject to special taxes, despite being necessary commodities and having positive externalities in terms of digital inclusion and connectivity. Indeed, in many developed and developing countries, mobile services are no longer a luxury reserved for the few, but a necessity and a key productive input. Therefore, mobile phones and services should not be included in a list of goods and services singled out for exceptionally harsh tax treatment[91].

- **The tax system should be equitable.** Mobile operators and consumers should be treated equally to other people in equal circumstances in an equal way ("horizontal equity"). In addition, the tax system should also preserve "vertical equity"[92] by avoiding the imposition of regressive taxes which affect more heavily consumers of mobile services in the lower-income groups[93].

- **Taxes should not undermine the affordability of mobile services.** Excessive taxation can increase the cost of handsets and mobile services. Therefore, specific taxes on mobile operators and consumers should be as low as possible. Reducing import tariffs is also a major policy challenge, especially for many developing countries[94].

- **Taxation should not discourage investment.** Given the high costs associated with the development of an adequate telecommunications infrastructure, investment in the sector is critical. One of the main considerations for attracting investment in telecommunications infrastructure

88. ICT Regulation Toolkit. 6.3.4.1. Tax Law.
89. V. Tanzi and H. Zee (March 2001). *Tax Policy for Developing Countries*, IMF. Mooij and Keen (2014). *Taxing Principles*. IMF. Finance and Development, December 2014, Vol. 51, No. 4
90. Idem.
91. ITU (June 2013)
92. Idem.
93. Richard M Bird and Eric M Zolt, *Introduction to Tax Policy Design and Development*, (Practical Issues of Tax Policy in Developing Countries, World Bank, 2003).
94. V. Tanzi and H. Zee (March 2001).

and services are the additional costs associated with taxes.[95] A stable and transparent legal and regulatory framework and putting in place a tax system in line with international standards is a strategy that delivers sustained investment[96].

- **The tax system should be certain and simple.** Tax rules should be clear and no more complex than needed to achieve the policy aim, facilitating mobile businesses and consumers to make optimal decisions and respond to intended policy incentives. This is a very important factor for developing countries where inadequate legal frameworks could create uncertainties for taxpayers and imbalances in tax administration's powers and taxpayers' rights. This could lead to poor revenue performance, opportunistic behaviour, and other adverse effects[97].

- **The costs of collection should be minimised.** The collection of taxes should be as efficient as possible, i.e. low tax administration costs and minimisation of evasion and avoidance costs. Significant additional revenue can be raised in many developing countries by building systems that effectively limit incentives and opportunities for rent-seeking and inappropriate behaviour[98]. However, large tax rises may exacerbate evasion problems and push customers and providers into the informal sector. This could increase administration costs, creating more problems for the government. This risk is particularly important in developing countries where many administrations continue to have structures which do not encourage an integrated approach to different taxes, and are marked by imbalanced service and enforcement functions[99].

3.4.1 An assessment of mobile sector taxation in Argentina

An assessment of the current mobile tax regime in Argentina against the criteria elaborated above identifies the following characteristics:

- **Specific taxation on mobile services without a clear rationale.** Mobile services are subject to special taxes (ENARD and *Impuesto Interno*). As mentioned above, mobile services have positive externalities for the wider economy in terms of connectivity and digital inclusion. Therefore it is not clear why they should be penalised with specific taxes as other products with negative externalities (such as alcohol and tobacco). Mobile services should not be included in a list of goods and services singled out for exceptionally harsh tax treatment.

- **The tax base is not as broad-based as possible.** The tax system is characterised by low tax bases and highly distortive tax design, with many exemptions and special treatments. For example, VAT, which should be broad-based by definition, has many exemptions and reduced rates. Argentina's VAT revenue ratio (which measures actual VAT revenues to potential revenues in the case where the standard rate were applied on all consumption) is only 46% while other countries, both in the OECD and in Latin America, have substantially broader VAT bases and better compliance. This suggests that more than half of potential VAT revenues, or around 3.5% of GDP, are foregone; around one third of this is due to exemptions and reduced rates[100].

  Despite being a necessary commodity, mobile services are either taxed at the standard rate of VAT (for individuals), or at an increased rate (for businesses). Therefore, mobile is more heavily taxed than sectors with a preferential treatment.

  VAT exemptions and reduced rates applied on food, medicines, education and transportation provide substantial support to better-off households and are therefore poorly targeted. In fact, only the lower rate on food brings larger benefits to low-income households than to high-income households. Simulations based on household data suggest that applying the current standard rate of 21% on all consumption would have small distributional effects, which could be compensated through transfers to low-income households with significantly less resources than the revenue losses resulting from reduced rates[101].

- **The tax system is not equitable.** As a result of the two points mentioned above, the tax burden is not equal across all the economic sectors in Argentina, and mobile services are more heavily

95. ICT Regulation Toolkit.
96. V. Tanzi and H. Zee (March 2001).
97. *Enhancing the Effectiveness of External Support in Building Tax Capacity in Developing Countries*. Prepared for Submission to G20 Finance Ministers (IMF, OECD, UN, and WBG, July 2016).
98. *Revenue Mobilization in Developing Countries* (March 2011) Prepared by the Fiscal Affairs Department. Approved by Carlo Cottarelli, IMF.
99. *Supporting the Development of More Effective Tax Systems. A Report to the G-20 Development Working Group by the IMF, OECD, UN, and World Bank* (2011)
100. OECD (2017), OECD Economic Surveys: *Argentina 2017: Multi-dimensional Economic Survey*, OECD Publishing, Paris. http://dx.doi.org/10.1787/eco_surveys-arg-2017-en
101. Idem.

taxed than others without a clear reason to justify such discrimination. Specifically, there is not an evident justification for the imposition of excise taxes which should be reserved for particular goods or services with negative externalities.

- **Taxes undermine the affordability of mobile services.** As a consequence of the above, mobile services are more expensive than they should be. In particular, the imposition of excise taxes (such as ENARD and *Impuesto Interno*) affects the affordability of mobile services.

- **Taxation discourages investment.** The provincial turnover tax (*impuesto sobre los ingresos brutos*), which is levied on sales, is particularly distortive for investment in Argentina. This provincial tax is applied in a cascading manner at every stage in the supply chain, without any deduction for the tax paid at earlier stages, reduces competitiveness and distorts the organisation of the value chain towards vertical integration. In contrast, global trends have been moving towards more fragmented value chains. With different tax rates depending on the origin and destination of goods, the turnover tax also acts as an interprovincial tariff barrier. This turnover tax has increased sharply over recent years, partly because it is not very visible to consumers[102].

- **The tax system is not simple.** The current regime in Argentina features more than 35 taxes and a complex system of cross-exemptions across taxes, depending on the type of activity and location. The existence of overlapping levels of taxation (national, provincial and municipal) adds to complexity and raises challenges in terms of certainty and simplicity.

- **The costs of collection are not minimised.** As a result of the above, the costs of collection are high for both government (national, provincial, and municipal) and mobile operators.

3.5 Options for tax policy reform on the mobile sector in Argentina

Following the path of other developing countries, Argentina has started the way to launch an ambitious tax reform, embracing many of the principles outlined above, namely[103]:

- Improving tax equity
- Improving tax progressiveness
- Tax simplification (both in terms of structures and administration)
- Improving fiscal coordination between federal and local government (in terms of collection and distribution of revenue)
- Allowing a smooth implementation of the reform in order to avoid tax uncertainty

Based on these principles, the Argentine Government has recently announced further details on the contents of the tax reform that will be submitted to the Congress, including changes to[104]:

- **Excise duty (*Impuesto interno a dispositivos*).** A reduction in the nominal rate from 17% to zero percent on electronic products, including mobile phones. Recently, the national government and the province of Tierra del Fuego agreed a gradual reduction of this tax for the local production and importation of electronic products. In this way, the nominal rate will be reduced to 10.5% in 2018, and then there will be further gradual reductions to achieve a nominal rate of 2% by 2023.

- **Provincial turnover tax (*Ingresos brutos*).** A gradual reduction in provincial rates, from a range of 0% to 8% to a range of 0% to 4%. This proposal will be negotiated with the provincial governments.

The whole tax package would be gradually implemented over five years. In this way, the overall fiscal cost will be minimal (only 0.3% of GDP), following a lower tax evasion and greater economic growth (0.5% GDP per year).These policy options

102. Idem.
103. Artículo 78. Título IV, Comisión Bicameral para la Reforma Tributaria. Ley 27260.
104. Ministerio de Hacienda (October 2017). *Proyecto de reforma tributaria.*

would bring positive impacts to the wider economy, by increasing the affordability of mobile phones and reducing distortions to mobile operators.

However, there are still shortcomings in the current regime affecting the mobile sector to be addressed. For example, under the current reform, the rate of the excise duty on mobile services (*impuesto interno al servicio*) is likely to increase from 4.1667% to 5%[105].

In this way, this report has identified three options in line with the principles of taxation and the same objectives underpinning the Argentine Government's approach to tax reform:

- Option 1 - Elimination of 4.2% excise duty on mobile services (*Impuesto Interno al servicio*);
- Option 2 - Elimination of the 6.7% provincial turnover tax (*Ingresos Brutos*); and
- Option 3 - Elimination of the 20.5% excise duty on electronics (*Impuesto Interno a dispositivos*).

These proposals would also increase the affordability of mobile products and services, reducing the tax burden on consumers, and as a result, improve the productivity of Argentina thanks to a better connectivity and digital inclusion.

3.5.1 Elimination of excise duty on mobile services (*Impuesto Interno al servicio*)

Excise duties are levied on specific products and services, including mobile phone services and other products such as tobacco, alcoholic beverages, non-alcoholic beverages, syrup, extracts, vehicles and motors, luxury objects, recreation and sports craft, and spaceships. The rate for mobile phone services is currently 4.1667%, although this rate is expected to increase to 5% following the on-going tax reform process.

This tax adds more complexity to the tax system and makes more expensive mobile services, which are already taxed with VAT and the ENARD contribution.

The rationale for change

- The elimination of this tax would help to reduce the level of mobile specific taxation, which is already very high[106].
- Mobile services have positive externalities and therefore should not be taxed on the same basis as other "sin" products like tobacco, alcohol or luxury products. The elimination of this tax on mobile services would increase the fairness of the system.
- The elimination of this tax would increase the affordability of mobile services, minimising the distortions to mobile subscribers.
- Compliance costs to mobile operators would be minimised as they would no longer have to withhold this tax on each bill.

If the elimination of *Impuesto Interno* is not possible, a rate reduction would still bring positive impacts to the wider economy, although to a more limited extent.

3.5.2 Elimination of the provincial turnover tax (*Ingresos Brutos*)

The Argentinian provinces, the City of Buenos Aires and all other jurisdictions levy local taxes on the habitual exercise of economic activities, known as the tax on gross receipts (*impuesto a los ingresos brutos*). Rates vary for different provinces and for different activities, generally ranging from 1% to 7%. Mobile operators are usually taxed at the rate of 6.7%[107].

The statutory corporate income tax rate of 35% in Argentina is already high by international standards, even among Latin America countries, which tend to have higher rates than advanced economies. But the effective tax burden is even higher due to a provincial turnover tax. As noted above, corporate tax payments in Argentina (34%) from the mobile sector are higher than other countries in the region, such as Uruguay (30%), El Salvador (19%), and Colombia (16%).

This tax is levied on sales at every state in the supply chain without a deduction for the tax paid at earlier stages. As a result, this cascading effect creates an artificial incentive for vertical integration and reduces competitiveness. It also acts as an interprovincial tariff barrier, as different tax rates are applied depending on the origin of goods. Some provinces have increasingly taxed economic

105. At the time of finalising this report, the full text of the draft tax bill has not been made public officially. However, according to some draft versions circulating in the media, Article 30 of Law 24.674 will be amended to increase the rate of *Impuesto interno* on mobile services to 5%. See further details on: La Nacion. *Así es el proyecto de reforma tributaria que ingresa hoy el Congreso. 13 November 2017.* http://www.lanacion.com.ar/2081932-asi-es-el-proyecto-de-reforma-tributaria-que-ingresa-hoy-el-congreso
106. As mentioned above, mobile specific tax payments are equivalent to around 10% of total mobile sector revenue in Argentina. This is one of the highest shares in Latin America, surpassing other countries such as Ecuador (9%), Brazil (7%), Peru (4%), Colombia (3%), Mexico (3%), El Salvador (2%), Panama (1%), Uruguay (1%), Chile (0.1%), and Guatemala (0.02%),
107. *Argentina – Corporate Taxation* sec. 9, Country Surveys IBFD (accessed 18 Sept. 2017). https://online.ibfd.org/document/gtha_ar_s_9.

activities undertaken in other jurisdictions, creating additional distortions and regulatory uncertainty[108].

The rationale for change

- The elimination of this tax would make the tax system more conducive to investment, minimising the distortions to mobile operators.
- This tax is difficult to administer as provinces have to coordinate between themselves to avoid double taxation and other problems. Compliance costs to taxpayers and administration costs for the local governments would be minimised. In the long term, this should lead to additional tax revenue given a better performance of the market.
- This tax adds complexity to the corporate tax system in Argentina. Effectively operators are required to compute two different tax bases, which means an additional administrative burden. Furthermore, some provinces have increasingly taxed economic activities undertaken in other jurisdictions, creating additional distortions and regulatory uncertainty. As a result of this, mobile businesses are less likely to make optimal decisions and respond to intended policy choices.

If the elimination of Ingresos Brutos is not possible, a gradual rate reduction (in line with the proposal announced by the Government[109]) would still bring positive impacts to the wider economy, although to a more limited extent.

3.5.3 Elimination of the excise duty (*Impuesto Interno*) on electronics

As explained in section 2.1, excise taxes are charged on specific products and services. The local production and importation of electronic products, including mobile handsets, outside *Tierra del Fuego*, is taxed at a nominal rate of 17%, which is equal to an effective rate of 20.5%[110]. According to the Decree No. 252/2009, electronic products "exported" from T*ierra del Fuego* to the Argentine continental territory are subject to a reduced effective rate of 7%.

As part of the tax reform, the government had initially announced a reduction in the nominal rate of tax applied to the local production and importation of electronic goods, including mobile phones, to 0%. Recently, the national government and the province of *Tierra del Fuego* agreed a gradual reduction of this tax for the local production and importation of electronic products. In this way, the nominal rate will be reduced to 10.5% in 2018, and then there will be further gradual reductions to achieve a nominal rate of 2% by 2023[111]. The schedule of these gradual reductions is expected to be as detailed in Table 5[112].

Table 5

Tentative schedule of Impuesto Interno on electronic goods from 2018-2023

Year	Nominal rate on electronic goods produced outside Tierra del Fuego	Nominal rate on electronic goods produced in Tierra del Fuego
2018[113]	10.5%	0%
2019	9.0%	0%
2020	7.0%	0%
2021	5.5%	0%
2022	3.5%	0%
2023	2.0%	0%

108. OECD (2017).
109. Ministerio de Hacienda (October 2017). *Proyecto de reforma tributaria.*
110. As mentioned above, the nominal rate on electronic products is 17%. The effective rate is 20.5% as per the following formula: effective rate = 100 x nominal rate/ 100 – nominal rate. Tributos Vigentes en la Republica Argentina a Nivel Nacional (Actualizado al 30 de septiembre de 2017). Ministerio de Economia, Argentina.
111. Ministerio de Hacienda. Presidencia de la Nación. Tierra del Fuego: acuerdo para mejorar la competitividad de la industria electrónica. 13 November 2017. https://www.minhacienda.gob.ar/tierra-del-fuego-acuerdo-para-mejorar-la-competitividad-de-la-industria-electronica/
112. As mentioned above, at the time of finalising this report, the full text of the draft tax bill has not been made public officially. However, according to some draft versions circulating in the media, Articles 119 and 125 of the bill would introduce a gradual reduction of the nominal rate, as detailed in Table 5. See further details on: La Nación. Así es el proyecto de reforma tributaria que ingresa hoy el Congreso. 13 November 2017.
113. This new rate would come into force on the first day of the third month following the promulgation of the reform. Article 125. Idem.

Eventually, a full elimination of this tax on electronic goods produced outside *Tierra del Fuego* will be beneficial for Argentinian consumers, as it will be aligned with the principles outlined in section 3.4, as explained below.

The rationale for change

- As recognised by the government, electronic goods are no longer seen as a luxury item but a necessary commodity for the productivity of businesses. This is particularly applicable to the case of mobile phones which are essential for the connectivity of individuals and businesses.
- This will reduce the tax burden on products with positive externalities, which should not be taxed on the same basis as other "sin" products like tobacco, alcohol or luxury products. In this way, this change would increase the fairness of the system.
- It will make mobile phones cheaper, especially for those from lower-income backgrounds.
- This tax was another layer of complexity in the tax system and its removal will help to reduce this complexity.

Section 4 presents detailed economic modelling to show the impacts delivered by each of the three options[114].



114. While a combination of these tax reforms can potentiate the economic benefits for Argentina, the economic assessment will consider the options as separate 'scenarios' where each tax is reformed and compared to a status quo scenario with no change in taxation.

4. Economic impacts of tax reform on the mobile sector in Argentina

4.1 Recommended options for tax reform

Based on the framework and analysis outlined in the previous section, three options for tax reform have been assessed quantitatively by modelling their impacts on the sector and the wider economy:

1. Elimination of 4.2% excise duty on mobile services (*Impuesto Interno al servicio*) – this will directly lead to lower prices for both households and business subscribers;

2. Elimination of the 6.7% provincial turnover tax (*Ingresos Brutos*) – this is expected to result in lower prices for both households and business subscribers; and

3. Eliminating the 20.5% effective rate[115] of the excise duty on electronics (*Impuesto Interno a dispositivos*)– this will reduce the cost of domestic and imported handsets, and consequently the cost of ownership, and it will directly reduce the cost of services sold bundled with handsets.

These options for tax reform have been modelled separately in order to isolate the effects of each tax reduction on the mobile sector and the wider economy. While we analyse the implications of these tax scenario reforms, we note that alternative scenarios and combinations of these reforms are also possible.

4.2 Approach to assessing the quantitative impacts of tax reform on the mobile market and the wider economy

The potential quantitative impacts of each of the tax options have been analysed using a set of modelling tools representing both the Argentine mobile sector and the Argentine economy as a whole. While we recognise that a combination of these tax reforms can have beneficial economic impacts for Argentina, the assessment considers the options as separate 'scenarios' where each tax is reformed and compared to a status quo scenario with no change in taxation[116].

A model of the Argentine mobile sector has been created to calculate changes in the mobile sector resulting from each of the tax policy scenarios. This includes the change in subscribers, usage, technology, revenues, profits, reinvestment and expanded capacity in the sector.

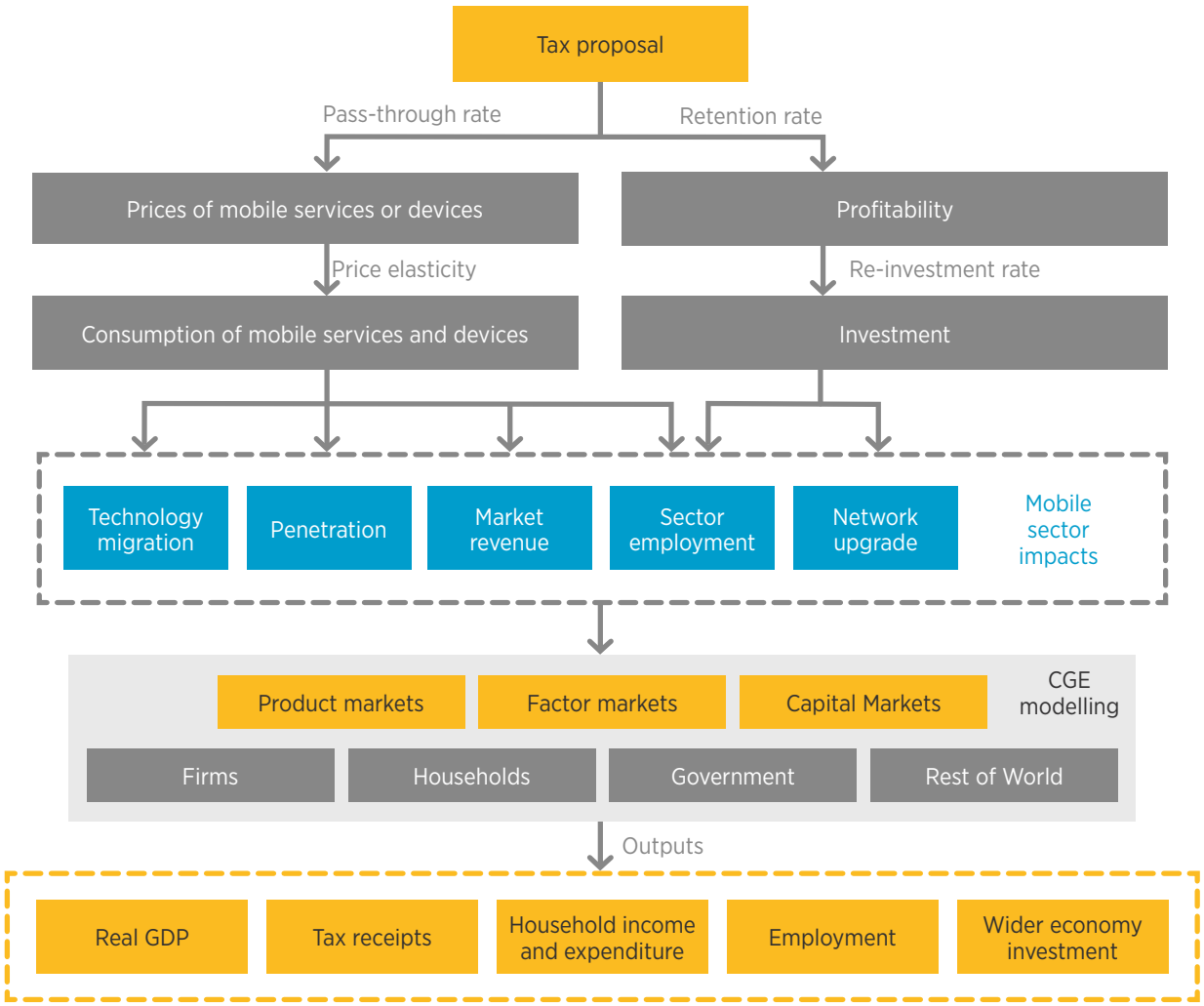
115. As mentioned above, the nominal rate on electronic products is 17%, but the effective rate is 20.5% as per the following formula: effective rate = 100 x nominal rate/ 100 – nominal rate. 20.5% is the effective rate that currently applies to mobile handsets, and other electronic appliances produced outside of Tierra del Fuego.
116. The economic impacts of each option for tax reform have been modelled separately, and therefore cannot be simply added up to determine the benefits of combined reductions in various taxes

The wider economic impacts of each tax policy scenario are assessed via a Computable General Equilibrium (CGE) model, namely the standard version of the Global Trade Analysis Project (GTAP) model and its associated dataset[117]. The GTAP model is contributed to and widely used by government agencies, international institutions, the private sector and academia to model policy changes within countries and cross-border effects of trade policies. Some examples include the World Bank, World Trade Organization (WTO), the Directorate General for Trade of the European Commission, Asian Development Bank, Organisation for Economic Co-operation and Development (OECD) and United Nations Economic Commission for Africa[118].

The schematics of the modelling approach used in this study is shown in Figure 22 below[119].

Figure 22

Overview of the modelling approach



Source: EY analysis

117. Global Trade Analysis Project (https://www.gtap.agecon.purdue.edu/)
118. GTAP Consortium (https://www.gtap.agecon.purdue.edu/about/consortium.asp)
119. Please see Appendix A for more detail on the methodology approach used in this study to construct the scenario forecasts

4.3 Elimination of excise duty on mobile services (*Impuesto Interno al servicio*)

The elimination of the 4.2% excise duty on mobile phone plans would reduce consumer prices and improve affordability for mobile services. In general, the extent to which taxes ultimately fall on mobile operators or consumers depends on the type of tax and market conditions. Some taxes and regulatory fees may be absorbed by operators in the form of lower profits, whilst others may be passed through to consumers through higher prices, or there may be a combination of the two. The elimination of the excise duty on mobile phone plans would initially lead to a direct tax saving for operators. However, the modelling shows that the majority of the reduction (about 90%) would be passed through to subscribers leading to an effective change in price of 3.7%[120].

This price decrease would benefit both households and business subscribers. For households, this would create an increase in their real incomes. The elimination of the excise duty will lead to a reduction in the share of monthly income spent on the cost of mobile ownership outlined in Section 1.5. Absent behavioural effects, the 500MB data basket will become more affordable for the bottom 20% of the income distribution after the tax change, as its cost will be reduced from 8.5% of monthly income to 8.2%. For business subscribers, this would reduce their costs and facilitate an expansion in all the sectors that use mobile. This tax scenario would have the following impacts compared to the baseline scenario[121]:

- **New connections:** an additional 1 million unique subscribers, or 1.7 million mobile connections by 2022. This is equivalent to an increase of around 2.1% in unique subscriber penetration (3.6% in total connections). Of these new connections, 71% would be pre-pay and 95% would be mobile broadband enabled (3G or 4G). About two-thirds would be classified as low-income;

- **Mobile market revenue:** total mobile sector revenue would increase by US$99m (1.7%) by 2022. This would be driven by additional revenues from the increased number of connections and higher overall usage, which offset the reduction in pricing from the tax reform;

- **Technology migration:** the reduction in the price of data would lead to the migration of around 370,000 additional 2G connections to mobile broadband enabled services;

- **Usage:** the reduction in the price of mobile services would lead to a 3.4% increase in average data usage per connection against the baseline, while average usage of voice and message services would also increase by 2.5% and 3.2% respectively. Among low-income customers, data usage would increase from an estimated 178MB per month to approximately 493MB per month;

- **Additional investment by operators:** there would be additional annual investment of over US$16m (equivalent to 147 new base stations, or 355 upgrades, per year). This extra capital expenditure would be spent on network improvements to increase capacity and quality of service, given that the vast majority of the population in Argentina will be covered with 4G services in the baseline[122];

- **Productivity gain:** the increase in unique subscriber penetration of 2.1% would lead to a 0.25% gain in productivity across the economy, leading in turn to further increases in output, incomes and expenditure;

- **GDP increase:** total GDP would increase by US$1.8bn (0.34%) as the price and productivity effects lead to a chain reaction of expansion across the economy;

- **Employment increase:** as a result of the increased economic activity in the economy, employment would increase by 16,100 (0.09%); and

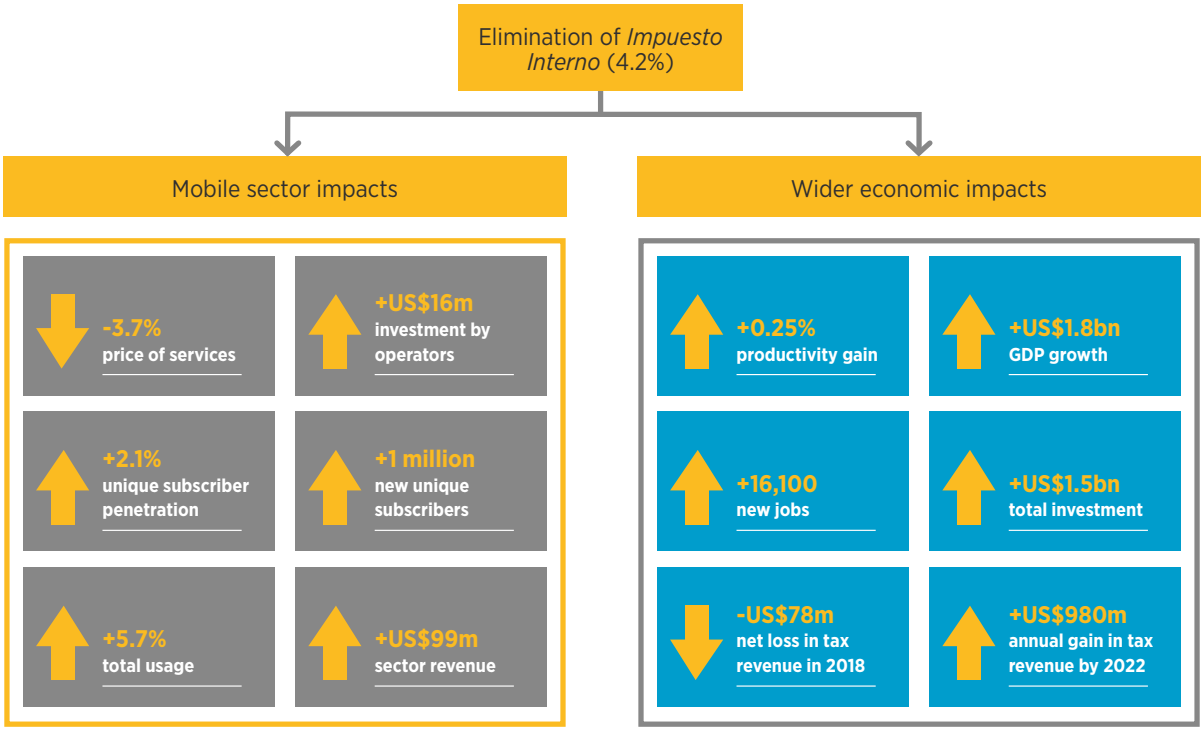
- **Tax revenue impact:** this scenario would have a net cost to the Argentine Exchequer of US$78m. However, the subsequent expansion of the mobile sector, and significant growth in the wider economy, mean that by year 2 both the annual impact and cumulative impact are positive. The gain in tax revenue is about US$980m per annum by 2022.

The summary of the sector-specific and economic impacts in 2022 is shown in Figure 23.

120. Please see Appendix A for more detail on the modelling assumptions used in this study
121. Please see Appendix A for more detail on the modelling assumptions used in this study
122. GSMA Intelligence database

Figure 23

Annual impacts of the elimination of excise duty on mobile services (*Impuesto Interno al servicio*), 2022



Source: EY analysis

4.4 Elimination of the provincial turnover tax (*Ingresos Brutos*)

The removal of the turnover tax leads to reduced mobile service prices. Modelling suggests that the vast majority (about 90%) of the reduction will be passed-through as lower prices for households and businesses[123]. With a tax reduction of 6.7%, this means prices fall by 6%[124]. Absent behavioural effects, the 500MB data basket will become more affordable for the bottom 20% of the income distribution after the tax change, as its cost will be reduced from 8.5% of monthly income to 8.1%.

This tax scenario would have the following impacts (compared to the baseline):

- **New connections:** an additional 1.6 million unique subscribers, or 2.7 million new mobile connections by 2022. This is equivalent to an increase of around 3.4% in unique subscriber penetration (5.8% in total connections). Of these new connections, 71% would be pre-pay and 95% would be mobile broadband enabled (3G or 4G). About two-thirds would be classified as low usage;
- **Mobile market revenue:** total mobile sector revenue would increase by US$156m (2.7%) by 2022. This would be driven by additional revenues from the increased number of connections and higher overall usage, which offset reduction in pricing;
- **Additional technology migration:** the reduction in the price of data would lead to the migration of around 606,000 additional 2G connections to mobile broadband enabled services;
- **Usage:** the reduction in the price of mobile devices would lead to a 5.6% increase in average data usage per connection against the baseline, while average

123. Please see Appendix A for more detail on the pass through rate calculations for this study
124. For consumers, a reduction in the tax rate leads to a decrease in the effective price of mobile services or handsets. The relationship between the size of the tax reduction and the related decrease in prices is calculated based on the pass-through rate of 90%

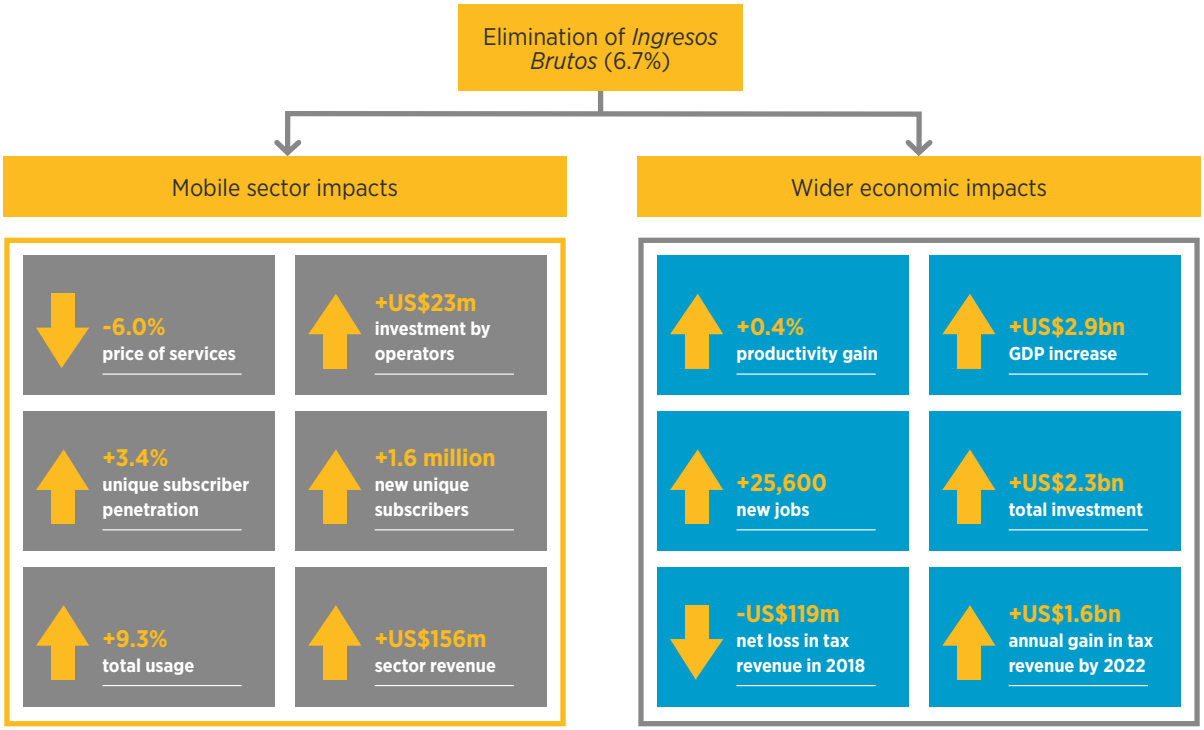
usage of voice and message services would also increase by 4.2% and 5.2% respectively. Among low-income customers, data usage would increase from an estimated 178MB per month to approximately 505MB per month;

- **Additional investment by operators:** there would be additional annual investment by mobile operators of over US$23m (equivalent to 215 new base stations, or 518 upgrades, per year). This extra capital expenditure would be spent on network improvements to increase capacity and quality of service, given that the vast majority of the population in Argentina will be covered with 4G services in the baseline[125];
- **Productivity gain:** the increase in unique subscriber penetration of 3.4% would lead to a 0.4% gain in productivity across the economy, leading in turn to further increases in output, incomes and expenditure;
- **GDP increase:** total GDP would increase by US$2.9bn (0.54%) as the price and productivity effects lead to a chain reaction of expansion across the economy;
- **Employment increase:** as a result of the increased economic activity, employment would increase by 25,600 (0.14%); and
- **Tax revenue impact:** this scenario would have a net cost to the Argentine Exchequer of US$119m in year 1. However, the subsequent expansion of the mobile sector, and significant growth in the wider economy, mean that by year 2 both the annual impact and cumulative impact are positive. The gain in tax revenue is about US$1.6bn per annum by 2022.

The summary of the sector-specific and economic impacts in 2022 is shown in Figure 24 below.

Figure 24

Annual impacts of eliminating the provincial turnover tax *(Ingresos Brutos)*, 2022



Source: EY analysis

125. GSMA Intelligence database

4.5 Eliminating the excise duty on electronics (*Impuesto Interno a dispositivos*)

As explained in section 3.5.3, the government had initially announced a reduction in the nominal rate of tax applied to the local production and importation of electronic goods, including mobile phones, to 0%. Recently, the national government and the province of *Tierra del Fuego* agreed a gradual reduction of this tax for the local production and importation of electronic products. In this way, the nominal rate will be reduced to 10.5% in 2018, and then there will be further smooth reductions to achieve a nominal rate of 2% by 2023. In the meantime, electronic goods produced in *Tierra del Fuego* will be taxed at 0%.

Eventually, a full elimination of this excise duty on electronic products, would have a direct effect on the price for both domestic and imported mobile phones, as well as on the price of the majority of electronic appliances in Argentina. This will be in line with the objective of increasing the affordability of electronics, especially for lower-income groups who would have access to these necessary products at more competitive prices.

At present, we understand that the vast majority of all domestic production of mobile phones and other electronic appliances (such as televisions, radios and air conditioners) in Argentina takes place in *Tierra del Fuego*, and is subject to an effective excise rate of 7%. Imported electronic products are taxed at an effective rate of 20.5%. For mobile handsets, imports represent approximately 5% of the market[126].

A fall in the price of electronic appliances (as a consequence of the proposed reform) will improve affordability and consumption in the sector. It is also likely that reducing the relatively higher taxes on imports would result in competitive pressure on the price of domestically produced products and result in a higher proportion of imports in domestic consumption of electronics.

Specifically for the mobile sector, the reduction in the excise duty on handsets would improve affordability, as the cost of mobile ownership would be reduced for both households and business. This would, in turn, lead to an increase in demand for mobile services more generally.

The modelling suggests that the elimination of excise duty on electronics (*Impuesto Interno a dispositivos*) would lead to a 7.4% reduction in the average price of mobile phones in Argentina.

This tax scenario would have the following impacts (compared to the baseline):

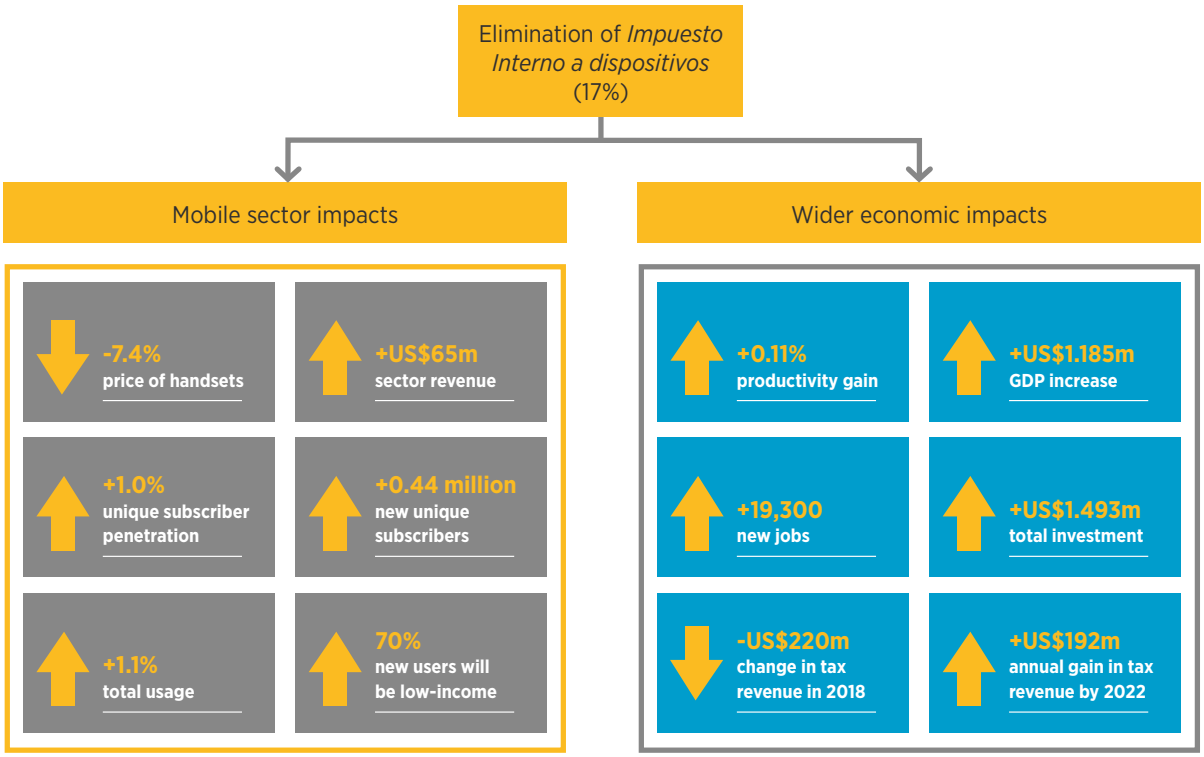
- **New connections:** an additional 0.44 million unique subscribers, or 0.75 million new mobile connections by 2022. This is equivalent to an increase of around 1.0% in unique subscriber penetration (1.6% in total connections). Of these new connections, 73% would be pre-pay and 87% would be mobile broadband enabled (3G or 4G). About 70% would be classified as low usage;
- **Mobile market revenue:** total mobile sector revenue would increase by US$65m (1.1%) by 2022. This potential increase in market revenue for services is driven almost entirely by the increase in the number of connections while the effect on the usage per connection is relatively small;
- **Additional technology migration:** the reduction in the price of data would lead to the migration of around 678,000 additional 2G connections to mobile broadband enabled services;
- **Productivity gain:** the increase in unique subscriber penetration of 1.0% would lead to a 0.11% gain in productivity across the economy, leading in turn to further increases in output, incomes and expenditure;
- **GDP increase:** total GDP would increase by US$1.2bn (0.2%) as the price and productivity effects lead to a chain reaction of expansion across the economy;
- **Employment increase:** as a result of the increased economic activity, employment would increase by over 19,000 jobs (0.1%); and
- **Tax revenue impact:** the fall in tax receipts from domestic and foreign electronic product manufacturers would be more than offset by growth in tax receipts from other sectors of the economy. The impact on tax receipts from the communications sector is particularly positive, due to increase consumption of mobile services, and lower input costs driving higher profits in the sector. The total gain in economy-wide tax revenues is US$192m per annum by 2022.

The summary of the sector-specific and economic impacts in 2022 is shown in Figure 25.

126. Euromonitor data

Figure 25

Annual impacts of eliminating the excise duty on electronic appliances, 2022



Source: EY analysis



5. Conclusion: Reforming mobile sector taxation in Argentina

The mobile industry plays an important role in financing public expenditure in Argentina, however mobile sector taxation remains relatively high and risks hampering further development of the sector, the digital economy, and the migration to new generation technologies.

Despite the widespread use of less advanced technologies, affordability remains a challenge, particularly for low-income groups and for mobile broadband services. This is driven by a relatively high tax burden on the sector when compared to other sectors and regional benchmarks. The complexity of the tax system also represents a challenge, with a variety of taxes applied to the sector at different jurisdictional levels.

Reforming taxation applied on the mobile sector towards a more balanced and efficient structure has the potential to provide significant economic benefits and align with the government's objectives of making the tax system more equitable, efficient, and modern[127]. Furthermore, it would support Argentina meeting the objectives set out in the OECD Ministerial Declaration on the Digital Economy undersigned in Cancun in 2016.

This paper has demonstrated that there would be considerable socio-economic benefits of reforming some of the most distortive taxes on the mobile economy in Argentina, in particular, the excise duty on mobile services (*Impuesto Interno al servicio*), the provincial turnover tax (*Ingresos Brutos*) and the excise duty on electronic appliances (*Impuesto Interno a dispositivos*). A summary of the impacts is provided in Table 6.

Table 6

Summary of socio-economic benefits of the proposed tax reforms by 2022

Indicator	Elimination of excise duty on mobile services	Elimination of Turnover Tax	Elimination of excise duty on electronics
New Unique Subscribers	+1 million	+1.6 million	+0.44 million
Investment by Operators	+US$16m	+US$23m	N/A[128]
Sector Revenue	+US$99m	+US$156m	+US$65m
GDP Increase	+US$1.8bn	+US$2.9bn	+US$1.2bn
Wider Investment	+US$1.5bn	+US$2.3bn	+US$1.5bn
Annual gain in tax revenue	+US$980m	+US$1.5bn	+US$192m

127. Ministerio de Hacienda (October 2017). *Proyecto de reforma tributaria.*
128. In all scenarios, we have assumed that operators reinvest a proportion of the tax savings that they retain. As mobile operators are not involved in handsets production Argentina, we have assumed that the elimination of excise duty on electronics does not constitute a direct tax saving for them, and therefore there is no reinvestment in the market.

The tax proposals analysed in this report are closely aligned with the suite of tax reforms recently announced by the Government, namely the reduction in excise duty on electronics and the gradual rate decline in the provincial turnover tax. The policy options for reform outlined in this report contain the same underpinning objectives, namely, increasing the affordability of mobile products and services, reducing the tax burden on consumers, and as a result, increasing the productivity of Argentina. In this way, support the Government's tax policy agenda through:

- Delivering a more equitable tax burden on the mobile sector by reducing industry-specific taxation;
- Increasing the progressiveness of the system by removing taxes which hamper the affordability of mobile services, especially for low-income groups;
- Simplifying the current tax system and therefore reducing compliance and administration costs for businesses, subscribers, and the Government; and
- Improving the productivity of both the sector and the wider economy, without compromising tax revenues. In turn, the Government will secure better and more stable sources of revenue for the immediate future.

Appendix A Methodology

This Appendix sets out the methodology applied in this study to calculate the potential economic impacts of tax policy scenarios. As described in section 4, the economic modelling is undertaken in two stages, using two models:

- A model of the Argentine mobile sector, the 'telecoms market model' has been created to calculate changes in the mobile sector resulting from each of the tax policy scenarios. This includes the change in subscribers, usage, technology, revenues, profits, reinvestment and expanded capacity in the sector.
- The wider economic impacts of each tax policy scenario are assessed via a Computable General Equilibrium (CGE) model, namely the standard version of the Global Trade Analysis Project (GTAP) model and its associated dataset

Mobile sector modelling

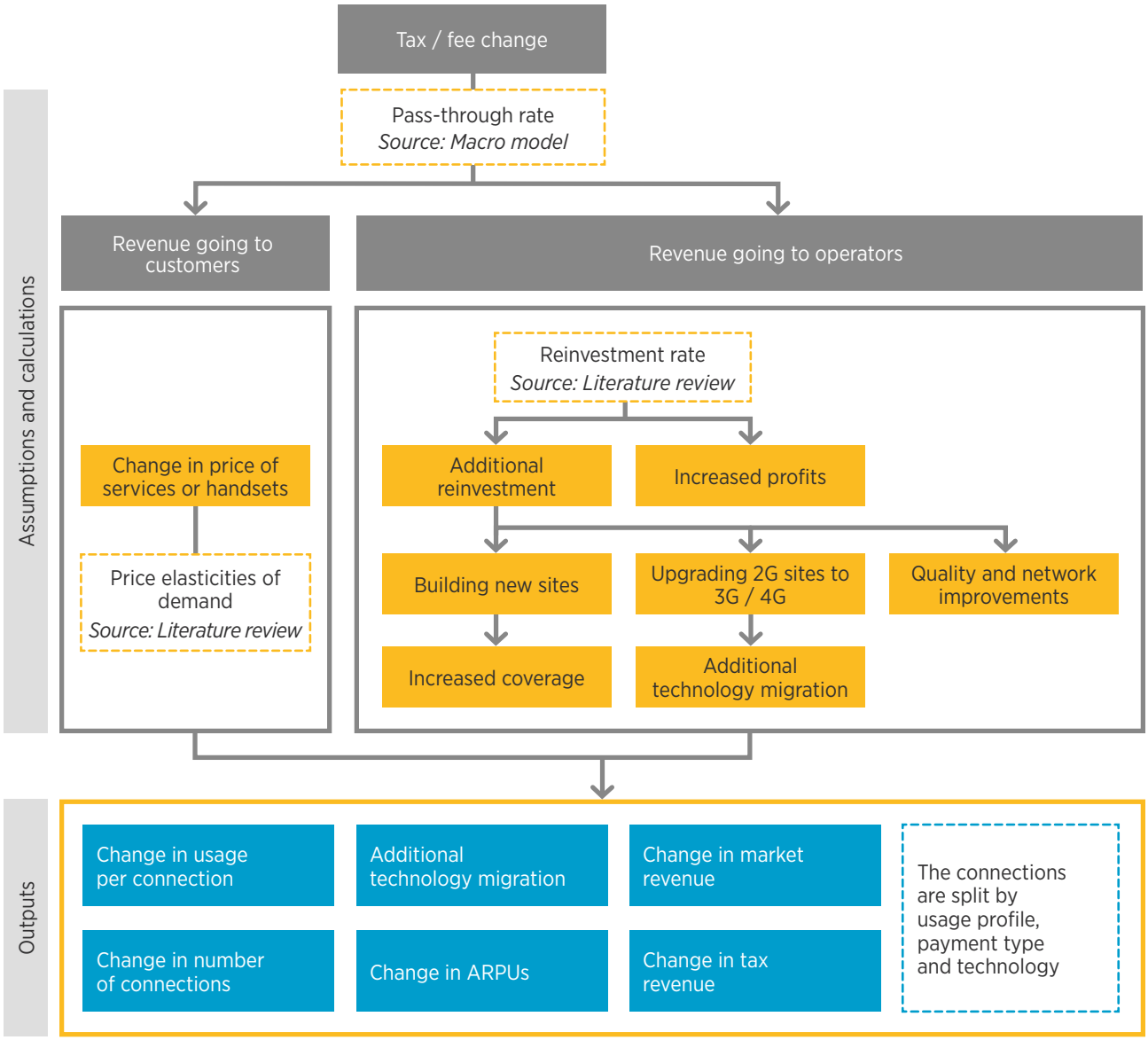
Design of the telecoms market model

The telecoms market model covers the period 2016–2022, and uses data from local mobile operators and the GSMA Intelligence database. For modelling the scenarios, it has been assumed that tax changes become effective in 2018. The mobile market model then calculates separate forecasts for each tax policy scenario. The difference between the scenario forecasts and the baseline is effectively the additional impact resulting from the tax policy reform.

A schematic of this model is presented in Figure 26 below.

Figure 26

Overview of mobile sector modelling approach



Source: EY analysis

As illustrated in Figure 26, the telecoms market model captures the impact on consumer demand and operators' profits and investment as a consequence of a mobile taxation reform. The model allows us to estimate the additional connections, technology migration and mobile penetration generated across low, medium and high-income groups, and across 2G, 3G and 4G services.

Mobile market impacts

For consumers, a reduction in the tax rate leads to a decrease in the effective price of mobile services or handsets. The relationship between the size of the tax reduction and the related decrease in prices is dependent on the level of "pass-through"[129]. The resulting reduction in the effective price of mobile services is modelled to have the following impacts:

- An increase in usage per connection, as lower prices lead to increased demand for services;
- An increase in the number of connections, as lower prices reduce the relative cost of mobile ownership which attracts new subscribers; and
- Additional technology migration, as lower prices for smartphones and / or cheaper data services accelerates the migration of existing subscribers from 2G services to 3G / 4G services.

For operators, the proportion of the tax reduction that is not passed through in the form of lower prices, would either be retained as increased profit, or reinvested. The decision between these two options depends on an assumption made on the reinvestment rate[130]. The following effects of additional investment are estimated using the telecoms market model:

- An increase in the number of subscribers, as the investment enables building of new mobile sites and, hence, increases network coverage; and
- Additional technology migration, as the investment enables upgrade of 2G sites to 3G / 4G and, therefore, existing subscribers have the opportunity to upgrade from 2G to 3G / 4G services.

Key outputs

The key outputs of the telecoms market model include changes to the baseline forecast (based on the GSMA Intelligence forecast) in respect of:

- the number of connections;
- the number of unique subscribers;
- mobile market penetration;
- total market revenue; and
- sector taxation receipts.

For connections and subscribers the model specifies market segments by usage profile (high, medium and low), technology (2G, 3G and 4G) and payment type (prepay and postpay). Therefore the telecoms market model has been run for the total of 18 categories of subscribers.

Macroeconomic modelling

Macroeconomic modelling approach

The macroeconomic model builds upon the mobile sector analysis to estimate how lower taxes and prices feed through to the wider economy. This takes into account forward and backward linkages in the supply chain (i.e. supply chain for mobile service providers, and where mobile services are used in other sectors of the economy), the interaction between expanding businesses and a rise in household incomes and employment, and an assumed productivity gain across the economy as mobile penetration rises. This model gives an estimate of the dynamic impact on total tax receipts, allowing for all these indirect effects to work through the economy.

The macroeconomic impacts are modelled in two stages:

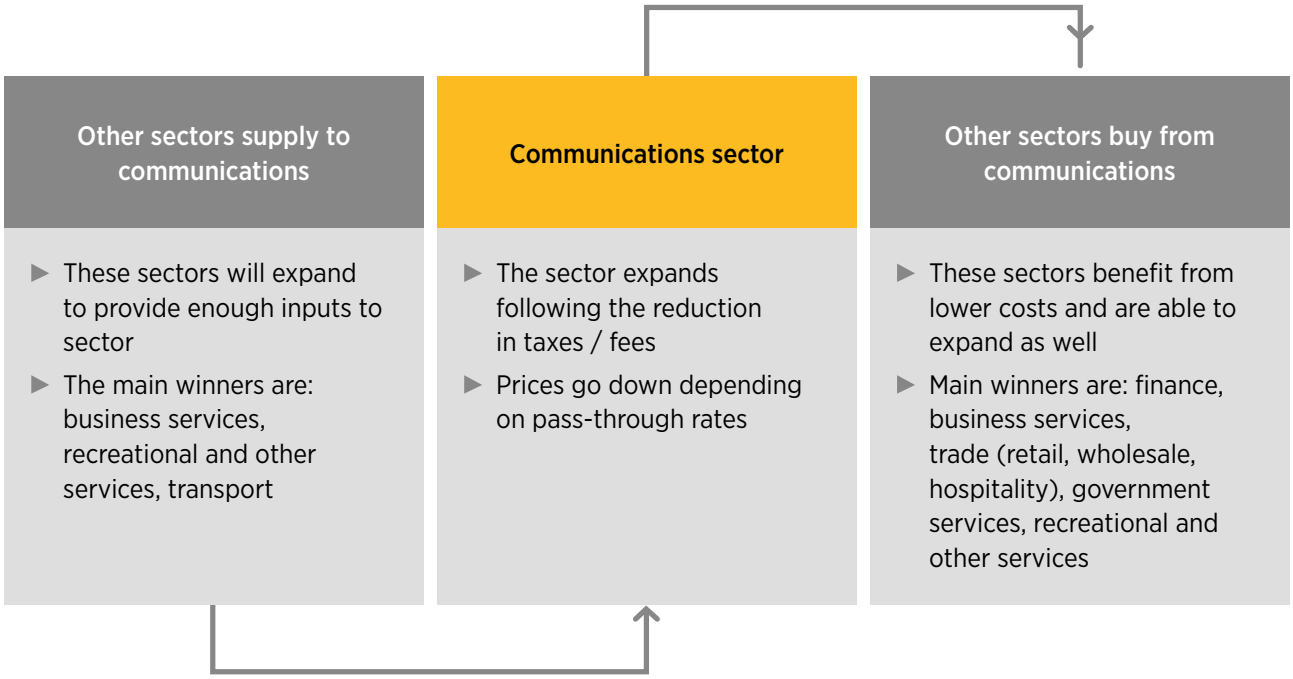
- The impact of the tax change on the sector itself and the interaction with the wider economy; and
- A boost to economy-wide productivity resulting from the increase in penetration.

The impact of the mobile sector on the wider economy starts from its supply chain linkages. In particular, telecommunications is an important input to businesses right across the Argentina economy. As lower taxes and consequent lower prices are passed on, many businesses will benefit and be able to expand their own outputs. Businesses that supply the mobile sector will also benefit from its expansion (see Figure 27).

129. The percentage of the tax / fee change which is passed through to subscribers in the form of lower prices. This is calculated based on the relative slope of the supply and demand curves for mobile services
130. The percentage of the tax / fee change not passed through to subscribers which is reinvested by operators

Figure 27

Supply chain linkages



Source: EY analysis

The wider interactions in the economy lead to a virtuous circle of economic expansion:

- The forward and backward linkages from the mobile sector lead to expansion in a number of related sectors, and this in turn creates more expenditure circulating in the economy;
- The mobile communications sector will see increased investment, as they are now relatively more profitable;
- The retail sector will benefit from higher demand for mobile handsets;
- Overall household incomes will expand, leading to more spending in the wider economy and an increase in aggregate savings to fund investment;
- Higher real wages attract more people into the workforce, expanding employment and in turn further boosting spending in the economy;
- A larger economy requires more investment to complement the expansion in employment and to support the larger capital stock, which will see growth in construction and in sectors making investment goods; and
- The economy is modelled to be constrained by available resources (workers, capital), so some sectors must contract to make way for the expanding sectors.

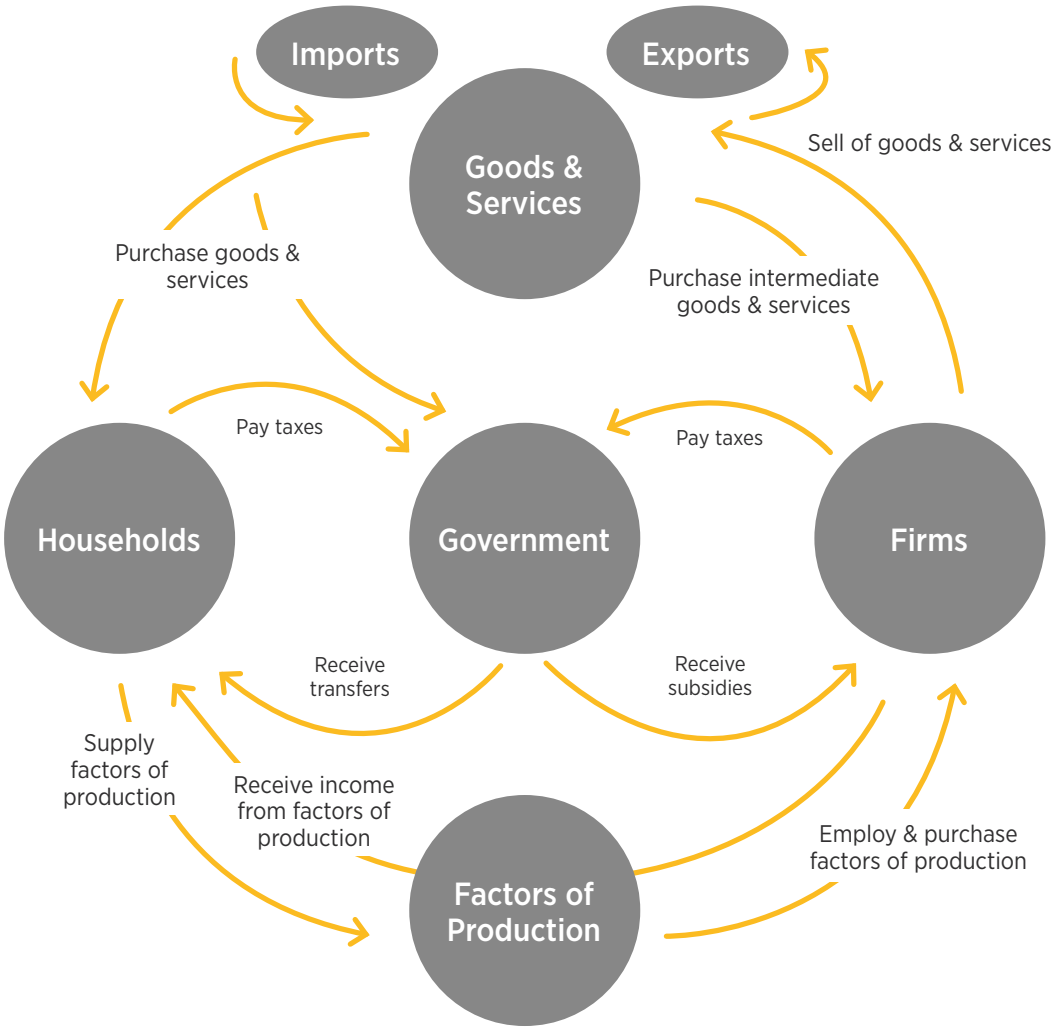
These linkage and interaction effects will be reinforced by an increase in productivity in the Argentine economy, due to the rise in penetration of the mobile sector. This in turn leads to a further expansion in output, incomes and expenditure in the economy.

The CGE model

CGE models reproduce the structure of the whole economy by mapping all existing economic transactions among diverse economic agents (e.g. households, firms). They are large-scale numerical models that simulate the core economic interactions in the economy, and replicate the circular flow of the economy (see Figure 28). They are based on the economic theory of general equilibrium; i.e. that supply and demand for goods, services and factors of production in the economy must be balanced. Economic relationships in CGE models are based on theory and empirical evidence from the academic literature. The prices of goods, services and factors of production adjust until all markets clear, that is, until they are simultaneously in equilibrium.

Figure 28

Circular flow of the economy



Source: Adapted from Burfisher, Mary (2011) Introduction to Computable General Equilibrium Models

Central in CGE modeling is the choice of closure rules. This relates to the specification of endogenous and exogenous variables that is those that are determined by the model and those defined externally. In the standard GTAP model prices, quantities of all non-endowment commodities (e.g. produced and traded commodities) and regional incomes are endogenous variables, while policy variables, technical change variables and population are exogenous to the model[131]. This standard closure is amendable with a wide range of alternative options available depending on modelling assumptions adopted.

131. Hertel, T.W. (ed.), (1997), Global Trade Analysis: Modeling and Applications, Cambridge University Press

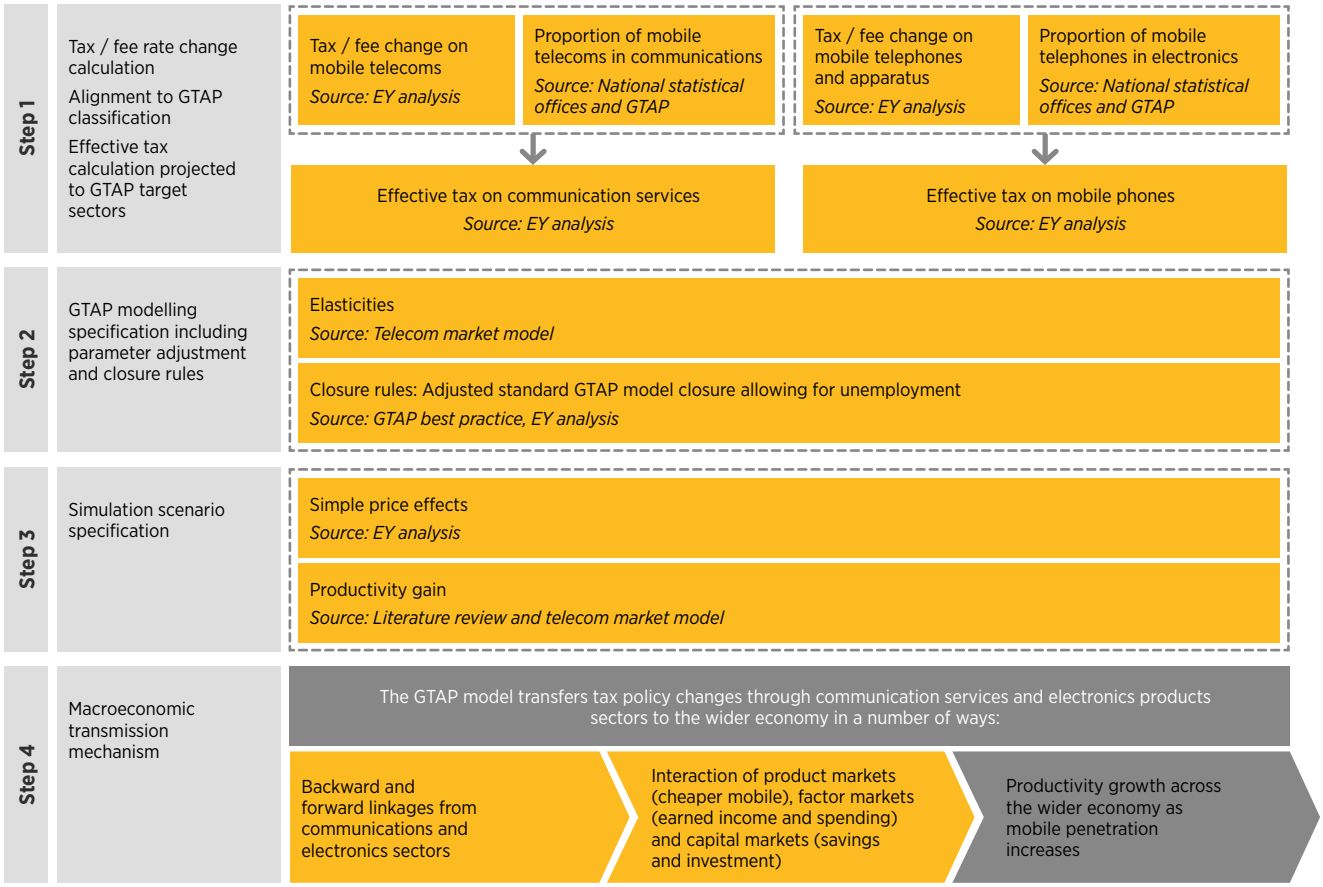
Scenario modelling

The CGE model is used to conduct a number of tax policy simulations and hence assess the impacts of detailed policy scenarios on the wider economy. The approach is as follows:

- First, the effective tax on Communication Services (which includes mobile services) and Electronic products (which includes mobile handsets) is calculated[132];
- Second, GTAP model parameters (e.g. own-price and cross-price elasticities) and closure rules (e.g. related to employment assumptions) are adjusted to ensure better alignment with the mobile telecoms market and broader characteristics of a specific economy;
- Third, simulation scenarios are run that account for the direct effect of taxes and tariffs on prices and a productivity improvement from any increase in mobile penetration (see Figure 29); and
- Finally, simulations are performed estimating the new equilibrium following the policy shocks introduced.

Figure 29

Overview of macroeconomic modelling approach



Source: EY analysis

132. All taxes affecting the production and consumption of mobile services and mobile phones in Argentina (e.g. turnover, excise, VAT) are combined to estimate the effective (compound) tax rates on final and intermediate consumption of goods and services

The impact of changes in tax policy on pricing

Mobile taxation policy changes may be fully or partially passed through to consumer prices for mobile goods and services. The extent of pass-through depends on specific market factors (e.g. the extent of competition in the specific market) and is likely to vary by sector and country.

In this study, the extent to which tax changes are passed onto consumers, is derived from the macroeconomic modelling in GTAP and specifically for Argentina. The GTAP model calculates the communication sector-specific short-to-medium-run change in relative prices of intermediate and final goods after a change in taxation. This calculation is based on relationships derived for Argentina that are incorporated in the GTAP model, and which are based on input-output tables from the national statistics and other empirical data on the Argentine economy. In the GTAP model, tax reform scenarios are modelled as a percentage change in the overall taxation burden on consumption and/or production in the sector.

Therefore, the change in price in any country is determined by the specific market conditions in the communications sector and the relationships in the wider economy of that country, as these are reflected in the underlying data (demand and supply flows) and parameters (elasticities and other estimated coefficients) of the economy under analysis. Specifically, the extent of pass-through is determined by the assumed elasticity of both demand and supply in the market[133]. The elasticity of supply depends on the competitive environment and degree of market power within the industry, and reflects the profitability, input costs and usage of natural resources in production. The elasticity of demand is determined by consumer preferences, and will vary depending on the underlying behavioural relationships in the Argentine economy.

Table 7 provides the pass-through rates derived in the GTAP model for each scenario.

Table 7

Summary of socio-economic benefits of the proposed tax reforms

Indicator	Elimination of excise duty on mobile services	Elimination of Turnover Tax	Elimination of excise duty on electronics
Pass-through rate	90%	90%	96%

In respect of the pass-through rate for the elimination of excise duty on mobile services, the pass-through rate is less than 100%, suggesting that the competitive environment and expected demand response allow operators to maintain a share of the tax reduction in the medium term.

The pass-through rate derived from the elimination of the turnover tax is similarly high. To test this, a literature review was conducted in order to determine if provincial turnover taxes have lower or higher pass-through rates when compared to excise duties. Our research found that, much like excise duties, turnover taxes typically exhibit high pass-through rates.[134]

For the elimination of excise duty on electronics, the pass-through rate is 84% for imported goods, and 99% for domestic goods. This study uses a weighted average pass-through rate (96%) based on the shares of imported and domestically produced electronics in the baseline.

Key assumptions for Argentina

The assumptions underlying the mobile sector and macroeconomic modelling for this study are based on an extensive literature review and are presented in more detail below.

Price elasticity of demand

The impacts of price changes on the consumption of mobile services are captured via estimates of the price elasticity of demand (PED), which measures the change in quantity demanded following a change in price.

133. For instance, if we assume that supply is perfectly elastic, then consumers will absorb the full tax reduction in the form of lower prices.
134. The evidence on the pass-through rate of the provincial turnover tax in Argentina is lacking. For international evidence, see, for example, Smart and Bird (2009) The Economic Incidence of Replacing a Retail Sales Tax with a Value-Added Tax: Evidence from Canadian Experience. This paper analyses the evidence from the provincial sales tax reform in Canada between 1992 and 1997, which replaced retail sales tax by VAT for a range of commodities. While it does not separate the mobile or communications sectors, the overall estimated pass-through rate was estimated at 100%. This confirms that, in the medium term, the competitive dynamics in the market would tend to result in high levels of pass-through

A literature review has been conducted (covering 30 studies), as a basis for establishing a set of assumptions on the PED.

For purposes of this study, we define three sets of PEDs:

- Mobile usage elasticities which relate to the change in usage per connection following a change in price;
- Mobile ownership elasticities which relate to the change in number of connections following a change in price of services and handsets; and
- Technology migration elasticities which relate to the migration from 2G to 3G / 4G services following a change in the price of data, and a change in price of handsets.

All elasticities in this study are further varied by income groups of subscribers (low, middle and high).

To establish relevant price elasticities for Argentina, evidence has been sourced from studies relating to middle-income countries (Argentina is defined as an upper middle-income economy by the World Bank)[135]. The technology migration elasticity for high-income subscribers in Argentina is assumed to be zero, this is because virtually all of these subscribers are expected to migrate to 3G / 4G in the baseline forecast.

The following price elasticities of demand have been assumed in this study:

- Usage elasticities: from -0.62 to -0.79 for voice and from -0.98 to -1.25 for data;
- Ownership elasticities: from -0.41 to -0.52 for mobile services and from -0.59 to -0.75 for handsets; and
- Technology migration elasticities: from 0 to -0.40 for handsets and from 0 to -0.28 for mobile services.

Reinvestment Rate

The exact reinvestment rate depends on a range of factors, including the cash flow of a specific company. In the modelling, it is assumed that operators re-invest 60% of the portion of the tax reduction that they retain (i.e. the proportion that is not passed onto subscribers). The remaining 40% is retained as increased profit. This assumption is based on a review of previous studies of the economic impacts of mobile taxation reforms[136]. We do recognise, however, that in Argentina there are limited incentives for operators to re-invest profits when compared to certain regional peers, for example Uruguay.

In Argentina, 4G network coverage is expected to cover the vast majority of the population by 2020 in the baseline forecast[137]. Therefore, the modelling assumes that reinvestment is largely targeted at improving capacity of the existing network rather than expanding network coverage. The equivalent of additional investment expressed in the number of new base stations per year is based on the assumption that construction of a new 3G site requires around US$105,000 of capital expenditure.[138]

Total factor productivity impact

The benefits of mobile connectivity – and how they translate to the macro economy – have been widely studied in the literature. The effects of mobile connectivity on the economy are largely delivered through their impact on productivity which is usually expressed as total factor productivity (TFP)[139]. Based on evidence from the empirical literature, we assume that, on average, a 1% increase in mobile penetration (unique subscribers) increases TFP by 0.12%[140]. This is further adjusted to reflect the country specific characteristics, including the levels of penetration and income and the existence of significant fixed internet infrastructure. Thus, the literature suggests that there exist a general trend in which countries with lower-income and high penetration experience a larger effect of higher penetration on productivity[141].

135. World Bank (https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups)
136. See, for example, Gilchrist and Himmelberg (1995): "Evidence on the role of cash flow for investment" and Katz (2012): "Assessment of the economic impact of taxation on communications investment in the United States"
137. GSMA Intelligence database
138. EY's analysis of operators' data
139. TFP is a measure for how efficiently an economy uses inputs during its production process
140. See, for example, LECG (2009) Exploring the Relationship Between Broadband and Economic Growth and Waverman et al. (2009) Economic Impact of Broadband: An Empirical Study
141. See, for example, Gruber & Koutroumpis (2010) Mobile Telecommunications and the Impact on Economic Development and Waverman, L., Meschi, M. & Fuss, M. (2005) The Impact of Telecoms on Economic Growth in Developing Countries

As Argentina is an upper middle-income country with a unique subscriber penetration of 92% and a significant fixed internet infrastructure, we assume that a 1% increase in mobile penetration increases TFP by 0.12%.

Timing of macroeconomic impacts

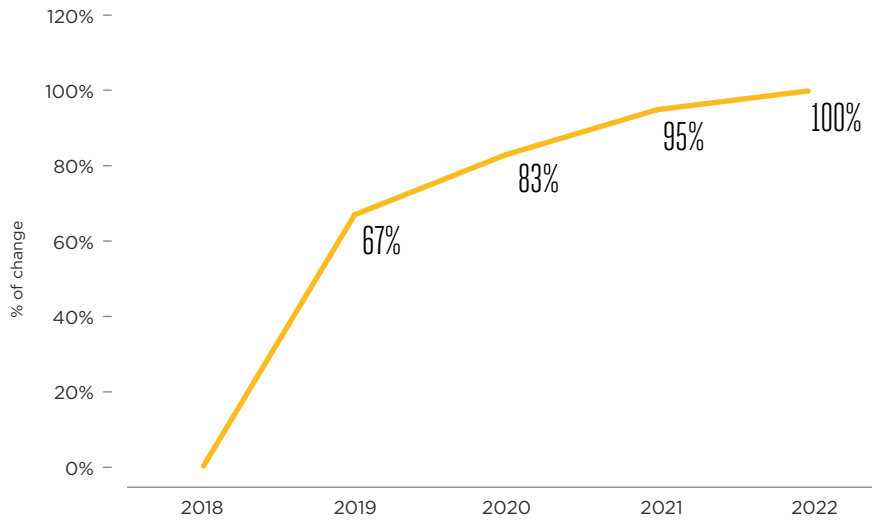
The standard GTAP model seeks to calculate differences in key economic variables between different possible states of the economy – a baseline case and a policy scenario – at a fixed point in time. This means that the standard model is a comparative static model and does not model year-by-year changes to the new equilibrium.

The CGE literature on the dynamic impacts of tax policy on a country's GDP suggests that the transition to a new equilibrium takes on average 5-10 years with the annual impact on GDP increasing at a diminishing rate[142].

Using this evidence from the literature, we have formed assumptions on the transition path between the baseline case and the policy change. We assumed that 67% of the steady state impact is felt in 2019 (the next year following the policy is implemented), 83% in 2020, 95% in 2021 and 100% in 2022 (five years after the policy implementation). The productivity effects are assumed to come into effect from 2019. The assumed path is illustrated in Figure 30.

Figure 30

Time path for the transition to the new equilibrium



Source: EY analysis

Closure rules in the macroeconomic model

In order to account for specific labour market conditions in Argentina, a specific closure rule has been applied in GTAP in relation to employment and wages. The standard approach in CGE models is to assume that the supply of labour is fixed, and hence increase demand for labour results in an increase in wages and prices, rather than employment. However, in Argentina, it can be observed that there is some significant unemployment in the low skilled workforce (15.6%).

Unemployment among the high- and medium-skilled workforce (2.0% and 4.8% respectively) is much closer to full employment[143].

Therefore, the modelling approach allows for employment to increase amongst unskilled labor in Argentina (but not for skilled labour). This means that an expansion of demand in the economy leads to both an increase in employment (for unskilled workers) and an increase in wages (for skilled workers).

142. See, for example, HMRC (2014) The Dynamic Effects of Fuel Duty Reductions; HMRC (2013) The Dynamic Effects of Corporation Tax; and Giesecke and Nhi (2009) Modelling Value-Added Tax in the Presence of Multiproduction and Differentiated Exemptions
143. EY analysis based on ILOSTAT, International Labour Organization (http://www.ilo.org/ilostat)

Appendix B
Scenario estimations

This Appendix reports the detailed estimated mobile market and economic impacts of each of the tax scenarios, compared to a baseline case of no tax reform.

Elimination of 4.2% excise duty on mobile services (Impuesto Interno al servicio)

Table 8

Annual impact of eliminating the excise duty on selected variables

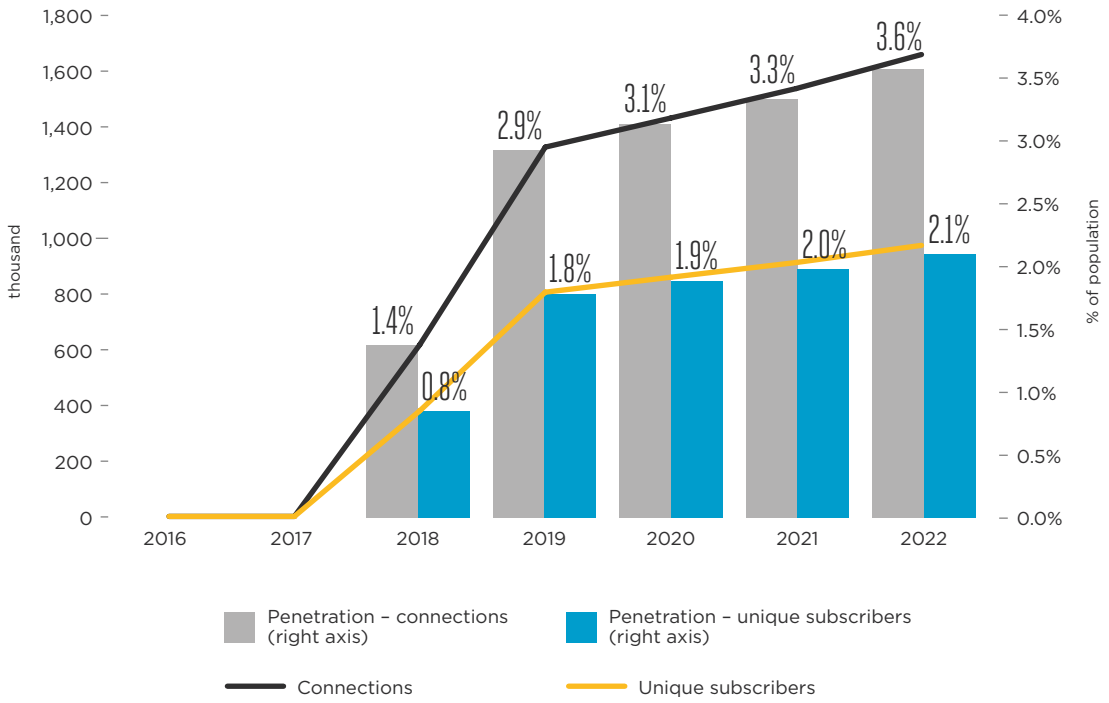
Indicator	2018	2019	2020	2021	2022
MOBILE SECTOR IMPACTS					
Change in price of services vs baseline	-3.7%				
Incremental connections (total)	616,000	1,324,000	1,428,000	1,534,000	1,656,000
Incremental unique subscribers (total)	380,000	806,000	860,000	913,000	975,000
Incremental connections (3G and 4G)	554,000	1,235,000	1,349,000	1,464,000	1,579,000
Incremental connections by low-income subscribers	403,000	856,000	932,000	1,007,000	1,087,000
Additional technology migration	176,000	197,000	0,000	0,000	0,000
ARPU (total) vs baseline	-2.2%	-0.5%	-0.5%	-0.5%	-0.5%
Increase in mobile penetration (connections)	1.4%	2.9%	3.1%	3.3%	3.6%
Increase in mobile penetration (unique subscribers)	0.8%	1.8%	1.9%	2.0%	2.1%
Total usage vs baseline[144]	2.6%	5.3%	5.4%	5.5%	5.7%
Increase in market revenue (total)	-US$69m (-1.2%)	US$79m (1.4%)	US$85m (1.5%)	US$91m (1.6%)	US$99m (1.7%)
Additional investment	US$15m	US$15m	US$15m	US$15m	US$16m
Static cost[145]	-US$227m	-US$234m	-US$235m	-US$238m	-US$241m
Impact on mobile sector taxation	-US$171m	-US$112m	-US$111m	-US$110m	-US$109m
WIDER ECONOMIC IMPACTS[146]					
Full impact on communications sector taxation	-US$150m	US$38m	US$47m	US$54m	US$56m
Tax receipts from all other sectors	US$78m	US$619m	US$766m	US$877m	US$923m
Total tax receipts	-US$78m	US$656m	US$813m	US$931m	US$980m
Cumulative total tax receipts	*-US$78m*	*US$578m*	*US$1.392m*	*US$2,322m*	*US$3,302m*
Real GDP	US$109m	US$1,229m	US$1,522m	US$1,742m	US$1,834m (0.34%)
Employment		Impact estimated for 2022 only.			16,100 (0.09%)
Household income		Impact estimated for 2022 only.			US$1,685m (0.43%)
Household expenditure		Impact estimated for 2022 only.			US$1,587m (0.44%)
Investment		Impact estimated for 2022 only.			US$1,463m (1.82%)

Source: EY analysis

144. Weighted average usage of voice, data, and other non-voice services.
145. This is the initial direct cost to the Exchequer, before any behavioural change in the sector and the economy; overstates the true cost.
146. The evidence on the time path of some of the variables to the new equilibrium is not available.

Figure 31

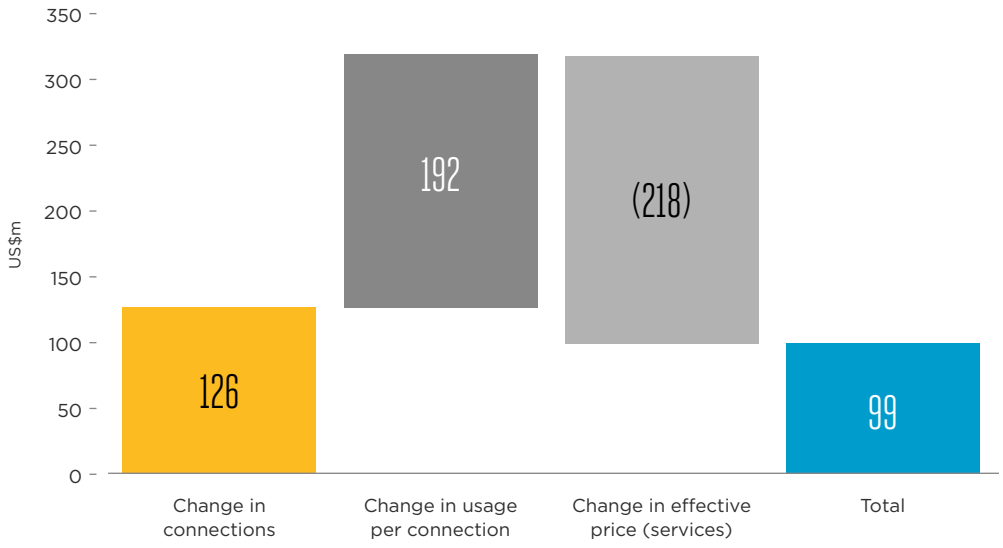
Connections and penetration impacts of the elimination of the excise duty



Source: EY analysis

Figure 32

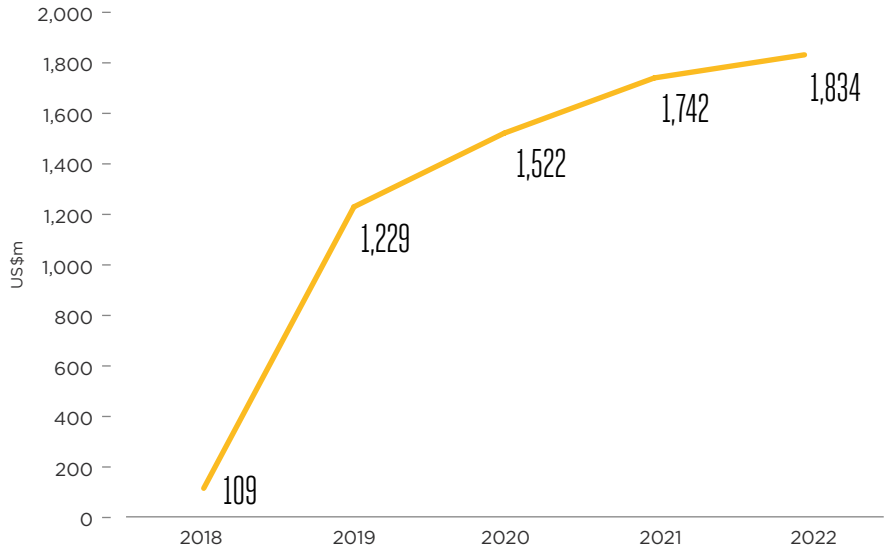
Main drivers of the market revenue change following the elimination of the excise duty



Source: Administración Federal de Ingresos Públicos, Argentina; EY Analysis

Figure 33

Elimination of the excise duty – annual GDP effects of compared to baseline, US$m



Source: EY analysis

Eliminating the 6.7% provincial turnover tax (Ingresos Brutos)

Table 9

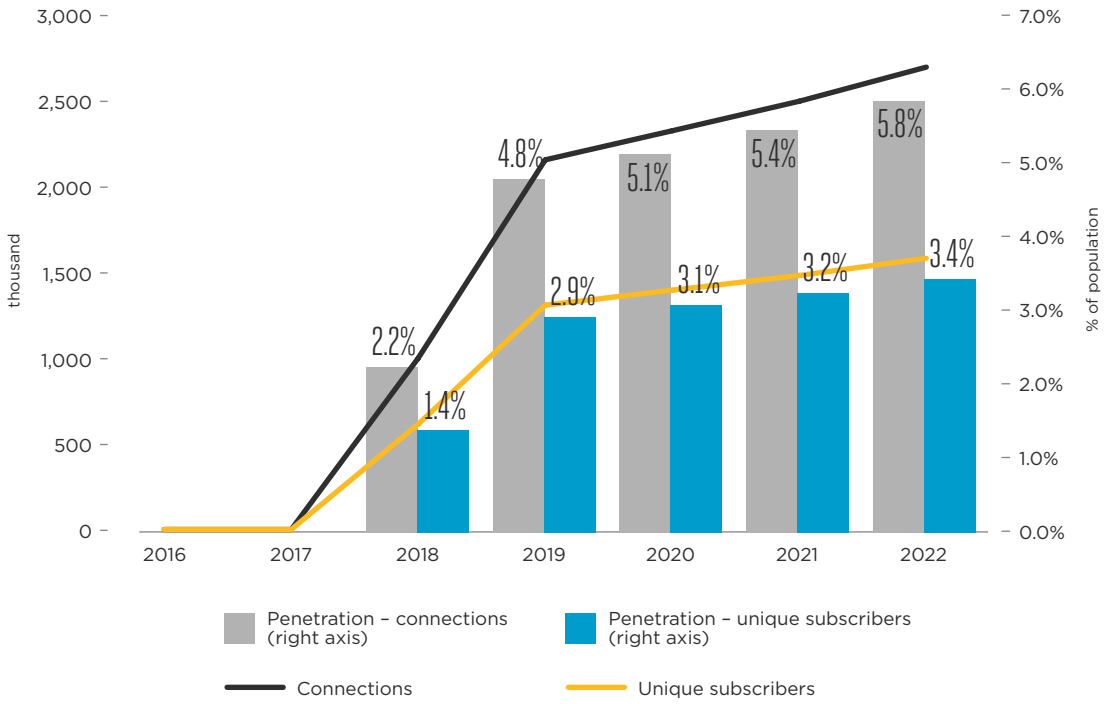
Annual impact of elimination of turnover tax on selected variables

Indicator	2018	2019	2020	2021	2022
MOBILE SECTOR IMPACTS					
Change in price of services vs baseline	-6.0%				
Incremental connections (total)	1,002,000	2,159,000	2,329,000	2,502,000	2,701,000
Incremental unique subscribers (total)	618,000	1,315,000	1,403,000	1,489,000	1,590,000
Incremental connections (3G and 4G)	901,000	2,014,000	2,200,000	2,387,000	2,575,000
Incremental connections by low-income subscribers	655,000	1,397,000	1,520,000	1,643,000	1,772,000
Additional technology migration	286,000	320,000			
ARPU (total) vs baseline	-3.6%	-0.9%	-0.9%	-1.0%	-1.0%
Increase in mobile penetration (connections)	2.2%	4.8%	5.1%	5.4%	5.8%
Increase in mobile penetration (unique subscribers)	1.4%	2.9%	3.1%	3.2%	3.4%
Total usage vs baseline	4.2%	8.8%	9.0%	9.1%	9.3%
Increase in market revenue (total)	-US$116m (-2.1%)	US$124m (2.2%)	US$133m (2.4%)	US$143m (2.5%)	US$156m (2.7%)
Additional investment	US$22m	US$22m	US$22m	US$23m	US$23m
Static cost	-US$364m	-US$375m	-US$378m	-US$382m	-US$388m
Impact on mobile sector taxation	-US$281m	-US$192m	-US$189m	-US$188m	-US$187m
WIDER ECONOMIC IMPACTS					
Full impact on communications sector taxation	-US$234m	US$63m	US$79m	US$90m	US$95m
Tax receipts from all other sectors	US$115m	US$992m	US$1,238m	US$1,406m	US$1,480m
Total tax receipts	-US$119m	US$1,055m	US$1,307m	US$1,496m	US$1,575m
Cumulative total tax receipts	*-US$119m*	*US$936m*	*US$2,243m*	*US$3,739m*	*US$5,313m*
Real GDP	US$153m	US$1,963m	US$2,432m	US$2,784m	US$2,930m (0.54%)
Employment		Impact estimated for 2022 only.			25,600 (0.14%)
Household income		Impact estimated for 2022 only.			US$2,694m (0.69%)
Household expenditure		Impact estimated for 2022 only.			US$2,536m (0.70%)
Investment		Impact estimated for 2022 only.			US$2,333m (2.90%)

Source: EY analysis

Figure 34

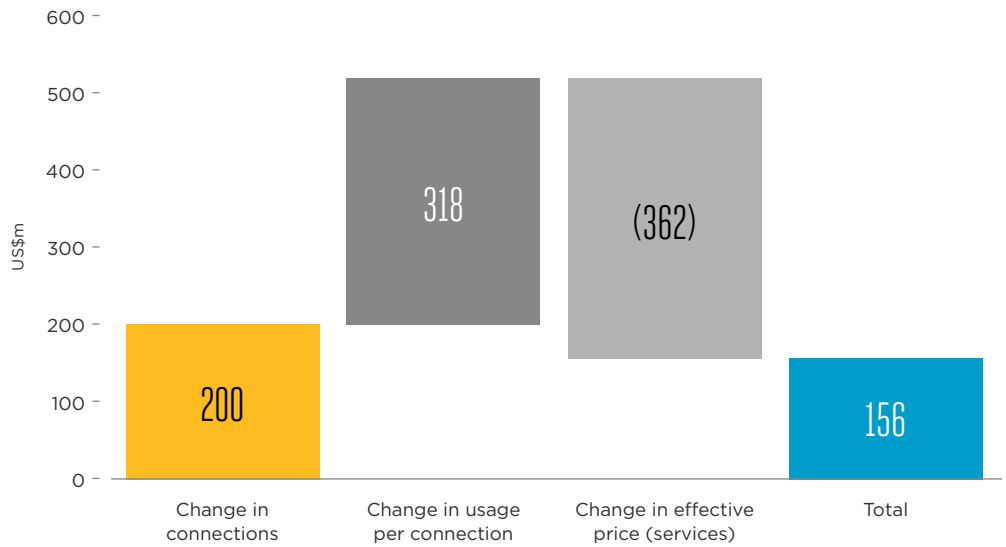
Connections and penetration impacts of eliminating the provincial turnover tax



Source: EY analysis

Figure 35

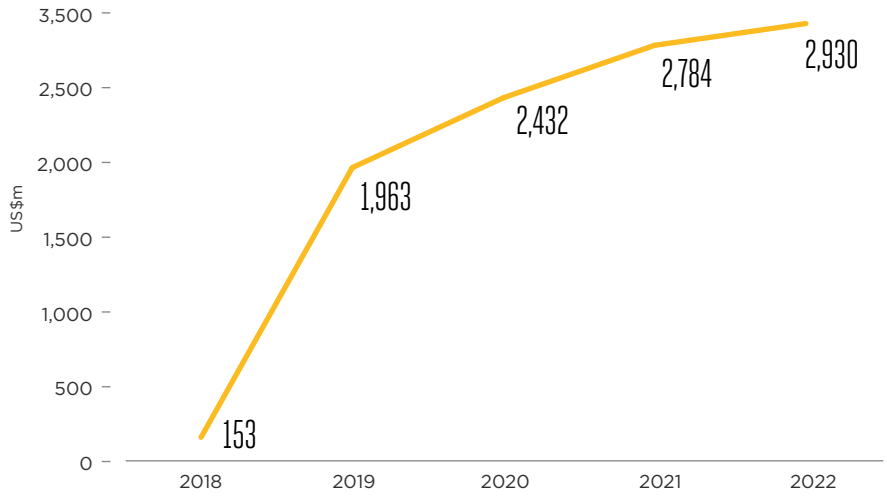
Main drivers of the market revenue change following the elimination of the provincial turnover tax



Source: EY analysis

Figure 36

Eliminating the provincial turnover tax– annual GDP effects of compared to baseline, US$m



Source: EY analysis

Eliminating the excise duty on electronic products (Impuesto Interno a dispositivos)

Table 10

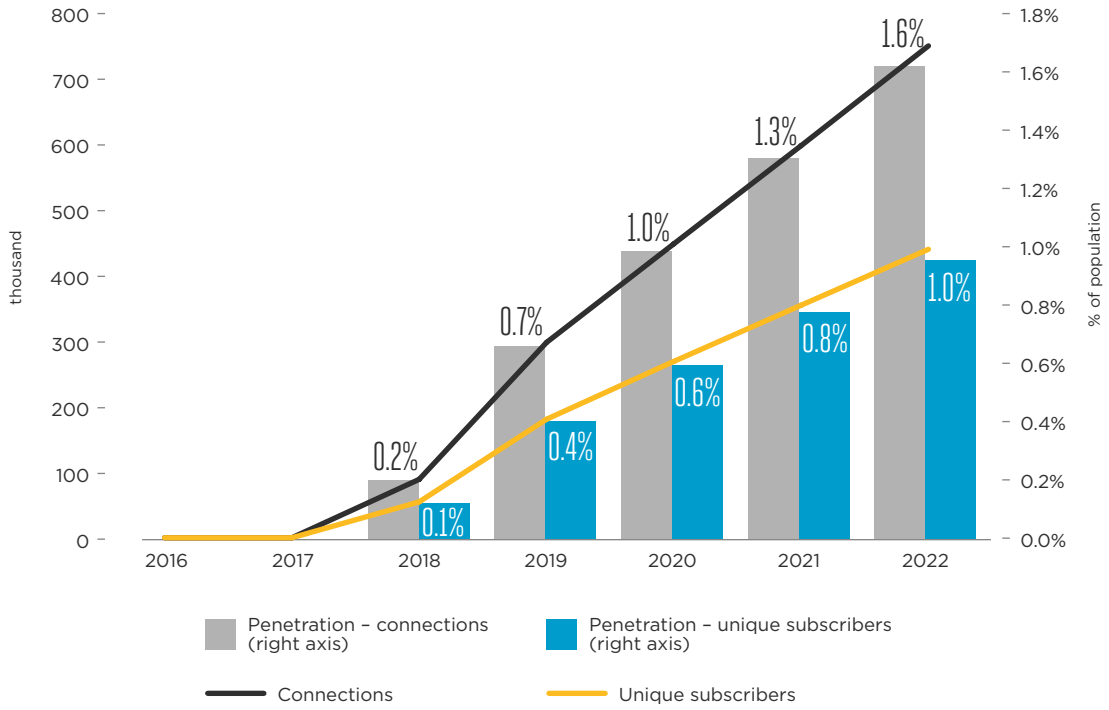
Annual impact of eliminating excise duty on electronics on selected variables

Indicator	2018	2019	2020	2021	2022
MOBILE SECTOR IMPACTS					
Change in price of handsets versus baseline	-7.4%				
Incremental connections (total)	89,000	298,000	449,000	598,000	751,000
Incremental unique subscribers (total)	55,000	182,000	270,000	356,000	442,000
Incremental connections (3G and 4G)	404,000	840,000	929,000	1,017,000	1,105,000
Incremental connections by low-income subscribers	58,000	173,000	289,000	403,000	526,000
Additional technology migration	350,000	328,000			
ARPU (total) vs baseline	0.1%	0.3%	0.3%	0.2%	0.1%
Increase in mobile penetration (connections)	0.2%	0.7%	1.0%	1.3%	1.6%
Increase in mobile penetration (unique subscribers)	0.1%	0.4%	0.6%	0.8%	1.0%
Total usage vs baseline	0.3%	0.8%	0.9%	1.0%	1.1%
Increase in market revenue (total)	US$15m (0.3%)	USD 43m (0.8%)	USD 50m (0.9%)	USD 58m (1.0%)	USD 65m (1.1%)
Static cost on mobile services tax revenue	-USD 1m	-USD 2m	-USD 2m	-USD 2m	-USD 3m
Full impact on mobile sector taxation	USD 6m	USD 18m	USD 21m	USD 24M	USD 27M
WIDER ECONOMIC IMPACTS					
Full impact on communications sector taxation	-USD 31m	USD 148m	USD 184m	USD 210m	USD 222m
Tax receipts from all other sectors	-USD 188m	-USD 20m	-USD 25m	-USD 28m	-USD 30m
Total tax receipts	-USD 220m	USD 129m	USD 159m	USD 182m	USD 192m
Cumulative total tax receipts	*-USD 220m*	*-USD 91m*	*USD 68m*	*USD 251m*	*USD 442m*
Real GDP	USD 382m	USD 794m	USD 983m	USD 1,126m	USD 1,185m
Employment		Impact estimated for 2022 only.			19,313
Household income		Impact estimated for 2022 only.			USD 1,159m
Household expenditure		Impact estimated for 2022 only.			USD 1,137m
Investment		Impact estimated for 2022 only.			USD 1,493m

Source: EY analysis

Figure 37

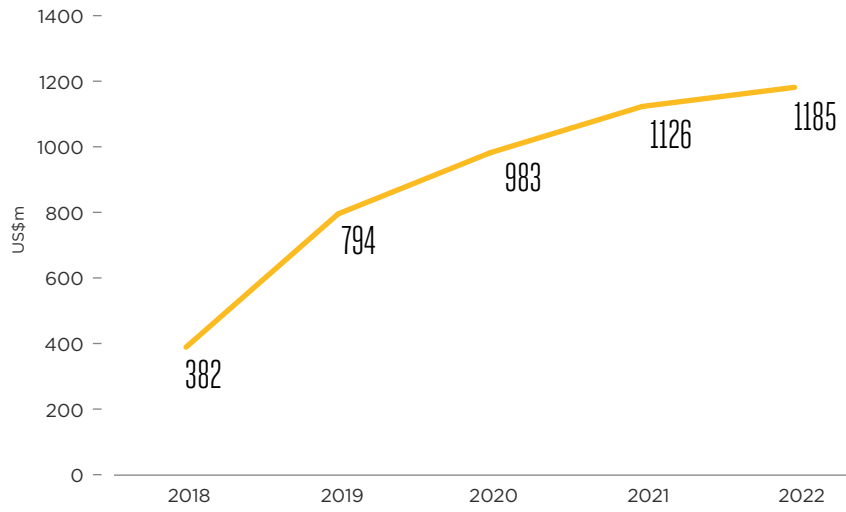
Connections and penetration impacts of eliminating excise duty on electronics



Source: EY analysis

Figure 38

Eliminating excise duty on electronics – annual GDP effects compared to the baseline, US$m



Source: EY analysis



For full report please visit the GSMA website at
www.gsma.com/mobiletaxation-argentina

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