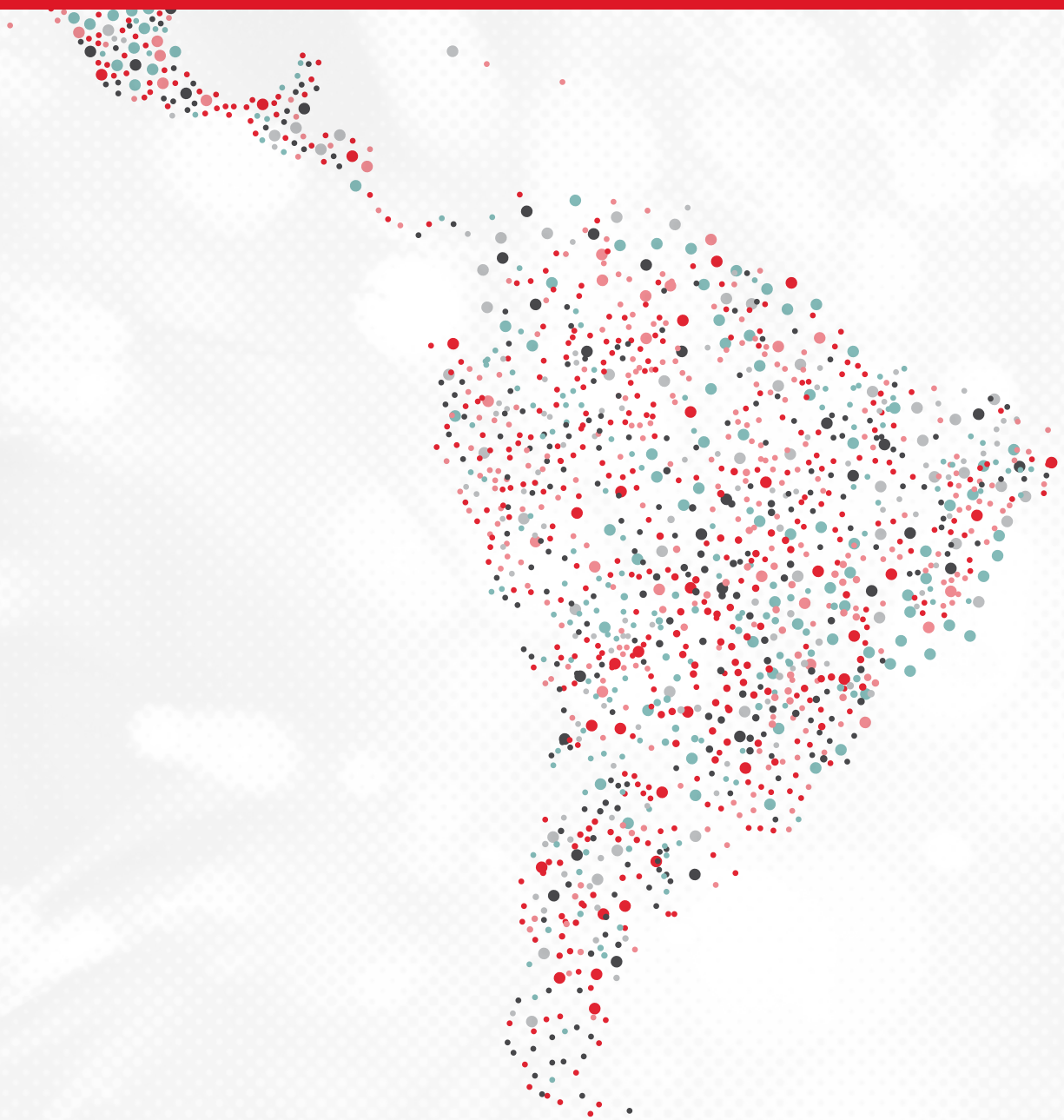
Taxing mobile connectivity in Latin America

A review of mobile sector taxation and its impact on digital inclusion



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Executive summary

Mobile connectivity is a key enabler of digital inclusion and economic and social development. The mobile industry in Latin America and the Caribbean contributed more than $260 billion to the regional economy in 2016. This represents 5% of the region's total GDP and supports 1.7 million jobs. Although 300 million people – half the population – in the region subscribe to mobile internet, there is room for further growth: for comparison, 65% of the population in Europe and North America are connected to mobile internet.

Consumers and operators in Latin America are subject to a substantial tax burden

The positive contribution of the mobile sector to the economy is well recognised. However, the tax treatment of the sector is not always aligned with best-practice principles of taxation, and may distort the continued development of the sector. Faced with considerable challenges in having to balance public sector budgets, some governments in the region apply additional, sector-specific, taxes on consumers and mobile operators. In 2016, the mobile sector in Latin America paid, on average, 25% of its revenues in the form of taxes and regulatory fees. This figure was even higher in Jamaica and Brazil, where tax payments exceeded 40% of mobile sector revenue.

Sector-specific taxes and fees are often the driver of the high tax burden: for instance, sector-specific consumer taxes are imposed in 11 of the 20 studied countries across the region and on average account for one in five dollars spent on taxes. Action to reduce or eliminate such taxes could have a significant positive impact on markets with the highest tax burdens. For example, we estimate that if such taxes were eliminated in Jamaica, Brazil, Argentina and the Dominican Republic, the tax burden would fall from 39% to 28% of market revenues on average for these countries.

Taxes levied on mobile services exacerbate affordability issues, especially for those on lowest incomes

The UN Broadband Commission recommends that internet access should be available at no more than 5% of a person's monthly income. Our analysis shows that the total cost of mobile ownership (purchasing a handset and accessing 1 GB of data per month) is more than 5% across every income group in Latin America, compared to 1% in Europe and North America. Access is less affordable for those on lower incomes: for the lowest 20% of earners in Latin America, adopting even the most basic mobile service would require 12% of total monthly income.

Consumer taxes represent almost 20% of the total cost of mobile ownership, compared to about 10% in North America. In Brazil and the Dominican Republic, they account for more than 30%. Action on taxes would ease the burden on affordability: for the lowest 20% of earners in Nicaragua, Bolivia, Honduras and Venezuela, taxes incurred on the purchase of a medium basket of services would represent more than 5% of monthly income. This is enough to breach the UN's affordability recommendation – without even taking into account the price before tax of the device and service.

In a challenging investment environment, high taxes can restrict investment in next-generation networks and coverage

Investment in Latin America has surged ahead, with more than 120 4G networks launched over the five years to 2016. This is against a challenging backdrop for operator revenues, with average revenue per connection dropping 15% over this period. Further investment is required over the coming years as operators expand 4G coverage and prepare for the Internet of things (IoT) and 5G. Discriminatory sector-specific taxes, import duties on network equipment, excessive spectrum fees and tax uncertainty will all reduce the likelihood of successful investments as Latin America approaches the next wave of mobile technologies.

Governments have been keen to develop digital plans and initiatives to expand infrastructure and inclusion. Universal service funds (USFs) in particular have featured heavily in Latin America, many funded by levies on operator revenues (typically 1–2%). However, as a revenue tax, USF contributions cause distortions in the market. Our research suggests that none of the collected funds had been spent by 2009 in five of the seven countries for which data is available. These funds could have been spent more efficiently by operators on increasing coverage.

Government efforts to improve digital transformation can help with the overall goal to increase internet access. However, it is important to match this ambition with appropriate tax policy to help with industry investment. For example, municipal taxes are applicable on the rental of mobile mast sites in cities in Argentina, Brazil, Ecuador and Mexico. These can only disincentivise the building of more mobile infrastructure.

Rebalancing sector-specific taxes and regulatory fees can promote connectivity, economic growth, investment and fiscal stability

Analysis shows that that there would be considerable economic benefits from tax reform in several countries in Latin America. The removal of sector-specific taxes can result in increased demand for mobile services and more investment, but also overall growth in government tax revenues over the medium term. For example, mobile services in Mexico are subject to a 3% usage tax (IEPS). If this were eliminated, the analysis shows that in the medium term, the number of connections would increase by 2.2 million, leading to a $4.5 billion increase in GDP and $1.1 billion increase in investment. Crucially, tax revenues would increase by $589 million as a result of the larger taxable base.

1 The mobile industry in Latin America

1.1 Access to mobile is having a transformative effect across society

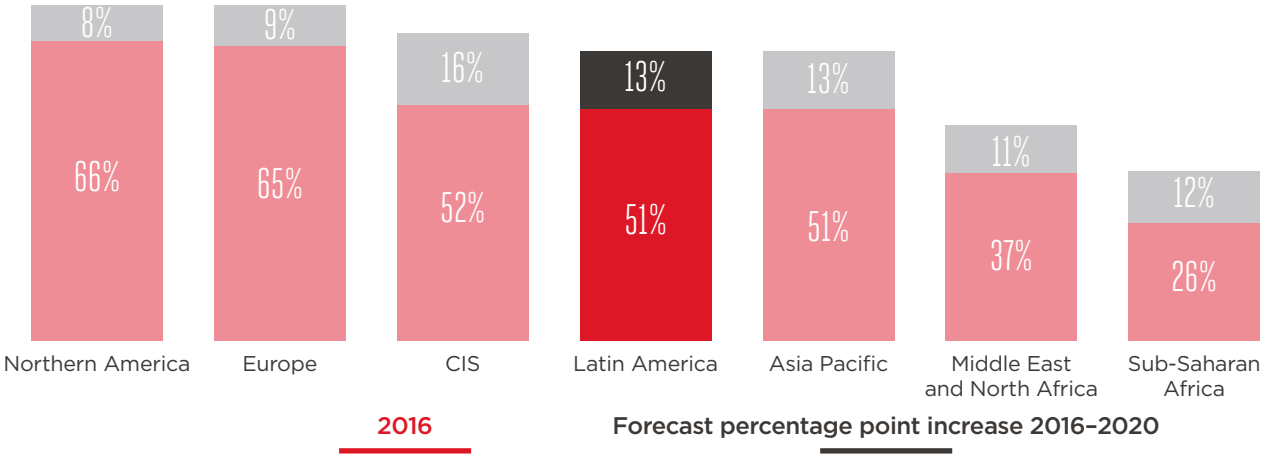
Mobile connectivity can produce social and economic benefits by helping promote digital inclusion and supporting the delivery of essential services as well as meeting public policy objectives around healthcare, education, financial services and gender equality. For these reasons, the mobile sector has become central to the international development agenda and will help achieve the UN's Sustainable Development Goals – an ambitious 17-point plan introduced in September 2015 to end poverty, combat climate change and fight injustice and inequality by 2030.

Those who enjoy access to mobile services are taking part in a significant transformation of society. The way individuals, communities and businesses work and interact is being redefined as more people engage with mobile services. With more than 5 billion unique subscribers worldwide, mobile is the most widespread form of personal technology.

Latin America has seen rapid growth in the number of mobile internet subscribers over recent years, reaching a total of more than 300 million, an increase from less than 200 million at the start of 2012. Despite mobile internet penetration reaching around 50% during 2016, this is still well below penetration rates of 65% in Europe and North America. Latin America is forecast to reach these rates in 2020, by which point 60% of the world's population are expected to be mobile internet users.

Figure 1

Penetration of unique mobile internet subscribers



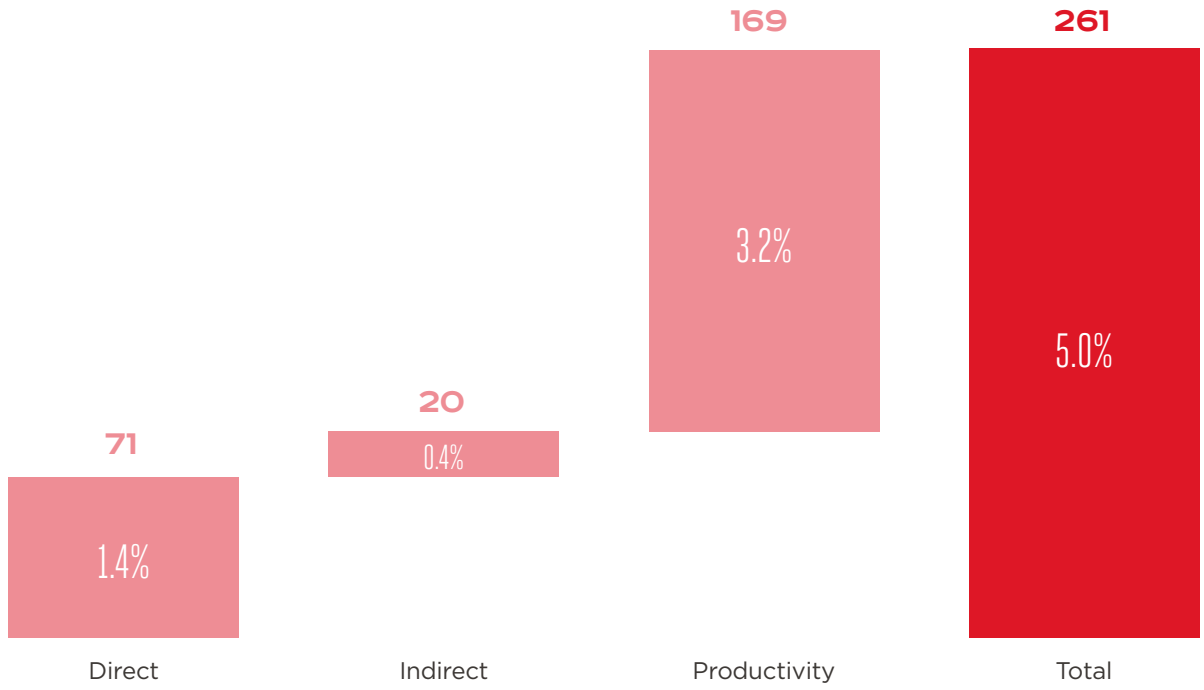
Source: GSMA Intelligence

1.2 The mobile industry makes a significant economic contribution

The mobile sector in Latin America is a significant contributor to the region's economy, providing more than $260 billion, equivalent to 5% of GDP. The direct contribution from the mobile ecosystem, which includes mobile operators and the industries that mobile directly supports,[1] is $71 billion. Additional growth is generated from the mobile ecosystem through indirect impacts on the wider economy ($20 billion) and improvements to productivity ($169 billion) from the increased use of mobile, mobile internet and – increasingly – machine-to-machine (M2M) connections.

Figure 2

Contribution of the mobile ecosystem to GDP ($ billion, % 2016 GDP)



Source: GSMA Intelligence

The mobile ecosystem directly supports 740,000 jobs in Latin America as well as a further 1 million jobs across the wider economy due to the indirect impacts of the industry.

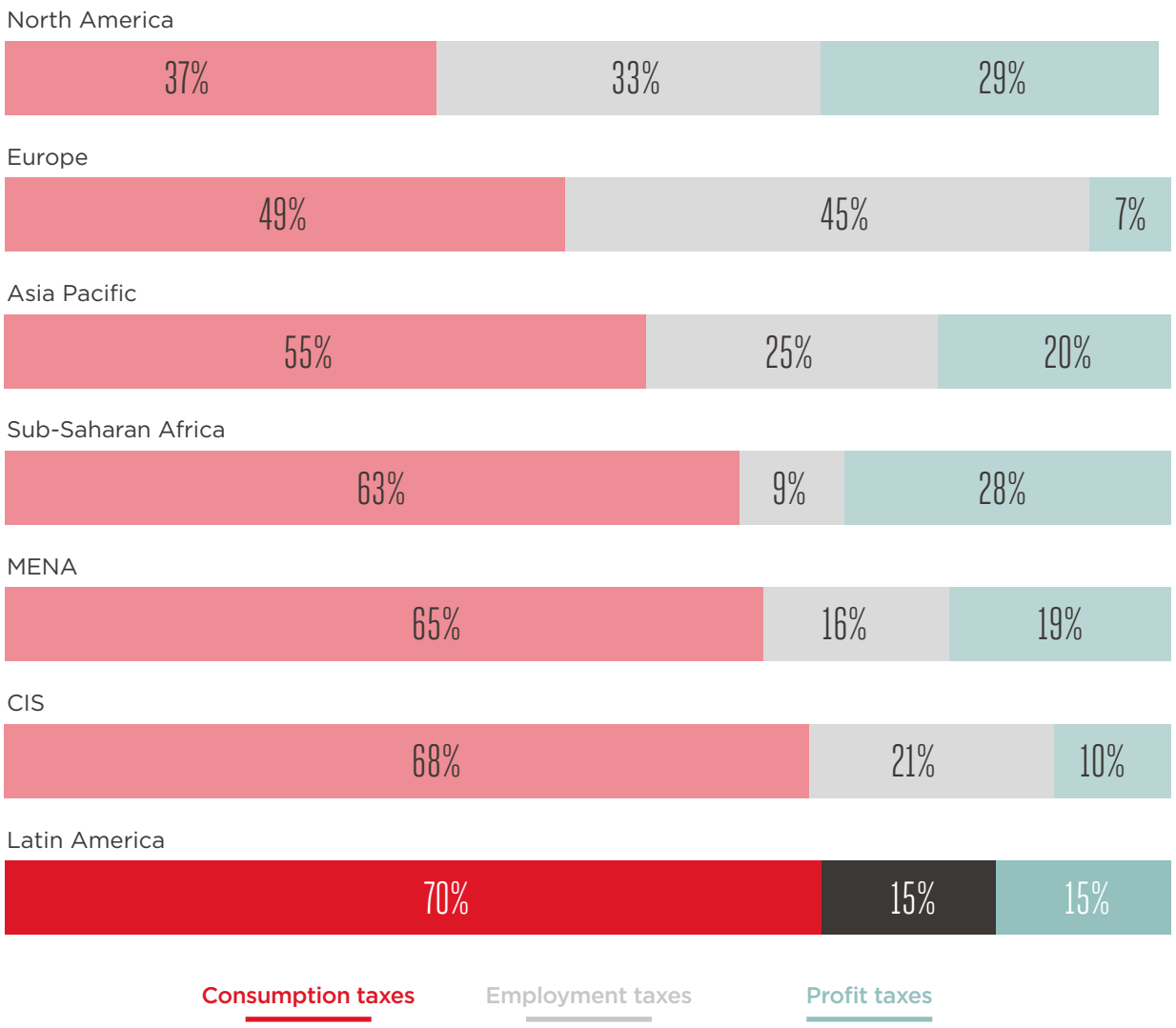
The mobile industry also contributes significantly to public funds in Latin America. In 2016, more than $34 billion was raised by governments in the region in taxes on the mobile industry. Almost half (47%) of the direct economic contribution of the mobile ecosystem to the Latin American economy is therefore directed to government funds throughout the region.

Latin American tax revenues rely heavily on taxes that have a direct impact on consumers. Approximately 70% of taxes raised from the mobile industry are raised from the consumption of mobile services, such as VAT, and from mobile handsets. This is significantly higher than regions such as North America and Europe, where tax revenues are primarily collected from taxes on profit and employment taxes.

1 Communications infrastructure; handset manufacturing; handset retail and distribution; and content provision.

Figure 3

Share of tax revenues generated by the mobile ecosystem, 2016



Source: GSMA Intelligence

1.3 Taxation on mobile economy affects connectivity and development of mobile industry

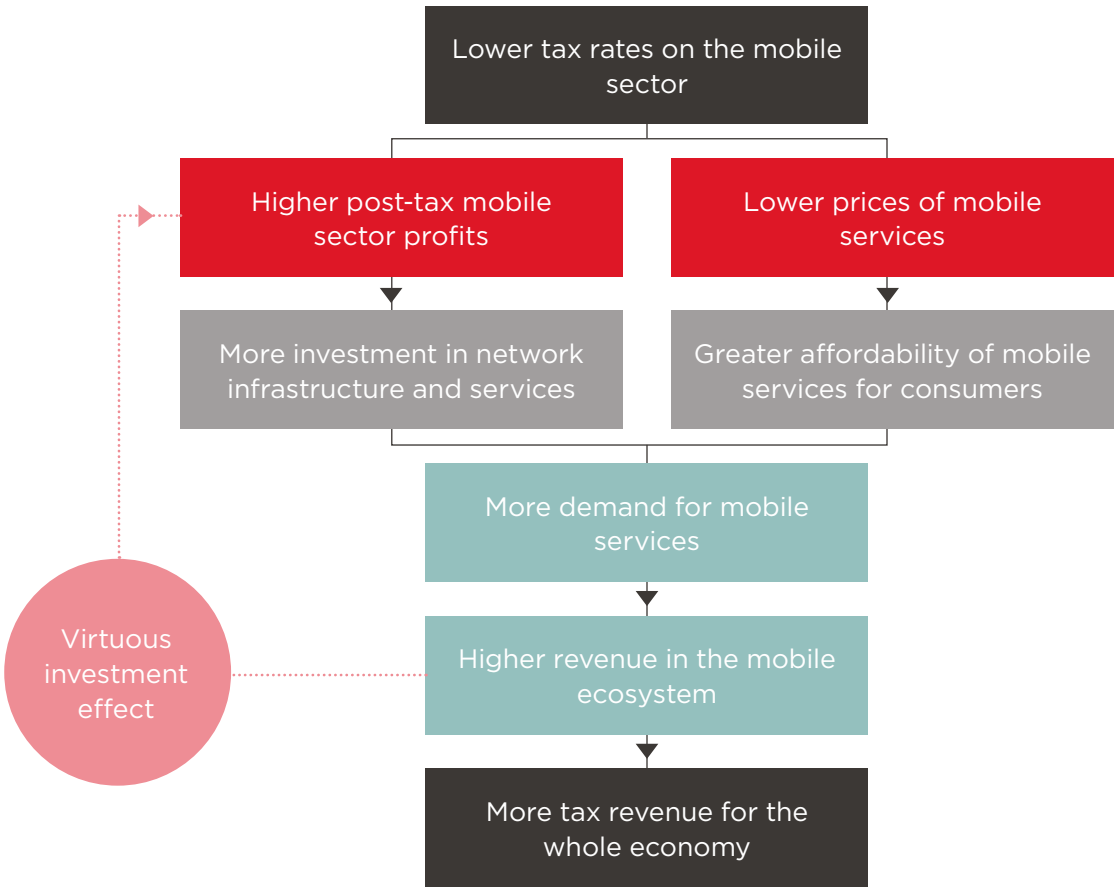
Taxing the mobile economy affects the industry's consumers and its operators. Taxes on the consumption of mobile services affect the affordability of mobile services, meaning some consumers will be less likely to adopt mobile services. As access to mobile is a key enabler of digital inclusion, higher taxes are likely to reduce inclusion and possibly increase the digital divide.

Additionally, investment can be affected by increases in taxes imposed on operators. With fewer post-tax funds, operators may be less inclined to undertake riskier investments in mobile infrastructure. This has a knock-on impact on the wider mobile ecosystem supported by mobile investment.

A supportive tax environment can boost investment, leading to higher quality services and improved coverage. More attractive services lead to greater demand, which means more revenue and a better business case for further investment. This virtuous effect is shown in Figure 4. Over time, lower taxes lead to bigger mobile markets, which means more tax revenue for governments.

Figure 4

How lower tax rates affect tax revenues



Source: GSMA Intelligence

2 Taxation on the mobile industry in Latin America

2.1 Overview of mobile taxes and fees in the region

The majority of goods and services across the world are taxed at general standard rates set by governments. Governments may set taxes above this standard rate when they want to reduce consumption of a good or service. This is either because of welfare reasons, such as the harmful effects of goods on people's health or wellbeing; or because of the harmful effects on society as a whole such as with pollution and environmental damage.

In Latin America, many governments have taxed the mobile sector despite mobile goods and services being conducive to large societal and economic benefits, such as higher levels of growth and productivity. In some countries, governments consider mobile a luxury good and implement sector-specific taxation.

Many governments in the region have resorted to sector-specific taxation on the mobile industry as an additional source of tax revenue when faced with the challenges of balancing their budgets. With informal employment ranging from 20% in Uruguay to 64% in Guatemala,[2] and with tax revenues vulnerable to economic downturns in those countries with less diversified economies, the mobile industry´s transparent billing makes its economic activity easier to target for tax and fee collection purposes.

A number of different and often special taxes are applied to the mobile industry. A summary of the taxes and fees that the mobile industry is subject to in the region is shown in Table 1.

2 International Labour Organization

Table 1

Overview of taxes and fees in the region

CONSUMERS		OPERATORS		
Tax base	**Tax type**	**Tax base**		**Tax type**
Handsets	VAT	General taxes	Profits	Corporation tax
	Customs duty		Revenue	Turnover tax
	* Additional VAT			Other revenue taxes
	* Excise taxes		Network equipment	Customs duty
Activation	VAT	Regulatory fees and other payments	Revenue or fixed amounts (one-off or recurring)	* Spectrum fees
	* Activation fees			* Licence and regulatory fees
	* Connection fees			* Universal service contributions
Usage	VAT			
	* Additional VAT			
	* Excise taxes			

* Sector-specific

Source: GSMA Intelligence

Users of mobile services are subject to taxation when purchasing a mobile device, when activating a service, and when using their mobile phones:

- **Devices** are subject to general taxes such as VAT and customs duties. Some markets have introduced additional sector-specific taxes – for instance, excise taxes on the handset value (as in Argentina and Costa Rica) or higher VAT rates as handsets are treated as luxury goods (as in Jamaica).
- In some countries, consumers also bear taxes when paying for the **activation** of their service, through general taxes (for instance, VAT on the sale on a SIM card) as well as sector-specific taxes that can consist of activation fees applied to SIM cards or connection charges. These can be either one-off or recurring, annual payments. Examples include Brazil and the Dominican Republic.
- Finally, **mobile services** are subject to general taxes (typically VAT) and sector-specific taxes, which in some markets take the form of excise taxes, withholding taxes or higher VAT rates where mobile services are still categorised as luxury goods. Countries where these are applied include Colombia, Mexico and El Salvador.

Operators are also subject to various taxes on the provision of mobile services. Aside from general taxes such as corporation tax, operators contribute to public funding through a number of sector-specific taxes and fees. Operators typically pay one-off and/or recurring licence and spectrum fees, as well as additional taxes on revenue or profits in some countries.

2.2 Sector-specific taxes are not aligned with best-practice in taxation

An effective tax policy has to balance a number of potentially competing factors. These include the government's revenue needs, supporting key sectors, the practicalities of enforcement and collection, and the desire to minimise any negative distortionary impact on the wider economy.

There are a number of established principles that are generally accepted as contributing to an effective tax system. These are provided by international organisations such as the World Bank,[3] the IMF,[4] the ITU[5] and OECD.[6] These principles seek to minimise the potential distortionary impacts caused by taxation and take into account important practical aspects such as the role of informal activity or limited institutional capabilities.

A framework of best practice is shown in Table 2, drawing on the important economic principles of efficiency, equity, simplicity, transparency and incidence. The six best-practice principles outline specific steps for implementing effective taxation in practice.

Table 2

Best-practice principles of taxation

CONCERN	BEST-PRACTICE PRINCIPLE
Efficiency	
Taxes raise prices for consumers and costs for firms – hence they may reduce consumption and production levels as well as divert investments.	An efficient tax system should rely on **low rates and wide bases** to minimise the impact on consumption and production levels, while raising the required revenue.
Different taxes across sectors are distortive in that they change the relative prices of goods and services.	Taxation should be **broad-based across sectors**. Adopting the same tax rates across firms and sectors and minimising the use of tax exemptions allow for fewer distortions on the economy.
Taxes promote or discourage the generation of externalities.	Taxes should **account for product and sector externalities**, encouraging the consumption and production of goods and services that generate positive broader economic impacts via lower specific tax rates.
Equity	
Vertical equity – taxes can be regressive, i.e. fall disproportionately on those with lower income.	Taxes should take into account income i.e. they should be designed so that they **do not have a regressive impact**. Taxes that are fixed or that apply to necessity goods are particularly likely to have regressive effects.
Horizontal equity – taxpayers with the same characteristics should be treated evenly.	Similar taxpayers should have **similar tax treatment**, particularly across firms in similar or competing sectors.
Simplicity and transparency	
Complex and unpredictable tax policy increases compliance costs and means more costly encforcement for governments.	A **simple and transparent tax system** involves a reduced number of taxes for firms to comply with. A stable, predictable tax design generates less cost for businesses and creates more certainty for investment.

Source: GSMA Intelligence based on IMF, ITU and OECD.

3 Introduction to Tax Policy Design and Development, Bird and Zolt, 2003
4 Taxing Principles, IMF, 2014
5 Taxing telecommunication/ICT services: an overview, ITU, 2013
6 "Fundamental principles of taxation" in Addressing the Tax Challenges of the Digital Economy, OECD, 2014

SECTOR-SPECIFIC TAXES TEND TO CREATE INEFFICIENCY

Mobile-specific taxes typically raise the price and cost of mobile services and devices, which reduces their consumption and production levels across the economy. In the long run, decreased production and consumption can also in turn drive lower tax revenue.

When special tax rates apply only to the mobile sector, the taxes distort the functioning of the mobile market compared to the rest of the economy. For instance, by increasing prices for consumers and costs for firms, taxes may lead to lower profitability in the mobile market with respect to other industries. This can make investing relatively less attractive, leading to underinvestment in the mobile industry and an inefficient allocation of capital across the economy.

Finally, sector-specific taxes are not aligned with taxation best practice in terms of accounting for the positive externalities of mobile connectivity. The use of mobile services generates well-acknowledged improvements in productivity and access to information, and becomes a platform for a wider range of services.[7] Sector-specific taxes, by inducing lower consumption and production of mobile services, can limit these positive, broader impacts. In particular, the OECD has acknowledged the problems of introducing these taxes in sectors generating positive externalities such as the telecoms sector, advocating steps towards their removal in countries such as Mexico.[8]

SECTOR-SPECIFIC TAXES ARE PROBLEMATIC FROM AN EQUITY POINT OF VIEW

Consumer taxes and fees in the mobile market tend to have a greater impact on the poorest households, creating vertical inequality, as shown in the analysis in Section 4. Taxing mobile services means that a large section of the population is subject to additional taxes. However, unlike income tax, which is usually set up so that higher income individuals pay more tax compared to individuals earning less, mobile taxes affect all people regardless of their income levels.

The amount of mobile taxes paid can be a large proportion of the income for the poorest: this is particularly the case for taxes imposed as a fixed fee, such as taxes on connections. Even for taxes levied as a percentage of the price of mobile services, lower income individuals will be affected more than higher income individuals (that is, the tax will have a regressive effect). This is because consumption of mobile services does not necessarily increase proportionally for higher income individuals, unlike with other goods such as luxury items.[9]

Additionally, since most other sectors are not subject to additional taxes, mobile is disproportionately affected as a sector compared to the wider economy. This is not in line with the principle of horizontal equity (similar tax treatment across similar firms) set out as a best-practice principle by leading international organisations.

SECTOR-SPECIFIC TAXES TEND TO INTRODUCE COMPLEXITY

The range of sector-specific taxes that operators are subject to does not typically align with the best-practice principles around encouraging simplicity and transparency in tax design. This can raise operators' compliance costs, create barriers for new firms in the market or lead to slower investment and innovation, as explained in Section 4.

7 For instance, the World Bank recently acknowledged in "Maximising Mobile" (2012) that "mobile applications not only empower individuals but have important cascade effects stimulating growth, entrepreneurship, and productivity throughout the economy as a whole".

8 OECD Telecommunications and Broadcasting Review of Mexico, OECD, 2017.
Accessible at www.oecd.org/publications/oecd-telecommunication-and-broadcasting-review-of-mexico-2017-9789264278011-en.htm

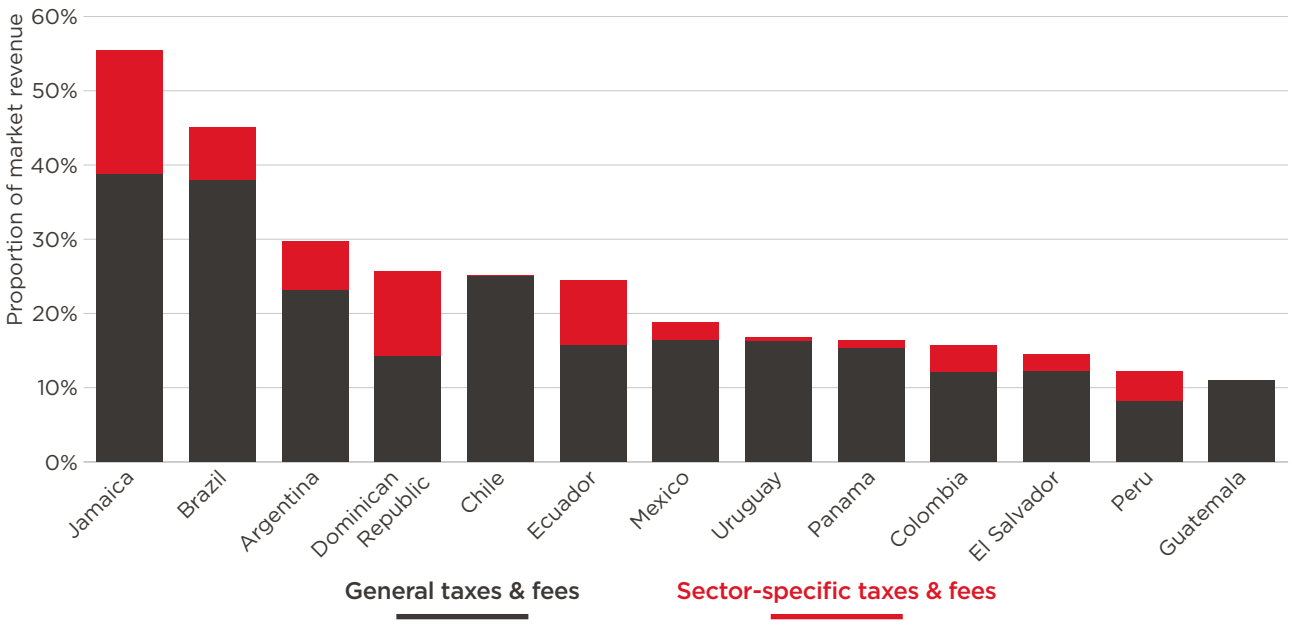
9 The consumption of mobile services does increase with income. However, the rate at which this increases is typically lower, given the mobile services and goods are, to some extent, necessity goods – for instance, they provide necessary communication or access to digital markets and services such as mobile money

2.3 Sector-specific tax payments are a significant part of overall tax payments by the mobile sector

Figure 5 shows total tax payments and fees in Latin America, including general and sector-specific taxes paid by consumers and operators. For the countries analysed, tax and fee payments represent on average approximately 25% of market revenue. However, tax payments in Jamaica and Brazil are significantly above this.

Figure 5

Total tax payments and fees



Dominican Republic, Uruguay, Peru and Guatemala reflect 2014 data; Chile and Panama 2013. The rest of the countries show 2015 data. Data for 2013 does not include certain operator tax payments such as those on property and land.

Source: GSMA Intelligence

Sector-specific taxes are a key contributor to total tax and fee payments: the mobile industry and its consumers contribute an average of 39% of market revenues in taxes in Jamaica, Brazil, Argentina and the Dominican Republic. Without sector-specific taxes, this would fall to 28%. Sector-specific taxes on average represent approximately one fifth of all tax payments, though this picture differs across countries substantially.

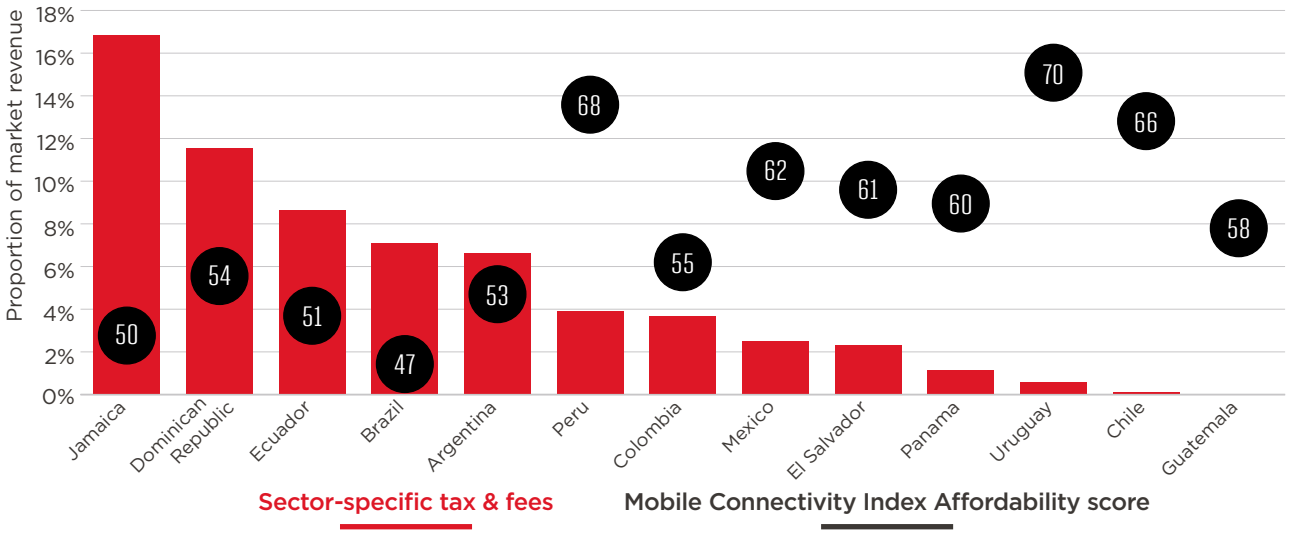
- In the Dominican Republic, Ecuador, Peru and Jamaica, sector-specific taxes and regulatory fees account for a greater than average part of tax payments.
- In Chile, Guatemala, Uruguay and Panama, sector-specific tax payments and regulatory fees represent a very limited contribution to total tax payments and are therefore better aligned with best-practice principles of taxation.

Markets featuring higher levels of sector-specific taxes as a proportion of market revenue tend to have lower affordability levels (as measured by the Mobile Connectivity Index).[10] This trend, seen across all tax payments in the industry, is consistent with the analysis presented in Section 4, which shows that consumer taxes are a key determinant of affordability.

10 www.mobileconnectivityindex.com

Figure 6

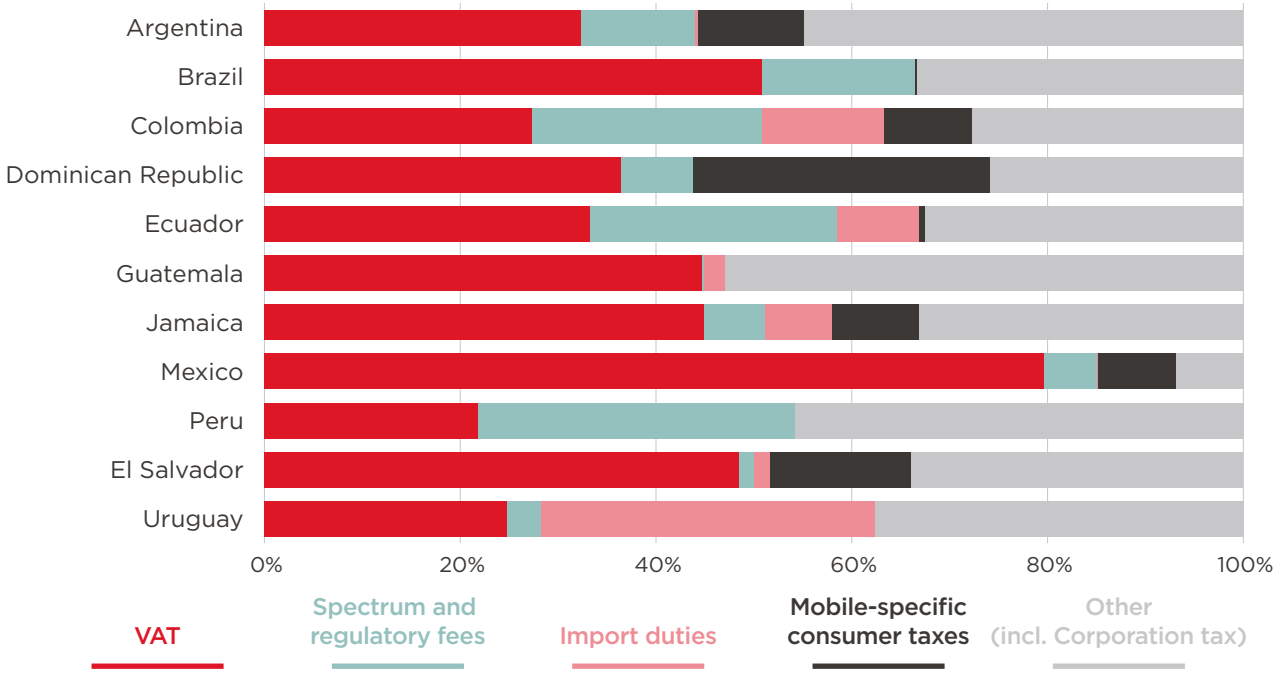
Sector-specific tax payments and GSMA affordability score



Source: GSMA Intelligence

Figure 7

Total tax payments, breakdown by tax type



Dominican Republic, Uruguay, Peru and Guatemala reflect 2014 data. The rest of the countries show 2015 data. Data for 2013 does not include certain operator tax payments such as those on property and land.

Source: GSMA Intelligence

As a result of sector-specific taxation, the relative contribution of the sector in terms of tax and fee payments as a share of total government tax revenues tends to be in many cases higher than the sector's revenue share of GDP. Within the sample of countries for which data is available, the contribution to government tax revenue was estimated to be nearly 1.25× the industry's share of GDP on average.

3 Taxes imposed on consumers and operators in Latin America

3.1 Consumer taxes and fees

As shown in Table 3, all sector-specific consumer tax rates can be problematic in terms of efficiency and equity.

- Sector-specific taxes on activation, usage and handsets distort consumption in the mobile market with respect to other sectors in the economy, decreasing the amount of mobile devices and services that would otherwise be produced and consumed. Moreover, taxes on activation, usage and handsets are not efficient in that they tend to have very narrow tax bases, and they constrain the positive social and economic externalities that arise from mobile connectivity.
- Sector-specific consumer taxes do not align with best practice in terms of vertical and horizontal equity, since they represent a higher income share for consumers at the bottom of the income pyramid (i.e. vertical inequality) and they discriminate against consumers in the mobile sector with respect to consumers in other markets (i.e. horizontal inequality).
- While VAT and customs duties tend to be implemented as standard rates across the economy and have wide bases, they do not particularly encourage the externalities of mobile connectivity (which would require a reduced tax treatment). High VAT and customs duties are also regressive in that these taxes mean a greater income effort for the poorest households

Table 3

Alignment of consumer taxes with best-practice taxation principles

	EFFICIENCY			EQUITY		SIMPLICITY AND TRANSPARENCY
	Wide base	Broad-based across sectors	Accounts for externalities	Vertical equity (not regressive)	Horizontal equity (even tax treatment)	
Sector-specific taxes						
Sector-specific tax on activation	✗	✗	✗	✗	✗	○
Sector-specific tax on usage	✗	✗	✗	✗	✗	○
Sector-specific tax on handset	✗	✗	✗	✗	✗	○
General taxes						
VAT	✓	✓	✗	✗	✓	✓
Customs duties	✓	✓	✗	✗	✓	✓

✗ Taxes do not follow the best-practice principle

✓ Taxes are typically consistent with the best-practice principle

○ Impact on simplicity and transparency depends on the specific design of the tax

Source: GSMA Intelligence

Table 4 provides an overview of the consumer tax rates and fees in 2016. Among the countries that have been analysed:

- **Eleven of the 20 countries have some type of consumer sector-specific tax.** Countries in line with best-practice principles of taxation, which do not have additional sector-specific taxes or fees on consumers, include Bolivia, Chile, Guatemala, Paraguay, Peru, Trinidad & Tobago, Uruguay and Venezuela.
- **Additional taxes on the use of mobile services and on mobile devices are the most common sector-specific taxes.** Only four markets have sector-specific taxes on activation.
- **Jamaica's tax structure has the highest number of additional sector-specific tax rates (4), followed by Argentina, Brazil and the Dominican Republic (3)**. This does not include customs duties.

Table 4

Overview of consumer taxes and fees in Latin America in 2016, excluding general VAT

Country	ACTIVATION Mobile-specific tax	USAGE Mobile-specific VAT	USAGE Mobile-specific tax	HANDSET Mobile-specific VAT	HANDSET Mobile-specific tax	Customs duties
Argentina	○	○ *	●	○ *	●	●
Bolivia	○	○	○	○	○	●
Brazil	◉	●	○	○	○	●
Chile	○	○	○	○	○	●
Colombia	○	○	● **	○	○	●
Costa Rica	○	○	○	○	●	○
Dominican Republic	●	○	●	○	●	●
Ecuador	○	○	○ *	○	○	●
El Salvador	○	○	●	○	●	○
Guatemala	○	○	○	○	○	○
Honduras	●	○	○	○	○	○
Jamaica	○	●	● **	●	●	○
Mexico	○	○	●	○	○	○
Nicaragua	●	○	○	○	●	○
Panama	○	○	●	○	●	○
Paraguay	○	○	○	○	○	●
Peru	○	○	○	○	○	○
Trinidad and Tobago	○	○	○	○	○	●
Uruguay	○	○	○	○	○	●
Venezuela	○	○	○	○	○	●

○ No tax or fee ● One tax or fee ◉ Two taxes and/or fees ○ Sector-specific

* Mobile-specific tax that applies to business users only (not included as consumer tax and/or fee in the table).

**Mobile-specific tax applies to usage of voice only.

Source: GSMA Intelligence

3.1.1 Activation taxes and fees

In some countries consumers bear taxes when paying for the activation of their service, through general taxes (for instance, VAT on the sale of a SIM card) and sector-specific taxes (activation fees applying to SIM cards) or connection charges. These can be either one-off or recurring, annual payments.

Activation and connection taxes are not commonplace in Latin America (as in most developed markets such as Europe and North America) but are in Sub-Saharan Africa.[11] However, Brazil, the Dominican Republic, Honduras and Nicaragua have these types of taxes. Brazil is the only country in the region where activation is subject to both a one-off tax and an annual tax. In Sub-Saharan Africa, Niger until recently had both a fixed one-off SIM tax and a 3% annual usage tax under the TURTEL. However, the government of Niger recently removed the fixed component.[12]

Table 5

Activation taxes in 2016

Country	Activation tax	
Brazil	One-off connection tax of BRL26.83 per regular SIM or BRL5.68 per M2M SIM Annual SIM tax of BRL8.86 per regular SIM or BRL1.89 per M2M SIM	^
Dominican Republic	One-off tax of 10% of connection value	^
Honduras	Numbering fee of $0.03	
Nicaragua	Numbering fee of $1.38	
Jamaica	One-off tax of 1% of connection value	v

^ v Increases or decreases in the 2011–2016 period

Source: GSMA Intelligence

Brazil has recently introduced a one-off connection tax (on top of the existing annual SIM taxes). The Dominican Republic has also introduced a tax on the connection value as a one-off charge, while Jamaica has removed a similar tax.

11 Taxing mobile connectivity in Sub-Saharan Africa: A review of mobile sector taxation and its impact on digital inclusion, GSMA, 2017. Available at www.gsma.com/mobilefordevelopment/programme/connected-society/taxing-mobile-connectivity-sub-saharan-africa-review-mobile-sector-taxation-impact-digital-inclusion

12 A positive outlook – Niger's digital inclusion and economy set to rise as a result of mobile tax reductions, GSMA, 2017. Available at www.gsma.com/mobilefordevelopment/programme/connected-society/positive-outlook-nigers-digital-inclusion-economy-set-rise-result-mobile-tax-reductions

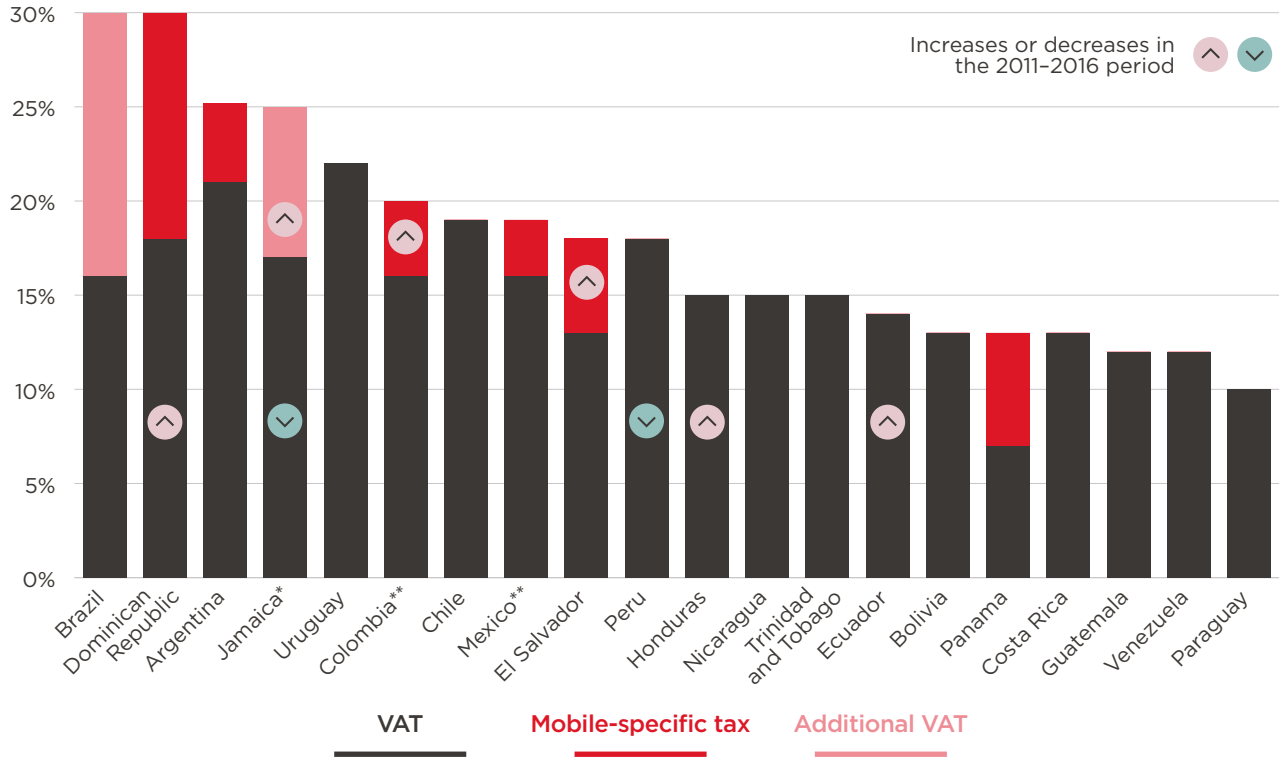
3.1.2 Usage taxes

Consumers are subject to additional mobile-specific taxes or additional VAT rates for the use of voice, SMS and data in around half of the 20 markets reviewed.

Brazil, the Dominican Republic, Argentina and Jamaica have the highest tax rates on usage, significantly higher than other Latin American countries and the average rates in regions such as Europe and North America. This has been driven largely by the application of sector-specific taxes in these countries.

Figure 8

Tax rates applying to usage in Latin America in 2016



*Jamaica also has a fixed rate tax (JMD0.40 per minute of voice).

**The usage tax only applies to voice as of 2016. In 2017 the Colombian government extended this tax to data services.

Source: GSMA Intelligence

Taking into account that taxes on mobile usage are typically regressive (including those applied as a proportion of consumption), these tax increases may have limited growth and adoption of mobile and mobile internet services particularly among lower income groups.

- Colombia and El Salvador have introduced mobile-specific, excise tax rates of 4% and 5%. Similarly, Jamaica has passed a law making mobile services subject to a higher, mobile-specific VAT rate of 25% (from a standard VAT rate of 17%).
- Since 2011, two countries have set mobile-specific taxes applying to usage from business users. Argentina's businesses are subject to a VAT rate that is 6 percentage points higher than standard VAT, while the government of Ecuador has implemented an excise tax of 15% additional to the application of VAT. [13]

13 This 15% excise tax does not apply to mobile services providing only internet access.

3.1.3 Handset taxes

Handsets are subject to a relatively high tax burden compared to taxes on mobile services usage. This is because most markets in the region preserve customs duties, and some have introduced special taxes on handsets. Overall, 14 of the 20 markets analysed have tax rates that apply on top of VAT. This is above the duties and taxes experienced in European and North American countries, where consumers typically only face VAT.

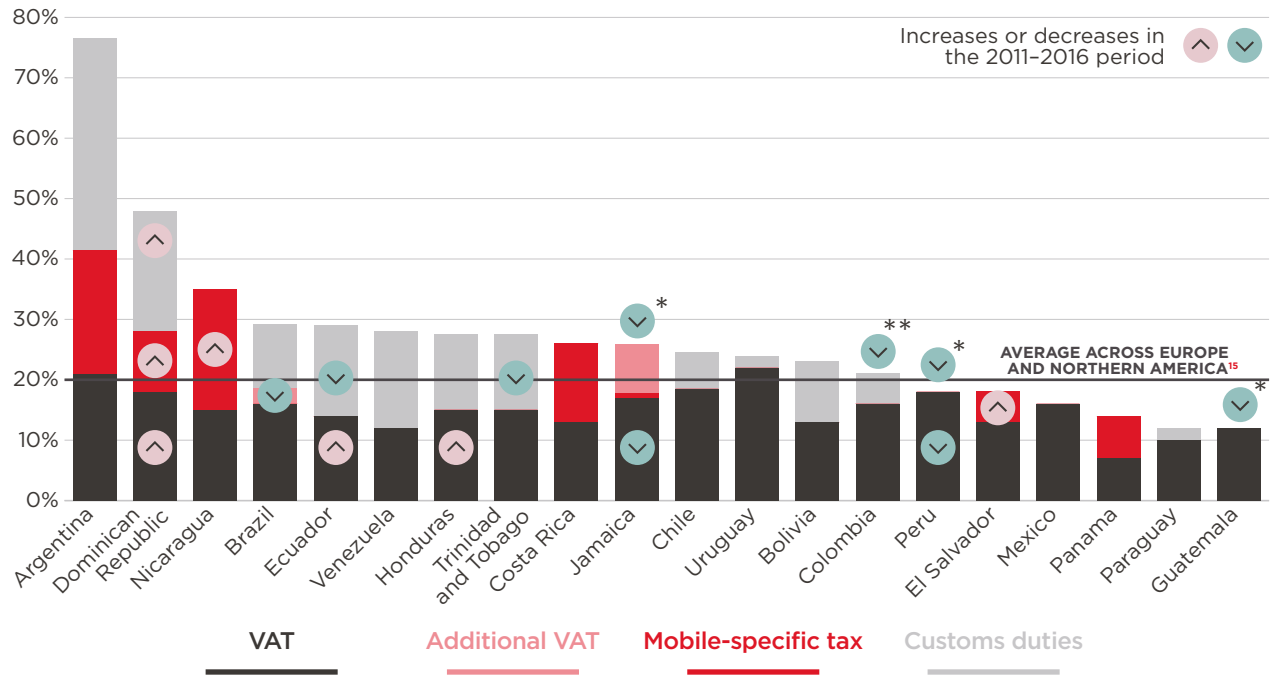
- Guatemala, Mexico and Peru are the only markets where consumers are only subject to VAT.
- With tax rates that account for approximately half the pre-tax value of handsets, Argentina and the Dominican Republic stand out compared to other countries in the region. Argentinian consumers are subject to 21% VAT, 20% luxury tax on devices and 35% of customs duties. The Dominican Republic is next, having introduced 20% customs duty and a 10% mobile-specific tax since 2011.

High customs duties have been used in some countries, such as Argentina, as a policy to protect and stimulate domestic production of devices. While some economic activity has been created in certain regions, these policies have not generally been successful in creating competitive domestic industries (often due to a lack of competitive skilled labour and technology), with Asian manufacturers still offering substantial cost advantages.

With these results, such protectionist policies seem to be harmful overall, given their impact on affordability. A report by the GSMA found that a reduction in customs duties of 35% to 12% in Argentina would increase unique subscribers by 0.17 million.[14]

Figure 9

Tax rates applied to handset and devices in Latin America in 2016



* Decrease means the complete exemption of customs duties for mobile handsets

** Decrease means the removal of a mobile-specific tax in Colombia

Source: GSMA Intelligence

14 Digital inclusion and mobile sector taxation in Argentina, GSMA, 2017

15 Albania, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, UK and US

Over the period analysed, a number of countries reduced customs duties, in a positive move to encourage greater access to mobile services.

- Jamaica, Peru and Guatemala have completely eliminated their customs duties on the import of mobile devices, while Ecuador and Trinidad & Tobago have decreased the rates of customs duties.
- While in some countries the tax burden on handsets remains substantial, the reduction of customs duties in recent years is likely to have improved affordability. The latter is particularly true for those on lower incomes, since handset prices represent a significant upfront cost for those consumers.

3.1.4 Other mobile-specific taxes

Some consumers in Latin America are also affected by surtaxes on international incoming traffic (SIIT). This tax fixes termination charges on incoming international calls, with the government typically collecting a fixed amount per minute. SIIT charges have been introduced in Honduras, Jamaica and, since 2017, the Dominican Republic (see Table 6).

Table 6

SIIT charges in Latin America in 2016

Country	SIIT
Honduras	Flat rate $0.03 per minute of incoming traffic
Jamaica	Flat rate $0.02 per minute of incoming traffic
Dominican Republic*	Flat rate $0.02 per minute of all international traffic and $0.0025 per international SMS

*2017

Source: GSMA Intelligence

Taxes on incoming international traffic have been more frequently used in Africa. Analysis carried out by the GSMA[16] found that these taxes substantially increased prices and decreased the volume of international calls – with this eventually negatively impacting the tax base over which this charge is applied. SIIT taxes have been found to cause the price of terminating international calls to increase by an average of 97%, with the volume of incoming calls diminishing 14–36%.

In the case of Honduras, a study by the GSMA[17] has estimated that the abolition of the SIIT tax would add 159,000 connections, which would increase mobile sector revenue and adoption of mobile services. This has been estimated to drive wider direct, indirect and productivity impacts for the mobile sector, ultimately delivering additional GDP growth (up to an additional $126 million in 2020). Despite an initial fall in tax revenues after the reduction in the tax rate, the study found that the government could achieve neutrality within three years and in 2020 the increase in GDP growth could enable $9 million in tax revenues to be collected through more broad-based taxation.

16 Surtaxes on International Incoming Traffic in Africa, GSMA, 2014.
Available at www.gsma.com/mobilefordevelopment/programme/connected-society/surtaxes-on-international-incoming-traffic-in-africa
17 Digital Inclusion and Mobile Sector Taxation in Honduras, GSMA, 2016.
Available at www.gsma.com/mobilefordevelopment/programme/connected-society/digital-inclusion-mobile-sector-taxation-honduras

3.2 Mobile operator taxes and fees

As well as paying corporation taxes, mobile operators are also subject to industry-specific fees. Governments impose recurring spectrum, regulatory and licence fees to recover the cost of providing operators with a certain service, such as spectrum management. However, these fees are often set over and above costs or established without a service being provided in exchange. Mobile operators are also required to contribute to USFs, created to develop telecommunications infrastructure, with these funds in some cases administrated and invested ineffectively.

Recurring spectrum fees, other regulatory fees and USF contributions can in these cases become in effect further forms of sector-specific tax – not aligning with best practice by for example not applying to broad bases, discriminating against one particular sector and creating complexity (see Table 7).

Table 7

Alignment of operator taxes with best-practice taxation principles

	EFFICIENCY			EQUITY		SIMPLICITY AND TRANSPARENCY
	Wide base	Broad-based across sectors	Accounts for externalities	Vertical equity (not regressive)	Horizontal equity (even tax treatment)	
General tax						
Corporation tax[18]	✓	✓	×	✓	✓	✓
Sector-specific tax						
Recurring spectrum fees (if they represent double taxation)	×	×	×	✓	×	×
Regulatory fees (if used as a means of revenue generation for the government)	×	×	×	✓	×	×
Universal service contributions (if fund is underutilised)	×	×	×	✓	×	×

× Sector-specific taxes do not follow the best-practice principle

✓ Sector-specific taxes are typically consistent with the best practice principle

Source: GSMA Intelligence

18 When corporate taxes are applied as standard rates across all sectors, these align with best practice in terms of having wide bases and not being discriminatory against a particular sector, promoting horizontal equity and being relatively simple and transparent. Corporate taxes in the mobile industry do not, however, account for the wider positive impacts generated by mobile connectivity, which would require special treatment in order to encourage consumption of mobile devices and services.

3.2.1 Recurring spectrum and regulatory fees

Mobile operators typically pay a one-off fee to gain access to radio spectrum, often allocated through auctions. On top of this, some countries in Latin America, such as Argentina, Brazil, Mexico and Venezuela have introduced recurring spectrum fees (Table 8). Governments have often justified this as a tool to recover the regulatory cost of spectrum management.

Unless spectrum auction prices and recurring fees are well calibrated, recurring fees can be inefficient as they can represent double taxation of the same resource. Spectrum fees raised unexpectedly after spectrum has been awarded competitively may create negative market expectations, potentially limiting investment and participation in future auctions, and therefore reducing future auction revenues.

Table 8

Selected examples of recurring spectrum and regulatory fees

Recurring spectrum fees		Regulatory and licence fees	
Argentina	Annual spectrum fee at 0.7% of revenue	**Colombia**	Annual regulatory fee at 0.1% of gross revenue
Brazil	One-off BRL1,341 and annual BRL442 per base station	**Argentina**	Annual licence fee at 0.5% of gross revenue
Venezuela	Annual spectrum fee at 0.5% of revenue	**Ecuador**	Annual licence fee at 0.5–9.0% of gross revenue depending on market position
Mexico	Flat fee paid annually per MHz based on band and coverage	**Honduras**	Annual supervisory fee at 0.5% of gross revenue
		Venezuela	Annual licence fee at 2.8% of gross revenue

Source: GSMA Intelligence

Separately, additional regulatory fees have been created by governments. In some cases, they have been introduced without aiming to recover a clear regulatory cost incurred by governments. In this context, regulatory fees have been used as a means to generate revenues for governments, becoming an additional tax operators have to support, potentially creating additional costs and lowering the ability to invest and reduce prices.

Regulatory fees are often based on revenue rather than profits, which can be a problem. This is because taxes on revenues lead to operators needing to inflate prices to maintain their profit margins. As a result, prices are higher than they would otherwise be without the tax. Taxes on profits on the other hand incentivise operators to reduce profits by spending more on network investments and product innovation, which may reduce initial profits but can bring tax savings.

3.2.2 Universal service fund contributions

Despite operators´ success in extending coverage in the region (approximately 70% and 90% of population for 4G and 3G, respectively), there are still many who remain unconnected. To extend the benefits of connectivity, regulators and policymakers have a number of tools available to increase coverage and access in underserved areas, one of which is the use of USFs.

USFs are designed to fund infrastructure rollout in general or in less densely populated areas. Latin American governments created a number of funds aimed at these objectives during the late 1990s and early 2000s. While some USFs are financed through government budgets, they are mostly funded through contributions from telecoms operators in the form of a percentage of gross revenues. Table 9 shows that operators are required to contribute to USFs in 13 of the 18 countries analysed, with rates ranging between 0.2% and 5.0% of operator revenue.

Table 9

USF contributions in Latin America

Country	Universal service fund name	Year of creation	Operator USF contribution revenue rate
Bolivia	PRONTIS	1996[19]	1–2%
Brazil	FUST/FUNTTEL	2000	1.5%
Ecuador	FODETEL	2000	1%
Venezuela	FSU	2000	1%
Nicaragua	FITEL	2003	2%
Peru	FITEL	1994	1%
Paraguay	FSU	1998	0.2%[20]
Colombia	FONTIC	2009[21]	2.2–5.0%
Costa Rica	FONATEL	2008	1.5–3.0%
Argentina	FFSU	2009[22]	1%
Honduras	FITTIC	n/a	1%
Panama	SAU	2008	1%
Colombia	FTIC	1994[23]	2.2%
Jamaica	n/a	n/a	SIIT Tax[24]
El Salvador	FIET	1998	Not mandatory
Chile	FDT	1994	State funded
Mexico	FCST	1995	State funded
Uruguay	CEIBAL	n/a	State funded

Source: CEPAL (2011),[25] Hernández (2009)[26] and ITU (2013) [27]

To function correctly and successfully disburse funds collected, USF levies should be set after careful analysis of the subsidy levels needed, with funds managed and distributed through independent structures, with measurable objectives and transparent management. While this picture may change across countries in the region, there is some evidence suggesting that in general USFs have not been administered effectively and have been underutilised.

In 5 of the 7 countries where data is available, contributions made by operators to USFs were never invested as of 2009 (with these funds created in the late 1990s or early 2000s). These countries include Bolivia, Brazil, Ecuador, Venezuela and Nicaragua. Only Peru and Paraguay partially invested the funds raised by USFs. This is consistent with broader analyses by ITU[28] and the GSMA,[29] which have found that, across the world, more than half of the sums collected were never utilised and over a third of the USFs were never used at all.

When underutilised, USFs are inefficient as they leave capital unemployed, which could instead be productively invested for network rollout. Since operators' contributions to USFs eventually tax communications consumers, they can be counterproductive in that they actually raise the affordability barrier – not serving as a means to increase coverage and access to connectivity.

19 The fund began in 1996 but changed substantially when the new Constitution was approved in 2009.
20 Operators in Paraguay are subject to a revenue tax of 1% (´Tasas de Explotación Comercial´). 20% of this tax revenue is allocated to the USF.
21 Fund initially created in 1976. Its name, funding and objectives changed in 2009.
22 Fund legally established in 2000, but it did not become operative until 2009.
23 The FTIC was legally created in 2009, but it replaced a previous fund created in 1994 by the Colombian government.
24 Jamaica's USF is funded through a surtax on international traffic
25 Uso de los fondos de acceso universal de telecomunicaciones en países de América Latina y el Caribe, CEPAL, 2011. Available at http://archivo.cepal.org/pdfs/2011/S2011088.pdf
26 Propuestas Regulatorias para la Implementación del Servicio Universal en Ecuador, Hernández, 2009. Available at http://repositorio.uasb.edu.ec/handle/10644/746
27 Universal Service Fund and Digital Inclusion, ITU, 2013. Available at www.itu.int/en/ITU-D/Conferences/GSR/Documents/ITU%20USF%20Final%20Report.pdf
28 Universal Service Fund and Digital Inclusion, ITU, 2013. Available at www.itu.int/en/ITU-D/Conferences/GSR/Documents/ITU%20USF%20Final%20Report.pdf
29 Are Universal Service Funds an effective way to achieve universal access? GSMA, 2016. Available at www.gsma.com/mobilefordevelopment/programme/connected-society/universal-service-funds-effective-way-achieve-universal-access

CASE STUDY
Mobile-specific taxes to fund security and emergency services in Central America

Over the last decade, a number of telecoms-specific taxes have been introduced to specifically fund security and emergency services in Central America.

In light of the need to finance extraordinary security measures, Honduras and El Salvador have created two special taxes, both of which were introduced as temporary. The government of Honduras introduced a tax on operator revenue in 2011, within the framework of the wider Ley de Seguridad Poblacional.[30] This tax nevertheless still applies as of 2017. In the same vein, El Salvador created two taxes as special contributions to security (CEGC and CESC), applying to operator profits and to the consumption of telecoms services and devices; these are set to apply until 2020.[31]

The introduction of such taxes in Honduras and El Salvador can be problematic for two reasons. Firstly, these taxes can put pressure on margins, limiting the scope for price reductions and constraining further expansion of connectivity, thereby driving reduced affordability and service availability. This can be particularly problematic for consumers in Honduras and El Salvador, as the total cost of mobile ownership (TCMO) for the Medium basket already represents 10% and 40% of income for the lowest 40% earners, respectively. A study by the GSMA[32] found that a 50% reduction of the CESC would generate an additional 110,000 connections.

Secondly, both of these taxes can reduce return on investment, potentially meaning lower investments. In the case of El Salvador, it was estimated that a reduction in the CESC would create an additional 420 new or upgraded base stations by 2021.

30 Ley de Seguridad Poblacional, Congreso Nacional de Honduras, 2011. Available at www.tsc.gob.hn/leyes/Ley%20de%20Seguridad%20Poblacional.pdf
31 Decreto N° 162, Asamblea Legislativa, 2015
32 Digital Inclusion and Mobile Sector Taxation in El Salvador, GSMA, 2017. Available at www.gsma.com/mobilefordevelopment/programme/connected-society/digital-inclusion-mobile-sector-taxation-el-salvador

Table 10

Emergency and security services funded via sector-specific taxes.

Country	Security or emergency service financed	Tax description		Sector taxed
Honduras	General security services	2011	Mobile communications security tax: 1% of operator gross revenue	Mobile-specific
El Salvador	General security services	2015	Special contribution to security of large taxpayers (CEGC): 5% of net income of companies whose net income exceeds $500,000	General tax
	General security services	2015	Special contribution to security (CESC): 5% of pre-tax value of usage of telecoms services and purchase of devices and network equipment	Telecoms-specific
Dominican Republic	911 Emergency service	2017	Tax on international traffic: $0.02/minute, 0.25 cents/SMS	Telecoms-specific
Costa Rica	911 Emergency Service	2017	Tax on mobile and fixed communications currently being discussed	Telecoms-specific

Source: GSMA Intelligence

Separately, the recent creation of the 911 emergency service in the Dominican Republic has come together with the introduction of a fee on international traffic to fund this service. Meanwhile, Costa Rica's parliament will be discussing the possibility of creating a fund for the 911 service with the introduction of a similar tax on telecoms.[33] Such surtaxes on international traffic have been found to drive substantial decreases in the volume of international traffic.

33 Proyecto de ley busca sumar impuestos en telecomunicaciones para financiar el 911, Telesemana, 2017. Available at www.telesemana.com/blog/2017/08/02/costa-rica-proyecto-de-ley-busca-sumar-impuestos-en-telecomunicaciones-para-financiar-el-911

4 Mobile sector taxation and its impact on affordability and investment

4.1 Affordability of mobile services is key to deliver greater connectivity

Affordability of mobile services and devices is a key determinant of mobile service adoption. Greater affordability reduces the amount of disposable income required for mobile usage and ownership, increasing adoption – particularly for the lowest earners, since this represents a higher share of their monthly income.

Figure 10 shows that worldwide and in Latin America, countries where the use of mobile services is less affordable (as measured by TCMO) tend to have lower connectivity levels. The latter is measured through the Mobile Connectivity Index,[34] which takes into account infrastructure, affordability, consumer readiness and content.

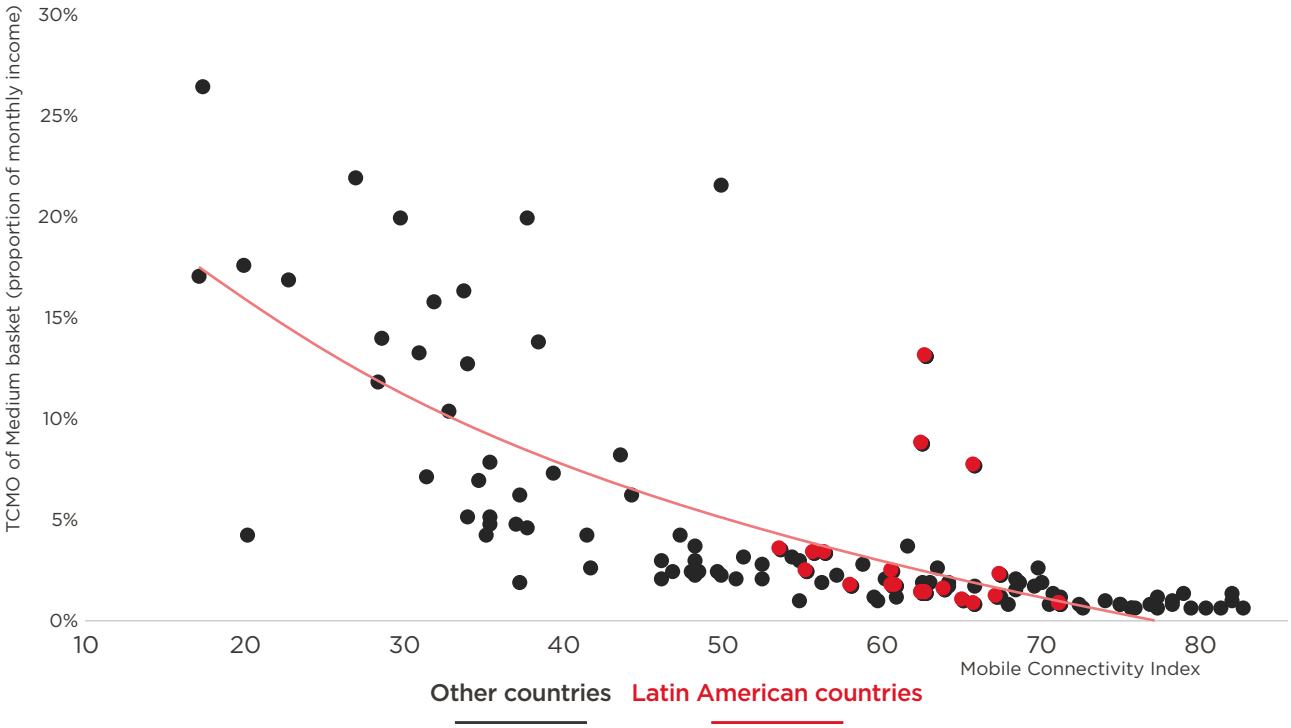
The TCMO is the total cost to a consumer of owning and using a mobile phone, expressed in monthly terms. It takes into account three cost categories:

- the handset price – the cost of the mobile device required for the use of mobile services, which represents an upfront, fixed cost that the user has to bear
- the activation and connection price or any other charges incurred to connect to the operator's network, which often depends on whether contracts are prepaid or postpaid
- the price related to use, comprising voice, SMS and data charges, which can be prepaid or postpaid.

34 www.mobileconnectivityindex.com

Figure 10

Total cost of mobile ownership and the Mobile Connectivity Index



Source: GSMA Intelligence and Tarifica

Table 11

Summary of monthly usage basket profiles used for the calculation of TCMO

	Basic	Low	Medium	High
Usage allowance	100 MB data	500 MB data	250 voice minutes 100 SMS 1000 MB data	5000 MB data
Tariff	Prepaid	Prepaid or postpaid	Prepaid or postpaid	Prepaid or postpaid
Technology	2G, 3G or 4G	3G or 4G	3G or 4G	3G or 4G

Source: GSMA Intelligence

Estimates from GSMA Intelligence indicate a median usage of approximately 1 GB of data per month per user in the region. Taking this into account, this section focuses on the Medium basket, with an allowance close to typical usage. Additionally, the Basic and Low baskets will also be inspected, to explicitly assess the affordability for lower end users. The High usage basket will also be used to understand the costs for segments of the market that are more intensive in the use of mobile services.

LACK OF AFFORDABILITY CREATES BARRIERS FOR THE UNCONNECTED, PARTICULARLY THE 40% AT THE BOTTOM OF THE PYRAMID

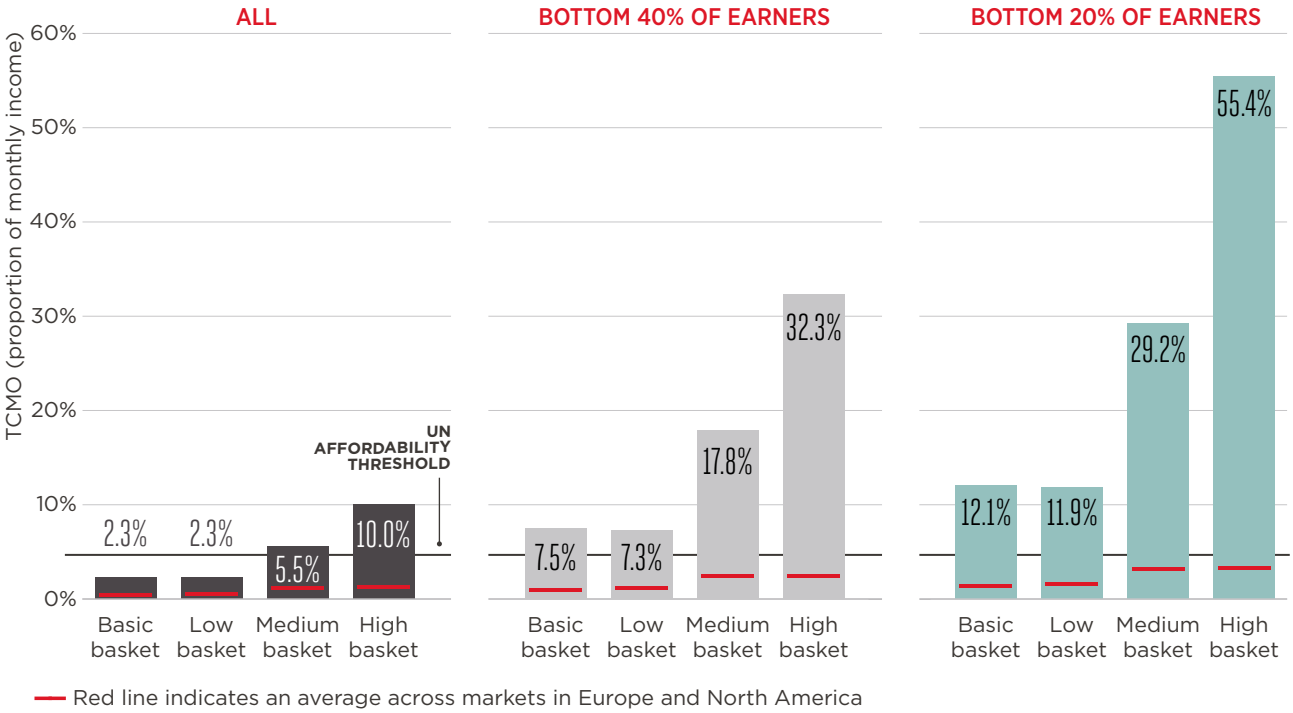
One basic affordability metric is the proportion of monthly income represented by TCMO. According to the UN Broadband Commission for Sustainable Development, broadband is affordable if a 500 MB data plan is available at 5% or less of monthly income.[35]

The Basic (100 MB) and Low (500 MB) baskets represent, on average, approximately 2% of income per capita in the region, with the Medium (1 GB of data, voice and SMS) and High (5 GB) allowances representing a more substantial proportion of monthly income, breaching the affordability barrier of 5%. Figure 11 shows that these estimates increase significantly for the bottom earners.

- None of the baskets analysed are below 5% of monthly income for the bottom 40% of the income distribution. Consequently, mobile services are unaffordable for the bottom 40% of all countries in Latin America, according to the UN's definition. The Low basket (500 MB) represents 7% of monthly income for the bottom 40%, and 12% for the bottom 20% earners. The most basic basket we analysed (100 MB) features similarly high levels of TCMO as a proportion of income.
- The Medium and High baskets are well above 5% at all levels of the analysis, even when taking into account higher values of income per capita (e.g. the average level). The results show that more intensive usage profiles are particularly inaccessible for the bottom 40% and 20% of the pyramid, with TCMO for these being more than 20% of monthly income.

Figure 11

TCMO as a proportion of income in Latin America[36]



Markets in Europe and North America include: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom and United States.

Basic (100MB) and Low (500MB) baskets represent **2%** of average income in Latin America

This increases to **7%** for the bottom 40% of earners

This increases further to **12%** of income for the lowest 20% of earners in Latin America

Source: GSMA Intelligence and Tarifica

35 Broadband Targets for 2015, UN Broadband Commission, 2015. Available at www.broadbandcommission.org/Documents/Broadband_Targets.pdf

36 The Basic basket in some cases may be higher than the Low basket due to the construction of the basket. The Basic basket only consists of prepaid prices, whereas the Low basket is constructed using prepaid and postpaid prices

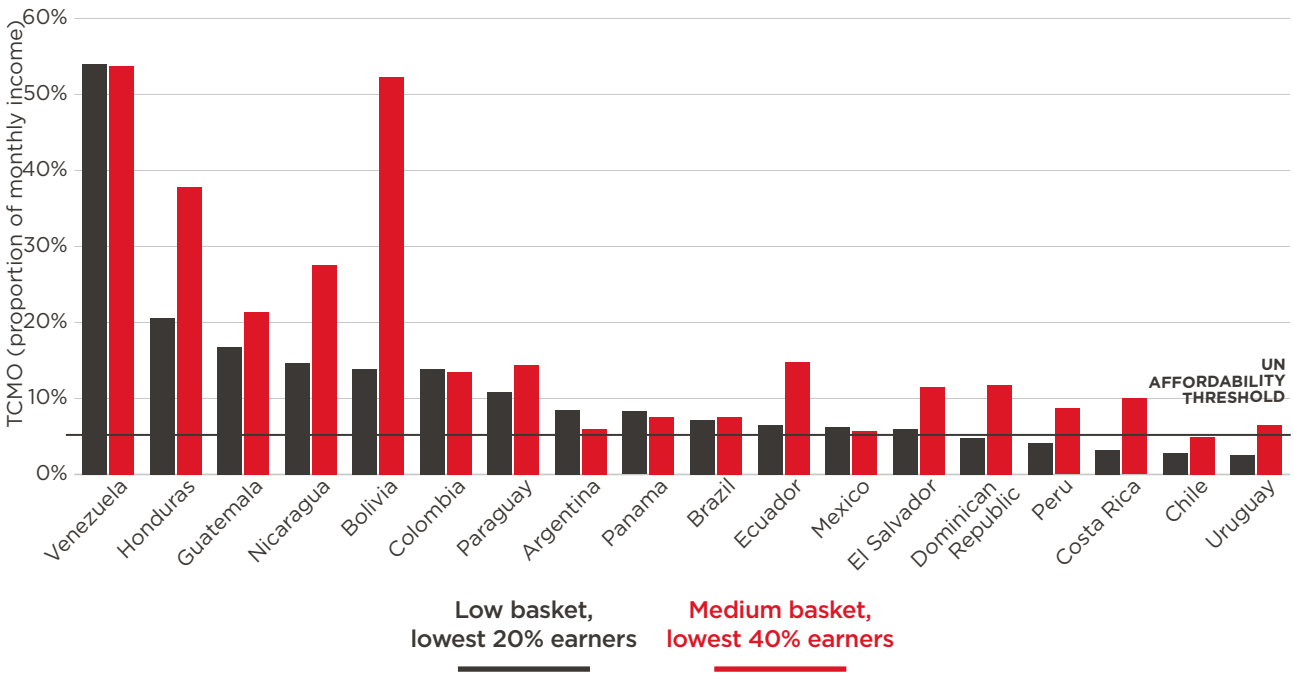
This picture in Latin America contrasts with the estimates for North America and Europe, where TCMO levels are below the 5% threshold across all baskets, including for the bottom 20% of earners in those regions.

In Latin America, the cost of using 500 MB of data is above 5% of monthly income for 13 of the 18 markets analysed. The countries below this threshold include the Dominican Republic, Peru, Costa Rica, Chile and Uruguay.

The Medium basket, with an allowance close to the typical data usage pattern in the region, represents more than 10% of monthly income for the bottom 40% in more than half of the countries analysed. Bolivia and Venezuela have TCMO levels above 50% of monthly income.[37] Only Chile is below the 5% income threshold.

Figure 12

TCMO of the Low and Medium baskets as a proportion of income of the bottom 20% and 40% of earners



Source: GSMA Intelligence and Tarifica

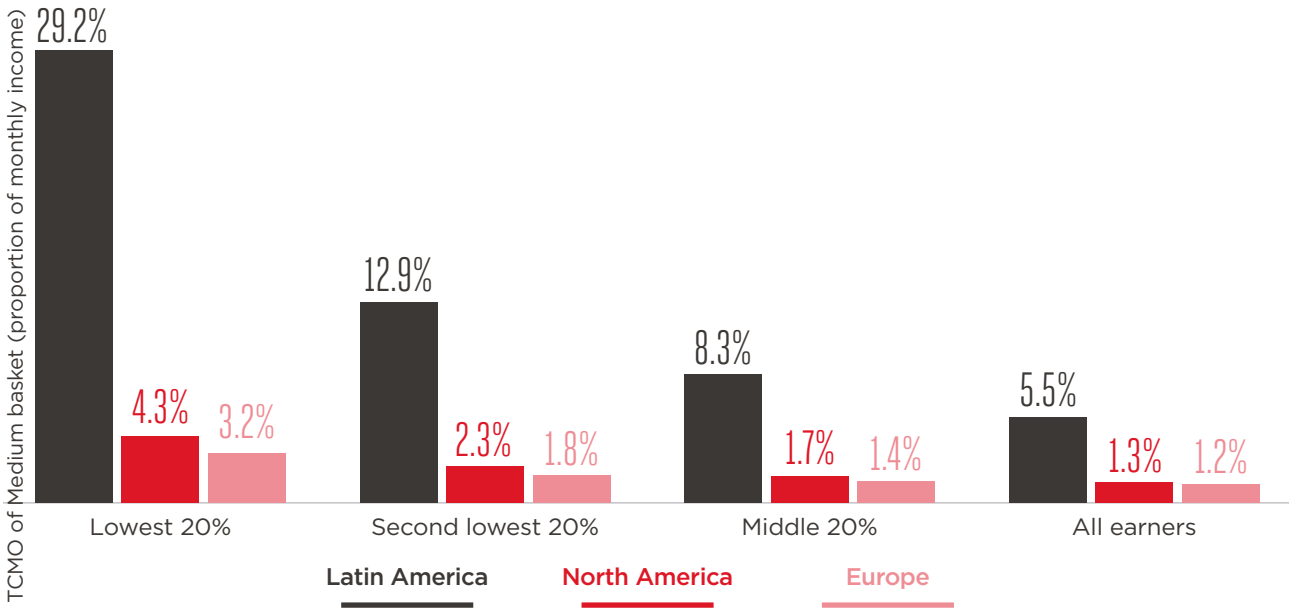
A SUBSTANTIAL AFFORDABILITY GAP EXISTS BETWEEN LATIN AMERICAN AND HIGHER INCOME MARKETS; WIDENS FOR HIGHER DATA USAGE PATTERNS

In Latin America the TCMO represents a proportion of income several times higher than in North America and Europe. The Medium basket represents more than 5% of monthly income, looking across all consumers in Latin America. This compares to around 1% in both Europe and North America. Figure 13 shows that these differences with respect to higher income are more pronounced for the lowest income groups. The affordability gap between Latin America and higher income markets is driven by lower incomes rather than higher tariffs. For the lowest 20% of earners in Latin America, the Medium basket represents 29% of income, compared to between 3% and 4% for the lowest 20% of earners in North America and Europe respectively.

37 The base data used to analyse Venezuela is represented in US dollars and bolivars. As a result, exchange rate fluctuations can significantly impact the outcome of our analysis on Venezuela. Nevertheless, we have included our analysis of Venezuela here for completeness

Figure 13

TCMO of the Medium basket as a proportion of income across regions and earners in 2016

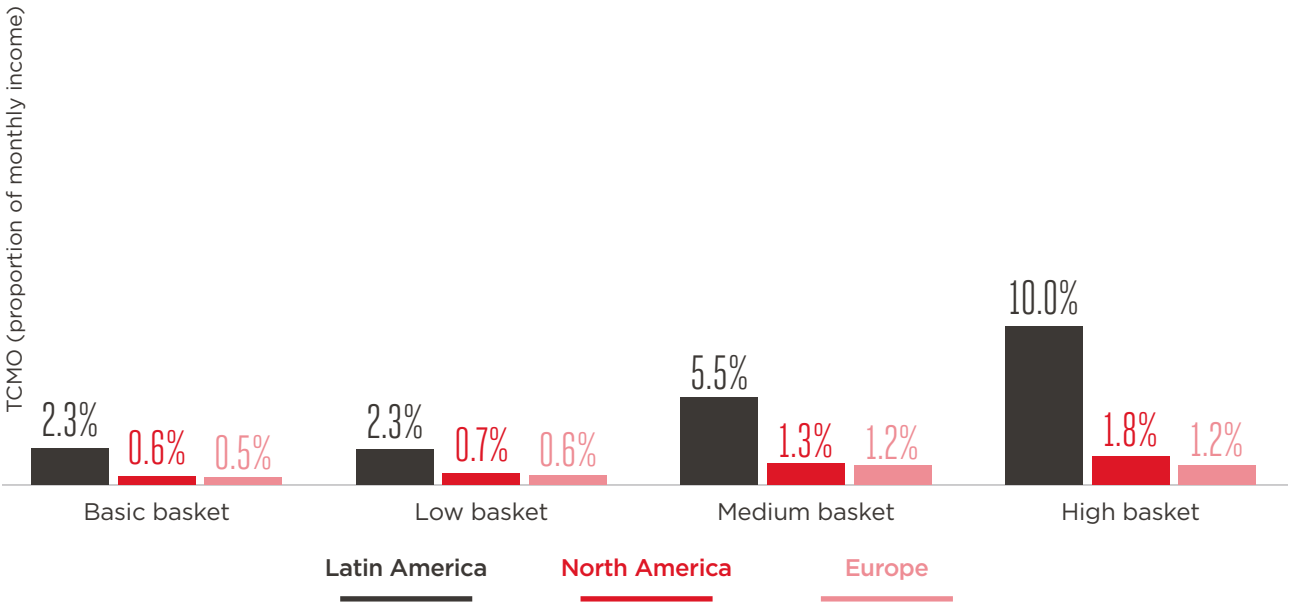


Source: GSMA Intelligence and Tarifica

Figure 14 shows that access to intensive usage baskets is a specific issue for the region. Medium and High baskets are substantially less affordable for consumers in Latin America than in more developed markets. This means that affordability is more of an issue for high data allowances in Latin American markets; the affordability gap is more intense in these baskets.

Figure 14

TCMO as a proportion of income per capita across regions and baskets in 2016 (all earners)



Source: GSMA Intelligence and Tarifica

Markets in Europe include: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom. North America includes the United States only..

4.2 Taxes faced by consumers are a key determinant of affordability

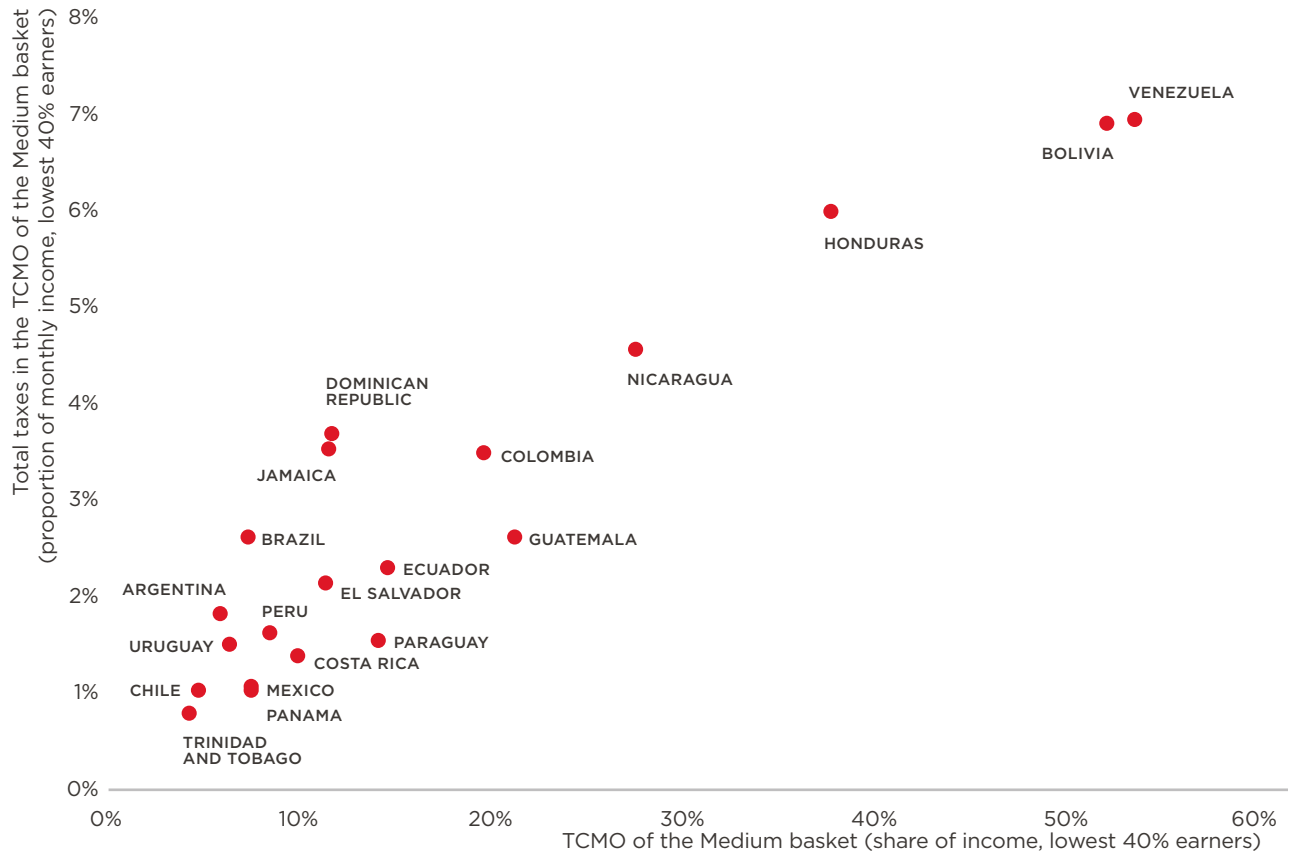
Taxation applied to the mobile sector contributes to the TCMO and can act as a barrier to the affordability of mobile services. Our analysis of 20 markets in Latin America includes the taxes faced directly by consumers when using mobile services. More taxes might be indirectly incurred by consumers, depending on whether operators are able to pass on taxes aimed at them. However, these have not been included.[38]

Countries with higher taxes tend to have higher TCMO levels. Figure 15 shows the latter for the Medium basket (250 minutes of voice, 100 SMS and 1 GB of data) for the countries analysed in Latin America.

- Countries with the highest TCMOs (Venezuela, Bolivia, Honduras and Nicaragua) tend to be those that have higher taxes as a proportion of monthly income.
- On average, total taxes in the TCMO for the Medium basket represent 3% of monthly income for the poorest 40% consumers in Latin America. This amount compares to close to 0% in Europe and Northern America.

Figure 15

Relationship between taxes and TCMO for Medium basket, as a proportion of income for lowest 40% earners



Source: GSMA Intelligence and Tarifica

38 The extent to which operator taxes ultimately fall on operators or consumers depends on individual market conditions. Some taxes and fees may be absorbed by operators in the form of lower profits, whilst others may be passed through in terms of higher prices for consumers, or a combination of the two. Additionally, this analysis does not take into account sector-specific taxes applying to business customers. This means we do not measure the sector-specific taxes on usage in Argentina and Ecuador, applying only to businesses.

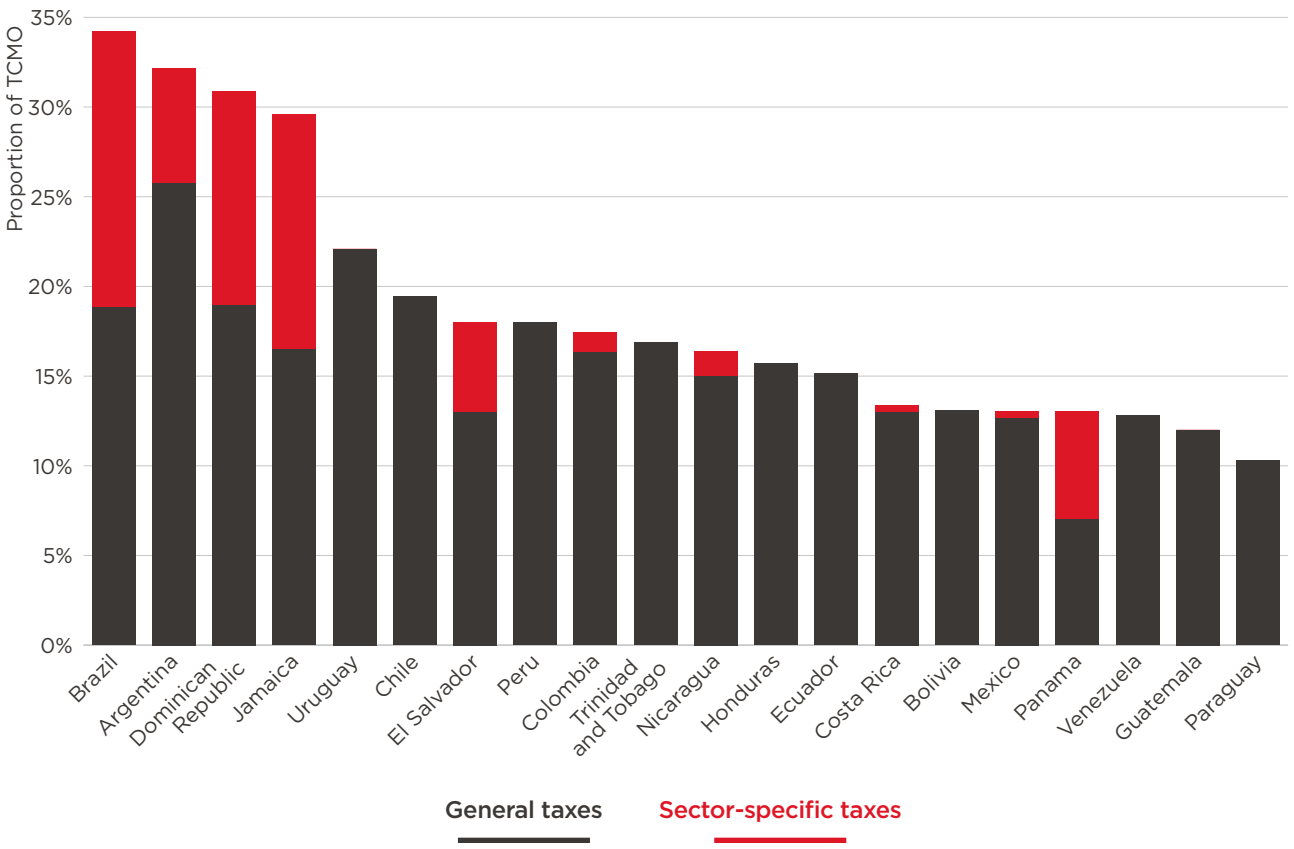
ONE DOLLAR IN EVERY FIVE SPENT BY MOBILE CONSUMERS GOES TOWARDS CONSUMER TAXES

In eight of the 20 countries consumer taxes on mobile ownership represent more than 5% of income for the poorest income quintile. Looking at the Medium basket for the lowest 40% of the income distribution:

- Total taxes represent on average 19% of TCMO in Latin America, compared to 12% in North America. In Brazil, the Dominican Republic, Jamaica and Argentina taxes represent 30% or more of TCMO.
- Countries ranking the highest in terms of total taxes as a proportion of TCMO tend to have a high degree of sector-specific taxes. Brazil, the Dominican Republic, Jamaica and Argentina are markets that stand out both in terms of high overall levels of taxes in TCMO and sector-specific taxes.

Figure 16

Proportion of taxes in TCMO (Medium basket)

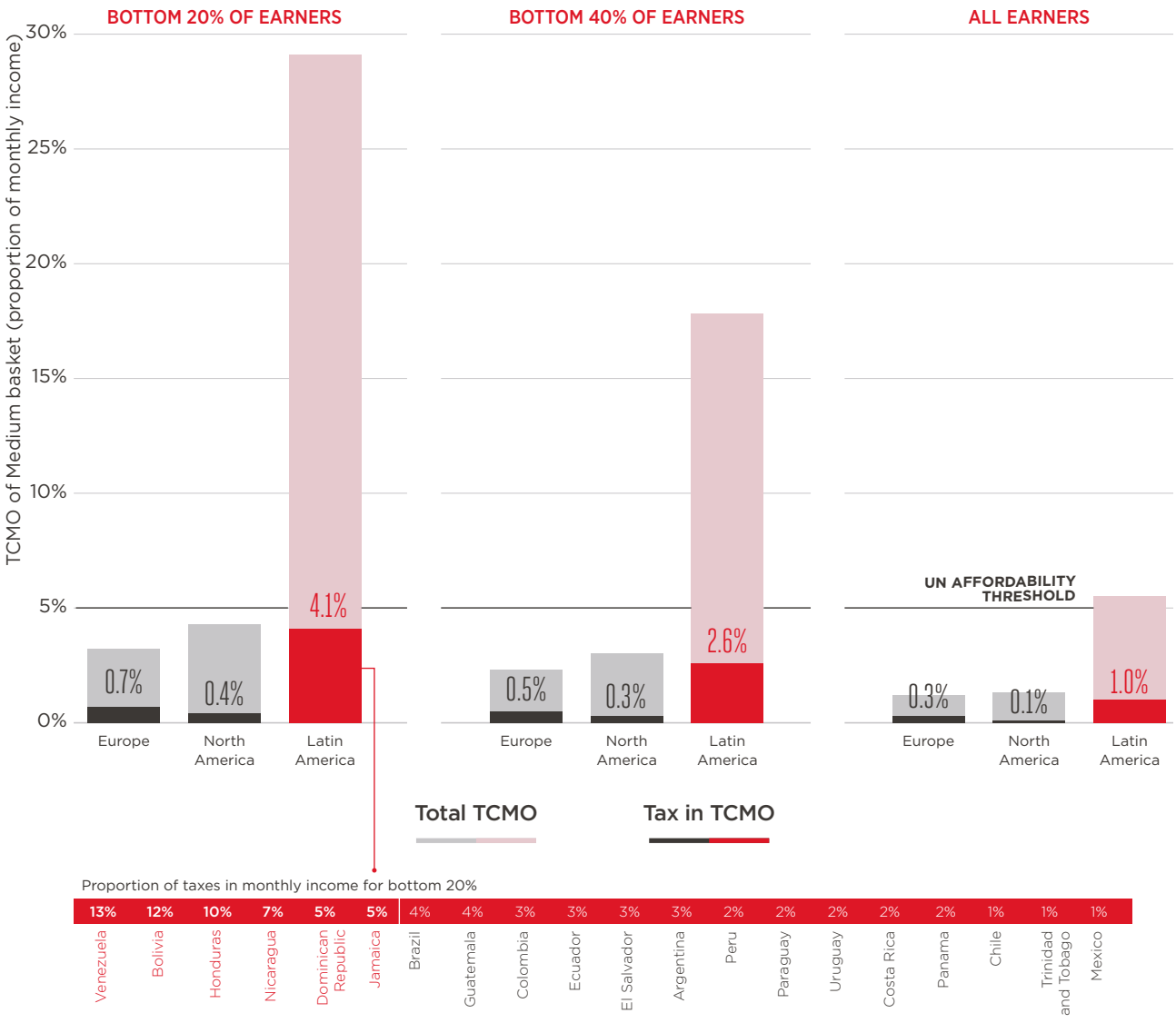


Source: GSMA Intelligence and Tarifica

The substantial proportion of taxes in TCMO is linked to the lack of affordability. Total taxes on mobile ownership in Latin America represent on average 4.1% of income for the poorest income quintile, which is several times higher than North America and Europe and close to the UN affordability threshold. Figure 17 shows that taxes alone are already above the 5% monthly income threshold in six of the 20 countries analysed, before taking into account the actual price of mobile services and devices. Figure 17 also shows the regressive nature of taxes on mobile services; taxes represent a greater burden for those at the bottom of the income distribution.

Figure 17

Proportion of taxes in monthly income by income group (Medium basket)



Markets in Europe include: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom. North America includes the United States only.

Source: GSMA Intelligence and Tarifica

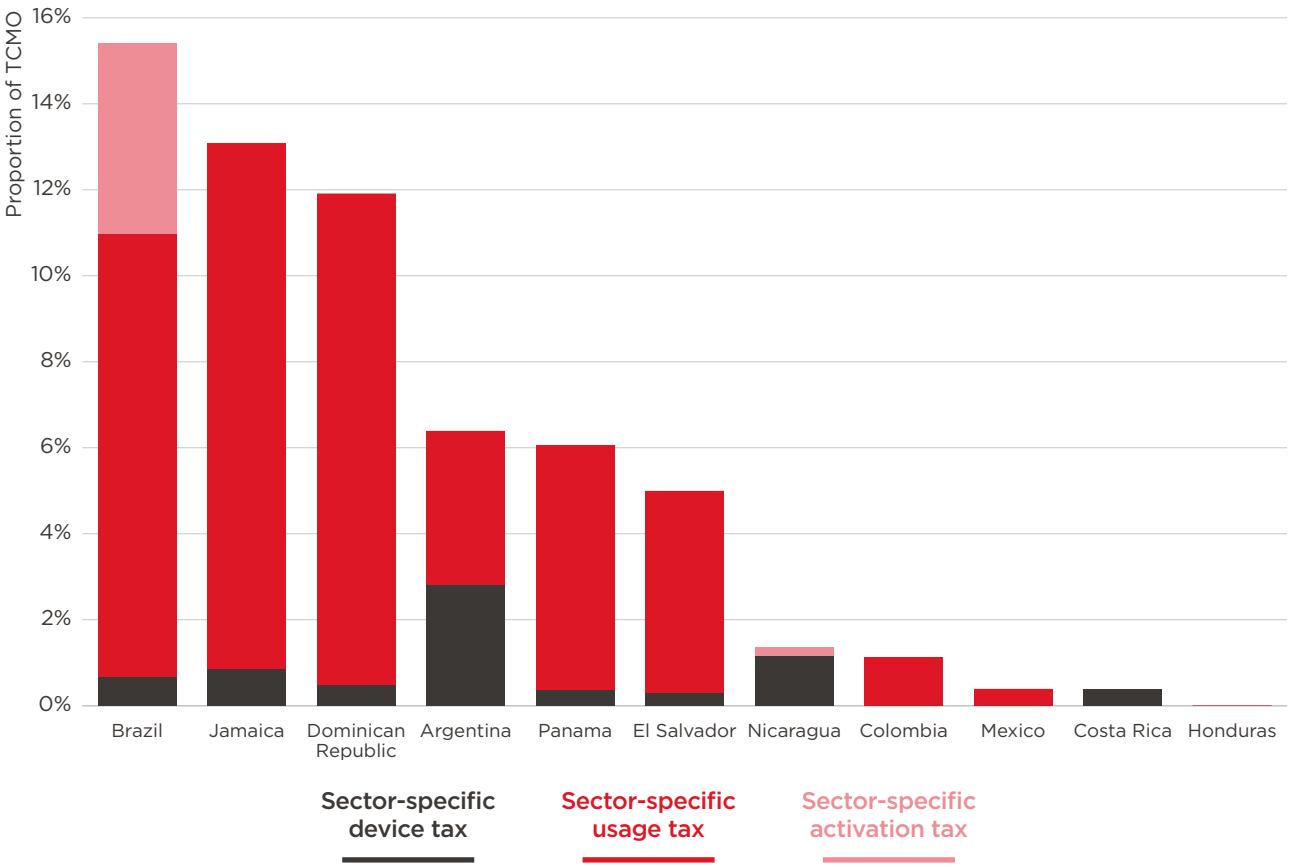
SECTOR-SPECIFIC TAXES ARE A KEY CONTRIBUTOR TO TOTAL TAXES

Overall, 11 of the 20 countries analysed have sector-specific taxes. For these countries (see Figure 18), sector-specific taxes represent an average of 5.5% of TCMO. This is much higher than for example in Europe, where they represent 1% on average.

- Consumers in Brazil, Jamaica and the Dominican Republic pay the highest sector-specific taxes in TCMO, representing over 12% of TCMO.
- Most of the sector-specific tax payments relate to usage taxes, which are the most common sector-specific taxes in the region. Sector-specific taxes on devices represent a smaller though significant proportion of TCMO, arising from the excise duties and/or higher VAT rates in Argentina, El Salvador, Costa Rica, the Dominican Republic, Jamaica, Nicaragua and Panama.
- Brazil has the highest activation taxes in the region, along the lines of levels observed in certain African markets, where activation taxes are more common. In Brazil, almost one third of all taxes paid in TCMO relate to activation taxes.

Figure 18

Proportion of sector-specific taxes in TCMO (Medium basket)



Source: GSMA Intelligence and Tarifica

4.3 Types of tax regime can affect investment and infrastructure development

Mobile services are maintained and improved on by companies in the mobile ecosystem undertaking large amounts of upfront investment. This includes new infrastructure, network equipment, spectrum licences and retail points of sale.

Mobile operators in Latin America are estimated to have invested more than $80 billion in the five years to 2016 and over $16 billion in 2016 alone. This has enabled 54 3G networks and 122 4G networks to be launched between 2011 and 2016. Over this time, the average proportion of the Latin American population covered by a 3G mobile network has increased from 71% to 90% and coverage for 4G has increased from 0.2% to 64%.

A tax regime that supports investment is important to ensure that mobile infrastructure develops at a rate that serves the region's population. There are four ways in which the wrong type of tax regime can disturb the investment environment:

- tax uncertainty
- revenue taxation
- duty taxation
- revenue-maximising spectrum auctions and fees.

Tax uncertainty: the more frequently tax changes are implemented, the more wary investors are of increasing funding into a market. Investment business cases are built on assumptions of tax rates. In many cases, investments require many years to produce returns. If an investor is unable to predict long-term tax rates at the point of deciding to invest, they will perceive future investment cash flows as more volatile, thereby making the investment less attractive. Depending on available alternatives, they might be driven to avoid investment altogether. Academic studies have found a negative relationship between tax uncertainty and investment.[39]

This has a particularly adverse impact on foreign direct investment (FDI), which is important to the Latin American mobile industry. Mobile groups from Spain, Mexico and Italy among others invest across the region. According to ECLAC,[40] telecommunications accounted for 14% of all announced foreign investment in Latin America in 2016. Large mobile groups seek to invest where there is the highest potential for growth and where doing business is uncomplicated.

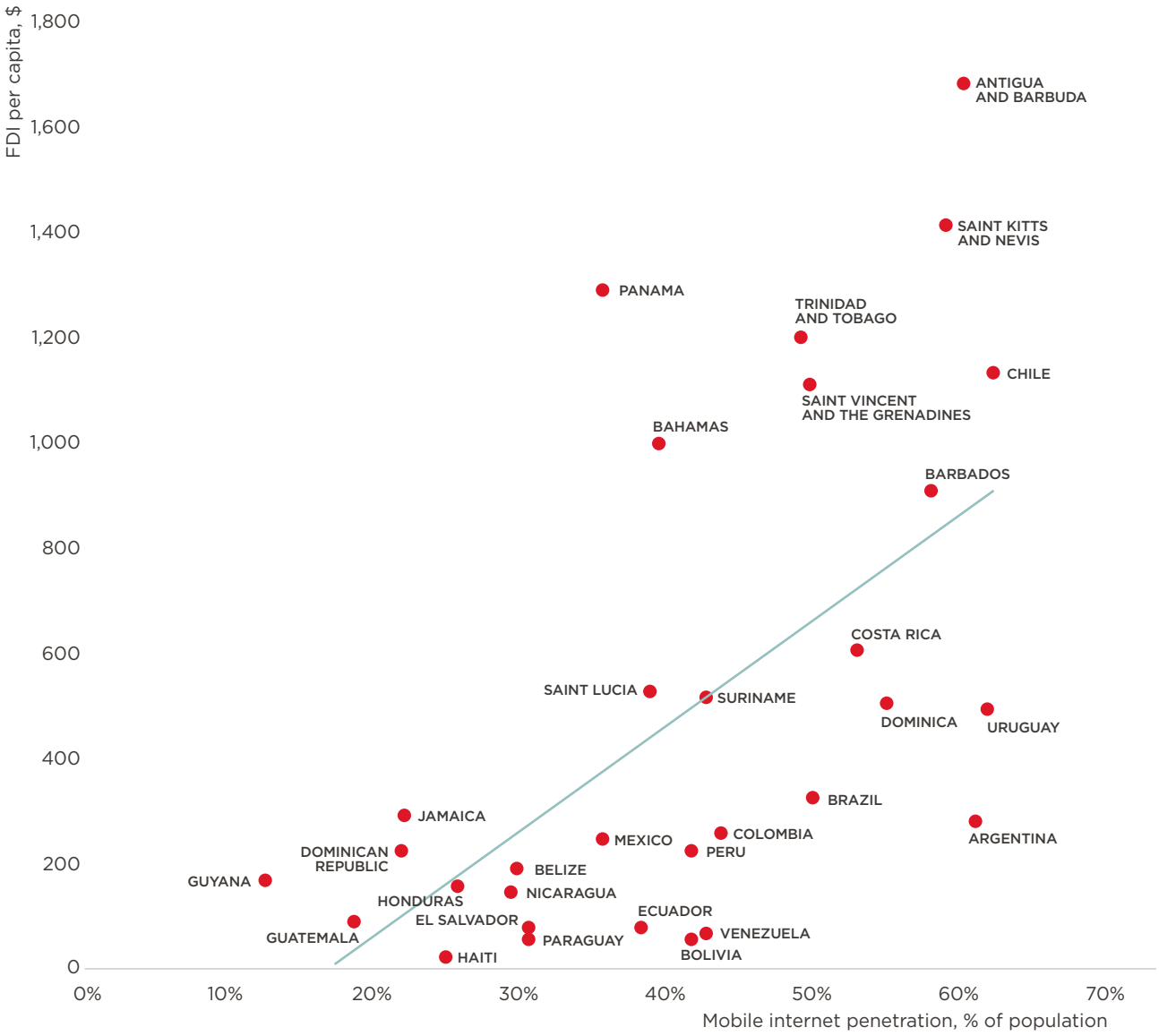
In turn, as investing in mobile infrastructure improves connectivity and digital inclusion, foreign investors can generally be attracted to countries where the provision of mobile services is good and where there is a highly digitally engaged consumer market. Academic research found that FDI is greater in countries that have better telecommunications networks, including mobile networks. Figure 19 shows that relationship in Latin America, by comparing the penetration of mobile internet in 2014 with FDI per capita in 2015.

39 Policy Uncertainty and Corporate Investment, Huseyin Gulen and Mihai Ion, 2016, Tax Uncertainty and Investment: A Cross-Country Empirical Examination, Kelly D. Edmiston, 2004

40 Foreign Direct Investment in Latin America and the Caribbean 2017, United Nations / Economic Commission for Latin America and the Caribbean (ECLAC)

Figure 19

FDI per capita (2015) versus mobile internet penetration (2014)



Source: UNCTAD and GSMA Intelligence

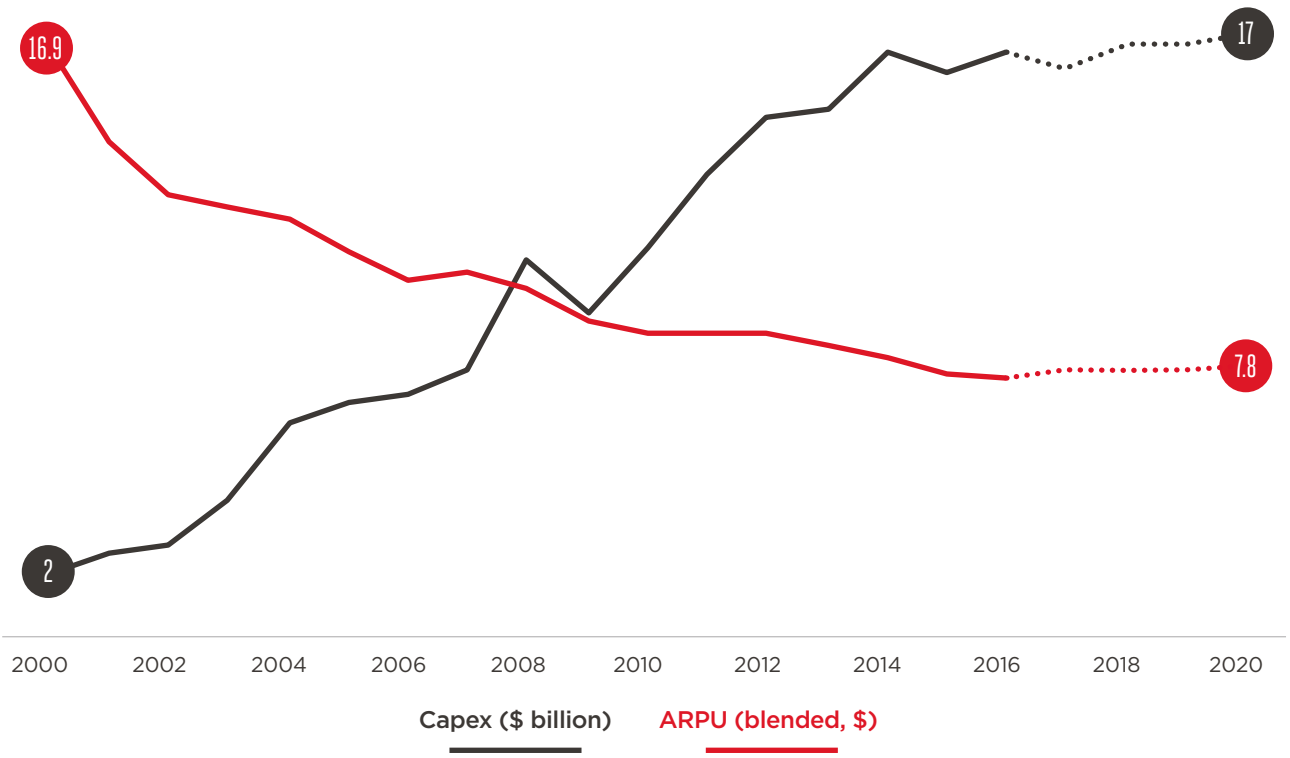
Tax regimes that create large burdens on foreign investors and complicate the process of doing business can stifle foreign direct investment into the mobile sector. Additionally, complicated tax regimes that restrict the development of the mobile economy can make investment in the region less attractive and have further negative impacts on the level of FDI.

Revenue taxation: fees and taxes that are levied on a company's revenue will discourage investment and innovation as the operator is taxed the same amount regardless of whether they retain their profit or re-invest in new infrastructure and services.

This is particularly troubling for the mobile sector in Latin America as revenues have fallen 9% per year on average between 2012 and 2016. ARPU has also fallen over the period by almost 15% as IP-based services are further adopted. Despite this, operators have managed to increase capex over the period, but the rate of increase is slowing. This is part of an overall long-term trend shown in Figure 20.

Figure 20

Capex by mobile operators and average revenue per connection, Latin America



Source: GSMA Intelligence

With declining ARPU, as well as reduced operating margins, operators face a challenging commercial environment for investment. Higher revenue taxes are likely to restrict the ability of mobile operators to continue to invest in high-quality mobile networks.

Duty taxation: duties levied on the import of telecommunications equipment only serve to increase the cost of investing in new infrastructure and services. This will reduce the attractiveness of potential investments. Similarly taxes levied by local authorities on the rental of sites for mobile infrastructure also increase the cost of investment and therefore reduce the attractiveness of investing.

Municipal taxes on mobile infrastructure sites in Latin America

Growing demand for mobile services and the constant drive for improvement in service quality have increased the speed of deployment of mobile networks, the key infrastructure for an increasingly connected world experiencing exponential growth of smartphones and data traffic.

Mobile operators in Latin America are investing heavily to meet user expectations and expand infrastructure deployment. However, this deployment faces continued challenges that make it difficult to achieve the objectives of installing new infrastructure in the region.

In many cases, municipal governments do not authorise the installation of more towers; installation procedures are delayed; or excessive fees are imposed. Recurring municipal taxes are charged on the rental of mobile infrastructure sites in cities in four out of seven surveyed Latin American countries: Argentina, Brazil, Ecuador and Mexico.

Taxes in the capital cities are typically around 15–20% of the cost of leasing a site. Outside of the capital cities, however, this can rise above 40%. These taxes can inhibit the continued deployment of much needed infrastructure.

Revenue-maximising spectrum auctions and fees: when operators pay too much for spectrum in auctions and via ongoing fees, there can be a negative impact on their investment in infrastructure and services. Firms with high sunk costs may be reluctant to engage in price competition; auction fees therefore become a signal to increase prices instead. Additionally, there could be financial liquidity issues when paying for highly priced spectrum in the auctions, leading to a delay in investment activity. This can be true in any market scenario. However, with the declining ARPU highlighted above, the delay in investment activity could be significant.

5 Reforming taxation to enable connectivity and deliver growth

Governments across the region aim to further their economic progress by increasing access to broadband and fostering the development of ICT technologies and sectors in their countries. These objectives are shared globally and will be crucial to achieving other targets such as the UN's Sustainable Development Goals.

Governments have to balance the competing objectives of maximising tax revenues to finance public spending on projects while minimising the tax burden on individuals and companies to encourage consumption and private sector investment. This relationship is complicated by how the effects of tax policies manifest over time: while raising tax rates might provide higher revenues for the government in the short term, the economy and the development of sectors can suffer in the medium to long term.

Reductions in mobile-specific taxes can boost demand for mobile services, which adds value to the economy through the knock-on impact on other industries and the increased productivity benefits of workers having mobile connections. The larger mobile industry is able to support more jobs and increase investment in infrastructure, which has further impacts on the economy. Finally, depending on how much the demand for mobile increases, tax revenues can increase in the medium term compared to a scenario where mobile-specific taxes are maintained.

The GSMA has undertaken studies to understand the impact of making changes to specific tax rules and rates in various countries across Latin America. The majority of the scenarios show an increase in tax revenues over a five-year period compared to the base case.

Figure 21

How tax reforms can produce economic benefits[41]

HONDURAS
ELIMINATE INTERNATIONAL INCOMING FEE

2016: Incremental impact in 2020

+ 159,000 connections
+ $126 million GDP
+ $9 million tax revenue
+ $28.6 million investment

COLOMBIA
ABOLISH VOICE CONSUMPTION TAX

2017: Incremental impact in 2021

+ 440,000 connections
+ $1.4 billion GDP
+ $100 million tax revenue
+ $1.2 billion investment

MEXICO
REMOVE IEPS ON MOBILE

2016: Incremental impact in 2020

+ 2.2 million connections
+ $4.5 billion GDP
+ $589 million tax revenue
+ $1.1 billion investment

EL SALVADOR
MOBILE BROADBAND EXEMPT FROM CESC

2017: Incremental impact in 2021

+ 60,000 connections
+ $100 million GDP
- $7 million tax revenue
+ $15 million investment

BRAZIL
ABOLISH FISTEL INSTALLATION FEE

2016: Incremental impact in 2020

+ 12.5 million connections
+ $9 billion GDP
+ $3.2 billion tax revenue
+ $1.6 billion investment

Source: GSMA Intelligence

41 Digital Inclusion and Mobile Sector Taxation in El Salvador, GSMA, 2017; Digital Inclusion and Mobile Sector Taxation in Brazil, GSMA, 2016; Digital Inclusion and Mobile Sector Taxation in Colombia, GSMA, 2016; Digital Inclusion and Mobile Sector Taxation in Mexico, GSMA, 2015; Digital Inclusion and Mobile Sector Taxation in Colombia, GSMA 2016; Digital Inclusion and Mobile Sector Taxation in Honduras, GSMA, 2015

A number of areas of reform can support the growth of the mobile sector and the region.

Reduce sector-specific taxes and fees	Taxes and fees that are charged to the sector beyond general taxes can distort functioning markets, affecting prices and investment levels. Reducing these sector-specific taxes can lead to increases in the adoption and use of mobile services. By extending the user and tax base, reductions in taxation could have a neutral or positive impact on government revenues in the medium to long term. Phased reductions of sector-specific taxes and fees can represent an effective way for governments to signal their support to the connectivity agenda, to benefit from economic growth resulting from the reductions, and to limit short-term fiscal costs.
Reduce complexity and uncertainty of taxes and fees on the mobile sector	Uncertainty over future taxation reduces investment as the risk of future tax rises is priced into investment decisions. In addition, numerous sector-specific fees often levied on different tax bases raise compliance costs for mobile operators. Governments should seek to limit unpredictable tax and fee changes, and streamline how tax and fees are levied.
Reduce or remove import duties	Import duties applied to handsets restrict access to mobile services like any other tax that targets access. Additionally, import duties on network equipment increase the cost of network rollout and restrict coverage. As reducing tariffs on mobile handsets and network equipment can generate wider economic impacts, governments should align to initiatives such as the WTO´s Information Technology Agreement, aimed at the elimination of import duties on technology and IT products.
Remove consumer taxes that target access to mobile services	One of the easiest ways to stop the take-up of mobile services is to tax access to the market in the first place. Luxury taxes on handsets, SIM cards and other activation or connection charges create a direct barrier for consumers to connect and access mobile broadband, especially in developing markets and for the poorest groups. To enable more users to gain access to the mobile market, governments should choose to address the affordability barrier represented by taxes on devices and connections. Removing these taxes has the potential to increase the taxable base for the government.
Avoid excessive regulatory fees and taxes on revenues	Taxes on revenues are particularly distortive as they are levied at the same level regardless of whether the operator is retaining large profits or whether it is investing heavily in new innovative networks. Additionally, where these are used for USFs, the lack of disbursement of fees seen in many countries represents a waste of resources.
Support effective pricing of spectrum to facilitate better quality and more affordable services	The approach to awarding spectrum needs to balance the relationship between ex-ante and ex-post fees in a transparent way to ensure operators do not pay twice for access to the same resource, as this may disincentivise investment. By adopting a long-term perspective, setting modest reserve prices and prioritising spectrum allocation, governments and regulators can support operators to deliver high-quality and affordable mobile services to consumers.
Remove taxes on international incoming calls	Surtaxes on international incoming calls are particularly detrimental to business and consumers in the countries that impose them in Latin America. Removing these taxes can ease barriers to regional and international trade by lowering the cost of receiving international calls, and can improve affordability, enabling more consumers to realise the benefits of mobile services.
Implement supportive taxation for emerging services such as the Internet of Things	Emerging services such as mobile data, mobile money and IoT applications can help accelerate economic productivity and financial inclusion throughout the economy. Disproportionate taxation of these services puts a wide range of positive externalities at risk. Implementing supportive taxation can play a key role in the development of these services.

CASE STUDY
Tax reform in Colombia

Encouraging mobile ownership but higher taxes on consumption of mobile services

In December 2016, Colombia approved tax reform that led to a more intense tax burden on the consumption of mobile services. The fiscal reform saw VAT levels rise from 16% to 19% and the introduction of a new excise duty on the use of mobile data. Before the tax reform, use of voice was subject to a sector-specific tax of 4%. The new Colombian law has extended this rate to the use of data for plans above COP47,789 (approximately $16). This reform places Colombia within the group of markets in Latin America where all use of mobile services is subject to sector-specific taxes, at a similar level to Argentina, El Salvador and Panama.

The same reform introduced a tax exemption on basic mobile handsets (those worth less than COP660,000, approximately $120). This move follows the abolishment of a 1.2% luxury tax previously imposed on handset sales in Colombia. The change is designed to increase the affordability of devices, following similar changes observed in other countries. For instance, Kenya's VAT exemption in 2009 was followed by an increase in handset sales of 200% and penetration increases of about 40% in just two years.

This makes Colombia the first country in Latin America to have introduced a sector-specific tax reduction on handsets. This approach contrasts with other Latin American markets where the devices are considered luxury goods and subject to higher tax rates, such as in Argentina, Costa Rica, the Dominican Republic, Jamaica, Nicaragua and Panama.

The reform introduces a clear contradiction as it encourages ownership, for those at the bottom of the economic pyramid, but at the same time "penalises" consumption through the increased VAT rate and introduction of a special surcharge.

OTT services start to be subject to VAT

As part of the reform, the Colombian government targeted the highly contentious issue of over-the-top (OTT) provider taxation.

The growth in digital services provided by OTTs has challenged analogue tax systems, since it typically means collecting taxes from companies that do not have a legal entity in the country, offering intangible cross-border services. This makes it difficult for governments to raise taxes such as VAT and creates a tax asymmetry, negatively affecting the competitiveness of locally registered firms that offer services over mobile platforms. According to the OECD,[42] the appropriate approach is to require non-resident suppliers to register and account for the VAT on these supplies in the country of the consumer, but OTTs do not always comply with this requirement.

For those companies that do not comply with the request of establishing a local presence in the country, the solution devised by the Colombian government was to circumvent the challenge of taxing offshore entities and, instead, target the payment process directly. This was achieved by requiring the banks processing card payments for digital services to collect any tax due before the payment reaches the beneficiary. Effectively, this applies the newly introduced 19% VAT to OTTs previously unaffected by VAT. Introducing this type of payment requirement contributes to a more level playing field for all parts of the mobile ecosystem.

42 Addressing the Tax Challenges of the Digital Economy, OECD, 2014.
Available at www.oecd.org/ctp/addressing-the-tax-challenges-of-the-digital-economy-action-1-2015-final-report-9789264241046-en.htm

Table 12

Reform to tax OTT services

Country	Tax covered by the OTT-specific tax collection mechanism	Time of reform
Argentina	Municipal tax 3%	2015
Brazil	Municipal tax 2–5%	2017
Colombia	VAT 19%	2017
Uruguay	VAT 22%	2016–2017
Australia	VAT 10%	2017
France	VAT 20%	2016

Source: GSMA Intelligence

In Latin America, similar moves have been made in Uruguay, Brazil and Argentina. Other countries, such as Paraguay, are also considering such initiatives.[43]

- Uruguay appears to be following Colombia's example, as reflected in its 2016 budget proposal. The latest announcements addressed the VAT issue by establishing clauses whereby services provided over the internet that are consumed in Uruguay are fully VAT liable.[44]
- Brazil and Argentina have introduced local taxes. In Brazil, OTTs have been required to pay municipality taxes between 2% and 5% from January 2017. Buenos Aires also created a local tax of 3% in 2015, particularly targeting Netflix and Spotify, following claims of asymmetric taxes by cable providers.[45] As of 2017, Argentina's federal administration is planning to extend a similar tax at the country level by taxing OTT services via credit card companies.

Such moves in the region are similar to mechanisms introduced in Australia and France, geared towards creating greater tax symmetry and increasing revenue collection (see Table 12).

43 "Uruguay mulls OTT tax", RAPIDTVNews, 2017
44 "El gobierno insiste en gravar Netflix y otros servicios online" El Observador, 2017
45 "Buenos Aires gives green light to Netflix tax", RAPIDTVNews, 2017

CASE STUDY
Taxing IoT in Brazil

IoT connected services account for a new and growing share of connections across the globe and have the potential to transform numerous industries. These devices are often everyday objects that can be equipped with an M2M SIM card allowing communication between two or more devices using a wireless connection. For this reason, the full development of IoT requires the right affordability and investment incentives for both consumers and operators, which can be affected by inappropriate taxes or regulatory fees.

Despite the positive externalities generated through IoT, some economies have levied taxes on connected services, generally in the form of SIM taxes. These taxes may have particularly detrimental effects on this sector and the wider economy – for two reasons:

- Many services require a large number of devices, each of which yields a low average revenue per unit. This means even small fixed charges on SIMs can create a significant tax burden and prove detrimental to the development of IoT connected services.
- Services relying on mobile M2M devices can incur double taxation, or regulatory uncertainty in relation to global deployment of IoT connected services.

In Latin America, Brazil is the only country to have introduced an M2M SIM tax. Between 2012 and 2014, two tax rates applied to both traditional SIMs and M2M SIMs: a tax for new connections of BRL26.83 (known as Installation Inspection Tax, TFI) and an annual tax of BRL13.42 (Operation Inspection Fee, TFF). In April 2014, the government passed regulation reducing taxation on M2M SIMs. With the new tax framework, the tax burden for M2M SIMs was lowered: the tax for new connections was reduced from BRL26.83 to BRL5.68 and the annual tax was lowered to BRL1.89. Meanwhile, taxes on traditional SIM cards were left unchanged.

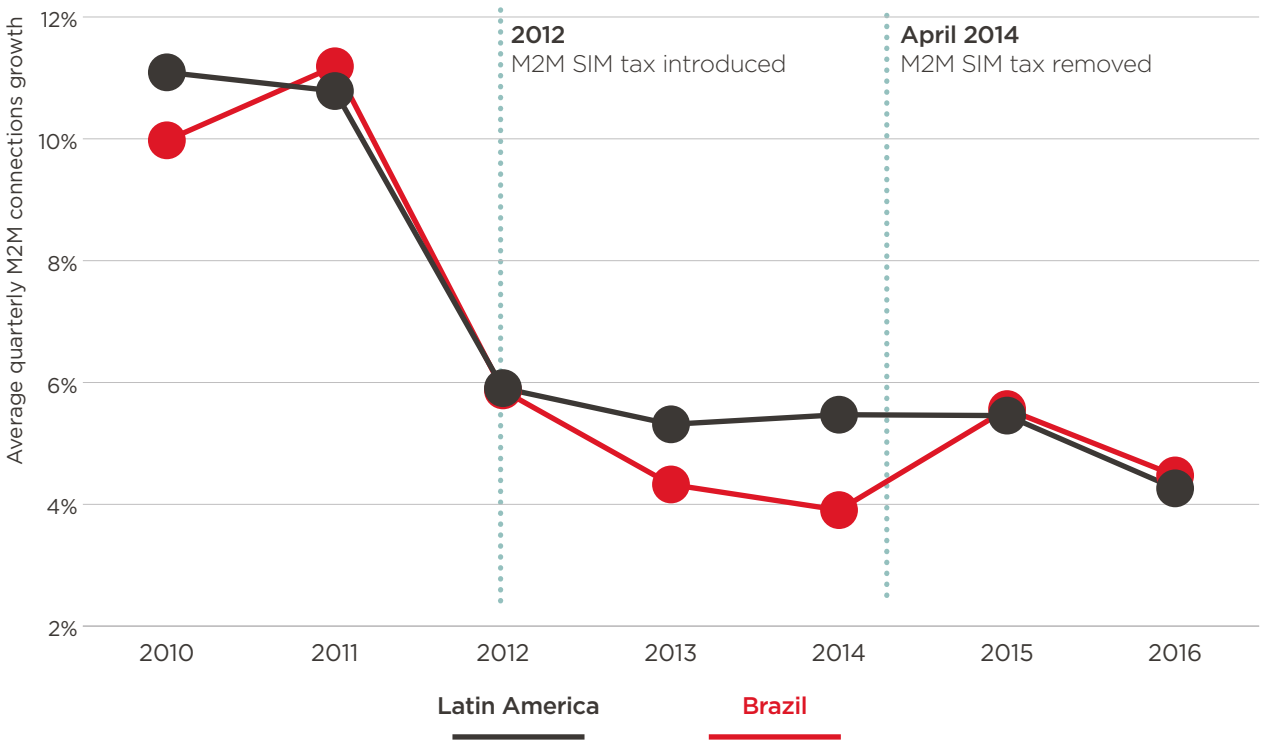
Continued on next page

Immediate effects on M2M connections growth and IoT investment

M2M connections growth trends provide some evidence that the tax cut generated a positive impact for the development of the IoT market. Figure 22 shows that, while before the introduction of the M2M tax Brazil tracked closely to the regional average, between 2012 and 2014 Brazil's M2M growth substantially underperformed the average in Latin America. Once the tax was removed, M2M connections growth appeared to immediately recover.

Figure 22

M2M connections growth



Source: GSMA Intelligence

The tax cut seems to have had a significant positive impact on the development of the Brazilian IoT market, as it provided a stimulus for mobile operators to develop their IoT connected services. For instance, shortly after the tax cut was enacted, mobile operators invested BRL13 billion ($6 billion) in their IoT sections.[46]

46 "Brazilian operators invest $6 billion in M2M", TelecomEngine, 2014

Methodology Appendix 1 Data sources

For the purposes of the study we collected data on handset and mobile service bundle prices, tax rates, tax payments, macroeconomic data and mobile market indicators. Table A1 summarises the specific variables used.

Table A1

Summary of variables and sources

Area	Variable	Time	Source
Prices	Tariff price for Basic basket	2017 Q1	Tarifica
	Tariff price for Low basket	2017 Q1	Tarifica
	Tariff price for Medium basket	2017 Q1	Tarifica
	Tariff price for High basket	2017 Q1	Tarifica
	Device price	2017 Q1	Tarifica
Tax rates	General tax rates	2016	Mobile operators and public sources
	Sector-specific tax rates	2016	Mobile operators and public sources
Tax payments	Tax payments (general, sector-specific)	2014–2015	Deloitte and GSMA analysis of mobile operator data
Macroeconomic	Nominal GDP	2016	IMF World Economic Outlook[47]
	Population	2016	World Bank
	Income distribution	2003–2013	World Bank[48]
	Exchange rates	2014–2016	Oanda[49]
	Tax revenue as a proportion of GDP	2014	IMF Government Finance Statistics[50]
Mobile market	Mobile operator revenue	2014–2016	GSMA Intelligence
	Market share by operator	2014–2015	GSMA Intelligence

47 See IMF WEO Database imf.org/external/pubs/ft/weo/2017/01/weodata/index.aspx
48 See World Bank data.worldbank.org/indicator/SI.DST.FRST.20
49 See Oanda oanda.com
50 See IMF Government Finance Statistics data.imf.org/GFS

A1.1 Prices

Pricing data for devices and tariffs was provided by Tarifica. Retail prices were captured as of the first quarter of 2017, including all relevant taxes.

Based on GSMA Intelligence analysis, four baskets were defined with different levels of usage allowance, type of contract and technology. The following aspects were taken into account:

- Historic average trends in data consumption across countries, sourced from GSMA Intelligence, Ofcom,[51] Tefficient[52] and Opera.[53] Data requirements going forward (which are likely to increase) were also taken into account. The analysis of average values was carried out taking into account the skewness introduced by intensive users of mobile services.
- A selection of allowances currently offered by operators in developed and emerging markets, provided by Tarifica.
- Baskets used in existing benchmarking studies from OECD,[54] Ofcom,[55] EC[56] and Tarifica. These represent basket designs often used in the economics literature analysing pricing in the mobile industry.[57]

The baskets resulting from this analysis are described in Table A2.

Table A2

Usage basket profiles

	Basic	Low	Medium	High
Usage allowance	100 MB data	500 MB data	250 voice minutes	5000 MB data
			100 SMS	
			1000 MB data	
Tariff	Prepaid	Prepaid or postpaid	Prepaid or postpaid	Prepaid or postpaid
Technology	2G, 3G or 4G	3G or 4G	3G or 4G	3G or 4G

Source: GSMA Intelligence and Tarifica

51 The Communications Market Report, Ofcom, 2016 ofcom.org.uk/__data/assets/pdf_file/0026/95642/ICMR-Full.pdf
52 Unlimited pushes data usage to new heights, Tefficient, 2016 media.tefficient.com/2016/12/tefficient-industry-analysis-5-2016-mobile-data-usage-and-pricing-1H-2016-ver-2.pdf
53 State of the Mobile Web Africa 2016, Opera, 2016 blogs.opera.com/news/wp-content/uploads/sites/2/2016/11/SMWAfrica-Opera-report-2016-01-WEB-1.pdf
54 Digital Economy Outlook 2015, OECD, 2015 oecd.org/sti/oecd-digital-economy-outlook-2015-9789264232440-en.htm
55 The Communications Market Report, Ofcom, 2016 ofcom.org.uk/__data/assets/pdf_file/0026/95642/ICMR-Full.pdf
56 Mobile Broadband Prices in Europe 2016, European Commission, 2016 ec.europa.eu/digital-single-market/en/news/mobile-broadband-prices-europe-2016
57 For instance, OECD and Tarifica's benchmarking has been extensively used in studies such as: Evaluating market consolidation in mobile communications, CERRE, 2015; Ex-post analysis of two mergers: T-Mobile/tele.ring in Austria and T-Mobile/Orange in the Netherlands, DG Comp 2015; The impact of competition on the price of wireless communications services, Hogunbonon, G.V, 2015; Supersonic: European telecoms mergers will boost capex, driving prices lower and speeds higher, HSBC Global Research, 2015

To capture all costs that consumers face when consuming mobile services (handset price, activation and connection fees and usage price), Tarifica collected two variables for each country: the retail price of a device and the tariff price, which included activation and connection fees as well as the price of the service.

Device prices were obtained from mobile operators' websites for the cheapest handset available in the market with internet-browsing capability – a smartphone[58] or a feature phone.[59] Given that the performance for basic internet mobile applications (such as basic video or social networking) is only functional with 3G and 4G, this analysis excluded devices with 2G and WAP connectivity. Device prices from retailers other than mobile operators were analysed for the countries where mobile operators did not offer handsets, which means that in some markets there may be cheaper devices available.

Mobile tariffs for each country were measured by the cheapest available plan for each basket across all mobile operators in the market. The plans and prices available for each market were obtained from the websites of mobile operators. Tariffs from mobile virtual network operators were not taken into account.[60] A number of restrictions were applied to ensure prices are representative of regular usage and consumption patterns:

- Postpaid plans that required a commitment of more than 24 months were excluded.
- Prepaid plans lasting less than one month were included; where this applied, usage allowance and prices were scaled up to one month.
- When there are promotional offers, only those that appear to be permanent were taken into account.
- Plans targeted or restricted to certain profiles (e.g., youth, student, senior) were not included.

A1.2 Tax rates

Tax rates were sourced from mobile operators and the following public sources:

- VAT rates were obtained from PwC Tax Summaries,[61] KPMG[62] and OECD's Tax Database.[63]
- Sector-specific consumer tax rates and fees were sourced from PwC Tax Summaries, IBFD[64] and from desktop research (e.g. government budget laws, mainstream media).
- Customs duties on handsets were collected from the World Trade Organization (WTO) website. These refer to the Harmonised System (HS) code 851712: 'Telephones for cellular networks mobile telephones or for other wireless networks'.
- Previous Deloitte and GSMA global[65] and country reports.[66]

A1.3 Tax payments

Tax payments are based on Deloitte and GSMA's analysis of data sourced from mobile operators for 2014 and 2015.[67] Total tax and fee payments applicable to the mobile sector are defined as total recurring tax and regulatory fee payments. Spectrum taxes and fees include recurring spectrum and licence fees but exclude one-off payments.

58 A smartphone is a device that has an open operating platform (where new applications can be developed and installed by the user).
59 A feature phone is a device with a closed platform, where non-native applications can be installed.
60 This could mean that in some markets cheaper alternatives could be available.
61 PwC Tax Summaries, 2016 pwc.com/gx/en/services/tax/worldwide-tax-summaries.html
62 Indirect tax rates studies, KPMG, 2017 home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/indirect-tax-rates-table.html
63 OECD Tax Database oecd.org/tax/tax-policy/tax-database.htm
64 IBFD Database ibfd.org
65 Digital inclusion and mobile sector taxation 2016, GSMA and Deloitte, 2016; Digital inclusion and mobile sector taxation 2015, GSMA and Deloitte, 2015; Global Mobile Tax Review 2011, GSMA and Deloitte, 2011.
66 Digital inclusion and mobile sector taxation in Ghana, GSMA and Deloitte, 2016; Digital inclusion and mobile sector taxation in the Democratic Republic of the Congo, GSMA and Deloitte, 2015; Digital inclusion and mobile sector taxation in Nigeria, GSMA and Deloitte, 2015; Digital inclusion and mobile sector taxation in Tanzania, GSMA and Deloitte, 2015; Digital inclusion and mobile sector taxation in Chad, GSMA and Deloitte, 2016; Digital inclusion and mobile sector taxation in Niger, GSMA and Deloitte, 2017.
67 Tax payments for 2014 were retrieved from Digital inclusion and mobile sector taxation 2016, GSMA and Deloitte, 2016 gsma.com/mobilefordevelopment/wp-content/uploads/2016/07/Digital-Inclusion-and-Mobile-Sector-Taxation-2016.pdf. Tax payments for 2015 follow the approach in Mobile Taxation Survey, A methodological note for GSMA and Deloitte, 2017 gsma.com/mobilefordevelopment/wp-content/uploads/2017/06/Mobile-taxation-survey-methodology-note.pdf

Appendix 2 Calculation of the total cost of mobile ownership (TCMO) and its tax component

A2.1 Calculation of TCMO

The total cost to a consumer of owning and using a mobile phone can be defined by using the concept of TCMO. The TCMO is calculated in monthly terms, on the basis of three building blocks:

- The handset price, i.e. cost of the mobile device required for the use of mobile services. This represents a one-off cost that can be spread over the lifecycle of the device (after which it is assumed to be replaced). Handset prices were converted to a monthly price based on a handset lifecycle assumption of three years for developing markets and two years for developed markets, in order to take into account differences in usage patterns, disposable income and willingness to pay.[68]
- The activation and connection price or any other charges incurred to connect to the MNO's network. For prepaid customers this usually consists of an initial charge for activating the SIM card. For postpaid customers there may be additional upfront costs, such as an initial charge for activating the number. Activation and connection prices were converted into monthly prices assuming they follow the lifetime of the device.
- The price related to use and comprising voice, SMS and data charges, which can be prepaid or postpaid. This price is already expressed in monthly terms.

To account for the fact that the handset, activation and connection and usage prices are different across consumption profiles, the TCMO was calculated for two baskets for each country – the Basic and Low baskets, as defined in Table 11, taking into account the relevance of these profiles for lower income quintiles. Since these two baskets have different usage characteristics (in usage allowance, type of contract and technology), they can have different prices in the usage block of the TCMO as well as in the activation and connection component. As far as the device component is concerned, the same device was used for both baskets, since it was assumed these two profiles use it with similar purposes and services[69] and hence require a similar technology.

68 This assumption is based on Global Mobile Tax Review, GSMA and Deloitte, 2011 gsma.com/publicpolicy/wp-content/uploads/2012/03/gsmaglobaltaxreviewnovember2011.pdf
69 This assumption is based on the fact that the data allowance is not substantially different, which should to a certain extent drive similar usage patterns.

The calculation of the TCMO for basket *b* of country *i* is as follows.

$$TCMO_{bi} = \frac{Handset\ price_i}{Handset\ lifecycle_i} + \frac{Activation\ and\ connection\ price_{bi}}{Handset\ lifecycle_i} + Usage\ price_{bi}$$

In order to account for income differences across countries, the TCMO was expressed as a proportion of income per capita across different income quintiles,[70] using the most recent information on income distribution available from the World Bank.[71] The TCMO measure presented in this report was estimated for 2016 – i.e. using pricing and income data as of 2016. Since data collection of prices was carried out throughout the first quarter of 2017, for countries experiencing substantial inflation, adjustments have been made to allow for better estimates of 2016 mobile service prices. Prices were captured in local currencies and converted to US dollars using exchange rates from Oanda in 2017.

Besides the Latin American countries included in the analysis, calculations have also been carried out for European[72] and North American[73] samples, for benchmarking purposes.

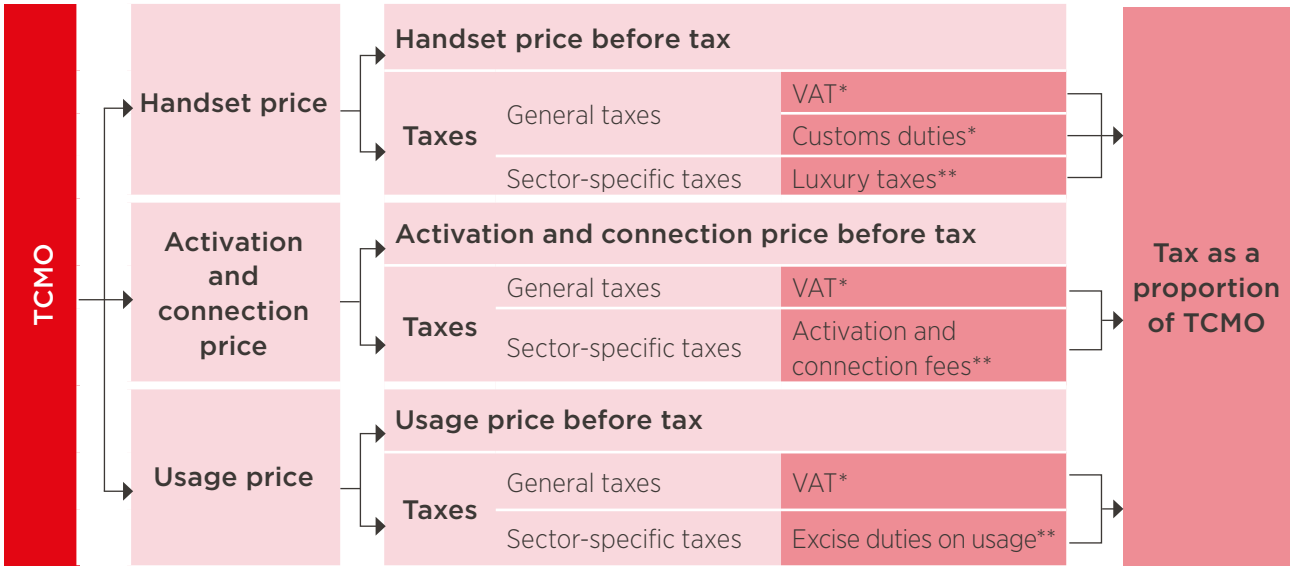
A2.2 Estimation of tax as a proportion of TCMO

The price of the three building blocks presented above can be further broken down into the price before tax (which covers costs and profits) and taxes. The latter can vary between general consumer taxes and sector-specific taxes. Table A3 presents the tax rates that have been considered for this analysis.[74]

Note that this study only covers consumer taxes. Any potential pass-through of taxes levied on the operator to consumers were not considered due to the complexities involved in modelling the latter.[75] Therefore, there is likely to be an underestimation of tax as a proportion of TCMO presented here.

Table A3

Calculation of the proportion of tax in TCMO



* Ad valorem tax rates

**Tax rates can either be ad valorem or fixed fees

Source: GSMA Intelligence

70 This results from estimating the share of nominal GDP across different income deciles and then distribute this between the number of individuals in each decile.
71 The most recent year being 2013 or from previous years up to 2003 for some countries where 2013 data was not available.
72 Markets in Europe include: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK and Ukraine.
73 The North America region only includes the US.
74 Due to lack of data, the analysis of tax rates excludes rates on international traffic (hence, we assume no international calls) and additional tax rates related to importing devices such as processing fees.
75 Estimating the percentage of an operator tax or fee that is reflected in the retail price of mobile services depends on the type of tax, the prevailing market conditions of competition and the price elasticity of demand across different groups of consumers, among other factors.

Taxes in the TCMO were calculated by applying tax rates to the appropriate tax base.

- In the case of ad valorem taxes (VAT and excise duties), the relevant tax base is the retail price of the relevant TCMO building block that was used.
- In the case of customs duties, the selected tax base was the retail price of the device building block in the TCMO. A more accurate calculation of customs duties would have involved using the price of goods at the import level as the tax base since retail prices incorporate a number of additional factors (such as transport costs or retailer costs and margins). No data is, however, available on import prices hence our approach to use retail prices as a close proxy. [76]
- In the case of fixed amount taxes, a number of assumptions were made. For activation and connection fees applied on the value of the SIM card, it was assumed that the average retail price of the SIM is $1.2.[77] For general fixed fees, the tax payments were converted to a monthly level.[78] In rare cases where fixed are applied per day of usage, it was assumed that the average consumer uses mobile services for 20 days in a month.[79]

76 Note that the difference between retail and import prices is likely to be country-specific (i.e. due to differences in transport and logistic costs and/or different market structures at the retail level, for instance).
77 This is an illustrative assumption, based on $1 wholesale price plus illustrative costs and margins that add to retail. Wholesale prices retrieved from www.budgetelectronics.cat
78 Yearly fees were brought to monthly level by dividing by 12. One-off fees were brought to monthly level by dividing by the lifecycle of the device (consistent with the approach taken with regards to fixed fees when measuring the TCMO as such).
79 This is an illustrative assumption.

Appendix 3
Analysis of mobile tax payments

Total tax and fee payments were divided into the two categories of standard taxation and sector-specific taxes and fees on the basis of information provided by mobile operators, following the breakdown below:

- General taxation included sales taxes, such as VAT or GST, and import duties on devices, as well as corporate taxes, import duties on network equipment and general revenue-based taxes.
- Sector-specific taxes applying to consumers included excise duties on usage, luxury taxes on handsets and connection and activation fees. For operators, this included regulatory taxes and fees and other revenue-based sector-specific taxes. For those countries where the mobile sector is subject to special corporate tax or VAT rates, the differential between standard rates and sector-specific rates was not been classified as sector-specific due to data limitations.

Where operator-level data was not complete to derive an estimate of total payments for the country, a market uplift has been applied using mobile operators' market share data from GSMA Intelligence. Local currency units were converted into US dollars using average exchange rates for 2014 and 2015 as sourced from Oanda.

For the analysis that looks at the relative contribution of the mobile industry to taxes raised by governments, mobile sector tax payments presented above were used against the total tax revenue as sourced by IMF for 2014. The IMF provides total tax revenues as a proportion of GDP, which was used together with nominal GDP data. The result of this analysis was then compared to the broader economic contribution of mobile operators to the economy, calculating the share of mobile operators' revenue (sourced from GSMA Intelligence) in GDP.

Where tax payments were presented as a proportion of total mobile market revenue, data from GSMA Intelligence was used for 2014 and 2015, depending on the year of the tax payments data.

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