European Commission

Mobile Broadband prices

Prices as of February 2016

FINAL REPORT

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Digital Single Market

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ABSTRACT

This study monitors mobile broadband prices in the EU28 and some non-EU countries (Norway, Iceland, Turkey, Japan, South Korea and the USA). Pricing information of 85 mobile operators and 2575 mobile broadband offers (for use with laptop, tablet or handset) is collected and compared.

The report presents mobile broadband prices in February 2016 in several manners: 1. Overall horizontal analysis of trends on the mobile broadband market; 2. Country fiches presenting an analysis per Member State.

Key findings: (1) Like in 2015, price levels across the EU are rather dispersed, especially for offers with higher data allowances. (2) Worst and best performers are not exactly the same for handset and laptop/tablet offers, but neither are enormous differences in position observed. (3) Often, mobile broadband offers for use with laptop or with tablet are identical or comparable; the equipment cost that sometimes additionally applies for laptop offers, is small and thus only to a limited extent impacts on countries' relative performance. (4) Rather large price differences across countries are observed for advanced smartphones that are part of handset offers, resulting in an impact on performance. (5) At average EU28 level, prices have mostly gone slightly down since 2015. (6) There appears to be some correlation between prices and take-up: countries with low mobile broadband prices also often portray high mobile broadband penetration, and vice versa. (7) The EU28 performs rather well compared to the other countries considered, especially for lower baskets. The latter are however not in all countries representative of the current market offer.

RÉSUMÉ

Cette étude vise à surveiller le coût de l'internet mobile à large bande dans les pays de l'UE28, ainsi que dans quelques autres pays (Norvège, Islande, Turquie, Japon, Corée et USA). Des informations sur les prix de 85 opérateurs mobiles et sur 2575 offres d'internet mobile y sont collectées et comparées.

Le rapport présente les prix de l'internet mobile à large bande en Février 2016 de plusieurs manières différentes : 1. Analyse horizontale générale des grandes tendances sur le marché de l'internet mobile ; 2. Fiches-pays présentant une analyse par Etat Membre.

Principales conclusions : (1) Comme en 2015, une grande disparité de prix apparait entre les Etats Membres; en particulier pour les offres présentant un niveau élevé de consommation de données. (2) Les pays affichant les meilleures et moins bonnes performances concernant les offres pour téléphones portables ne sont pas exactement les mêmes que pour les ordinateurs portables/tablettes, mais aucune différence majeure n'est pour autant constatée. (3) Souvent, les offres d'internet mobile pour ordinateur portable ou tablette sont identiques ou assez comparables; le coût de l'équipement s'appliquant dans certains cas aux offres pour ordinateur portable est assez faible et n'a dès lors qu'un impact réduit sur les performances relatives des pays. (4) D'assez grandes différences de prix entre les pays sont observées concernant les smartphones plus avancés (utilisés dans les profiles pour téléphone portable); ce qui a un impact non négligeable sur les performances. (5) Depuis 2015, les prix moyens pour l'UE ont, pour la plupart, légèrement diminué. (6) Une certaine corrélation peut être observée entre les prix et le « take-up » : les pays avec des prix de l'internet mobile relativement bas présentent généralement un taux de pénétration élevé de l'internet mobile, et vice versa. (7) L'UE28 affiche d'assez bonnes performances par rapport aux pays non-européens considérés, en particulier pour les paniers de consommation inférieurs. Ces derniers ne sont cependant pas représentatifs de marché actuel pour tous les pays.

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PREFACE

This report presents the outcome of the second study on “Mobile Broadband prices” for residential customers in Europe.

It is based on the monitoring of the offers of 85 mobile operators, for which data was collected in February 2016, and provides as such for an overview of most advantageous offers on the market for use with tablets, laptops and handsets.

After a methodological chapter, the report distinguishes between (1) horizontal analyses across countries (i.e. key findings) and (2) detailed analyses per country (i.e. country profiles). For ease of comparison, these analyses are in line with those performed during the first “Mobile Broadband prices” study (data of February 2015).

The database underlying this study report is published in addition to this report. These elements allow for tailor made analyses, not covered by this report.

Any questions or comments on this study can be directed to Van Dijk Management Consultants at info@bvdmc.com.

MAIN LIMITATIONS OF THE MOBILE BENCHMARKING STUDY

The analysis and comparison of the mobile broadband prices is characterised by a number of limitations which should be kept on mind when reading this report. The main limitations can be summarised as follows:

1. **The OECD usage profiles are not the most appropriate for many countries in the scope of the study**

   This mobile broadband benchmarking study is based on a basket approach, using the OECD usage profiles. During the 2015 study, when comparing the mobile data volumes included in these baskets with what was actually offered in the EU28, it however became clear that in many countries the data allowances greatly exceeded the requirements for the highest usage baskets in this study. This year, additional baskets have therefore been added: for all types of devices, a basket with double the highest data allowance of the OECD baskets has been included. There are however still some countries in which the data allowances offered exceed the requirements of this highest basket. Furthermore, like last year the most advanced markets do not offer any products adapted to the lowest usage profiles. As a result, the cost considered for these latter is equal to the cost of the higher usage profiles as no cheaper and more adapted offer is available.

   In summary, the outcome of the mobile broadband benchmarking does not give a fully representative picture for many of the countries in this study. Annex 6 provides an overview of the range of data allowances available on the market in February 2016, which allows for an assessment of the appropriateness of the OECD usage profiles per country and per operator.

2. **The study only provides a snapshot of a very quickly evolving market**

   The mobile broadband market is evolving very quickly. The results of this study are based on what was available on the market in February 2016 and should be considered as a snapshot of the market at that time. Already quickly after the data collection phase, many changes in the offers were observed, with possibly a significant impact on the results of the price analysis and the comparison between countries. These changes often related to e.g. the included data allowances, the applicable discounts, the monthly charges of the offers, the charges for or volumes included in the service add-ons.

   Changes that occurred after February 2016 have not been accounted for in the analysis and reporting phase in order to ensure a comparison on a like for like basis, referring to the same period of reference for all countries and operators.

3. **The Excel database underlying the study report is not exhaustive**

   For the purpose of this study, only mobile broadband offers which could potentially be the least expensive per operator or per country for a given usage profile were collected. This implies that the Excel database underlying the study report does not include all offers available on the market. Indeed, since e.g. the highest usage profile for laptop includes 20GB, offers with data allowances over 20GB per month are not collected for an operator which also has a (less expensive) 20GB offer available. As a result, and in contrast to the Broadband Internet Access Cost (BIAC) database for the fixed broadband prices, the mobile broadband prices dataset does not provide for a full market overview.

0. Executive Summary

The completion of the Digital Single market being one of the 10 priorities of the Juncker Commission, the developments in the electronic communications market continue to be closely monitored by the EC. In recent years, elements like coverage and take-up of mobile broadband have been added to fixed broadband indicators, and as of 2015, the Commission has started to **monitor and analyse the prices of mobile broadband**.

This second round of the "Mobile Broadband prices" study[1] aims at analysing and comparing what residential customers actually pay for mobile broadband in the EU28, three other European countries (i.e. Norway, Iceland and Turkey) and some non-EU countries (i.e. the USA, South Korea and Japan). It also allows for objectively measuring the price evolutions in the different EU countries between 2015 and 2016.

This report presents the results of the analysis of mobile broadband offers that were collected in February 2016. The approach used is that of the **2012 OECD methodology for mobile broadband**[2] which aims at calculating the total price (including the monthly fee, non-recurring charges and usage charges) of a set of offers in order to identify the least expensive offers for three different types of mobile devices (i.e. laptop, tablet and handset) and five different levels of usage (i.e. monthly volume consumed), in other words for 15 different combinations or "baskets". In order to reflect the rapid evolutions on the mobile broadband market, in this 2016 analysis a sixth usage profile (with double the data allowance of the highest OECD basket) has been added for each type of device.

	Laptop use (data volumes)	**Tablet use (data volumes)**	**Handset use (data volumes + voice/SMS basket)**
Basket 1	500 MB	250 MB	100 MB + 30 calls basket
Basket 2	1 GB	500 MB	500 MB + 100 calls basket
Basket 3	2 GB	1 GB	1 GB + 300 calls basket
Basket 4	5 GB	2 GB	2 GB + 900 calls basket
Basket 5	10 GB	5 GB	2 GB + 100 calls basket
Basket 6	20 GB	10 GB	4 GB + 900 calls basket

Table 1: Mobile broadband baskets under consideration in the study

Per operator, only offers that could potentially be the least expensive one for a given usage profile have been collected. After a calculation of their average total monthly cost (on a 36 months basis), the least expensive offer per operator, and subsequently per country, was identified for each usage profile. These least expensive offer prices per country and per usage profile (subsequently called 'price') are used as the key indicator for all analyses.

In view of the large number of usage profiles, distinguishing between good and bad performers is not always straightforward, as **differences can occur between devices and usage volumes**:

[1] The first mobile broadband prices study, based on February 2015 prices, is available at https://ec.europa.eu/digital-single-market/en/news/mobile-broadband-prices-february-2015

[2] Methodology for constructing wireless broadband price baskets, OECD (2012): http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP%282011%295/FINAL&docLanguage=En

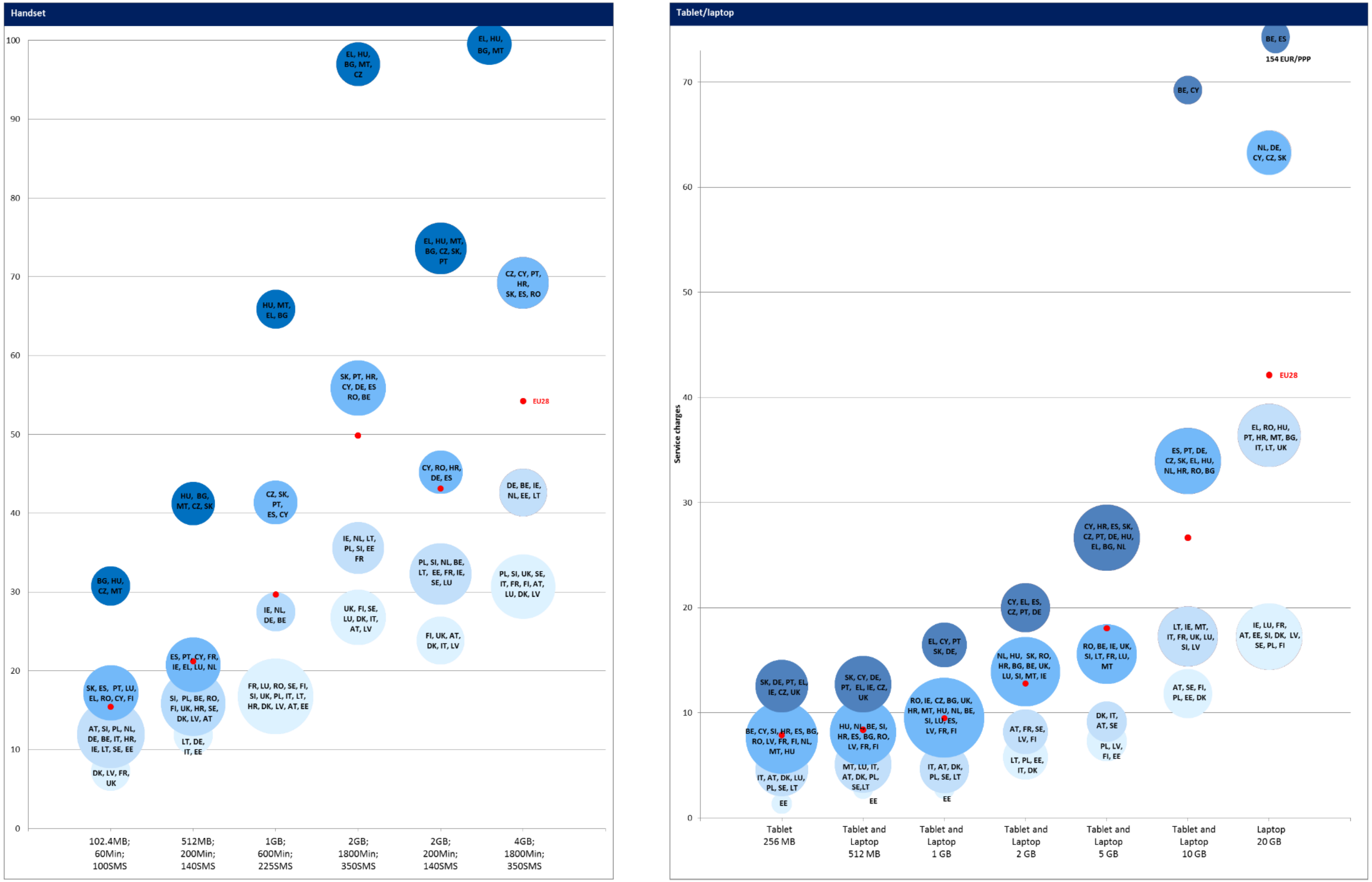


Figure 1: Clustering[3] of countries based on prices for the least expensive offer available on handset (left) and laptop/tablet (right)[4] (expressed in EUR/PPP, VAT included, data for February 2016)

[3] Clustering is performed through the k-means clustering approach (see above) with 4 clusters. In the graph, all clusters are centered around the cluster mean, and the size of the clusters illustrates the number of observations belonging to the cluster.

[4] The least expensive offer available per basket is the lowest value of the least expensive laptop and least expensive tablet offer.

Within the **handset baskets**, Denmark, Italy, Latvia and the UK frequently perform very well, and unlike in 2015, they are accompanied by Austria and Sweden. On the other side of the ranking, Bulgaria, Hungary and Malta are expensive for all user profiles. To a slightly lesser extent, the Czech Republic, Greece, Portugal and Slovakia also perform relatively poorly in comparison to the other EU countries.

For **laptop/tablet offers**, which are presented above in a grouped way (as in many cases identical or rather comparable offers are available for both - see below), results are somewhat different. Denmark, Austria and Sweden again score very well, but other top rankers for these devices are Poland (especially for higher baskets) and even more so Estonia, which for all user profiles takes a place in the lowest (i.e. least expensive) cluster and in six out of seven cases has a top 3 place. In the high price range, Czech Republic, Slovakia and Portugal appear again, but this time they are accompanied by Cyprus and Germany and for the higher baskets, Spain (2GB and more) and Belgium (10GB and more).

When expressing these monthly prices as a **percentage of income**, the dispersion between countries is still apparent. For instance, in Bulgaria and Hungary more than 7% of income is spent on mobile broadband on handsets of 1, 2 and 4 GB, whereas in Austria and Denmark this is less than 1.5%. Depending on the usage profile, the EU average is situated between 1.7 and 3.1% of income. For laptops and tablets, the EU average is a bit lower (0.5 to 2.5%), and especially Bulgaria, Romania and Cyprus come out as bad performers. The position of the first two thus deteriorates if prices are expressed in terms of income. On the other side of the ranking, the good performance of Austria, Denmark and Sweden is confirmed, but when crossing results with income, they are accompanied by Italy.

From the 'clustering' analysis, some further observations can be drawn, that have given rise to more detailed analyses:

- The clustering graphs show (both for handset and for laptop/tablet offers) a clear and continuous rise in EU average prices for higher volumes, thus confirming the existence of a **positive data volume-price relationship**. Higher usage profiles however appear to give more value for money. Indeed, when expressing prices in unitary terms as a 'cost per GB', the latter at EU28 level in all cases drops between 20 and 45% between two adjacent usage profiles. This is similar to last year's result, as then a drop between 30 and 50% was observed. Exceptions to the general rule arise most often when the basic data allowance included in the offer does not fit the basket usage profile (but no cheaper alternative exists at the operator or other operators of the same country) or because higher usage profiles on handsets also include higher volumes of voice and SMS;
- Prices for **handset offers** at first sight seem much higher than those of laptop/tablet offers, but it should be kept in mind that these offers, next to a data allowance, **also include voice minutes and SMS**. Moreover, to allow for meaningful comparisons, all handset offer prices also include **hardware** (smartphone): a basic smartphone (i.e. Nokia Lumia 532/535/550/635/640; Huawei Y5/P8 Lite; Samsung Galaxy S4 mini; LG Spirit 4G/Leon 3G/G Stylo/G Flex 2) for Baskets 1 to 3 and an advanced smartphone (i.e. most often the Samsung Galaxy S6) for Baskets 4 to 6. As mentioned, **prices for laptop and tablet offers are much more comparable**. First of all, the equipment cost (e.g. USB stick, dongle or MiFi-modem) that in more than half of the countries is part of the laptop offer prices, is highest for the lowest baskets, but even then on average is only 1.1 EUR per month. Secondly, when abstraction is made of this equipment cost, in between 17 and 21 (depending on the usage profile) of the EU Member States prices for laptop and tablet offers of the same usage profiles are identical, most often implying that on the operators' websites offers are proposed that can be used by choice either with tablet or laptop;

- While a **basic smartphone** represents on average around **3.2 to 3.3 EUR** or 10 to 20% of the total monthly price, the **advanced smartphone** that is part of the three highest handset baskets has a monthly cost of around **13.5 to 14.5 EUR** or 25 to 35% of the total monthly price on average, in a handful of countries even surpassing 20 EUR. Only the advanced smartphone therefore truly **impacts on the relative performance of some countries**. This is especially the case in Lithuania and Poland: if in these countries the smartphone cost to be added to the monthly price would only be as high as the EU average, they would in all three baskets end up in the top 5 of least expensive countries (while in reality, they occupy positions between 11 and 16, depending on the basket).

These overall observations run strongly parallel with what was observed during the first “Mobile Broadband Prices” study of February 2015. When **comparing 2015 and 2016 prices** per usage profile and per device more in detail, it can be observed that EU28 average prices of mobile broadband on handsets have without an exception dropped in the past year. However, only for the 2GB - 1800 min -350 SMS usage profile can an impressive decrease of 14% be observed. Laptop and tablet based offers of 2 GB and more have also slightly decreased, but offers in low usage profiles have become slightly more expensive since last year. Going down to the level of the individual countries, it appears that these increases are mostly caused by price increases in some of the countries that last year had relatively low prices, so that prices in the 512 MB and 1 GB laptop/tablet baskets appear to have grown somewhat closer between 2015 and 2016. Also for low handset usage profiles can such a limited price convergence be observed, while for high usage profiles (on all devices), no clear trend for more expensive countries versus less expensive countries emerge. Noteworthy is however that in Finland, Malta and Sweden, prices have decreased since 2015 on all devices and for all usage profiles.

When crossing the results of the mobile broadband prices study with mobile broadband take-up figures, last year’s observation that a certain amount of **correlation appears to exist between prices and take-up**, is further confirmed. Good illustrations of this are e.g. Denmark, Estonia, Finland and Sweden, where low prices go hand in hand with high take-up figures; and Greece, Hungary, Malta and Portugal, where high prices and low take-up can be observed. However, this trend is not ubiquitous: for instance, in Latvia and Lithuania low prices can be observed, but at the same time mobile broadband penetration is relatively low in these countries.

Finally, **EU mobile broadband prices score relatively well compared to those in a selection of other countries worldwide**. In the handset category, the EU and the USA showcase prices that are situated close together, and take turns in occupying first place, whereas for laptop and tablet offers, the EU takes first position for the low-capacity offers (up until 1GB), but loses its leading place to South Korea for higher capacity. This is because in South Korea no low allowance offers exist on the market, and (relatively more expensive) offers with higher data allowances are thus the only solution to fulfil the lower basket requirements. A similar effect can be noticed in Japan in the handset category. The OECD usage profiles thus do not seem fully appropriate for some of these non-EU countries. Moreover, although baskets with higher usage profiles have been added during the 2016 study, this does not solve the lack of representativeness of the low usage profiles for several (EU and non-EU) countries. Results should thus be interpreted with caution.

1. Introduction

1.1. Context of the study

In 2010, the **"Digital Agenda for Europe" (DAE)** was launched, a strategy which aims at promoting high-speed internet and delivering sustainable economic and social benefits from a Digital Single Market. This agenda defines several priority action areas, among which the provision of fast and ultra-fast internet access for all.

In 2015, the completion of the **Digital Single Market** is one of the 10 priorities of the new Juncker Commission. Indeed, the removal of existing barriers between fragmented national markets is expected to boost jobs, growth, competition, investment and innovation in Europe. Among the objectives of the Digital Single Market Strategy for Europe[5], the Commission wants to "*create the right conditions and a level playing field for advanced Digital networks and innovative services*" by, among other things, "*making the telecoms rules fit for purpose*". By "*giving more ambitions to the ongoing reforms on Telecom rules*"[6], one of the aims is to ensure that European consumers can benefit from high-performance infrastructures at affordable prices.

In this policy context, the European Commission continues to follow the developments in the electronic communications markets, including those in the EU broadband market. While a large number of indicators were originally created to monitor fixed broadband, the developments occurring in recent years and the perspective of a world becoming more mobile have led the Commission to include specific indicators for mobile broadband. Since 2015, the Commission has therefore decided to monitor and analyse the prices of mobile broadband. This report is the second round of a study aiming at monitoring the evolution of mobile broadband prices[7] and allows for objectively measuring the price evolutions in the different EU countries between 2015 and 2016. Much like the results of the monitoring and analysis of prices for fixed broadband, the results of this study could be used as input for the **European Semester.**

1.2. Objective of the study

The "Mobile Broadband prices" study aims at analysing and comparing what residential customers actually pay for mobile broadband in the EU28, three other European countries (i.e. Norway, Iceland and Turkey) and some non-EU countries (i.e. the USA, South Korea and Japan).

The study is based on the **2012 OECD methodology for mobile broadband**[8] which aims at calculating the total price (including the monthly fee, non-recurring charges and usage charges) of a set of offers in order to identify the least expensive offers for three different types of mobile devices (i.e. laptop, tablet and handset) and five different levels of usage (i.e. monthly volume consumed), in other words for 15 different combinations or "baskets". In order to reflect the rapid evolutions on the mobile broadband market, a sixth usage profile (with double the data allowance of the highest OECD basket) has been added for each type of device.

[5] http://ec.europa.eu/priorities/digital-single-market/docs/dsm-communication_en.pdf
[6] http://ec.europa.eu/priorities/digital-single-market/index_en.htm
[7] The first mobile broadband prices study based on February 2015 prices is available at https://ec.europa.eu/digital-single-market/en/news/mobile-broadband-prices-february-2015
[8] Methodology for constructing wireless broadband price baskets, OECD (2012): http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP/CISP%282011%295/FINAL&docLanguage=En

1.3. Structure of the report

After this introductory chapter, the second chapter outlines the methodology used for this study. Subsequently, the third and fourth chapter present the results regarding the residential mobile broadband prices in Europe; more particularly:

- **Key findings**: EU 28-wide horizontal analysis of the mobile broadband prices (chapter 3);
- **Country profiles**: country reports, providing more insight in the specific situation and results of all EU28 countries, and comparing results per country with the overall EU28 figures (chapter 4).

The report is further completed with six annexes:

- Annex 1: OECD Handset Baskets – Details of voice and SMS services
- Annex 2: List of mobile operators included in the sample
- Annex 3: Taxonomy of pre-paid offers
- Annex 4: Overview of additional taxes on mobile broadband services
- Annex 5: Parameters for EUR/PPP conversion and VAT rates per country
- Annex 6: Overview of data allowances per operator

2. Methodology

The methodology for this Mobile Broadband prices study is based on a 'basket approach'. These baskets are usage profiles, describing a consumption pattern for different types of users. The prices of corresponding offers available at different mobile operators are used for estimating what is paid by each type of user (usage profile). This allows selecting the least expensive offer per operator and per country for each usage profile. On this basis, a comparison between countries can be made.

2.1. Usage profiles (baskets)

The baskets used for this study are the five 'OECD Baskets'[9,10] plus a sixth basket including the double of the data consumption of the fifth OECD basket. Evidence on usage patterns collected at operators on behalf of OECD suggests different usage volumes on different types of mobile devices. Therefore, three different sets of mobile broadband baskets were developed:

	Laptop use (data volumes)	**Tablet use (data volumes)**	**Handset use (data volumes + voice/SMS basket)**
Basket 1	500 MB	250 MB	100 MB + 30 calls basket
Basket 2	1 GB	500 MB	500 MB + 100 calls basket
Basket 3	2 GB	1 GB	1 GB + 300 calls basket
Basket 4	5 GB	2 GB	2 GB + 900 calls basket
Basket 5	10 GB	5 GB	2 GB + 100 calls basket
Basket 6	20 GB	10 GB	4 GB + 900 calls basket

Table 2: Mobile broadband baskets under consideration in the study

Data volumes include both upload and download data volumes. Details regarding the voice and SMS volumes of the OECD handset-based baskets are presented in Annex 1 (e.g. distribution between on-net and off-net calls).

The number of hours or days of use of mobile broadband per month are not used as parameters in the baskets since the study will only consider offers that can be freely used over a whole month[11]. The OECD methodology considers excess usage, i.e. beyond data allowances or voice/SMS volume included in the offer, in one of two ways[12]:

- *"If throttling is used the tariff is excluded from the results if the basket volume exceeds the allowance. This will also apply if both throttling and overage charges are applied to a given offer. In this regard, throttling practices specified by acceptable use policies (AUPs) will also be considered.*
- *If excess usage results in overage charges the additional cost is added to the total as a usage element to pick the level of usage specified in a basket."*

[9] See OECD (2012), "Methodology for Constructing Wireless Broadband Price Baskets", *OECD Digital Economy Papers*, No. 205, OECD Publishing. http://dx.doi.org/10.1787/5k92wd5kw0nw-en.
[10] See OECD (2009), "Revision of the methodology for construction telecommunications price basket" (DSTI/ICCP/CISP(2009)14/FINAL)
[11] Likewise, add-ons with extra SMS and voice minutes have only been considered if they are at least available during a period of 30 days.
[12] See OECD (2012), "Methodology for Constructing Wireless Broadband Price Baskets", *OECD Digital Economy Papers*, No. 205, OECD Publishing. http://dx.doi.org/10.1787/5k92wd5kw0nw-en.

2.2. Scope of the sample

2.2.1. Geographical coverage

Mobile broadband data is collected for 34 countries; these are the 28 EU Member States, Iceland, Japan, Norway, South Korea, the United States[13] and Turkey.

2.2.2. Mobile operators

In line with the OECD methodology, at least the two largest mobile network operators per country have been selected, based on the number of mobile broadband subscribers (i.e. market shares). If this information is not available, operators have been selected based on the number of mobile subscriptions (including voice, SMS and data). If the combined market share of these two operators is below 70%, the third largest operator has also been included in the sample. In any case, no more than three operators are considered, whatever their combined market share would be. The list of mobile operators in the sample for this study is provided in Annex 2.

Discount brands of the mobile operators in the sample are only taken into account when they are clearly linked with the network operator's brand and website and when their individual market share is considered as significant (i.e. at least 5% of the total number of mobile (broadband) subscriptions).

2.2.3. Mobile broadband offers

The aim of the study is to identify, for each mobile operator, the least expensive offer for each of the eighteen predefined baskets. Therefore, only a sub-set of all available offers has been collected. Indeed, since e.g. the highest usage profile for laptop includes 20GB, offers with data allowances over 20GB per month will not be collected for an operator which also has a (less expensive) 20GB offer available. The more expensive offers with higher data allowances are not considered relevant for our study and have not been collected. Also, if e.g. additional data packs of 1GB, 3GB and 5GB are available for completing an offer with a 5G data allowance, but combining these for the 10GB usage profile never gives a lower cost than taking a 10GB subscription, the different combinations of the 5GB offers with all available data packages will not be included in the sample. Furthermore, offers are only considered as relevant (for a given basket) if they allow for consuming the service levels as defined by the OECD (in terms of data volumes, voice and SMS) and irrespective of whether this requires e.g. additional data allowances or not.

The offers collected are based on 3G or 4G technologies (UMTS, HSPA/HSPA+, CDMA2000, IEEE 802.16e and LTE), for mobile use. This implies that LTE at home installations are out of scope. Wi-Fi or hotspot usage is not considered either.

Pre-paid as well as post-paid offers are included in the sample. For handset-based baskets, SIM-only offers as well as packages including a handset are taken into account. For baskets 1 to 3 a basic handset was selected (i.e. Nokia Lumia 532/535/550/635/640; Huawei Y5 or P8 Lite; Samsung Galaxy S4 mini; LG Spirit 4G/Leon 3G/G Stylo/G Flex 2); for baskets 4, 5 and 6 an advanced handset is included (i.e. most often the Samsung Galaxy S6). Offers including a tablet or laptop are not considered.

Only offers and prices clearly presented on the operator web pages in February 2016 and available to all residential subscribers[14] are considered. If needed, minor clarifications were requested by phone, email or chat. Additional elements obtained by these means are also considered in the final pricing of the offers.

[13] In contrast to the fixed broadband offers, it appears that the same mobile services offered by the major mobile operators (AT&T, Verizon, T-Mobile and Sprint) are available across all the US States.
[14] Offers targeting certain categories of consumers such as students or retired persons are out of the scope.

The offers in the sample correspond to 'single subscriptions' or 'a single user' (i.e. for just one connecting device); grouped subscriptions (e.g. multi-SIM) are not considered.

Finally, subscriptions that only provide access to a selection of websites (e.g. Facebook, Spotify, email services, customised content provided by the mobile operator) have not been taken into account.

2.3. Calculation of the total monthly cost

For the identification of the least expensive offer per operator and per basket, the average total monthly cost is calculated on a 36 months basis. The aim is to reflect as good as possible what the consumers will actually be paying on average per month. Therefore, the following charge elements are considered:

- **One off charges:** these charges relate to the cost for activating or installing the mobile services; these can also include the costs related to shipment of the equipment. For the pre-paid offers, these costs relate e.g. to the start-pack (e.g. upfront payment for the SIM-card).

- **Monthly subscription charges**: for the post-paid offers, these are the monthly charges as advertised on the operator's website, excluding any discounts that apply at a given moment and excluding overage charges.

  For the pre-paid offers, it was observed that a lot of different types of tariff plans exist (e.g. with or without a fixed fee per month[15] - an overview of possibilities is given in the "Taxonomy of pre-paid offers" in Annex 3). Therefore, for the pre-paid offers, the total monthly charge is the result of a calculation by the study team. This calculated value reflects the total cost of the (monthly) refill, including any add-ons or per unit charges required for covering the usage profile of as specific basket. As a result, the same pre-paid offers can be considered in the sample with different monthly charges, for different baskets.

- **Overage charges**: when the allowance of the offer is not sufficient to fulfil the predefined level of consumption of the basket, costs are taken into account per additional GB and/or per additional call minute and/or per additional SMS until the required level is attained. Besides additional service volumes, charged per unit, offers can also frequently be combined with add-ons (or 'packs') including additional data, minutes or SMS (or combinations of these). For the post-paid offers, the information regarding overage charges is combined with the various offers to which they apply[16]. Finally, as said, for the pre-paid offers, any overage charges are immediately considered in the monthly charges[17].

- **Discounts**: discounts are generally only valid during a limited period; however, since they are often repeated several times a year, it was considered that all discounts applicable at the time of the data collection (February 2016) are relevant for correctly reflecting the price that consumers are paying for mobile broadband. It should be noted however than only discounts available to all consumers are taken into account[18].

[15] The sample only contains pre-paid offers with a validity of at least 30 days.
[16] The database does however not contain an exhaustive overview of all add-ons available on each offer. Indeed, the aim of this study is to identify the least expensive offer per basket, so add-ons which are clearly more expensive, are not considered.
[17] Their details are however still included in the database.
[18] E.g. online discounts which are only available for consumers ordering online are thus not considered.

- **Charges related to equipment:** these are only relevant for handset-based offers and offers for laptops. For tablets, it is assumed that the SIM card can be inserted in the device, so no equipment cost is added.
  - **Handsets**: to allow for meaningful comparisons, the total monthly cost of all handset based offers takes into account the price of a basic smartphone (for Baskets 1, 2 and 3) or an advanced smartphone (for Baskets 4, 5 and 6). Two situations can occur: 1) to SIM-only offers is added a retailer price for a basic or advanced smartphone. 2) In case the operator is offering packs including a smartphone, these packs are also considered, and the cost of the smartphone is calculated as the sum of the one-off charges for the smartphone and, insofar as possible, a recurring fee derived from the difference between the monthly pack price and the SIM-only version of the same offer. In all cases, the price of the smartphone is depreciated over 36 months. The resulting cost per month is added to the total monthly charges.
  - **Laptops:** if an equipment (e.g. USB stick, dongle or MiFi[19]-modem) is required for using a mobile broadband offer on a laptop and if this equipment is directly provided by the operator, its cost is also considered. This cost is also depreciated over 36 months and added to the total monthly charges.
- **Any specific taxes**: in some countries (i.e. Austria, Croatia, Italy, Greece and Turkey), specific taxes (in addition to VAT) apply to some or all mobile broadband offers. Since the aim of the study is to reflect what consumers are actually paying, these specific taxes are added to the total monthly charges. Annex 4 gives an overview of these additional specific taxes.

Finally, the total monthly cost, calculated based on the charge elements collected in EUR and other local currencies, is converted into EUR/PPP. Results are presented including VAT. The parameters used for the EUR/PPP conversion and the VAT rates per country are presented in Annex 5.

2.4. Analysis of results

Once the total monthly cost is calculated for every offer in the sample and for every basket in which the offer fits, the least expensive offers per device and per usage profile can be identified for each operator and then for each country. These least expensive offer prices (called 'price' in the report) are then used as the key indicator for all the subsequent analyses.

[19] MiFi is a brand name used to describe a wireless router that acts as mobile Wi-Fi hotspot. By connecting a MiFi device to a mobile network, internet access can be provided for several devices.

3. Key findings

3.1. Mobile broadband prices at a glance

Based on the February 2016 prices for mobile broadband, the following figures classify the EU countries in 4 groups for each individual usage profile. For the handset-based and tablet & laptop based offers respectively, the clustering[20] takes account of the price of the least expensive offer available.

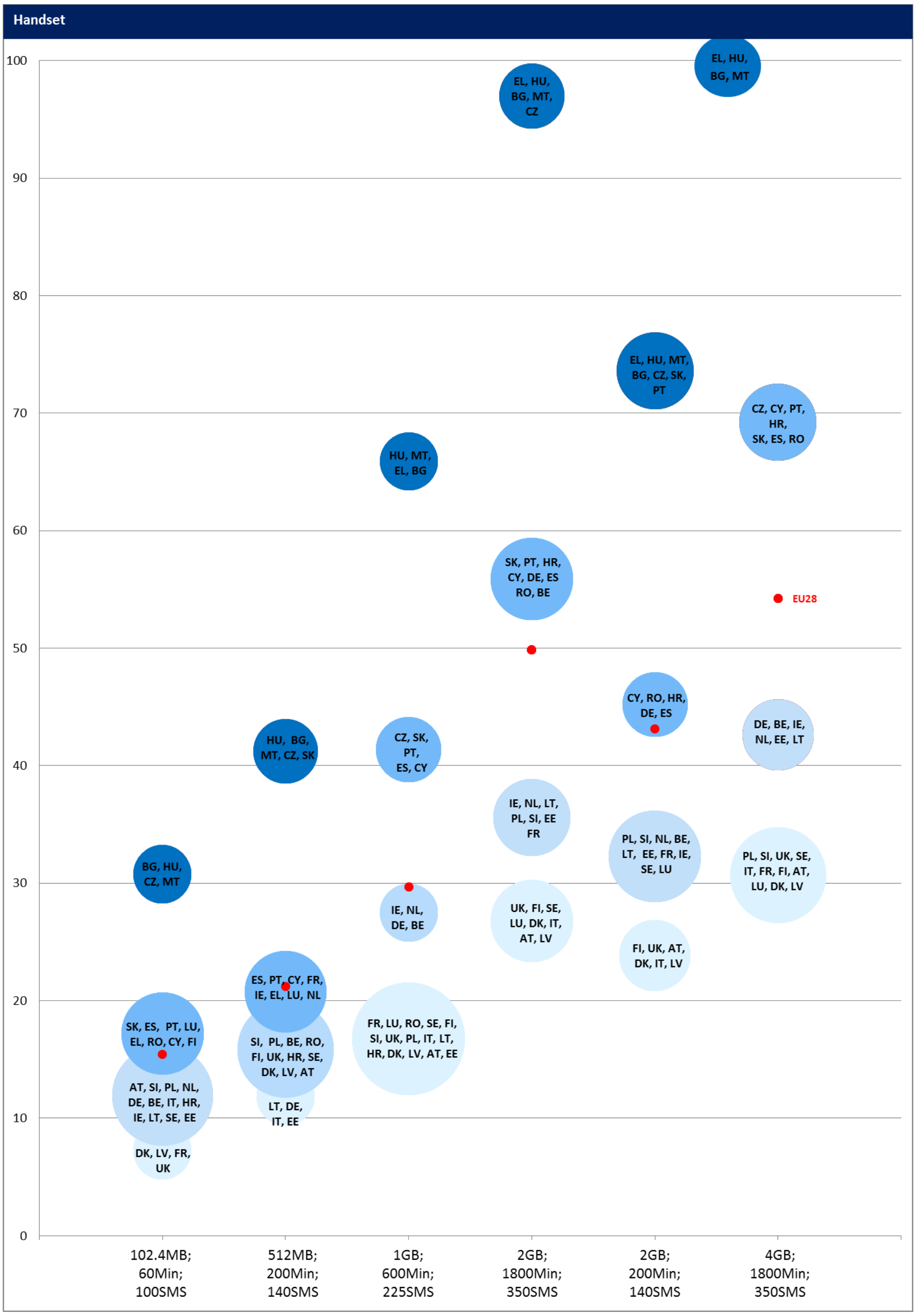


Figure 2: Clustering[21] of countries based on prices for the least expensive offer available on handsets (expressed in EUR/PPP, VAT included, data for February 2016)

[20] Clustering is done following the k-means clustering approach, a method that aims to partition all observations in a predefined number of clusters by minimising the average squared Euclidean distance of observations to the cluster center.
[21] Clustering is performed through the k-means clustering approach (see above) with 4 clusters. In the graph, all clusters are centered around the cluster mean, and the size of the clusters illustrates the number of observations belonging to the cluster.

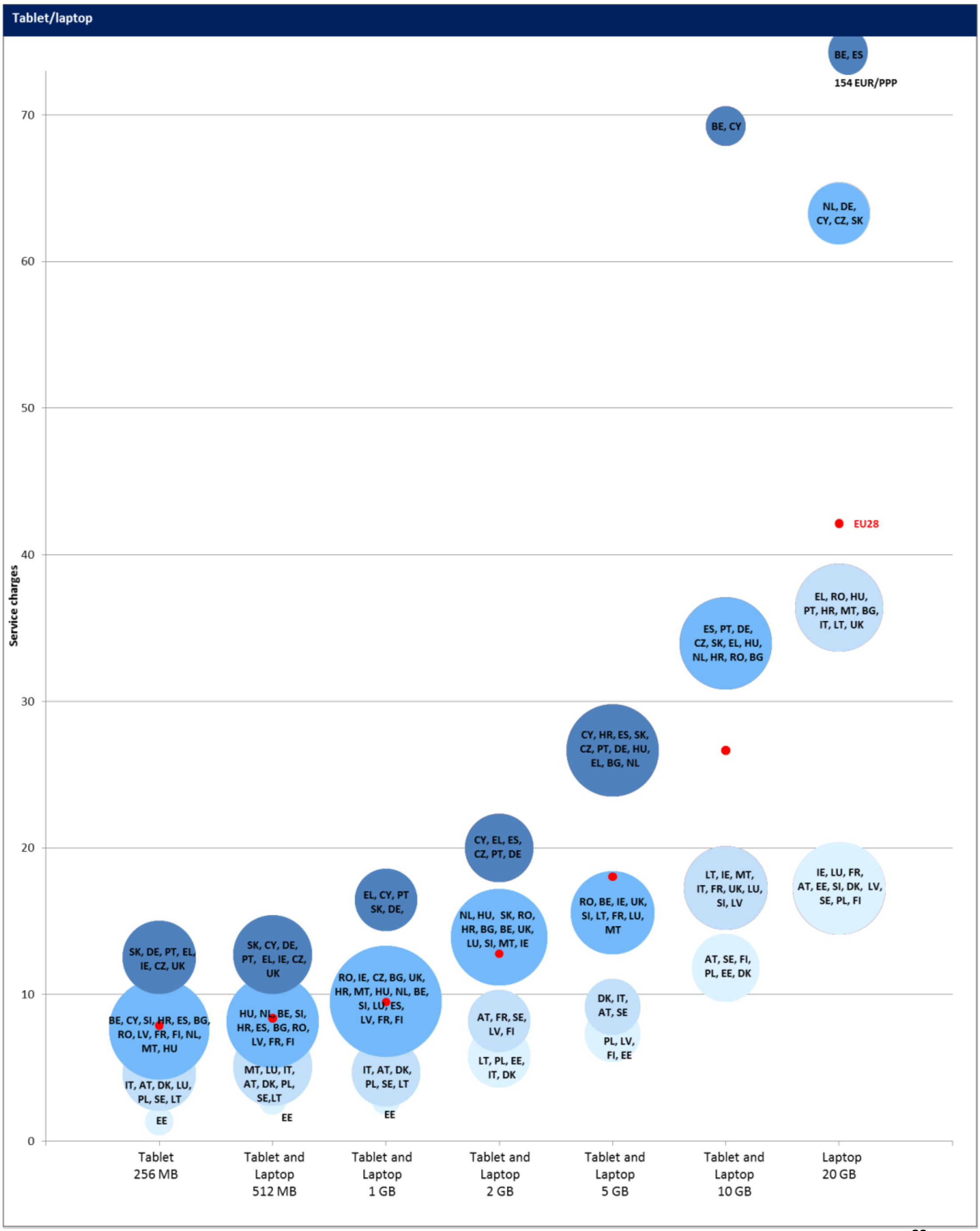


Figure 3: Clustering of countries based on prices for the least expensive offer available on laptops and tablets[22] (expressed in EUR/PPP, VAT included, data for February 2016)

Identical usage profiles for laptop and tablet based offers are presented above in a grouped way (i.e. by only presenting the least expensive of both offers), as the study has made clear that in many cases identical or rather comparable offers are available for both (see below).

3.1.1. *Who is best in class?*

Starting with the handset based offers, which are by far the most numerous category in the collected sample[23], **Denmark, Italy, Latvia and the UK** appear to be top rankers, as in five of the six baskets under consideration, their least expensive offer is situated in the lowest of four clusters. **Austria and Sweden** also appear in the

[22] The least expensive offer available per basket is the lowest value of the least expensive laptop and least expensive tablet offer.

[23] They account for 1623 out of 2575 offers, i.e. around 63%.

lowest cluster in at least half of the baskets. The former is in the top 5 best performers for all baskets except for the lowest one (100 MB, 60 min, 100 SMS), while Sweden takes a top 10 position in all but the basket of 1 GB, 600 min, 225 SMS. Unlike the others, these last two countries did not come out as very good performers during last year's mobile broadband price exercise. At that time, Estonia, Lithuania and France appear to have had relatively lower prices.
On the other side of the ranking, **Bulgaria, Hungary and Malta** have very expensive mobile broadband prices, as they are situated in the highest cluster for all user profiles. To a slightly lesser extent, the Czech Republic, Greece, Portugal and Slovakia also perform relatively poorly in comparison to the other EU countries. Greece's relative position decreases with higher user profiles: in the three baskets of 2 GB and more, it takes the last place, at prices that are two to two and a half times as high as the EU28 average.

For the laptop and tablet based offers, conclusions do not fully run parallel. Indeed, **Estonia** comes out as the price champion for these types of mobile broadband offers, as for all user profiles they are classified in the lowest cluster. Their seventh place in the highest basket (20 GB) is their worst result (i.e. in all other cases they are situated in the top 3). Other good performers are **Austria and Sweden** and, especially for higher baskets, **Denmark and Poland**. **Cyprus and Germany** take a place on the other end of the ranking, and **Czech Republic, Slovakia and** (for lower profiles) **Portugal** are also countries that mostly offer expensive prices for laptop and tablet-based usage profiles. Finally, **Spain** only performs badly for profiles of 2 GB and more, and **Belgium** for profiles of 10 GB and more. While in all other baskets the Belgian price differs by maximum 15% of the EU28 average, it is 3 to 4 times this average in the 10 and 20 GB baskets[24].

3.1.2. Are performances similar across devices?

To allow comparison of individual countries' position for the different types of devices, and thus to distinguish overall trends *across devices*, the following graph depicts on the one hand each Member State's average ranking[25] for all handset baskets and on the other hand their average ranking for tablet and laptop baskets:

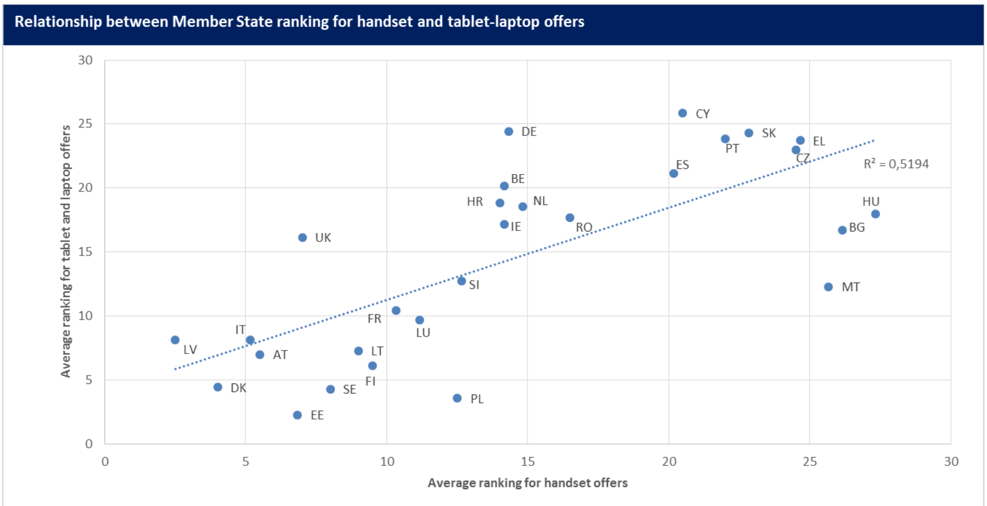


Figure 4: Relationship between average ranking for prices of handset based and laptop/tablet based offers per Member State

From this graph, it can be concluded that especially **Denmark and Estonia** offer low prices regardless the device used for having access to mobile broadband services, as do **Austria, Italy, Latvia and Sweden**. Countries with high prices for both handset baskets and tablet and laptop baskets are **Cyprus, Czech Republic, Greece, Portugal and Slovakia**. Not all countries however showcase such trends across devices. Indeed, prices for handset offers in Bulgaria, Hungary and Malta are even higher than those of the previously mentioned group

[24] Like during the February 2015 exercise however, the least expensive offer in these baskets is in fact an offer of 5 GB, to which an additional data volume is added, since no 10 or 20 GB offers are available in Belgium.
[25] Calculated as the average (over all usage profiles) of the relative ranking of the country's least expensive offer.

of Cyprus, Czech Republic, etc., but at the same time they score relatively averagely in terms of mobile broadband prices for tablet and laptop offers. In Belgium and Germany the opposite situation appears, i.e. very high tablet and laptop prices are combined with rather average handset offer prices. Finally, the UK has very low handset prices and Poland has very low tablet and laptop prices, while their prices for offers on the other type of device are fairly average.

3.1.3. Is more mobile data more expensive?

Clustering of least expensive offers also gives an overview of the relationship between data volume and price. Indeed, like last year the graphs show, **both for handset and for laptop/tablet offers, a clear and continuous rise in EU average prices for higher volumes**, thus confirming intuitive expectations. Additionally, especially for laptop/tablet offers it can be observed that while prices of the individual countries are relatively converged for the lower baskets, this is not the case for the baskets of 5, 10 and 20 GB. The most extreme case is that of the 20GB laptop basket, in which the two highest observed prices (of Belgium and Spain) are 3.3 to 4 times as high as the EU average, and 12 to 14 times as high as the price in the best-ranking country (Finland).

A more profound analysis of the data volume-price relationship can be derived from the graphs below. Each graph is dedicated to one type of device, and shows the 'unit price' for one GB data allowance included for a subset of the different usage profiles considered. Care should be taken when analysing the results for handset offers, since in these baskets, not only a data allowance but also voice minutes and SMS are included.

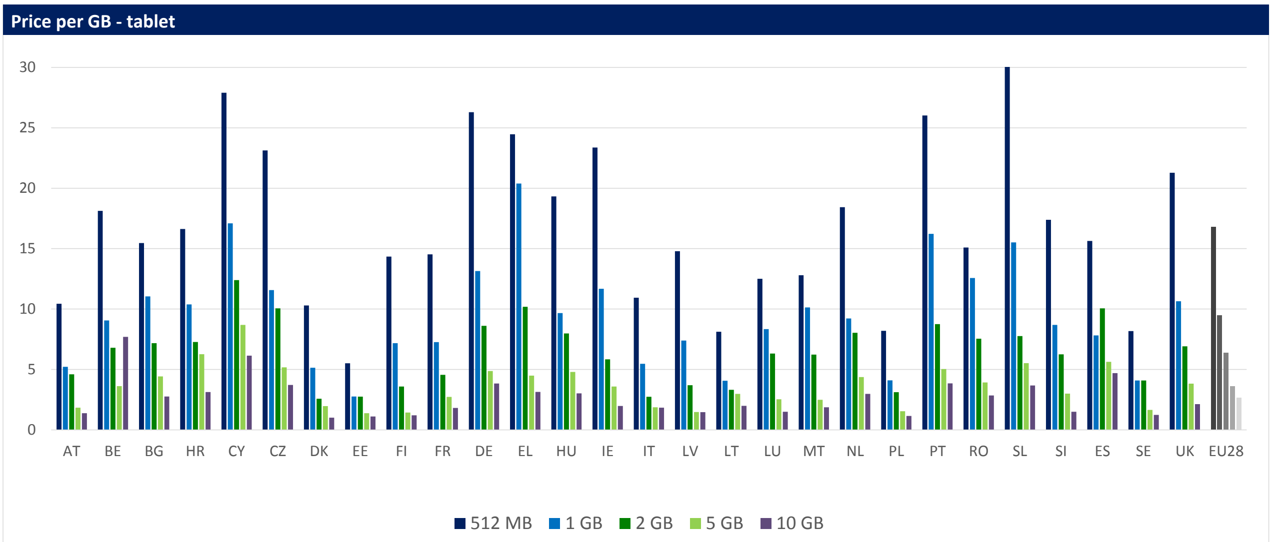


Figure 5: Unit cost (per GB)[26] of the least expensive tablet offer for 512MB, 1 GB, 2GB, 5GB and 10GB baskets (expressed in EUR/PPP, VAT included, data for February 2016)

[26] Price per GB is defined as the price of the least expensive offer divided by the data allowance of the basket.

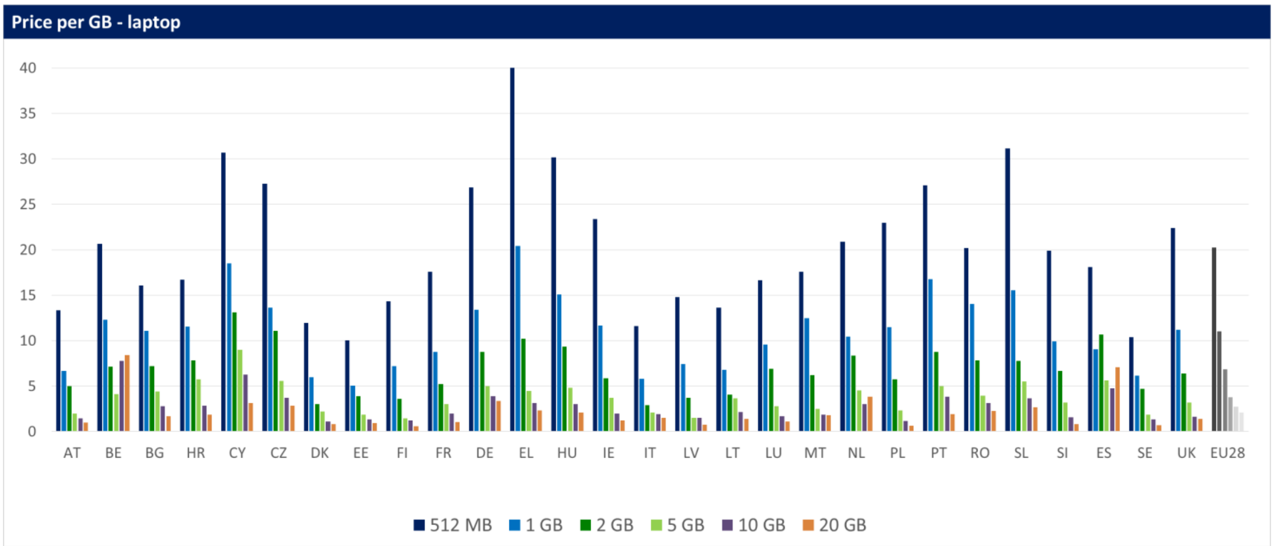


Figure 6: Unit cost (per GB) [27] of the least expensive laptop offer for 512MB, 1 GB, 2GB, 5GB, 10GB and 20GB baskets (expressed in EUR/PPP, VAT included, data for February 2016)

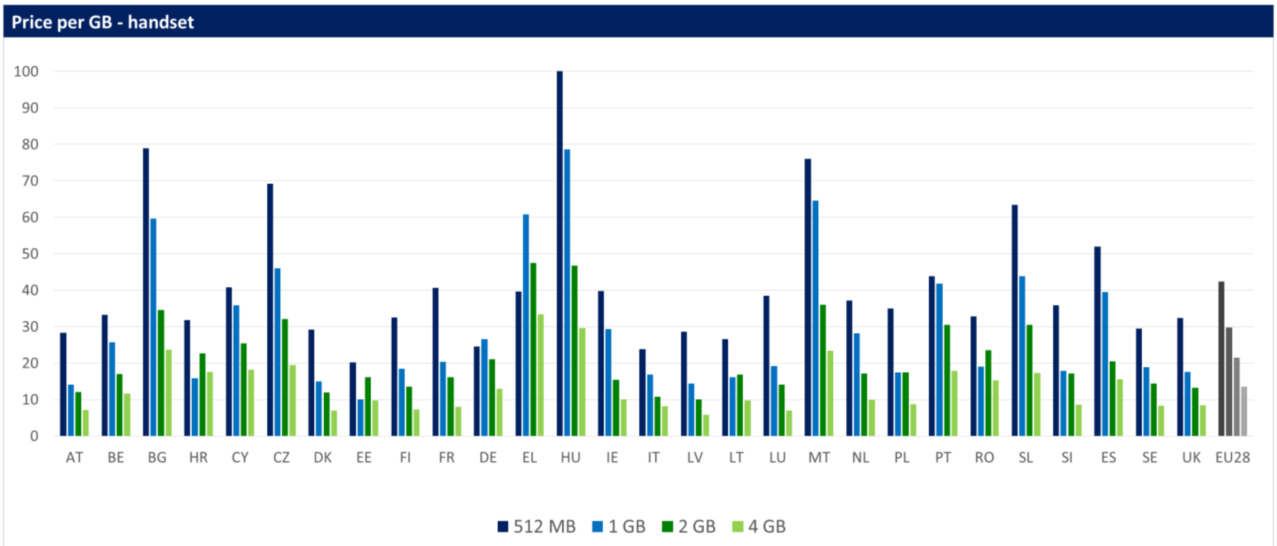


Figure 7: Unit cost (per GB) [28] of the least expensive handset offer for 512MB, 1 GB, 2GB[29] and 4GB baskets (expressed in EUR/PPP, VAT included, data for February 2016)

The main observation on unitary prices of last year's mobile broadband prices exercise, i.e. that economies of scale could be observed for all types of devices, is further confirmed this year. Indeed, at EU28 level, **the price per GB in all cases drops between 20 and 45% between two adjacent usage profiles**[30]. For tablets and laptops, the biggest drop occurs between 512 MB and 1 GB and also between 2 and 5 GB, whereas for handset offers, the difference in unitary price is largest (in relative terms) between 2 and 4 GB. For all three types of devices, a small number of exceptions on the general rule exist, for different countries[31]. Causes for this are very similar to those observed last year:

- The basic data allowance included in the offer is not sufficient to fulfil the basket usage profile, so that an (often rather high) unit cost is added to obtain a monthly price, and for this particular basket no cheaper alternatives exist with other operators. This is particularly the case if no offers of such a high

[27] Price per GB is defined as the price of the least expensive offer divided by the data allowance of the basket.
[28] Price per GB is defined as the price of the least expensive offer divided by the data allowance of the basket.
[29] Costs for the basket 2GB – 200min- 140SMS are considered here, i.e. the basket with the lowest volume of voice and SMS.
[30] E.g. -22% for laptop 10 to 20 GB and -46% for laptop 512 MB to 1 GB.
[31] For tablet: BE and ES – for laptop: BE, LV, NL and ES – for handset: HR, EE, DE, EL, LT and RO

data allowance are provided on the national market, as is the case in the Netherlands and Spain for the 20 GB laptop offers, and in Belgium also for the 10 GB tablet and laptop offers;

- The basic data allowance included in the offer is too high for the basket usage profile, but is still the cheapest option available. In that case, it is not uncommon that the unitary cost in this basket is higher than the one in the lower basket, as the latter applies to an offer closer to the required data allowance[32];
- Least expensive offers in different baskets may come from different operators[33], with different tariff structures, and/or differ in terms of prepaid versus postpaid nature[34];
- Specifically for handsets: the 2 GB baskets include another type of smartphone that is more advanced (and thus in general more expensive)[35], or the least expensive offer of higher baskets includes more minutes and/or SMS, distorting the unit price per GB[36];
- Finally, an effect not observed last year is that in Spain, for tablet and laptop offers, the price of the least expensive ISP for going from a 1 to a 2 GB offer more than doubles. Unlike in the cases above, this is a true case of diseconomies of scale. It should be noted however that tablet and laptop offers are not very common in Spain, one of the ISPs for instance does not have any specific offers, and the others have only very few.

3.1.4. How do prices on different devices compare?

Comparison of the two clustering graphs above (see **Error! Reference source not found.** and **Error! Reference source not found.**) shows that prices for handset offers on the one hand and laptop/tablet offers on the other hand, are not at all alike. This is not to be surprised, given the fact that the usage profiles defined for handset offers logically not only include a certain data volume, but also contain a mobile voice volume (voice + SMS). Furthermore, all handset prices include an equipment cost (smartphone). A more detailed examination of price comparisons between handset and tablet/laptop offers does thus not seem meaningful. However, in light of what was mentioned earlier in this report regarding the frequent availability of identical or similar offers for laptop versus tablet baskets and the similarities observed during the mobile broadband prices exercise of February 2015, a more detailed analysis is made below of the degree of comparability of prices for mobile broadband on laptops and tablets.

In the graphs below, individual countries' least expensive offer prices for tablet and laptop offers are compared for the five baskets that share the same data volume. As according to the methodology, the price for laptop offers also includes equipment costs (if relevant), this part of the total laptop price is isolated.

[32] This is for instance the case in Latvia for the 10 GB laptop offer.
[33] This is for instance the case in Estonia and Romania for the 1 GB versus 2 GB handset offer
[34] This is for instance the case in for the 1 GB versus 2 GB handset offer and in Greece for the 512 MB versus 1 GB handset offer.
[35] This is for instance the case in Lithuania for the 2 GB handset offer.
[36] This is for instance the case in Germany for the 1 GB handset offer.

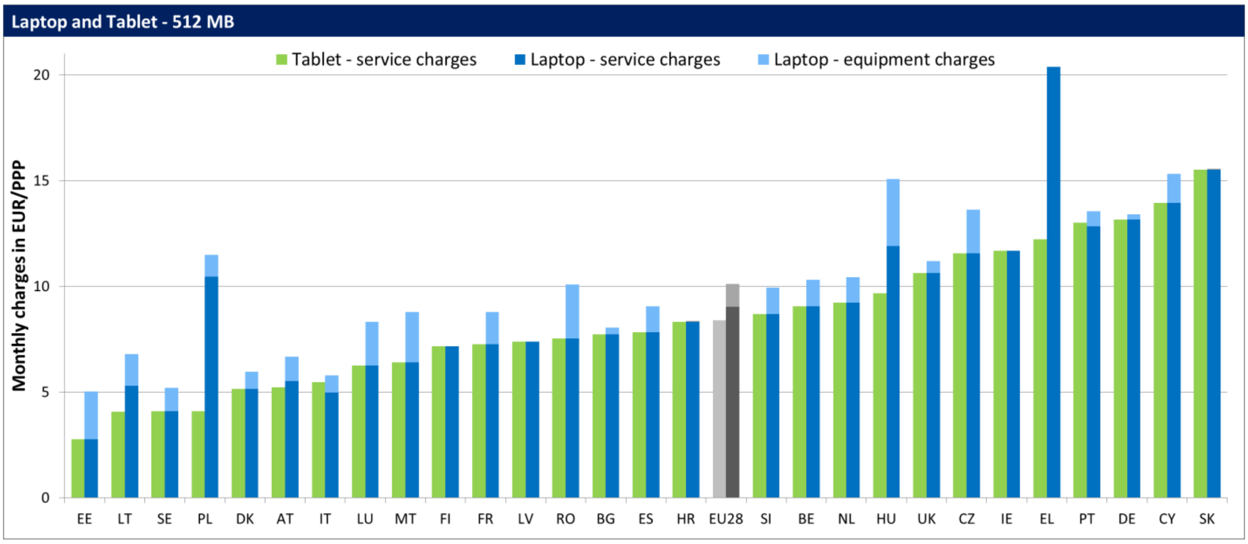


Figure 8: Comparison of least expensive offer prices for tablet and laptop based offers for the 512MB basket (expressed in EUR/PPP, VAT included, data for February 2016)

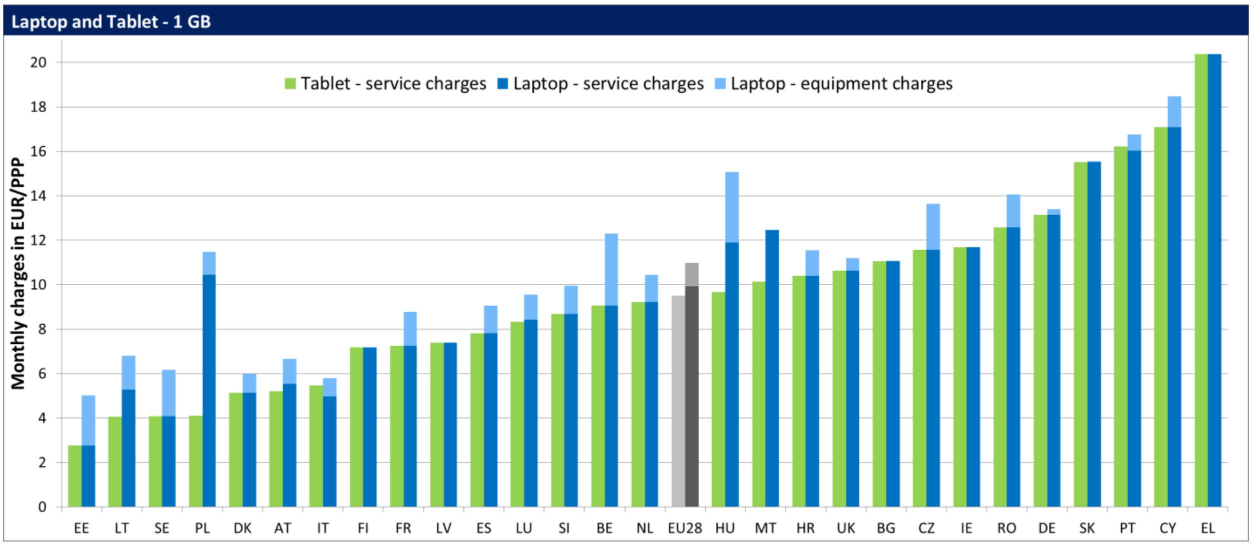


Figure 9: Comparison of least expensive offer prices for tablet and laptop based offers for the 1GB basket (expressed in EUR/PPP, VAT included, data for February 2016)

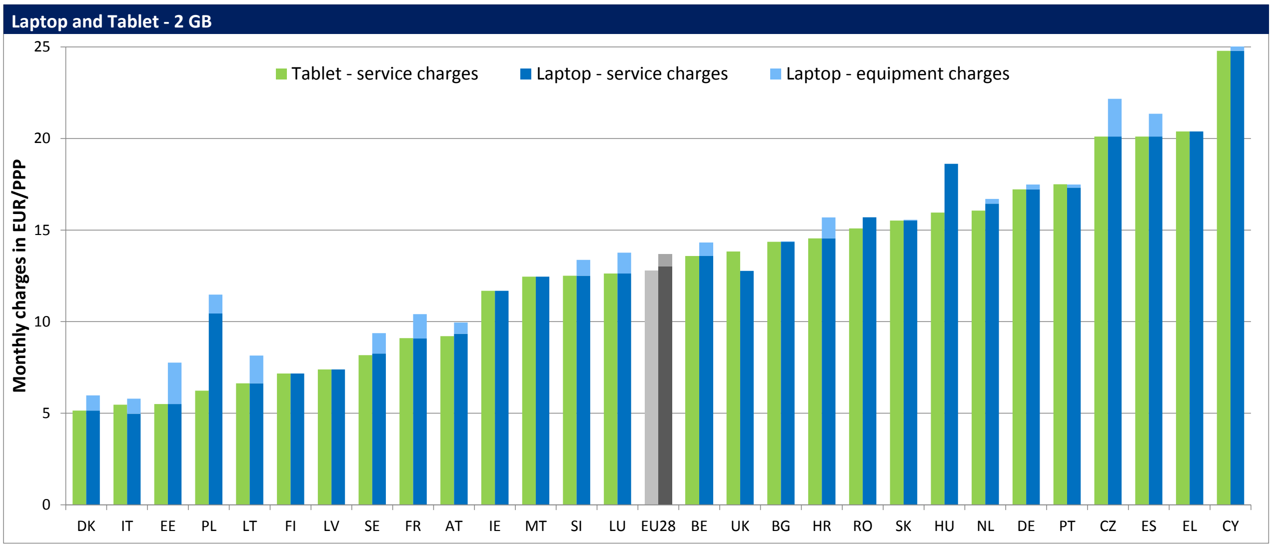


Figure 10: Comparison of least expensive offer prices for tablet and laptop based offers for the 2GB basket (expressed in EUR/PPP, VAT included, data for February 2016)

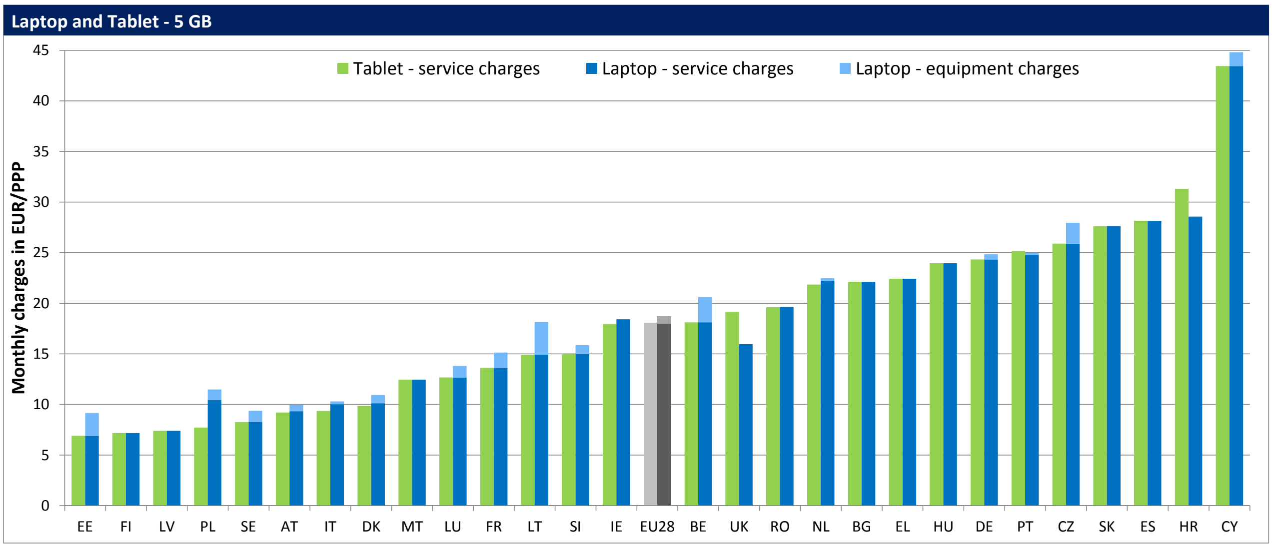


Figure 11: Comparison of least expensive offer prices for tablet and laptop based offers for the 5GB basket (expressed in EUR/PPP, VAT included, data for February 2016)

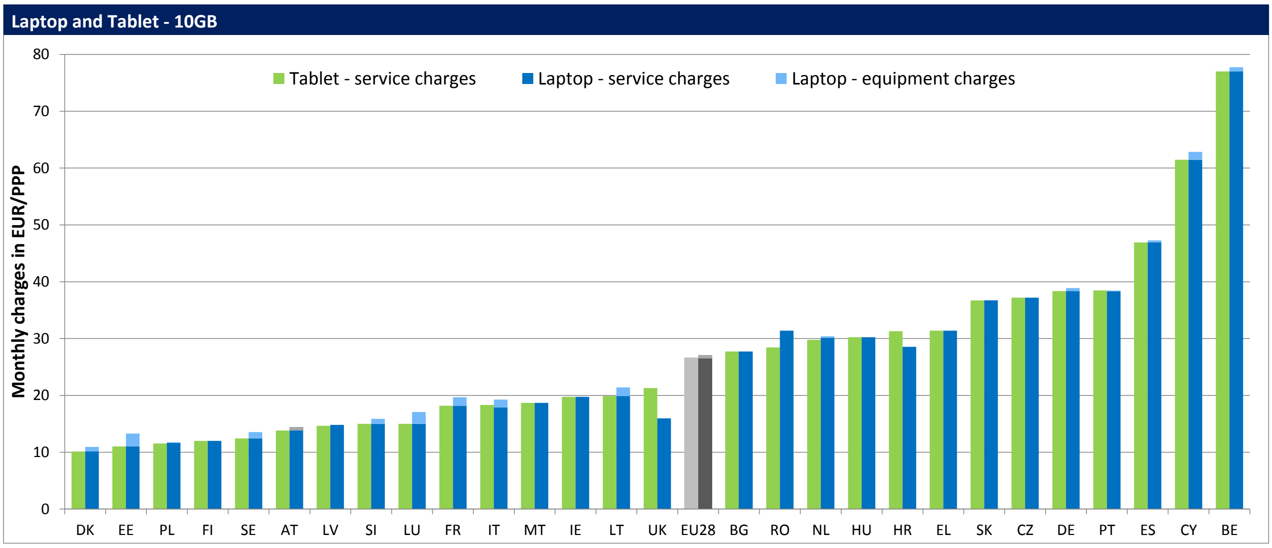


Figure 12: Comparison of least expensive offer prices for tablet and laptop based offers for the 10GB basket (expressed in EUR/PPP, VAT included, data for February 2016)

When comparing least expensive tablet based prices with laptop based prices (excluding equipment) for the same data allowance, a trend can be observed across all five baskets: **in a majority of the EU Member States (i.e. between 17 and 21 countries) prices are identical.** This most often implies that on the operators' websites offers are proposed that can be used by choice either with tablet or laptop (if relevant with a surcharge for the equipment needed for laptop use). In no less than ten countries, an identical price appears in all five baskets under consideration. These are Belgium, Bulgaria, Cyprus, Czech Republic, Estonia, Finland, Germany, Slovenia, Slovakia and Spain.

As for the countries where price differences can be observed, it should be noted that, for all baskets up until 5 GB, **in most cases the price for laptop based offers is higher than that of tablet based offers**. In many cases, the difference is rather limited, but in Poland the laptop based offer in the 512 MB, 1GB, 2GB and 5GB baskets is 35 to 155% more expensive than the tablet based offer. In Greece, substantial differences can be observed for the 512 MB basket. The 10 GB basket shows an atypical pattern, as there are as much countries where the tablet based offer is more expensive than the laptop based offer as vice versa. However, the difference only in few cases exceeds 2%: in the UK and Croatia, the tablet based offer is respectively around 25 and 10% higher than the laptop based offer, and in Romania the laptop based offer is 10% more expensive than the tablet based offer.

3.1.5. What is the impact of equipment on prices?

For laptops

From the graphs above, it can be concluded that the addition of a cost for the USB stick, dongle, MiFi-modem or other device allowing mobile broadband access from a laptop is a rather frequent phenomenon. Indeed, for the five baskets presented above, as well as for the 20 GB basket (see below), **in between 18 and 24 Member States[37] an additional equipment charge applies**. Especially in the 512Mb and 1GB baskets is an equipment charge of 0 an exception (respectively only 4 and 5 out of 28 countries). The EU28 average charge in these baskets is also a bit higher than in the other baskets: around 1.1 EUR instead of between 0.55 and 0.7 EUR in the baskets between 2 and 20 GB. This is not only because of the more frequent appearance of equipment charges in these lower baskets, but also linked to the fact that the occurrence of relatively substantial equipment charges is more common. Indeed, a surcharge of more than 2 EUR applies in 5 countries in the two lowest baskets, but only 2 times in the 10 and 20 GB baskets. In Estonia and the Czech Republic, such a surcharge applies in nearly all baskets. Despite these few cases, it can be noted that the amount of the equipment cost is rather limited in most countries. This is illustrated by the fact that the **equipment cost only in a few instances truly impacts on a country's relative performance**[38].

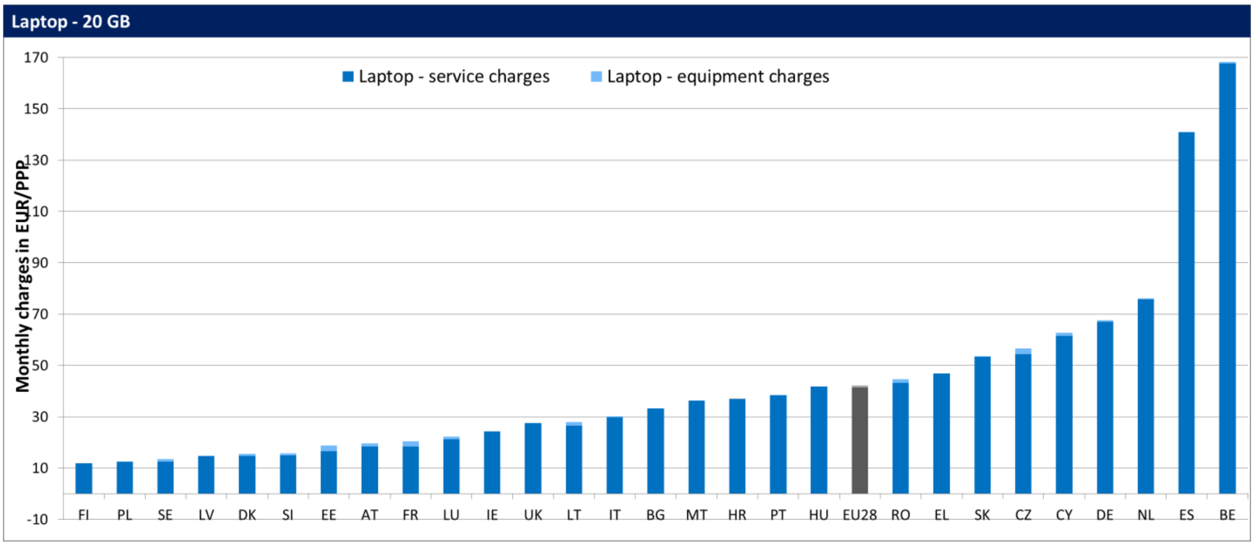


Figure 13: Least expensive offer prices for laptop based offers for the 20GB basket (expressed in EUR/PPP, VAT included, data for February 2016)

[37] No equipment charges apply in: in 512MB basket: FI, EL, IE, LV– in 1GB basket: FI, EL, IE, LV, MT – in 2GB basket: FI, EL, HU, IE, LV, MT, RO, UK – in 5GB basket: BG, FI, EL, HU, IE, LV, MT, RO, ES, UK - in 10GB basket: BG, FI, EL, HU, IE, LV, MT, RO, UK – in 20GB basket: BG, FI, EL, HU, IE, LV, MT, PL, UK

[38] Notable cases (i.e. change of more than 3 places) are: in the 512 MB basket, Bulgaria would drop from the 9th to the 13tht position, Croatia would drop from the 11h to the 15th position, Malta would rise from the 13th to the 8th position and Romania would rise from the 16th to the 12th position if their equipment cost would only be as high as the EU average; in the 1 GB basket, Bulgaria would drop from the 15th to the 19th position and Belgium would rise from the 20th to the 13th position if their equipment cost would only be as high as the EU average.

For handsets

For the six handset baskets, the graphs below depict individual prices per country, subdivided into service charges and smartphone charges. The latter apply to a basic smartphone for baskets 1 to 3[39] and an advanced smartphone for baskets 4, 5 and 6[40].

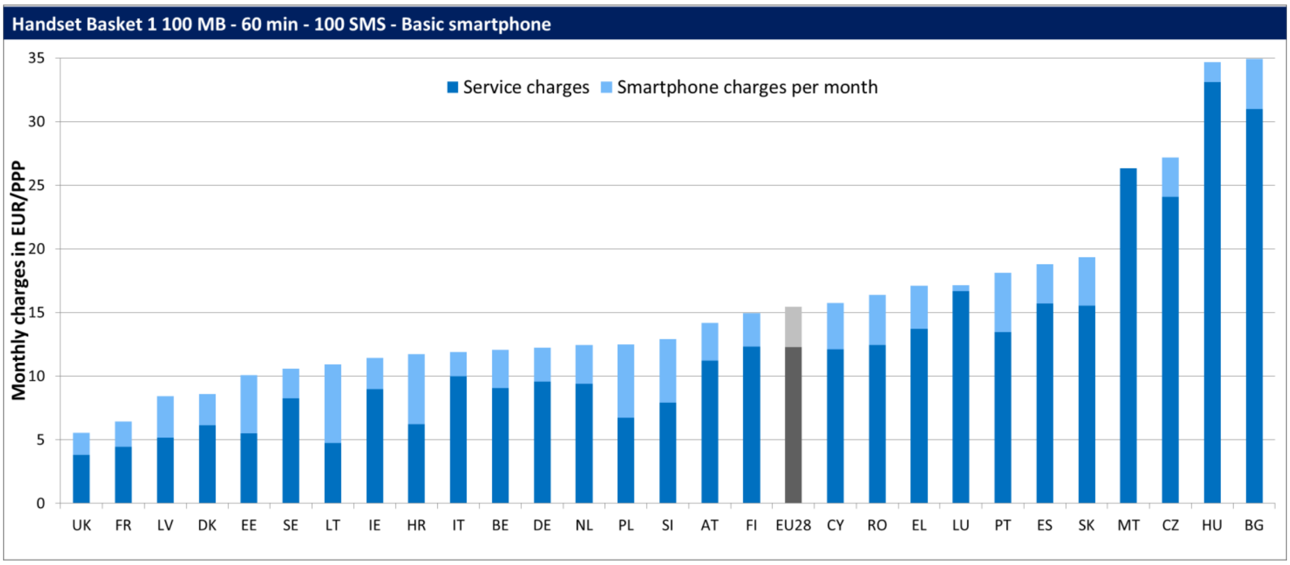


Figure 14: Least expensive offer prices for handset offers for the 100MB – 60min -100SMS basket (expressed in EUR/PPP, VAT included, data for February 2016)

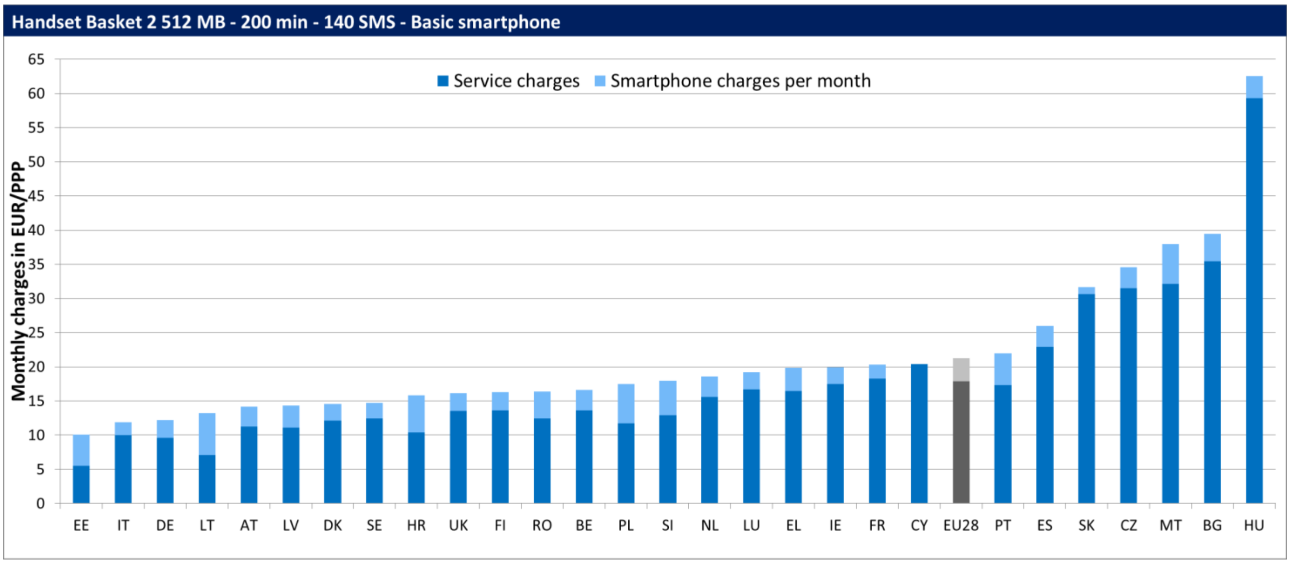


Figure 15: Least expensive offer prices for handset offers for the 512MB – 200min -140SMS basket (expressed in EUR/PPP, VAT included, data for February 2016)

[39] i.e. Nokia Lumia 532/535/550/635/640, Huawei Y5/ P8 Lite, Samsung Galaxy S4 mini, LG Spirit 4G/Leon 3G/G Stylo/G Flex 2.
[40] i.e. most often the Samsung Galaxy S6

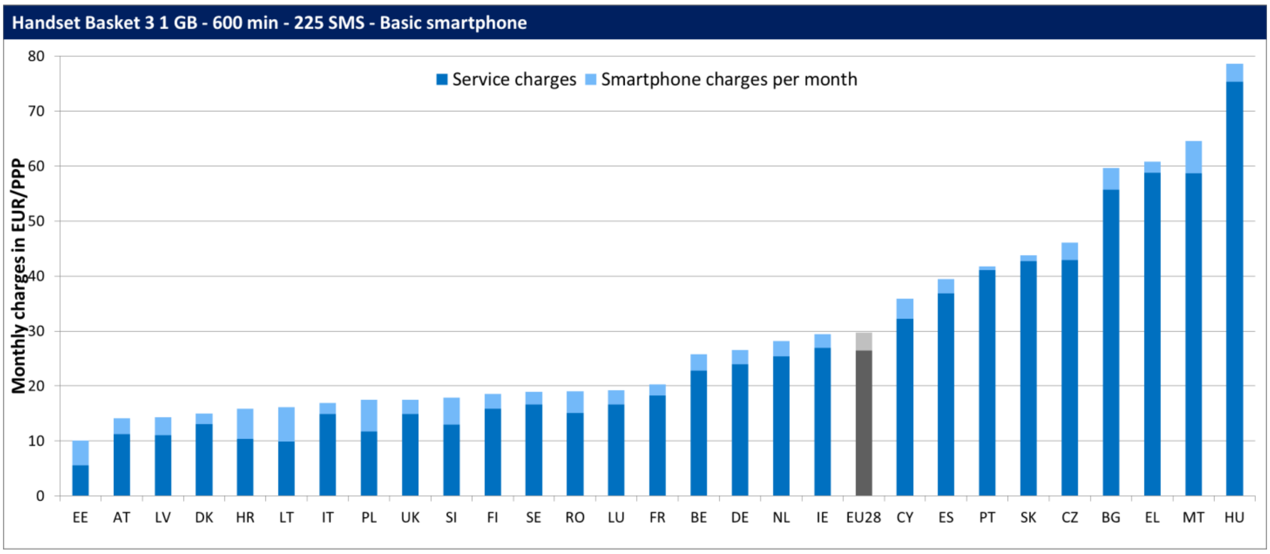


Figure 16: Least expensive offer prices for handset offers for the 1GB – 600min -225SMS basket (expressed in EUR/PPP, VAT included, data for February 2016)

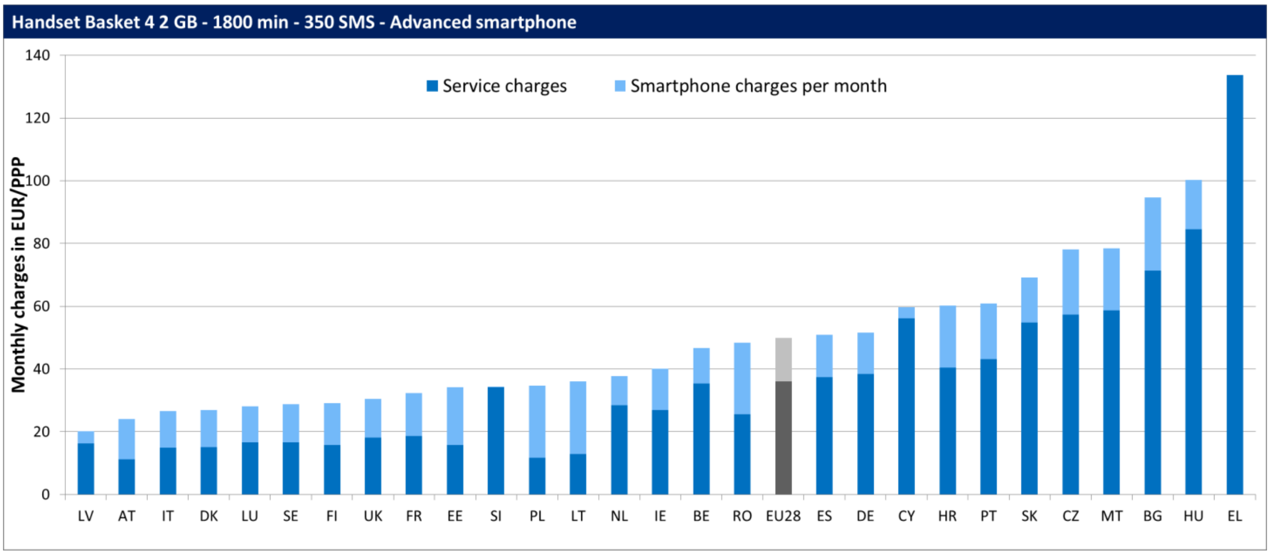


Figure 17: Least expensive offer prices for handset offers for the 2GB – 1800min -350SMS basket (expressed in EUR/PPP, VAT included, data for February 2016)

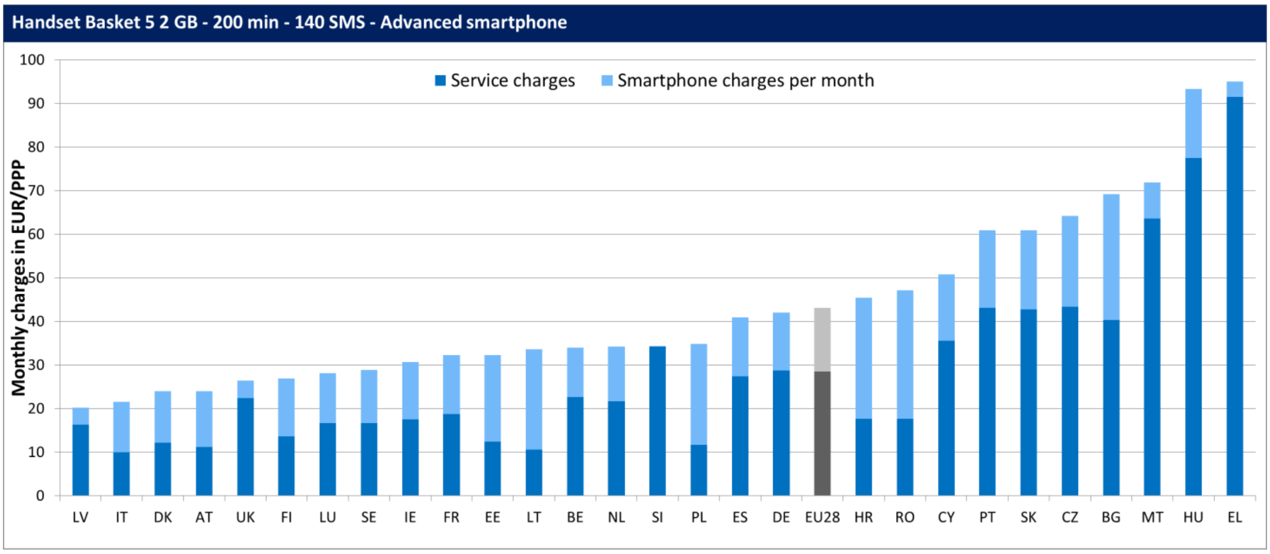


Figure 18: Least expensive offer prices for handset offers for the 2GB – 200min -140SMS basket (expressed in EUR/PPP, VAT included, data for February 2016)

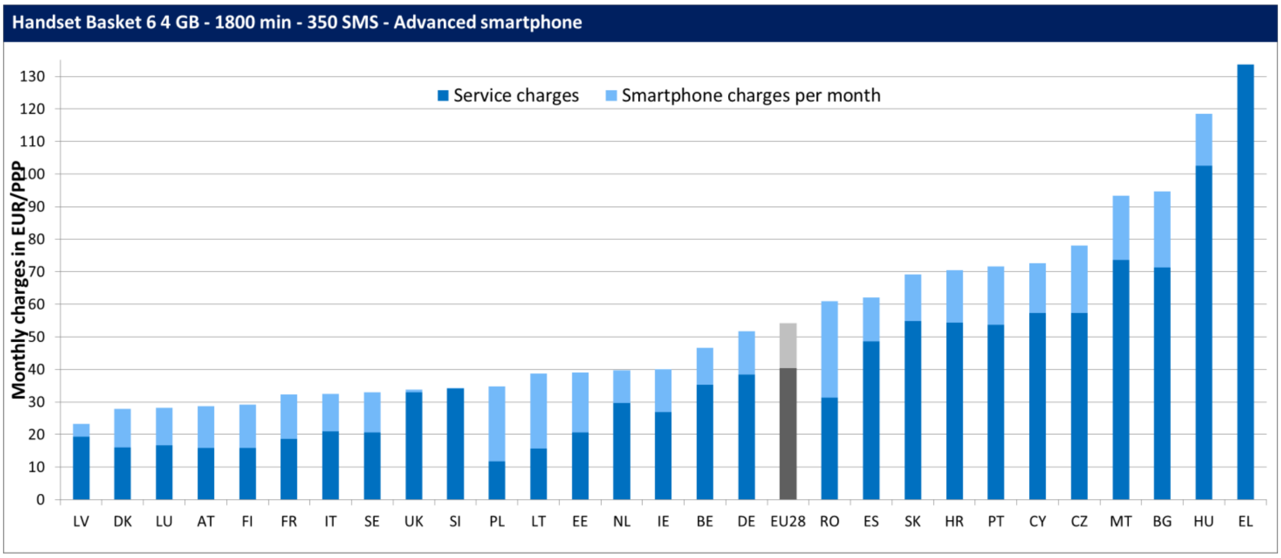


Figure 19: Least expensive offer prices for handset offers for the 4GB – 1800min -350SMS basket (expressed in EUR/PPP, VAT included, data for February 2016)

In the three baskets in which a basic smartphone is taken into account, results at EU28 level are very similar to what was observed a year ago: **around 3.2 to 3.3 EUR or 10 to 20% of the total monthly price can be attributed to the smartphone**. In all three baskets, there are however six countries in which the price of the smartphone exceeds 4 EUR. Five of these countries show the same result across baskets: Lithuania (6.17 EUR), Poland (5.76 EUR), Croatia (5.48 EUR), Slovenia (5 EUR) and Estonia (4.56 EUR). Other than those, in the 100 MB-60 min–100 SMS and 512 MB-200 min-140 SMS baskets, Portugal has a monthly smartphone charge of 4.63 EUR, while in basket 3 (1GB-600 min-225 SMS), the Maltese charge of 5.85 EUR is the highest one observed. Finally, the offering of a smartphone for free appears to be a rare phenomenon: it only appears in Malta in basket 1 and Cyprus in basket 2. Like was the case for the laptop equipment charges, the smartphone charges only in a few cases impact on a country's relative ranking. Countries in which this is a recurring phenomenon[41], are: Lithuania, that would in baskets 1 and 3 gain 4 places if its smartphone cost would only be as high as the EU average, and thereby enter the top 3 of least expensive countries; and Poland, that would gain six places in baskets 1 and 2 if its smartphone cost would only be as high as the EU average, and thereby enter the top 10 of least expensive countries.

Not surprisingly, results are very different in the **three highest baskets** (2 GB included with either 1800 min - 350 SMS or 200 min – 140 SMS and 4 GB with 1800 min - 350 SMS). Indeed, in these baskets with an advanced phone, **the monthly smartphone cost at EU level amounts to around 13.5 to 14.5 EUR** (depending on the basket), which represents around **25 to 35% of the total monthly price**. In Bulgaria, Czech Republic, Lithuania, Poland and Romania, the smartphone price is over 20 EUR for all three baskets under consideration. This is similar to what was observed last year: only in Hungary has the smartphone cost in the meantime dropped below the 20 EUR cap. Especially in Lithuania and Poland, this high cost has an important impact on the country's position: if in these countries the smartphone cost to be added to the monthly price would only be as high as the EU average, they would in all three baskets end up in the top 5 of least expensive countries[42]. Finally, a minority of countries has a negligible cost for the advanced smartphone. In Slovenia and Latvia, the cost in all 3 baskets is respectively 0.03 EUR and 3.94 EUR, and in Greece it is offered for free in the two baskets with the highest voice volume (baskets 4 and 6) and at 3.53 EUR in basket 5. As Greece takes the last position in the ranking, the small smartphone charge has no impact on its ranking. For Latvia, this is very different, with a smartphone charge that is equal to the EU average charge, it would in all three baskets drop

[41] I.e. in which the significant change occurs in more than 1 basket.
[42] Whereas in reality, they occupy positions between 11 and 16, depending on the basket.

from the 1st to the 8th position. Finally, in Slovenia the small smartphone cost clearly positively impacts their relative ranking, but in any case would they remain in the middle range.

3.2. Price evolution over time

3.2.1. Has mobile broadband gotten cheaper in the past year?

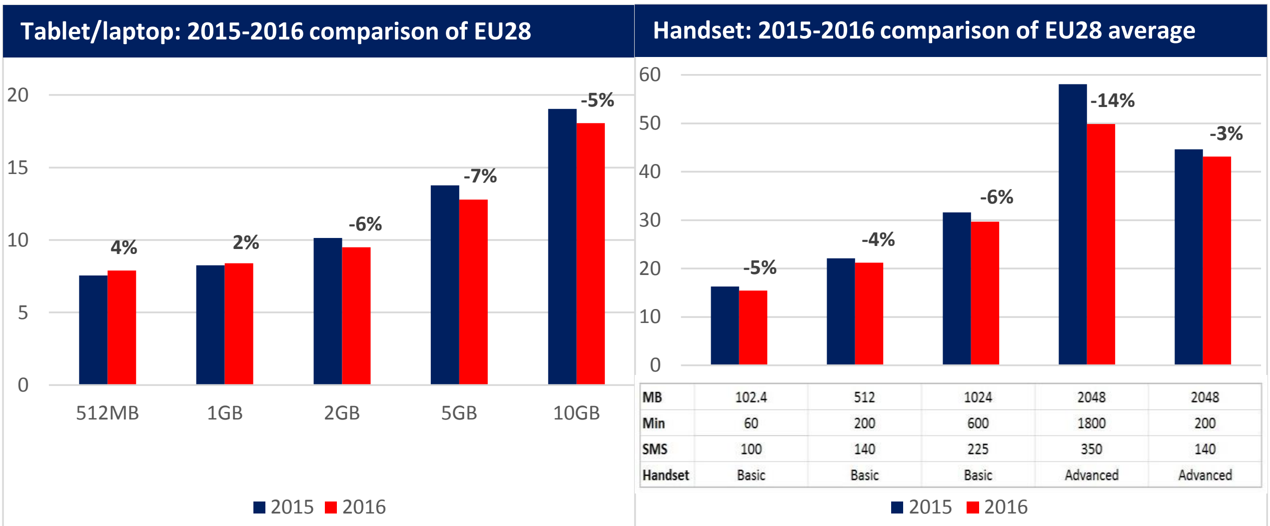


Figure 20: Evolution of EU28 average prices between 2015 and 2016 (expressed in EUR/PPP, VAT included, data for February 2015 and 2016)

Comparison of 2016 EU28 average results per basket with their 2015 counterpart shows that **prices of mobile broadband on handsets have without an exception dropped in the past year**. While the decrease for most baskets is limited to 3 to 6%, the highest basket[43] showcases a price decline of 14% for the EU28 on average. **Prices of tablet and laptop offers of capacities of 2 GB and more have also decreased** by some percentages, but in the lowest 512 MB and 1 GB baskets, the EU28 average price in 2016 is respectively 4 and 2% more expensive than one year ago. In this regard, it is interesting to note that more often than in 2015 does the same offer comes out as least expensive option of the operator in several of the lowest baskets, implying that the basic data allowance of the offers in these baskets is often higher.

3.2.2. How did prices evolve in the Member States?

Behind this average evolution in prices between 2015 and 2016 is hidden a rather disperse evolution at individual countries' level. The graphs below illustrate, for all baskets individually, the percentage evolution in price of all countries compared to last year. To allow an analysis of the degree of convergence of prices, countries are ranked from most expensive to least expensive (top to bottom). For laptop and tablet based offer, this results in:

[43] I.e. the basket of 2 GB – 1800 min – 350 SMS, as the 4 GB – 1800 min – 350 SMS basket did not exist in 2015, so that no comparison over time can be made.

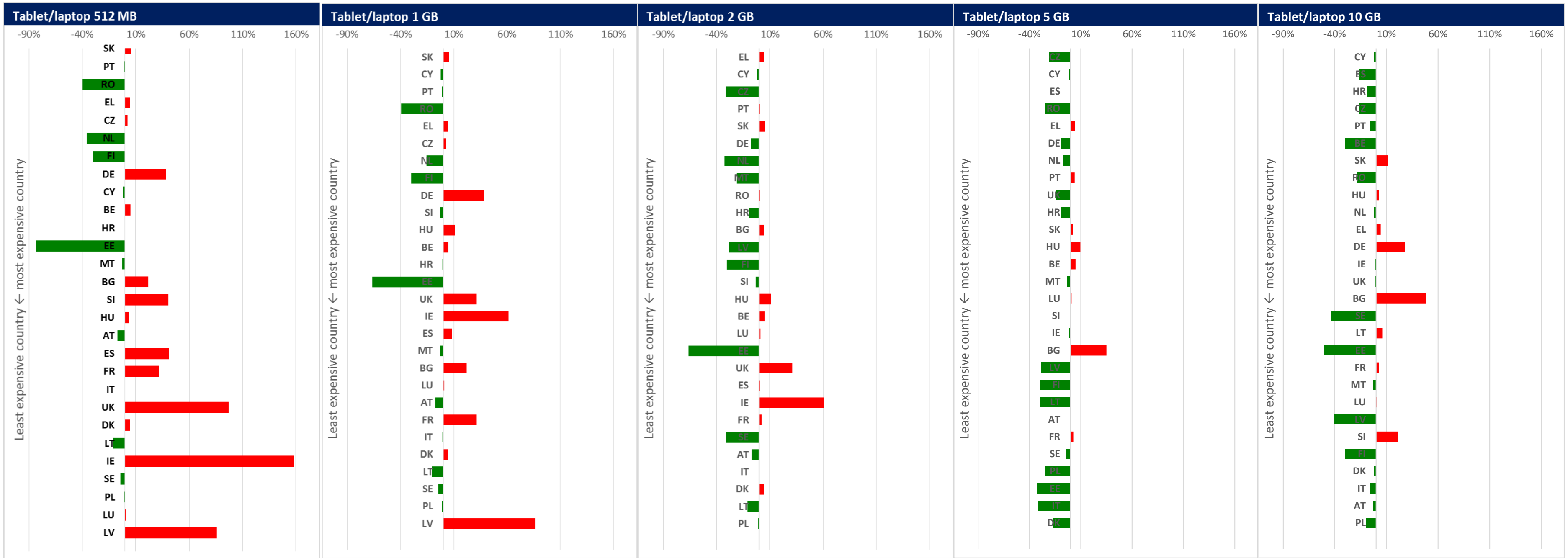


Figure 21: Tablet/laptop: Percentage change in prices per Member State between 2015 and 2016 – countries ranked by 2015 price (expressed in EUR/PPP, VAT included, data for February 2015 and 2016)

The increase in EU28 average prices between 2015 and 2016 for the lowest baskets is apparently mostly caused by price increases in some of the countries that are situated in the cheapest half (i.e. below in the graph), like Ireland, Latvia and the United Kingdom. The (smaller amount of) price decreases have mainly taken place in the more expensive countries, which has as a consequence that prices in the 512 MB and 1 GB baskets have grown somewhat closer. In the other three baskets, (substantial) price increases are less common. Indeed, depending on the basket there are only between 1 and 3 countries with an increase that surpasses 10%, while in 8 to 10 countries prices decrease by more than 10%. In none of these three baskets, there is a clear difference in trend between more and less expensive countries.

For handset based offers, the evolution in price since last year can be summarised as follows:

Figure 22 Handset: Percentage change in prices per Member State between 2015 and 2016 – countries ranked by 2015 price (expressed in EUR/PPP, VAT included, data for February 2015 and 2016)

For handset offers, a similar trend can be observed in the three lowest baskets, i.e. most price increases take place in countries that in 2015 had relatively low prices, although already expensive countries Bulgaria and Hungary also get considerably more expensive. Price decreases mostly take place in the most expensive half of countries or, in the case of the 100 MB – 60 min – 100 SMS basket, in the mid-range. Estonia stands out in the group of countries with price decreases, as depending on the basket, a drop of no less than 33 to 83% is observed. Like is the case for lower-capacity tablet/laptop offers, these evolutions in general bring prices a bit more together. In the two highest baskets (with 2GB included), price decreases are most concentrated in the mid-range, and price increases appear both in more and less expensive countries.

Finally, when looking at tablet/laptop and handset baskets together, there appear to be three countries in which prices have decreased in all cases (i.e. in all 10 baskets under consideration), namely Finland, Malta and Sweden. In none of the Member States have prices gone up in all 10 baskets.

3.3. Mobile broadband prices in a broader perspective

By combining the results of the study on mobile broadband prices with other statistics and data on the EU28 mobile broadband market, some further insights in the market can be obtained.

3.3.1. *How much of the income is spent on mobile broadband?*

Whereas the calculation of the mobile broadband price per country and per basket to some extent takes account of income differences between countries by incorporating Purchasing Power Parities, a more detailed analysis of the relative weight of mobile broadband prices can be made by analysing the percentage of the average income that is spent on mobile broadband services. In the graph below, results are shown for 3 usage profiles for all three types of devices.

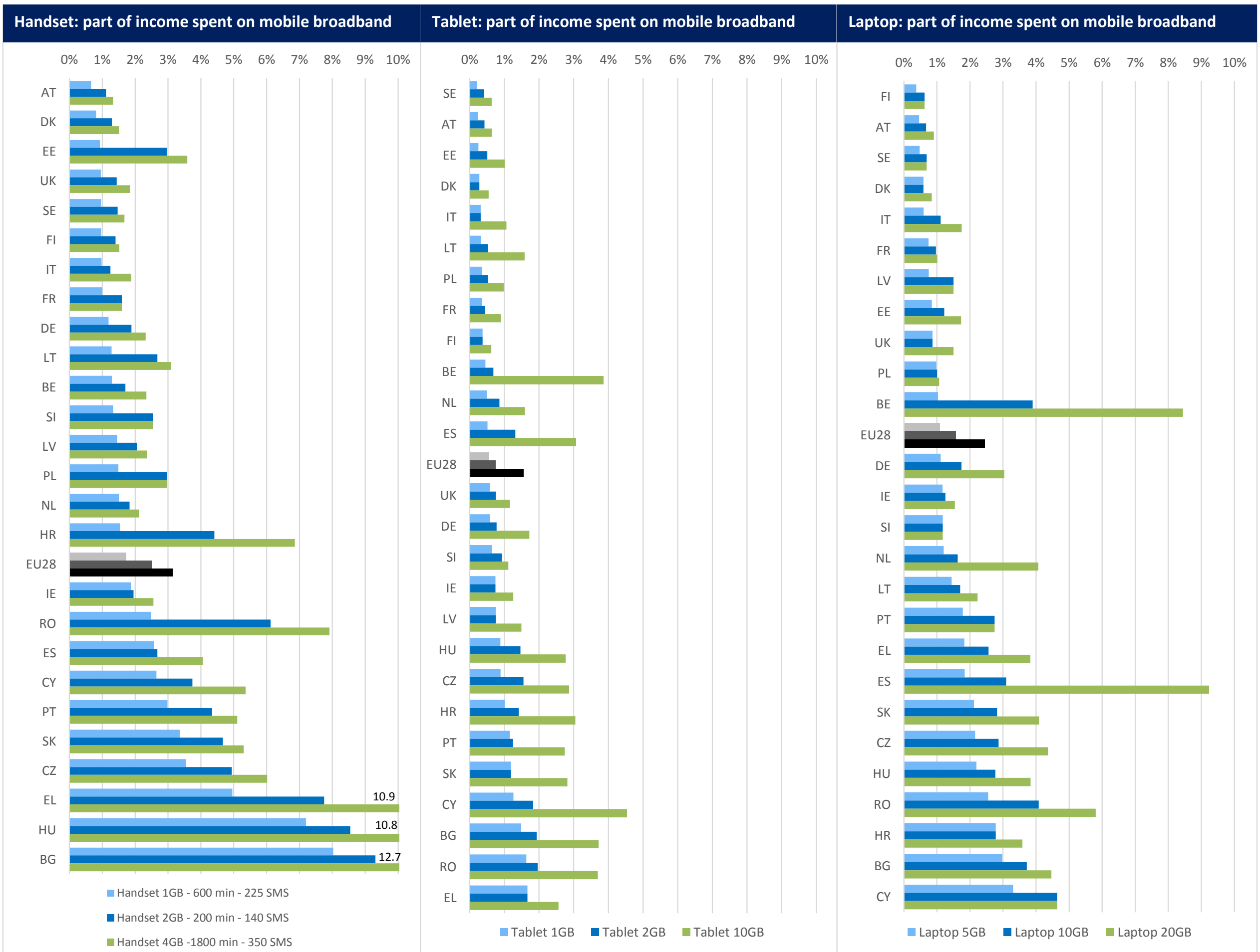


Figure 23: Part of the income spent on mobile broadband offers (prices: expressed in EUR/PPP, VAT included income: real adjusted gross disposable income of households per capita – Eurostat 2014 values[44])[45]

On average at EU28 level, **around 0.5 to 2.5% of income is spent on mobile broadband on tablet/laptop.** In the two lowest baskets under consideration in the graph, the country showcasing the highest part of the income spent on mobile broadband has a value that is around 3 times the EU average. Especially for the 20 GB laptop offer, the difference between countries is higher: in Belgium and Spain, respectively 8.44 and 9.23% of income is spent on a 20 GB laptop offer.

[44] Retrieved on 8 January 2016.

[45] No statistics on the real adjusted gross disposable income of households per capita is available for Luxembourg and Malta.

Handset offers also including voice minutes and SMS on average cost between 1.7 and 3.1% of income. For all three baskets under consideration, the percentages spent at individual country level are very disperse: in Hungary and Bulgaria more than 7% of income spent in all three cases, whereas in Austria and Denmark this is less than 1.5%. It can also be noted that in the relatively expensive countries Greece, Hungary and Bulgaria, the additional part of the income spent for a 4GB-1800 min-350SMS offer compared to a 2GB-200min-140SMS offer, is relatively substantial, i.e. plus 2.3 to 3.4%. Only in mid-ranker Croatia can such a high value also be observed.

3.3.2. Are mobile broadband prices related to mobile broadband penetration?

Using the ranking of countries based on their least expensive mobile broadband offers (see **Error! Reference source not found.**) as an indication of the overall level of mobile broadband prices, a comparison between prices and take-up can be made. While this does not allow for concluding on cause-consequence relationships, the degree to which low prices are linked with higher take-up and vice versa, can be demonstrated. In the figures below, both the countries' ranking for handset offer prices and their overall ranking for all three types of devices are compared to respective mobile broadband take-up figures.

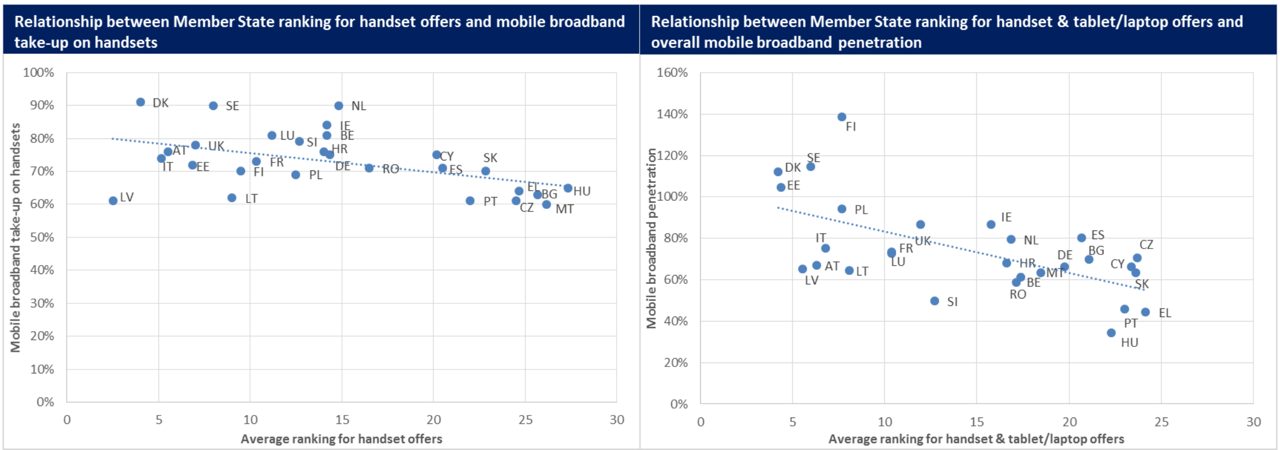


Figure 24: Relationship between the Member State ranking for handset offers and percentage of individuals having at least one mobile phone subscription giving access to internet[46] / Relationship between Member State overall ranking for all three types of devices and mobile broadband penetration (subscriptions per 100 people) [47]

Like was observed during the mobile broadband prices study of last year, **a certain amount of correlation appears to exist between prices and take-up**. Indeed, low prices in e.g. Denmark, Estonia, Finland and Sweden go hand in hand with high take-up figures, and the opposite is true for countries like Greece, Hungary, Malta and Portugal. At the same time however, this trend does not apply to some countries. Clear examples of this are Latvia and Lithuania, in which low prices can be observed, but mobile broadband penetration is also relatively low.

[46] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.
[47] Source: Electronic communications market indicators collected by Commission services, through National Regulatory Authorities, for the Communications Committee (COCOM) – June 2015

3.4. The bigger picture: Europe in the world

Finally, the figures below show how mobile broadband prices in the EU compare to those in a selection of other countries worldwide.

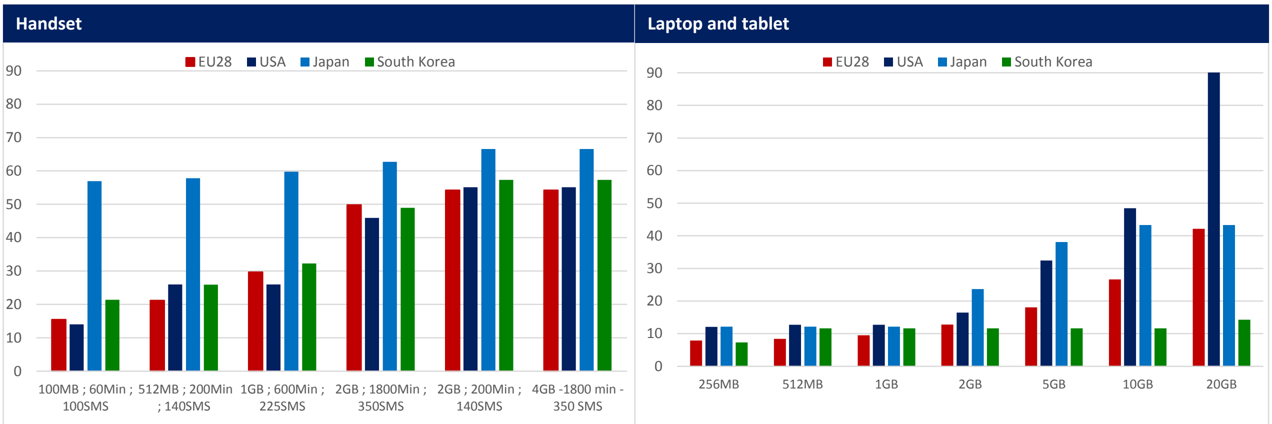


Figure 25: EU28 least expensive mobile broadband prices compared to other countries in the world (expressed in EUR/PPP, VAT included)

In the handset category, EU28 prices are rather close to USA results. Indeed, the EU28 average is between 14% more expensive and 18% less expensive, without there being a clear trend either way depending on the baskets. Prices in South Korea are in the same order of magnitude, but in general higher than in the EU[48], especially in the lower baskets. Finally, while Japanese prices are the highest in all handset baskets, the difference becomes smaller with increasing capacity. This is because in Japan, the same mobile broadband offers come out as cheapest for different baskets (i.e. since no low allowance offers exist on the market).

For laptop and tablet offers, the EU also takes first position for the low-capacity offers (up until 1GB), but loses its leading place to South Korea for higher speeds. Again, this is because rather stable prices across baskets are observed in South Korea (cf. offers with higher data allowances are the cheapest solutions to fulfil the lower basket requirements). The USA and Japan have higher prices for all baskets under consideration, and especially for the USA can an increasing difference with EU28 average prices be observed as speeds increase[49].

Based on the above, it can be concluded that the **EU28 performs relatively well compared to the other non-European countries considered.**

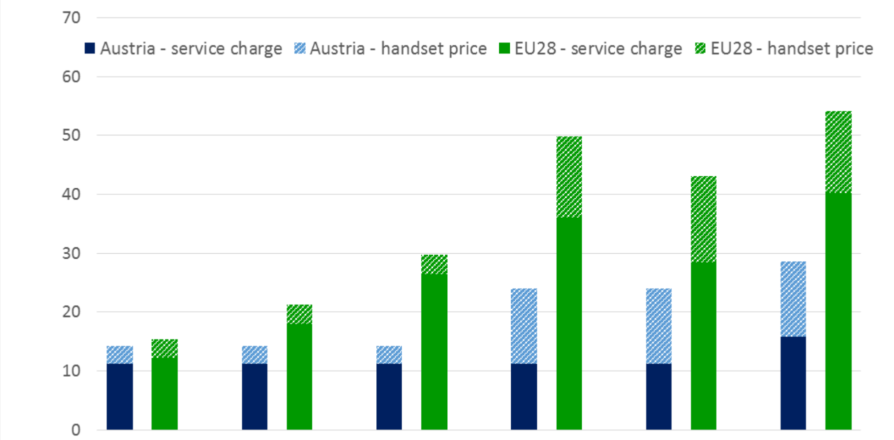
[48] On average, i.e. for all baskets together, South Korean prices are 13% higher.
[49] +53% for 256MB and +117% for 20 GB.

4. Country profiles

4.1. Austria

4.1.1. Price of mobile broadband

Mobile broadband on handsets (smartphones)



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 3: Austria: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband on laptops and tablets

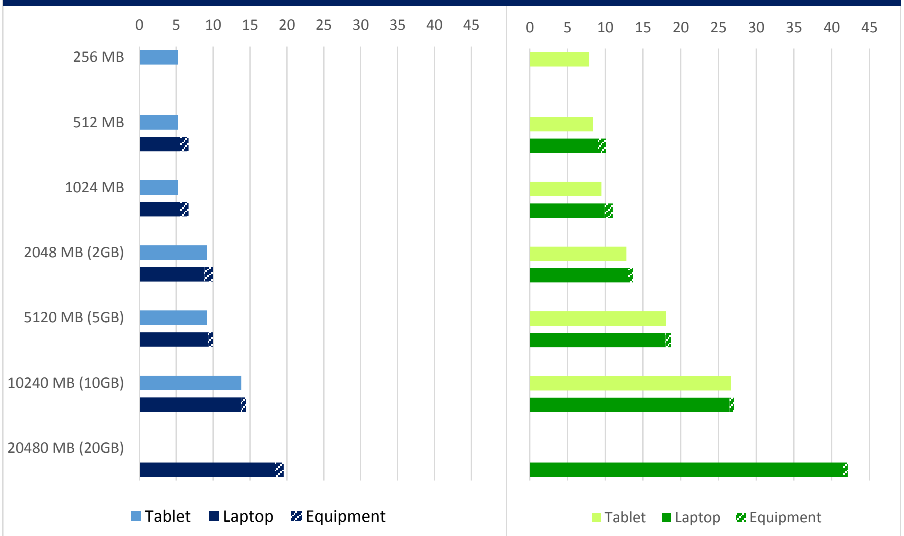
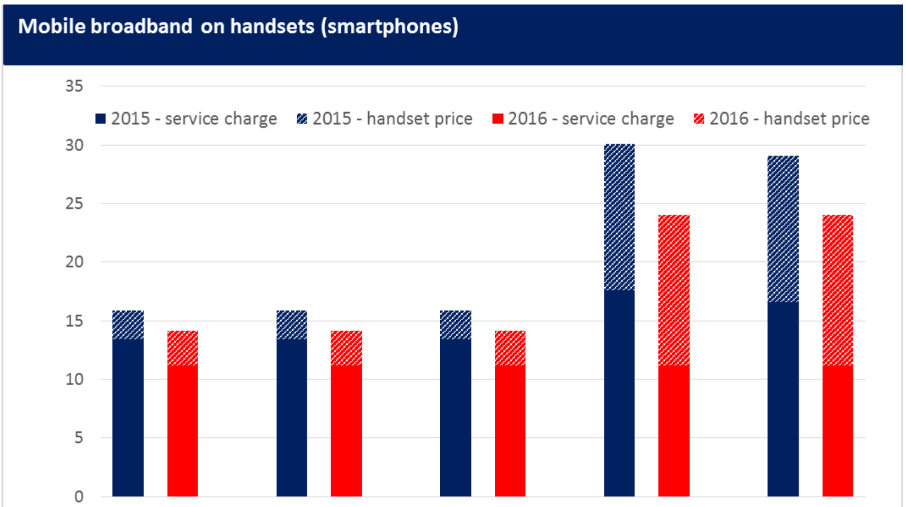


Table 4: Austria: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband in Austria is systematically cheaper than the average prices in the EU28[50] (45% cheaper on average[51], excluding handsets and equipment and including voice and SMS for the handset offers). The difference with the EU28 increases as the data allowance included in the subscription goes up. The price of the handsets however is only around 10% less expensive in Austria compared to the EU28.

[50] Average of the least expensive offers of all mobile operators in the sample.
[51] Compared to 40% in February 2015.

4.1.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 5: Austria: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

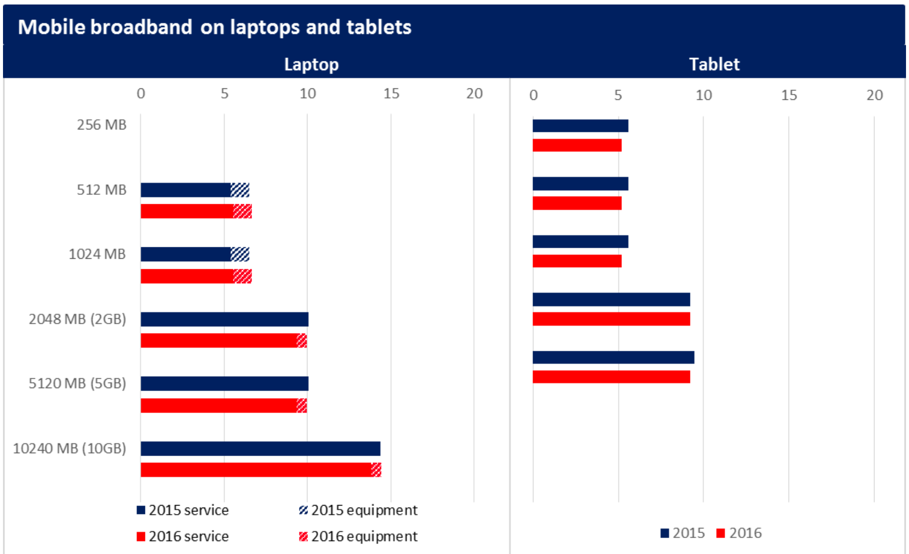


Table 6: Austria: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

In Austria, the price of mobile broadband on handsets has dropped significantly between 2015 and 2016 (-24% on average for the service charges, compared to -8% in the EU28[52] on average). The strongest price decreases can be observed for the higher usage profiles.

The price of mobile broadband on laptops has remained stable between 2015 and 2016, this is the result of slightly decreasing service charges, combined with higher equipment charges. The average price decrease for mobile broadband on tablets is slightly higher in Austria (-5%) than in the EU28 on average (-3%).

52 Based on average of the least expensive offers of all mobile operators in the sample.

4.1.3. *Competition in the mobile broadband market*

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**A1 Telekom Austria AG** 14.17 2.95	**Hutchison 3 Austria** 14.53 2.03	**T-Mobile Austria GmbH** 16.75 2.95
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**A1 Telekom Austria AG** 14.17 2.95	**T-Mobile Austria GmbH** 16.75 2.95	**Hutchison 3 Austria** 16.80 2.95
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**A1 Telekom Austria AG** 14.17 2.95	**T-Mobile Austria GmbH** 16.75 2.95	**Hutchison 3 Austria** 16.80 2.95
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**A1 Telekom Austria AG** 24.01 12.79	**Hutchison 3 Austria** 30.90 12.79	**T-Mobile Austria GmbH** 31.20 12.79
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**A1 Telekom Austria AG** 24.01 12.79	**T-Mobile Austria GmbH** 26.60 12.79	**Hutchison 3 Austria** 26.65 12.79
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**A1 Telekom Austria AG** 28.62 12.79	**T-Mobile Austria GmbH** 31.20 12.79	**Hutchison 3 Austria** 31.25 12.79
Tablet			
256 MB EU28: 7.89	**Hutchison 3 Austria** 5.22	**A1 Telekom Austria AG** 8.75	**T-Mobile Austria GmbH** 9.34
512 MB EU28: 8.4	**Hutchison 3 Austria** 5.22	**A1 Telekom Austria AG** 8.75	**T-Mobile Austria GmbH** 9.34
1024 MB (1GB) EU28: 9.5	**Hutchison 3 Austria** 5.22	**A1 Telekom Austria AG** 8.75	**T-Mobile Austria GmbH** 9.34
2048 MB (2GB) EU28: 12.8	**A1 Telekom Austria AG** 9.21	**T-Mobile Austria GmbH** 9.34	**Hutchison 3 Austria** 9.77
5120 MB (5GB) EU28: 18.06	**A1 Telekom Austria AG** 9.21	**T-Mobile Austria GmbH** 9.34	**Hutchison 3 Austria** 9.82
10240 MB (10GB) EU28: 26.67	**T-Mobile Austria GmbH** 13.81	**A1 Telekom Austria AG** 13.87	**Hutchison 3 Austria** 14.37
Laptop			
512 MB EU28: 10.13	**Hutchison 3 Austria** 6.67	**A1 Telekom Austria AG** 9.49	**T-Mobile Austria GmbH** 9.95
1024 MB (1GB) EU28: 11	**Hutchison 3 Austria** 6.67	**A1 Telekom Austria AG** 9.49	**T-Mobile Austria GmbH** 9.95
2048 MB (2GB) EU28: 13.7	**T-Mobile Austria GmbH** 9.95	**A1 Telekom Austria AG** 9.97	**Hutchison 3 Austria** 12.20
5120 MB (5GB) EU28: 18.71	**T-Mobile Austria GmbH** 9.95	**A1 Telekom Austria AG** 9.97	**Hutchison 3 Austria** 12.20
10240 MB (10 GB) EU28: 27.05	**T-Mobile Austria GmbH** 14.43	**A1 Telekom Austria AG** 14.64	**Hutchison 3 Austria** 16.88
20480 MB (20 GB) EU28: 42.14	**Hutchison 3 Austria** 19.56	**A1 Telekom Austria AG** 21.64	**T-Mobile Austria GmbH** 28.17

Table 7: Austria: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

The least expensive offers for the usage profiles including 100 MB, 256MB, 512MB and 1G are for each mobile operator systematically the same, since no offers with less than 1GB included[53] are available on the market. Compared to 2015, A1 Telekom Austria AG is now much cheaper for the low usage handset based offers. As a result, this operator is now the cheapest choice for all handset based user profiles. For tablet and laptop based offers, the ranking of operators is rather comparable with 2015. Again, for usage levels including 2GB, the prices of all three mobile operators are very similar. It is however remarkable that Hutchison 3 Austria, with is the most expensive operator for offers with 2GB[54] or more included, has the best offer for very high usage profiles (20GB).

[53] With the exception of the cheapest offer of Hutchison 3 Austria, including 100MB.
[54] With the exception of the 2GB handset based offer, including 1800 minutes and 350 SMS.

4.1.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Austria		
A1 Telekom Austria		4G available
T-Mobile Austria GmbH		4G available
Hutchison 3 Austria		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
A1 Telekom Austria	0 to unlimited	100MB to 30GB
T-Mobile Austria GmbH	15GB	2 to 6GB
Hutchison 3 Austria	1 to unlimited	100MB to 40GB

Data allowances of T-Mobile Austria GmbH are rather different from those of A1 Telekom Austria and Hutchison 3 Austria. Whereas the latter two provide handset offers with data allowances that largely exceed the highest predefined user profiles, the diversity in T-Mobile's offers is limited, i.e. ranging from 2 to 6 GB. For laptop and tablet based offers, similar observations can be made, and A1 Telekom Austria and Hutchison 3 Austria even provide unlimited offers.

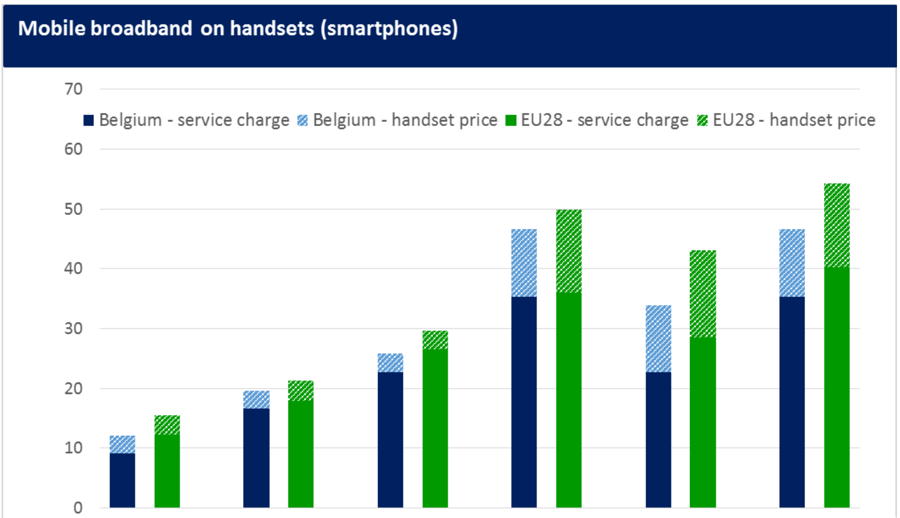
Take-up of mobile broadband offers

	Austria	EU28
Mobile broadband penetration (subscriptions per 100 people) [55]	66.9%	75.3%
% of households having at least one mobile phone subscription giving access to internet[56]	76.0%	75.0%

[55] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[56] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.2. Belgium

4.2.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 8: Belgium: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

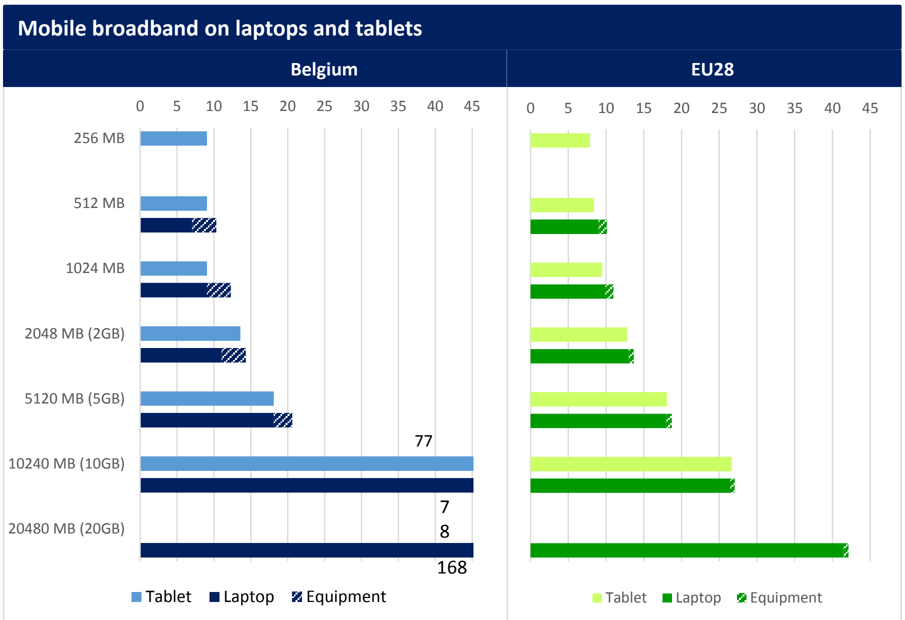
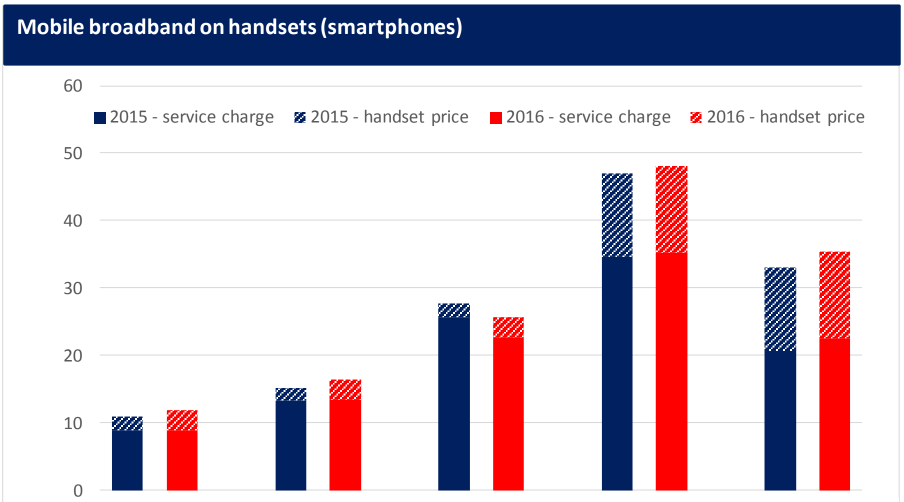


Table 9: Belgium: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

In Belgium, mobile broadband on handsets is systematically cheaper than the EU28[57] average (14% cheaper on average, compared to 24% cheaper in 2015). This difference between Belgian and EU28 average prices is moreover uniformly spread between the service charge and the handset price. Prices for mobile broadband on laptop and tablet in Belgium are similar to the average prices in EU28, at least for the data volumes up to 5GB. For usage profiles requiring 10GB and 20GB, prices are significantly higher (twice as high for 10GB and three times as high for 20GB) since offers for tablets and laptops in Belgium never include more than 5GB[58] and the cost of extra volume is very high.

[57] Average of the least expensive offers of all mobile operators in the sample.
[58] With the exception of one offer including 6GB, but to which no additional data can be added.

4.2.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 10: Belgium: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

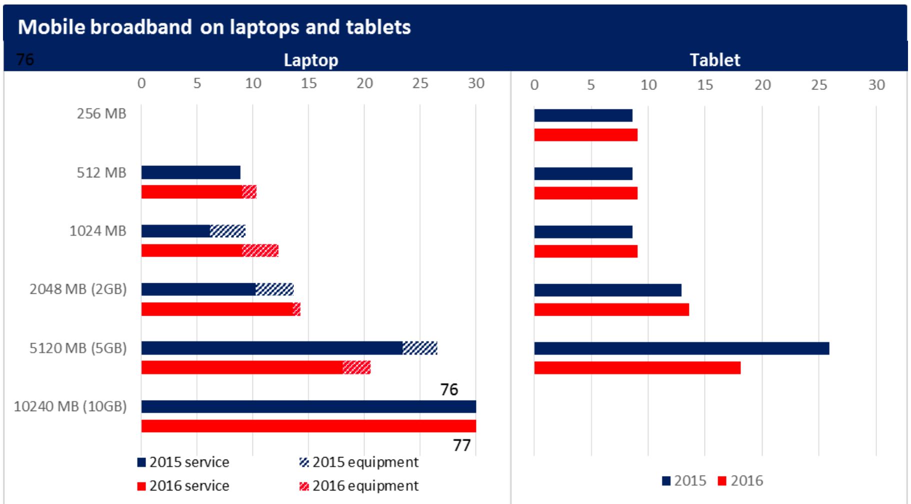


Table 11: Belgium: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

In Belgium, the total price of mobile broadband on handsets has increased between 2015 and 2016 (7% increase on average for all usage profiles, compared to a decrease of -7% in the EU28[59] on average).

The price of the least expensive mobile broadband offers for laptops also increased (by 6% on average, compared to a decrease of -3% in the EU28 on average). The only exception to the overall trend of increasing prices is the 5GB usage profile, for which the price is 23% lower in 2016 compared to 2015.

Finally, tablet based offers with up to 2GB included are 5% more expensive in 2016 compared to 2015, whereas the 5GB offer dropped 30% in price. This gives an average price evolution for the least expensive tablet based offers of -2%, which is close to the EU28 average of -3%.

[59] Based on average of the least expensive offers of all mobile operators in the sample.

4.2.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Base** 12.06 3.00	**Mobistar sa** 12.91 2.04	**Proximus** 16.59 3.00
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Base** 16.59 3.00	**Mobistar sa** 21.12 2.99	**Proximus** 25.65 3.00
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Base** 25.76 3.00	**Mobistar sa** 43.77 2.99	**Proximus** 43.77 3.00
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Base** 46.64 11.31	**Mobistar sa** 50.56 9.80	**Proximus** 53.15 12.39
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Base** 33.95 11.31	**Mobistar sa** 35.03 12.38	**Proximus** 35.03 12.39
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Base** 46.64 11.31	**Mobistar sa** 50.56 9.80	**Proximus** 53.15 12.39
Tablet			
256 MB EU28: 7.89	**Base** 9.06	**Mobistar sa** 9.06	**Proximus** 9.06
512 MB EU28: 8.4	**Base** 9.06	**Mobistar sa** 9.06	**Proximus** 9.06
1024 MB (1GB) EU28: 9.5	**Base** 9.06	**Mobistar sa** 13.59	**Proximus** 13.72
2048 MB (2GB) EU28: 12.8	**Mobistar sa** 13.59	**Proximus** 18.11	**Base** 18.12
5120 MB (5GB) EU28: 18.06	**Mobistar sa** 18.12	**Base** 27.18	**Proximus** 31.70
10240 MB (10GB) EU28: 26.67	**Mobistar sa** 77.01	**Proximus** 170.87	
Laptop			
512 MB EU28: 10.13	**Proximus** 10.32	**Mobistar sa** 11.55	**Base** 12.31
1024 MB (1GB) EU28: 11	**Base** 12.31	**Mobistar sa** 14.32	**Proximus** 14.97
2048 MB (2GB) EU28: 13.7	**Mobistar sa** 14.32	**Proximus** 19.37	**Base** 21.37
5120 MB (5GB) EU28: 18.71	**Mobistar sa** 20.61	**Base** 30.43	**Proximus** 32.96
10240 MB (10 GB) EU28: 27.05	**Mobistar sa** 77.74	**Proximus** 172.13	
20480 MB (20 GB) EU28: 42.14	**Mobistar sa** 168.35	**Proximus** 450.46	

Table 12: Belgium: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Base is most often the cheapest choice for the predefined usage profiles, but Mobistar has better laptop and tablet based offers with 2GB or more included. Base is not offering any products allowing a monthly usage of 10GB or more. As in 2015, Proximus has the cheapest offer for the lowest usage profile for laptops. Overall however, Proximus is most often the most expensive operator, regardless of the device used for accessing mobile broadband services.

4.2.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Belgium		
Proximus		4G available
Base Belgium		4G available
Mobistar		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Proximus	500MB to 5GB	1GB to 10GB
Base Belgium	1GB to 6GB	50MB to 10GB
Mobistar	2GB to 5GB	500MB to 10GB

The data allowances included in the mobile broadband offers of the three Belgian mobile operators are very similar. While the highest data allowances of the handset offers exceed those in the highest predefined user profiles, tablet and laptop offers in Belgium only go up until 5 to 6 GB, which is less than half of the data allowance of the highest user profile (20 GB).

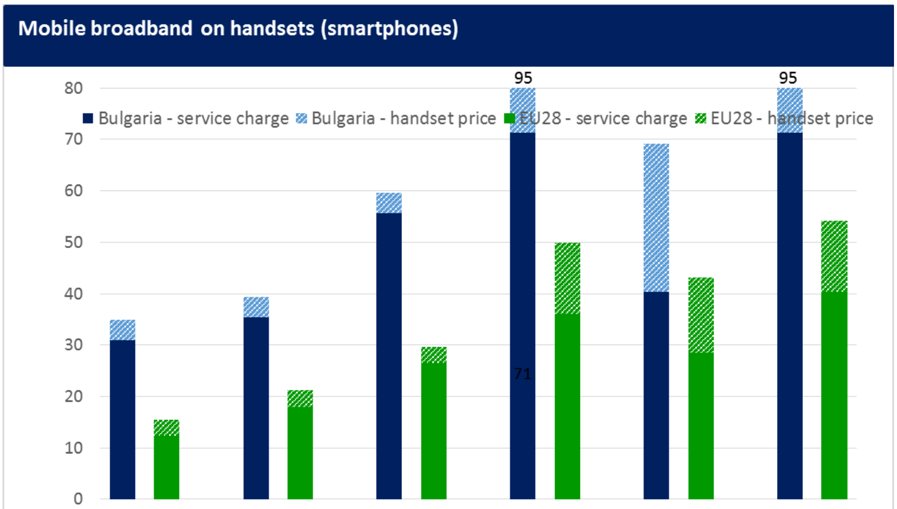
Take-up of mobile broadband offers

	Belgium	EU28
Mobile broadband penetration (subscriptions per 100 people) [60]	61.1%	75.3%
% of households having at least one mobile phone subscription giving access to internet[61]	81.0%	75.0%

[60] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[61] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.3. Bulgaria

4.3.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 13: Bulgaria: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

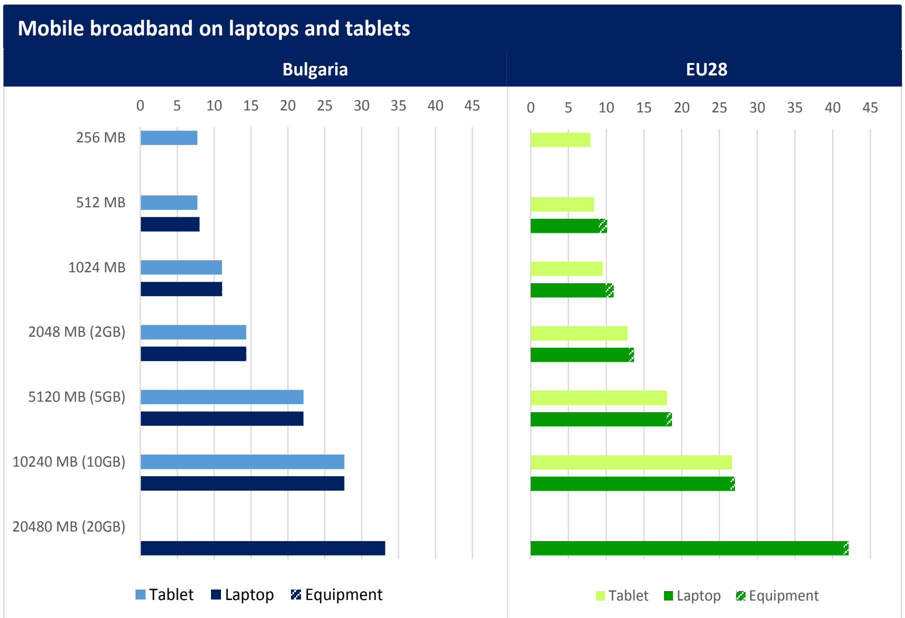
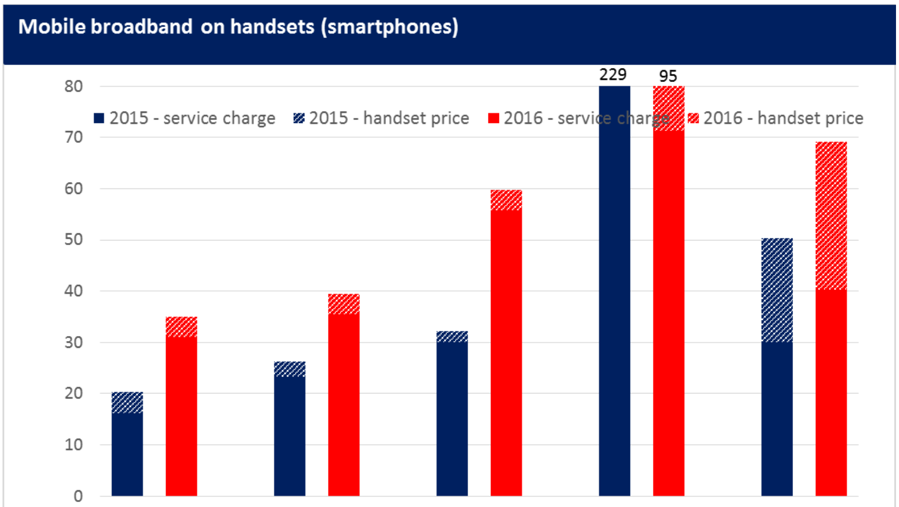


Table 14: Bulgaria: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Packages including mobile broadband on handsets in Bulgaria are systematically much more expensive (+90%) than in the EU28[62] on average. The difference between Bulgarian and EU28 average prices is much more pronounced in 2016 than in 2015[63], due to significant price increases in Bulgaria (see below). Prices for mobile broadband on laptops and tablets are more in line with the EU28 averages. As in 2015, the cost of the equipment needed for connecting a laptop to the mobile network is very cheap in Bulgaria (less than 5 cEUR/PPP per month on a 36 months basis) or comes at no cost at all.

[62] Average of the least expensive offers of all mobile operators in the sample.
[63] In 2015, prices in Bulgaria were 14% more expensive if abstraction is made of the usage profile including 1,800 voice minutes.

4.3.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 15: Bulgaria: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

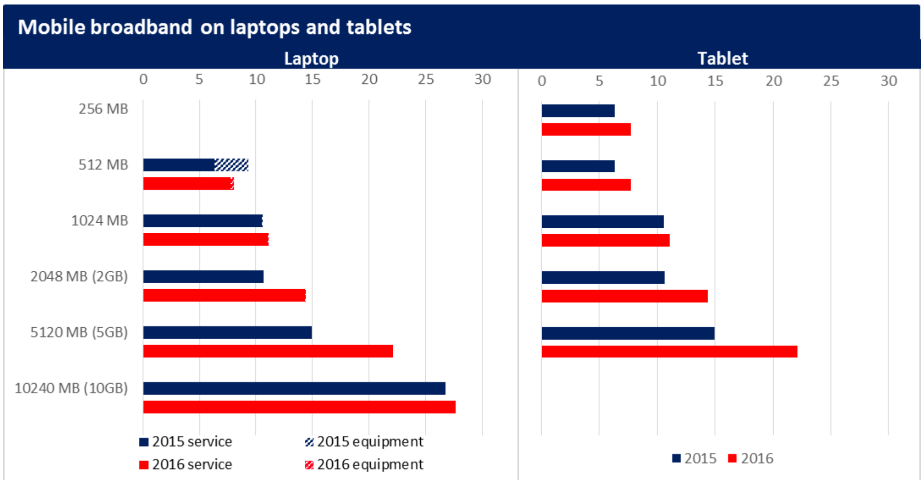


Table 16: Bulgaria: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Except for the usage profile including 1800 minutes, the prices of the packages including mobile broadband for handsets have increased significantly (+61% price increase on average between 2015 and 2016).

Prices for mobile broadband on laptops and tablets also increased between 2015 and 2016 (+26% for laptop based offers and +16% for tablet based offers, compared to -3% decrease on average for both devices at the EU28 level).

4.3.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Vivacom** 34.93 3.97	**Telenor** 40.46 3.97
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Vivacom** 39.43 3.97	**Telenor** 50.87 3.97
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Vivacom** 59.67 3.97	**Telenor** 61.20 3.38
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Telenor** 94.63 23.36	**Vivacom** 110.74 23.05
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Vivacom** 69.21 28.89	**Telenor** 71.93 23.36
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Telenor** 94.63 23.36	**Vivacom** 110.74 23.05
Tablet		
256 MB EU28: 7.89	**Telenor** 7.73	**Vivacom** 11.05
512 MB EU28: 8.4	**Telenor** 7.73	**Vivacom** 11.05
1024 MB (1GB) EU28: 9.5	**Vivacom** 11.05	**Telenor** 12.16
2048 MB (2GB) EU28: 12.8	**Vivacom** 14.36	**Telenor** 16.58
5120 MB (5GB) EU28: 18.06	**Telenor** 22.11	**Vivacom** 22.11
10240 MB (10GB) EU28: 26.67	**Telenor** 27.65	**Vivacom** 30.96
Laptop		
512 MB EU28: 10.13	**Telenor** 8.04	**Vivacom** 11.08
1024 MB (1GB) EU28: 11	**Vivacom** 11.08	**Telenor** 12.34
2048 MB (2GB) EU28: 13.7	**Vivacom** 14.39	**Telenor** 16.58
5120 MB (5GB) EU28: 18.71	**Telenor** 22.11	**Vivacom** 22.14
10240 MB (10 GB) EU28: 27.05	**Telenor** 27.65	**Vivacom** 30.99
20480 MB (20 GB) EU28: 42.14	**Telenor** 33.18	**Vivacom** 44.27

Table 17: Bulgaria: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

In contrast to 2015, Vivacom now offers the least expensive packages with up to 1GB of mobile data for handsets. This is mainly due to the fact that the prices of the Telenor offers have increased significantly. Telenor however remains the cheapest provider of mobile broadband for usage profiles of 4GB and more, regardless of the device used for accessing mobile broadband services.

4.3.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Bulgaria		
Vivacom		4G not available
Telenor Bulgaria		4G not available

Range of data allowances offered

	Laptop and Tablet	Handset
Vivacom	1,5GB to 35GB	50MB to 20GB
Telenor Bulgaria	650MB to 34GB	300MB to 25GB

The data allowances included in the offers of the two Bulgarian ISPs are rather comparable. Telenor offers slightly higher data volumes for handset offers, and Vivacom for tablet and laptop offers. For the latter offer type, Telenor offers options with lower data volumes (starting at 650 MB), while Vivacom offers options with lower data volumes for handset offers (starting at 50 MB). Both for handset and tablet and laptop offers, the highest data allowances observed greatly exceed those of the highest predefined user profiles.

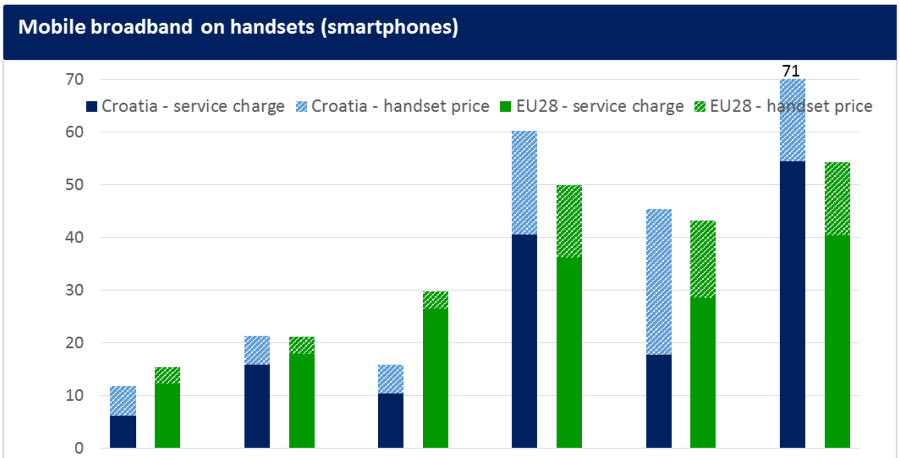
Take-up of mobile broadband offers

	Bulgaria	EU28
Mobile broadband penetration (subscriptions per 100 people) [64]	69.8%	75.3%
% of households having at least one mobile phone subscription giving access to internet[65]	60.0%	75.0%

[64] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[65] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.4. Croatia

4.4.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 18: Croatia: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

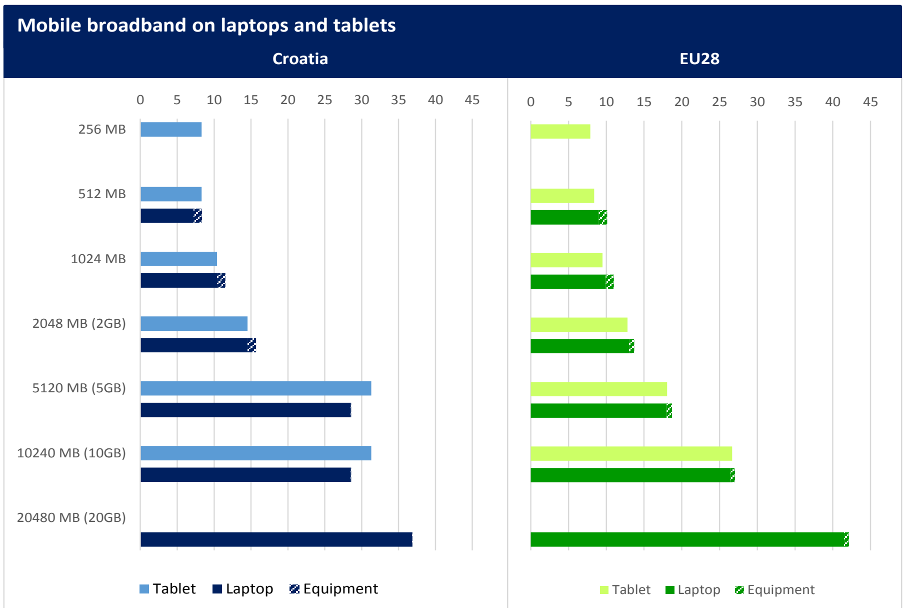
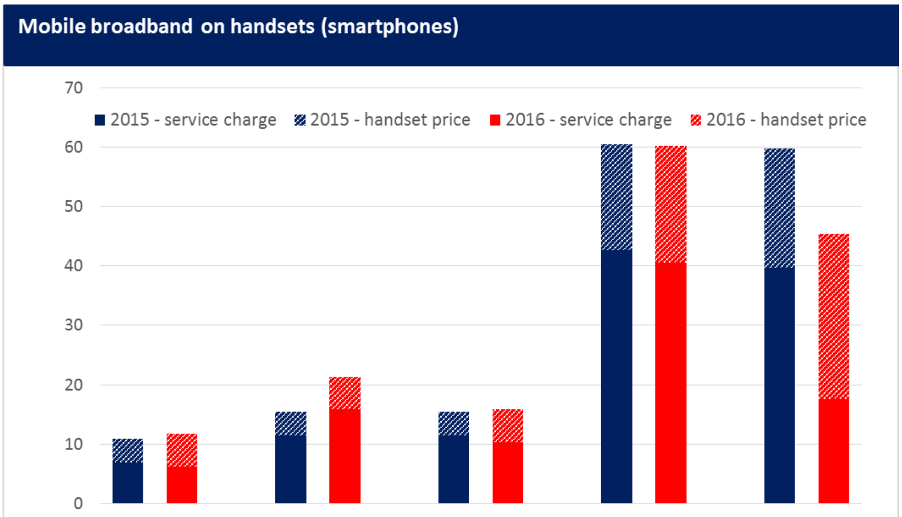


Table 19: Croatia: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

There is no clear trend regarding how prices for packages including mobile data for handsets compare to the EU28[66]. It is striking how the Croatian offer with 1GB mobile data included is about 50% cheaper, whereas the offer including 4GB is 30% more expensive than the EU28 average. The price of the handset based offer including 2GB and with low volumes of minutes and SMS is very high, which could be due to the fact that the smartphone is at full price as part of a prepaid offer. Mobile broadband on laptops and tablets is on average around 15% more expensive in Croatia than in the EU28 on average (compared to 25% in 2015). As last year, there is an exceptionally large difference for offers including 5GB. These are 65% more expensive than in the EU28 on average. Offers for tablets are more expensive for the 5GB and 10GB user profiles than for laptops since discounts on the subscription fee are limited to 12 months (compared to 24 months for the laptop offers).

[66] Average of the least expensive offers of all mobile operators in the sample.

4.4.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 20: Croatia: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

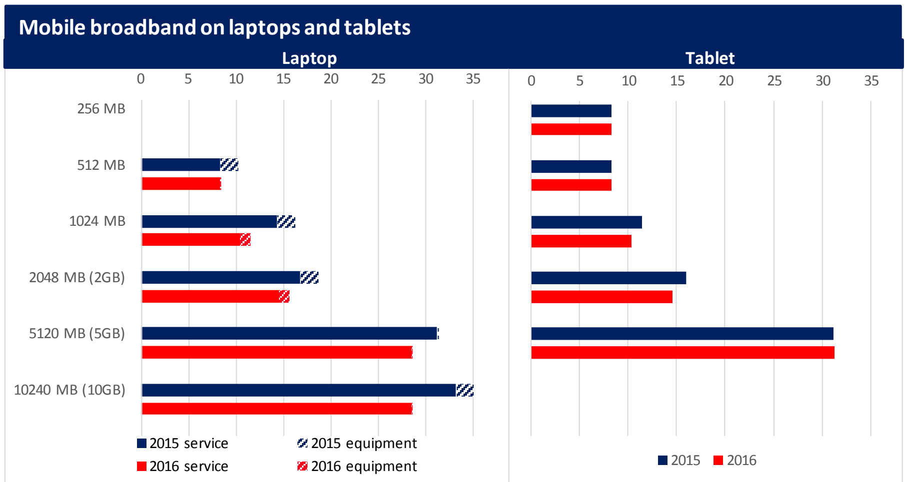


Table 21: Croatia: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

In Croatia, prices for mobile broadband on handsets have increased by 5% on average between 2015 and 2016, whereas the EU28[67] average decreased by 7%. The usage profile including 2GB mobile data and low usage of minutes and SMS is the only one for which the price went down significantly (-24%). This decrease is the result of about a halving of the service charge and an increase of the price of the handset with around 40%. The evolution of the price of mobile broadband on tablets in Croatia is in line with the EU28 average (-4% in Croatia compared to -3% in the EU28), whereas the offers for laptops became on average much cheaper (prices decreased by 18% on average in Croatia, compared to a decrease of 3% in the EU28). About 5% out of the 18% price decrease can be explained by significantly cheaper equipment for accessing mobile internet service with a laptop.

[67] Average of the least expensive offers of all mobile operators in the sample.

4.4.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS	**VIPnet**	**HT**
EU28: 15.45	11.71	15.36
includes 3.35 for the handset	5.48	5.19
512MB - 200 min - 140 SMS	**VIPnet**	**HT**
EU28: 21.23	15.86	21.80
includes 3.35 for the handset	5.48	5.19
1024 MB - 600 min - 225 SMS	**VIPnet**	**HT**
EU28: 29.71	15.86	38.22
includes 3 for the handset	5.48	5.19
2048 MB - 1800 min - 350 SMS	**VIPnet**	**HT**
EU28: 49.86	60.13	70.08
includes 14.26 for the handset	19.62	27.70
2048 MB - 200 min - 140 SMS	**VIPnet**	**HT**
EU28: 43.12	45.35	55.50
includes 14.81 for the handset	27.70	25.39
4096 MB - 1800 min - 350 SMS	**VIPnet**	**HT**
EU28: 54.23	70.52	84.62
includes 13.93 for the handset	16.16	27.70
Tablet		
256 MB	**VIPnet**	**HT**
EU28: 7.89	8.31	11.54
512 MB	**VIPnet**	**HT**
EU28: 8.4	8.31	11.54
1024 MB (1GB)	**VIPnet**	**HT**
EU28: 9.5	10.39	16.47
2048 MB (2GB)	**VIPnet**	**HT**
EU28: 12.8	14.54	19.53
5120 MB (5GB)	**VIPnet**	**HT**
EU28: 18.06	31.30	31.99
10240 MB (10GB)	**VIPnet**	**HT**
EU28: 26.67	31.30	48.62
Laptop		
512 MB	**VIPnet**	**HT**
EU28: 10.13	8.36	12.86
1024 MB (1GB)	**VIPnet**	**HT**
EU28: 11	11.54	18.18
2048 MB (2GB)	**VIPnet**	**HT**
EU28: 13.7	15.69	19.63
5120 MB (5GB)	**VIPnet**	**HT**
EU28: 18.71	28.58	32.10
10240 MB (10 GB)	**VIPnet**	**HT**
EU28: 27.05	28.58	48.72
20480 MB (20 GB)	**VIPnet**	**HT**
EU28: 42.14	36.89	48.72

Table 22: Croatia: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

VIPnet is the cheapest choice for all predefined usage profiles. The differences in prices between both operators is most often significant. They amount to 45% on average for handset based offers and respectively 38 % and 42 % for tablet and laptop based offers. For mobile broadband on tablets and laptops, prices of VIPnet and HT approach each other most for the usage profiles including 5GB.

4.4.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Croatia		
HT	Hrvatski Telekom	4G available
VIPnet	vip	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
HT	2GB to 25GB	300MB to 10GB
VIPnet	500MB to 25GB	250MB to 8GB

The data allowances included in the mobile broadband offers of HT and VIPnet are very similar. The latter offers a slightly wider choice range for tablet and laptop offers, i.e. also provides options with low data allowances.

Take-up of mobile broadband offers

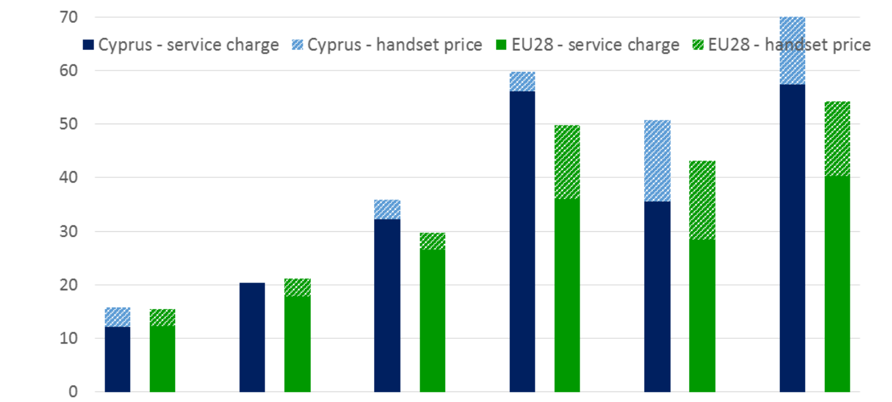
	Croatia	EU28
Mobile broadband penetration (subscriptions per 100 people) [68]	68.1%	75.3%
% of households having at least one mobile phone subscription giving access to internet[69]	76.0%	75.0%

[68] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[69] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.5. Cyprus

4.5.1. Price of mobile broadband

Mobile broadband on handsets (smartphones)



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 23: Cyprus: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband on laptops and tablets

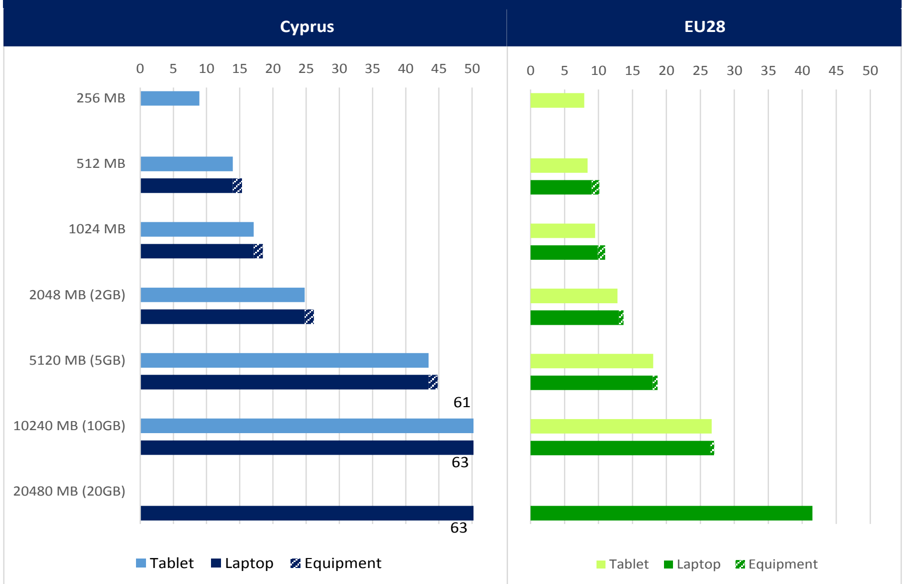


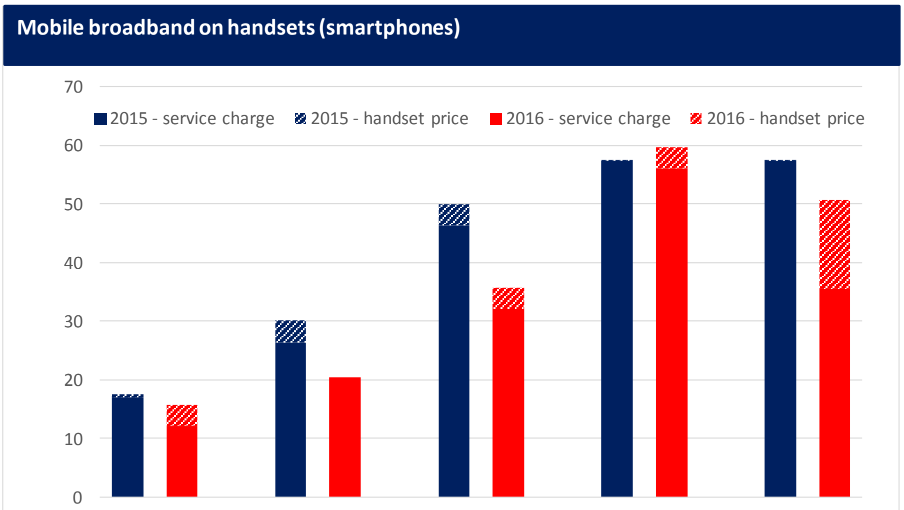
Table 24: Cyprus: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

In 2016, packages including mobile broadband for handsets are on average around 15%[70] more expensive in Cyprus than in the EU28[71] on average. The gap in prices is most outspoken for packages including 1GB or more and goes up to around 35% for the 4GB offer. Mobile broadband on laptops and tablets is a lot more expensive in Cyprus compared to the EU28: the difference with the EU amounts to 90% on average (compared to 80% in 2015). As in 2015, offers with at least 5GB of mobile data included are over 130% more expensive than on average in the EU28.

[70] Compared to 27% more expensive in 2015.

[71] Average of the least expensive offers of all mobile operators in the sample.

4.5.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 25: Cyprus: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

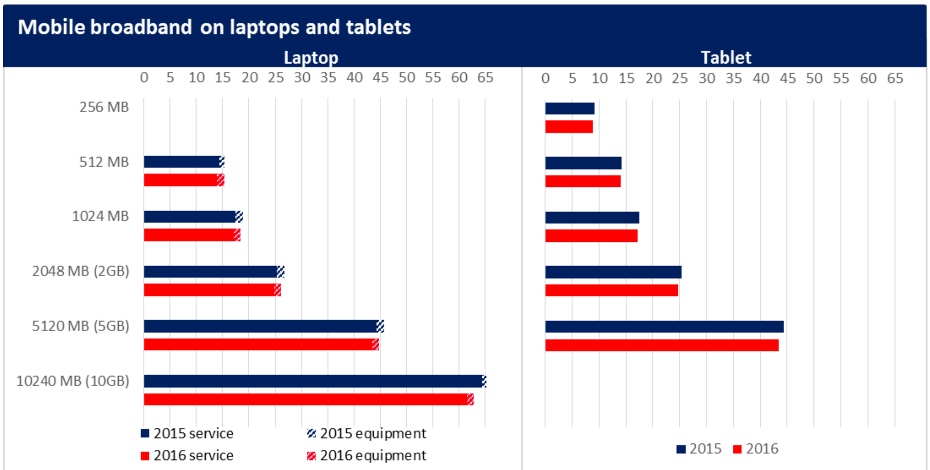


Table 26: Cyprus: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

In Cyprus, prices for handset packages including mobile broadband went down by 16% between 2015 and 2016 (compared to an average price decrease of -7% in the EU28[72]). The price decreases are highest for the 512 MB and 1 GB usage profiles.

Prices for mobile data on laptops and tablets slightly decreased (-2% on average for both laptop and tablet based offers). This is very much in line with the overall price decreases of -3% in the EU28 for mobile broadband on these two devices.

[72] Average of the least expensive offers of all mobile operators in the sample.

4.5.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS	MTN	Cyta
EU28: 15.45	15.75	18.27
includes 3.35 for the handset	3.63	3.63
512MB - 200 min - 140 SMS	MTN	Cyta
EU28: 21.23	20.37	25.22
includes 3.35 for the handset	0.00	2.17
1024 MB - 600 min - 225 SMS	MTN	Cyta
EU28: 29.71	35.83	39.12
includes 3 for the handset	3.63	3.63
2048 MB - 1800 min - 350 SMS	MTN	Cyta
EU28: 49.86	59.78	68.82
includes 14.26 for the handset	3.61	12.84
2048 MB - 200 min - 140 SMS	Cyta	MTN
EU28: 43.12	50.71	59.78
includes 14.81 for the handset	15.22	3.61
4096 MB - 1800 min - 350 SMS	MTN	Cyta
EU28: 54.23	72.56	85.29
includes 13.93 for the handset	15.22	12.84
Tablet		
256 MB	MTN	Cyta
EU28: 7.89	8.91	10.51
512 MB	MTN	Cyta
EU28: 8.4	13.95	16.00
1024 MB (1GB)	Cyta	MTN
EU28: 9.5	17.10	17.56
2048 MB (2GB)	Cyta	MTN
EU28: 12.8	24.78	25.25
5120 MB (5GB)	Cyta	MTN
EU28: 18.06	43.44	43.90
10240 MB (10GB)	MTN	Cyta
EU28: 26.67	61.46	76.38
Laptop		
512 MB	MTN	Cyta
EU28: 10.13	15.33	17.37
1024 MB (1GB)	Cyta	MTN
EU28: 11	18.47	18.94
2048 MB (2GB)	Cyta	MTN
EU28: 13.7	26.15	26.62
5120 MB (5GB)	Cyta	MTN
EU28: 18.71	44.82	45.27
10240 MB (10 GB)	MTN	Cyta
EU28: 27.05	62.84	77.75
20480 MB (20 GB)	MTN	Cyta
EU28: 42.14	62.84	77.75

Table 27: Cyprus: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

MTN is clearly the least expensive operator in Cyprus. The only usage profile for which Cyta is significantly cheaper, is the 2GB handset based offer with low volumes of minutes and SMS included. For the tablet and laptop based offers for which Cyta has the least expensive offer (offers with 1GB, 2GB or 5GB included), the price differences with MTN are limited to less than 3%.

4.5.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Cyprus		
Cyta		
MTN		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Cyta	30MB to 20GB	100MB to 5GB
MTN	30MB to 20GB	150MB to 6GB

The data allowances included in the mobile broadband offers of both operators are very similar. Moreover, the largest data allowances offered are very close to those of the highest predefined user profiles (i.e. 20 GB for laptop and tablet offers and 4 GB for handset offers).

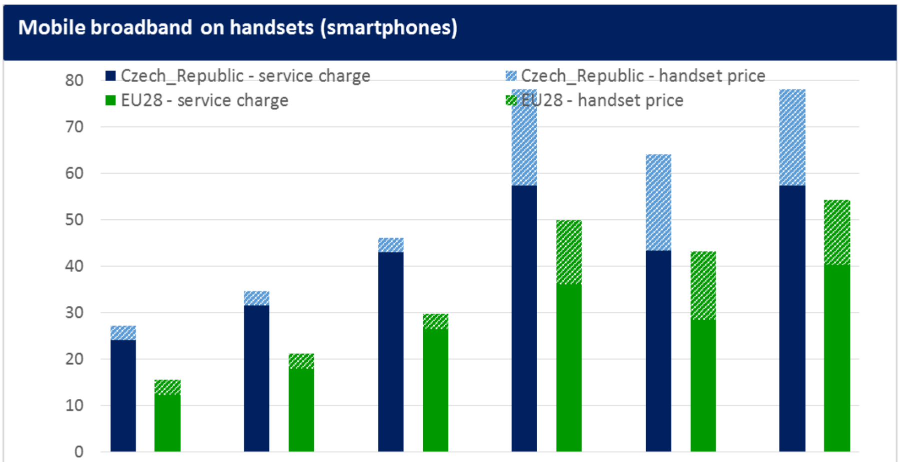
Take-up of mobile broadband offers

	Cyprus	EU28
Mobile broadband penetration (subscriptions per 100 people) [73]	66.2%	75.3%
% of households having at least one mobile phone subscription giving access to internet[74]	71.0%	75.0%

[73] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[74] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.6. Czech Republic

4.6.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 28: Czech Republic: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

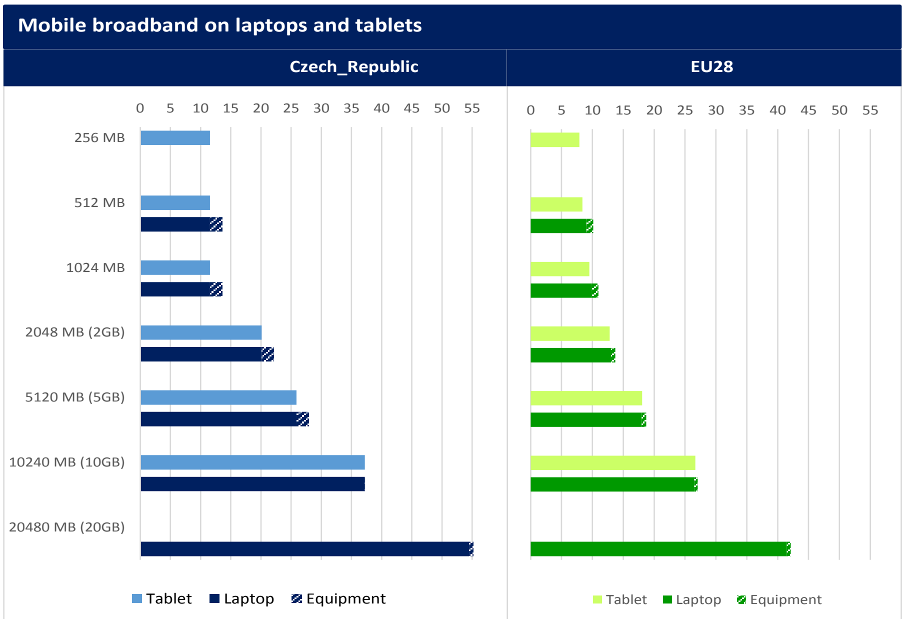
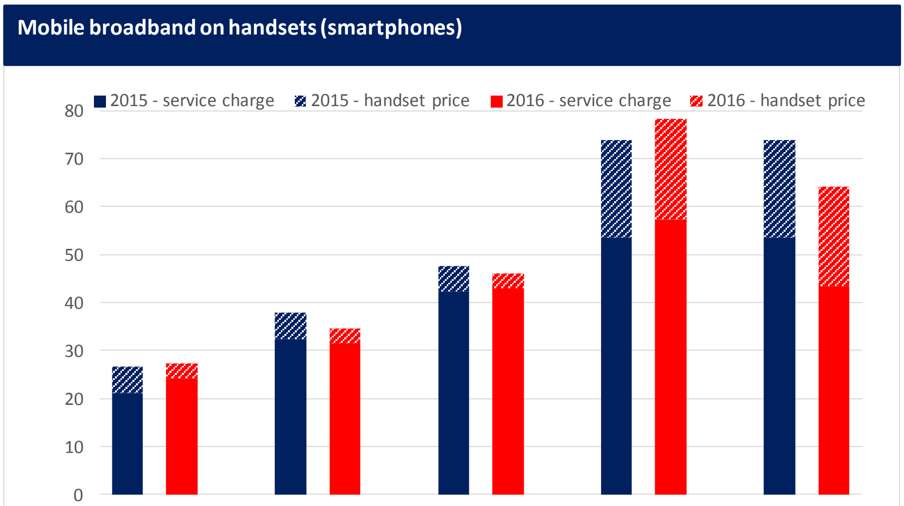


Table 29: Czech Republic: mobile broadband prices on laptops & tablets (least expensive offer in EUR/PPP, Feb 2016 data)

Regardless of the device used for accessing mobile broadband in the Czech Republic, prices are systematically much more expensive than in the EU28[75] on average. Differences amount to about 60% on average for the handset based offers and 40% on average for the tablet and laptop based offers. As in 2015, the gap in price levels between the Czech Republic and the EU28 is rather similar across user profiles.

[75] Average of the least expensive offers of all mobile operators in the sample.

4.6.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 30: Czech Republic: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

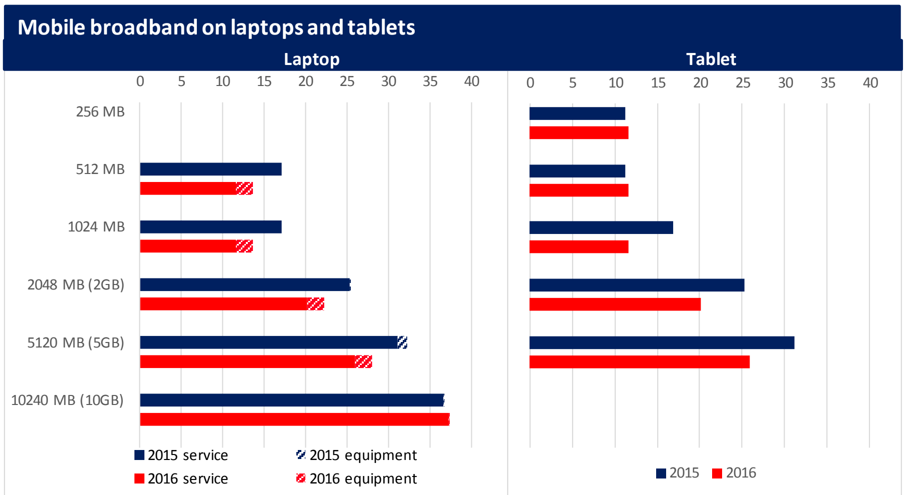


Table 31: Czech Republic: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

In the Czech Republic, prices for mobile broadband decreased by 3% on average between 2015 and 2016. This is only about half the price decrease of 7% which can be observed in the EU28[76] on average. Moreover, the overall price decrease in the Czech Republic is fully due to an important decrease in the price of the basic handset (around -40%). The service charge remained stable on average.

Prices for mobile broadband on tablets and laptops dropped remarkably sharper. Regardless of the device used, these offers became 13% cheaper in 2016 compared to 2015. The price decreases occur rather

[76] Average of the least expensive offers of all mobile operators in the sample.

uniformly across all usage profiles. The only exceptions are the lowest usage profiles for tablet (256MB and 512MB) and the highest usage profile on laptop (10GB), to which a small price decrease applies.

4.6.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Vodafone** 27.19 3.12	**T-mobile** 34.59 3.12	**O2** 35.92 3.12
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**T-mobile** 34.59 3.12	**Vodafone** 38.26 3.12	**O2** 46.42 3.12
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**T-mobile** 46.05 3.12	**Vodafone** 59.46 2.20	**O2** 86.42 3.12
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**T-mobile** 78.07 20.81	**Vodafone** 78.07 20.81	**O2** 203.71 20.81
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**O2** 64.11 20.81	**Vodafone** 77.56 20.81	**T-mobile** 78.07 20.81
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Vodafone** 78.07 20.81	**T-mobile** 89.88 20.81	**O2** 215.12 20.81
Tablet			
256 MB EU28: 7.89	**O2** 11.57	**T-mobile** 20.01	**Vodafone** 28.55
512 MB EU28: 8.4	**O2** 11.57	**T-mobile** 20.01	**Vodafone** 28.55
1024 MB (1GB) EU28: 9.5	**O2** 11.57	**T-mobile** 20.01	**Vodafone** 28.55
2048 MB (2GB) EU28: 12.8	**O2** 20.11	**T-mobile** 25.74	**Vodafone** 28.55
5120 MB (5GB) EU28: 18.06	**O2** 25.90	**Vodafone** 34.22	**T-mobile** 37.20
10240 MB (10GB) EU28: 26.67	**T-mobile** 37.20	**O2** 37.36	**Vodafone** 42.94
Laptop			
512 MB EU28: 10.13	**O2** 13.63	**T-mobile** 20.01	**Vodafone** 28.67
1024 MB (1GB) EU28: 11	**O2** 13.63	**T-mobile** 20.01	**Vodafone** 28.67
2048 MB (2GB) EU28: 13.7	**O2** 22.17	**T-mobile** 25.74	**Vodafone** 28.67
5120 MB (5GB) EU28: 18.71	**O2** 27.96	**Vodafone** 34.34	**T-mobile** 37.20
10240 MB (10 GB) EU28: 27.05	**T-mobile** 37.20	**O2** 39.42	**Vodafone** 43.06
20480 MB (20 GB) EU28: 42.14	**O2** 56.56	**Vodafone** 99.81	

Table 32: Czech Republic: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

There is no trend in terms of which operator offers the least expensive mobile data packages for handsets in the Czech Republic. O2 is most often the most expensive operator, and the price differences with the least expensive operator are highest for the usage profiles that include an important volume of minutes and SMS. Meanwhile, for mobile broadband on tablets or laptops, O2 is clearly the cheapest operator. T-Mobile has only a very slightly better offer for the usage profile that includes 10GB of mobile data. For all other usage profiles, the prices of O2 are only about half of the price of the second least expensive operator.

4.6.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Cyprus		
T-Mobile CZ		4G available
O2		4G available
Vodafone		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
T-Mobile CZ	50MB to 10GB	1,5GB to 10GB
O2	1,5GB to 10GB	50MB to 10GB
Vodafone	500MB to 10GB	100MB to 10GB

The highest data allowances included in the mobile broadband offers of all three operators are the same, and do not differ between devices (handset versus laptop/tablet). While for laptop and tablet T-Mobile appears to offer most flexibility by providing offers of as low as 50 MB, this role is taken up by O2 for handset offers.

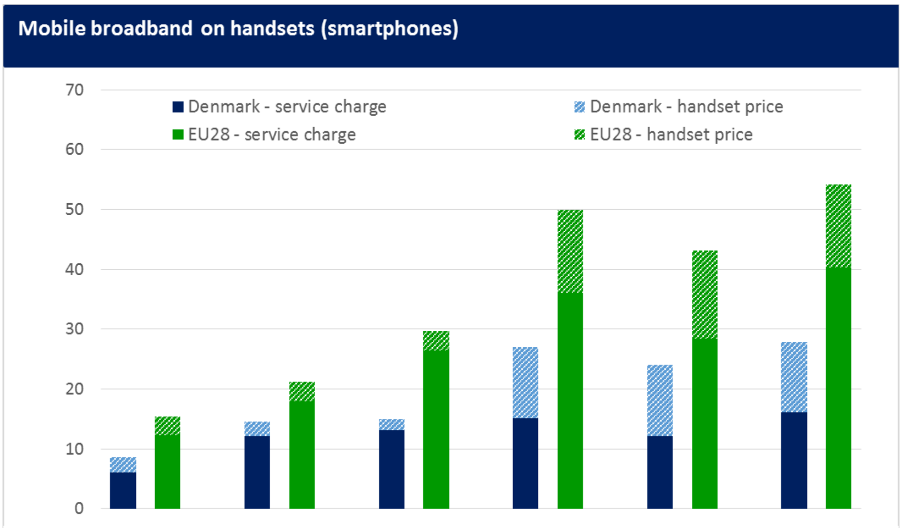
Take-up of mobile broadband offers

	Czech Republic	EU28
Mobile broadband penetration (subscriptions per 100 people) [77]	70.6%	75.3%
% of households having at least one mobile phone subscription giving access to internet[78]	61.0%	75.0%

[77] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[78] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.7. Denmark

4.7.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 33: Denmark: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

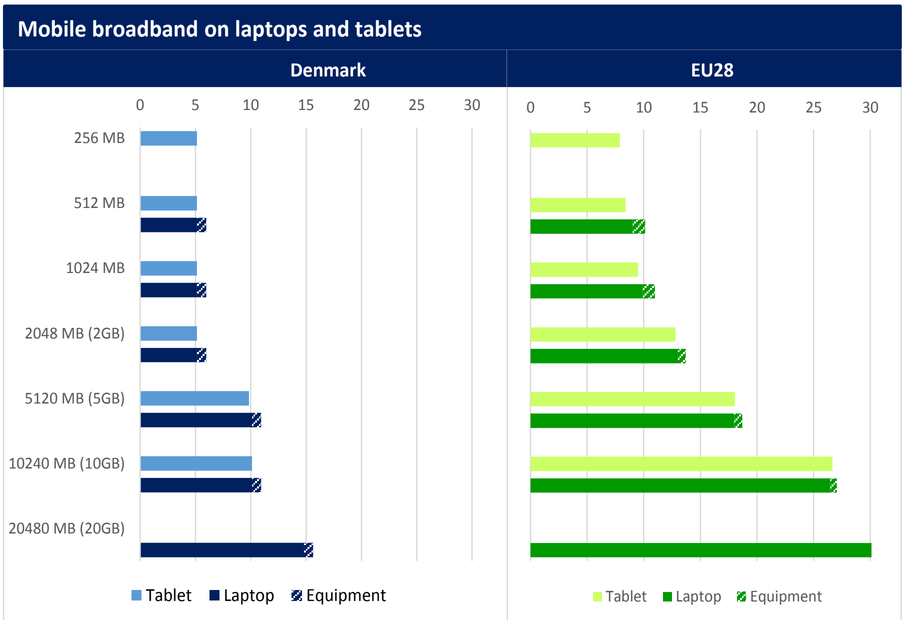
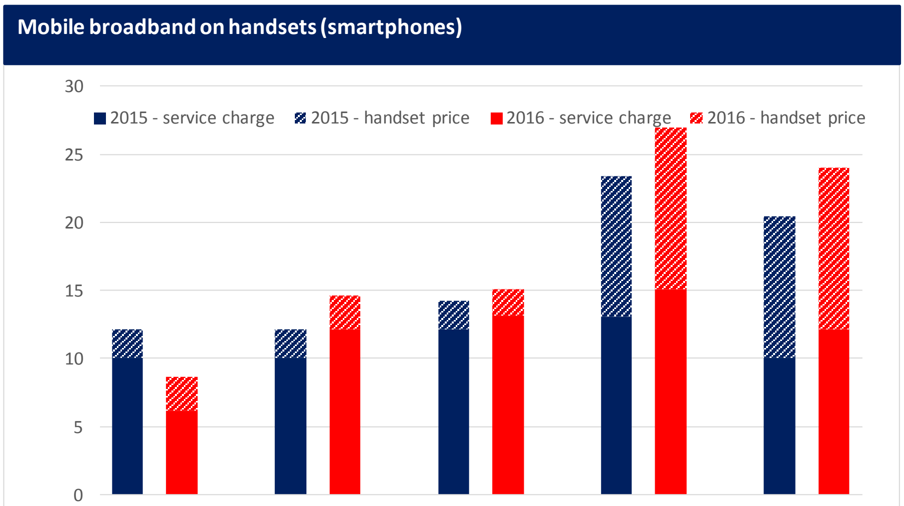


Table 34: Denmark: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband prices in Denmark are systematically cheaper than the average prices in the EU28[79]. More precisely, mobile broadband on handsets is on average around 45% cheaper than the EU28 average and prices for mobile broadband on tablets and laptops are about 50% lower. Overall, the difference with the EU28 increases as the volume of data allowance included in the subscription goes up. The equipment cost of handsets is on average around 25% lower in Denmark compared to the EU28.

[79] Average of the least expensive offers of all mobile operators in the sample.

4.7.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 35: Denmark: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

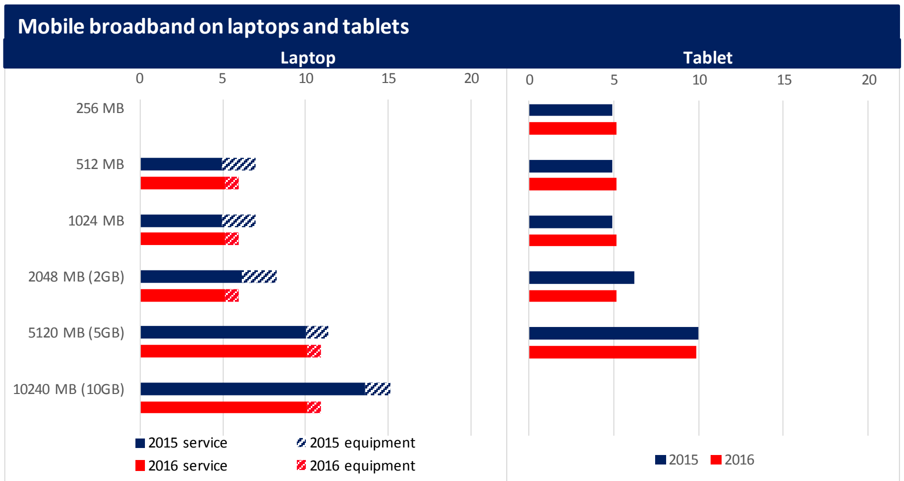


Table 36: Denmark: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Between 2015 and 2016, the prices of handset packages including mobile data have increased on average by 6%, whereas the EU28 prices decreased on average by 7%. The average price increase for Denmark even amounts to 15%, if abstraction is made of the lowest usage profile (for which the price went down by 30%).

In Denmark, mobile broadband on laptops is less expensive in 2016 compared to 2015. On average, the price of the least expensive offers decreased by 17% (compared to a decrease of about 3% for the EU28 on average). The larger part of the price decreases in Denmark can be explained by lower prices for the equipment needed for accessing the mobile broadband services. Prices for mobile broadband on tablets remained overall very stable. For the three lowest usage profiles, the prices increased by about 5%; for the two highest usage profiles, a decrease of respectively 17% and 2% was observed between 2015 and 2016.

4.7.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Teliasonera** 8.59 2.48	**TDC** 14.58 2.48	**Telenor** 15.03 1.93
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**TDC** 14.58 2.48	**Telenor** 15.03 1.93	**Teliasonera** 16.54 2.48
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Telenor** 15.03 3.38	**TDC** 16.33 1.38	**Teliasonera** 16.54 2.48
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**TDC** 26.95 11.87	**Teliasonera** 27.92 11.87	**Telenor** 29.94 11.87
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**TDC** 23.97 11.87	**Telenor** 24.97 11.87	**Teliasonera** 25.93 11.87
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Teliasonera** 27.92 11.87	**TDC** 28.43 8.51	**Telenor** 29.94 11.87
Tablet			
256 MB EU28: 7.89	**TDC** 5.15	**Telenor** 5.15	**Teliasonera** 7.86
512 MB EU28: 8.4	**TDC** 5.15	**Telenor** 5.15	**Teliasonera** 7.86
1024 MB (1GB) EU28: 9.5	**TDC** 5.15	**Telenor** 5.15	**Teliasonera** 7.86
2048 MB (2GB) EU28: 12.8	**TDC** 5.15	**Teliasonera** 7.86	**Telenor** 8.03
5120 MB (5GB) EU28: 18.06	**Telenor** 9.84	**TDC** 10.12	**Teliasonera** 11.09
10240 MB (10GB) EU28: 26.67	**TDC** 10.12	**Telenor** 16.80	**Teliasonera** 17.80
Laptop			
512 MB EU28: 10.13	**TDC** 5.97	**Telenor** 7.61	**Teliasonera** 9.12
1024 MB (1GB) EU28: 11	**TDC** 5.97	**Telenor** 7.61	**Teliasonera** 9.12
2048 MB (2GB) EU28: 13.7	**TDC** 5.97	**Teliasonera** 9.12	**Telenor** 10.49
5120 MB (5GB) EU28: 18.71	**TDC** 10.94	**Telenor** 10.95	**Teliasonera** 12.35
10240 MB (10 GB) EU28: 27.05	**TDC** 10.94	**Telenor** 16.81	**Teliasonera** 19.07
20480 MB (20 GB) EU28: 42.14	**TDC** 15.64	**Teliasonera** 22.30	**Telenor** 28.54

Table 37: Denmark: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

In 2016, TDC is clearly most often the least expensive operator. This is in stark contrast with the situation in 2015, when TDC was almost systematically the most expensive operator. Meanwhile, for the majority of the usage profiles for handsets and tablets, the price differences between TDC and the second least expensive operator remain very limited.

4.7.4. *Background information*

Mobile operators considered in the sample

Mobile operators in 2016 sample - Denmark		
TDC		4G available
Telenor Denmark		4G available
Teliasonera		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
TDC	2GB to 300GB	3GB to 40GB
Telenor Denmark	1GB to 100GB	2GB to 30GB
Teliasonera	1GB to 200GB	300MB to 100GB

The data allowances included in the mobile broadband offers of the three operators all clearly exceed the data volumes included in the predefined user profiles. For laptop and tablet offers, TDC provides the highest data allowance (300 GB), while for handset offers, Teliasonera's offer of 100 GB is the highest one. The latter operator also provides for the widest range of offers, as the most basic mobile broadband offer includes only 300 MB, while the minimum data allowances of the others is 2/3 GB.

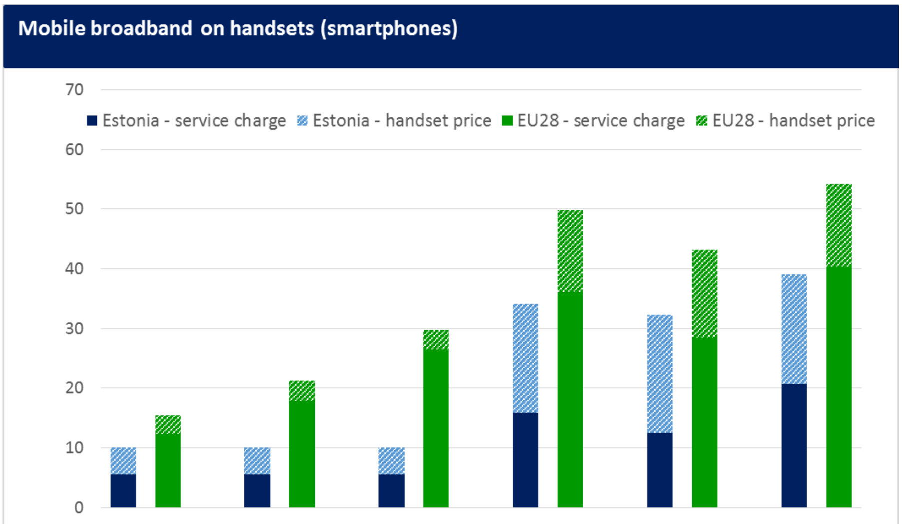
Take-up of mobile broadband offers

	Denmark	EU28
Mobile broadband penetration (subscriptions per 100 people) [80]	112.1%	75.3%
% of households having at least one mobile phone subscription giving access to internet[81]	91.0%	75.0%

[80] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[81] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.8. Estonia

4.8.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 38: Estonia: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

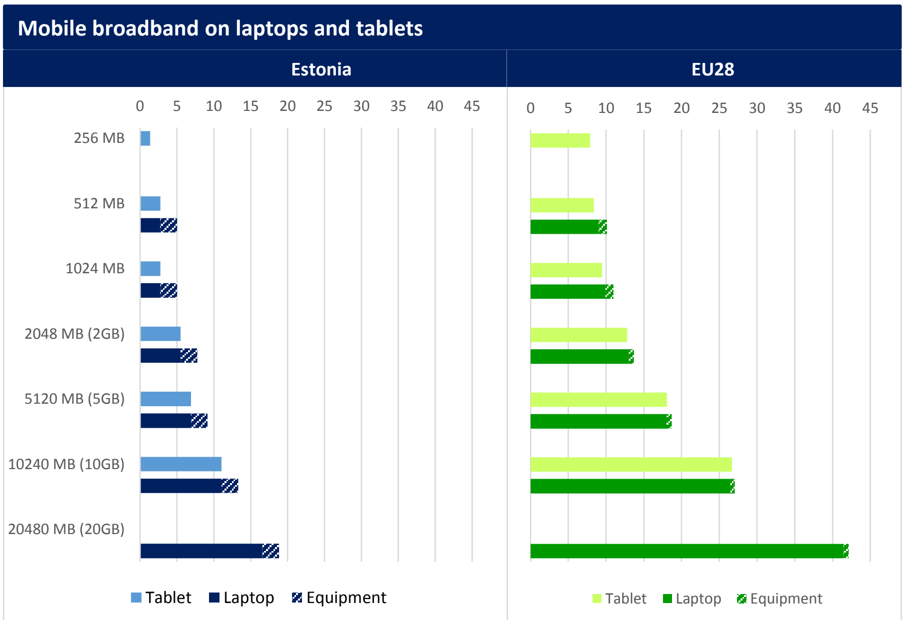
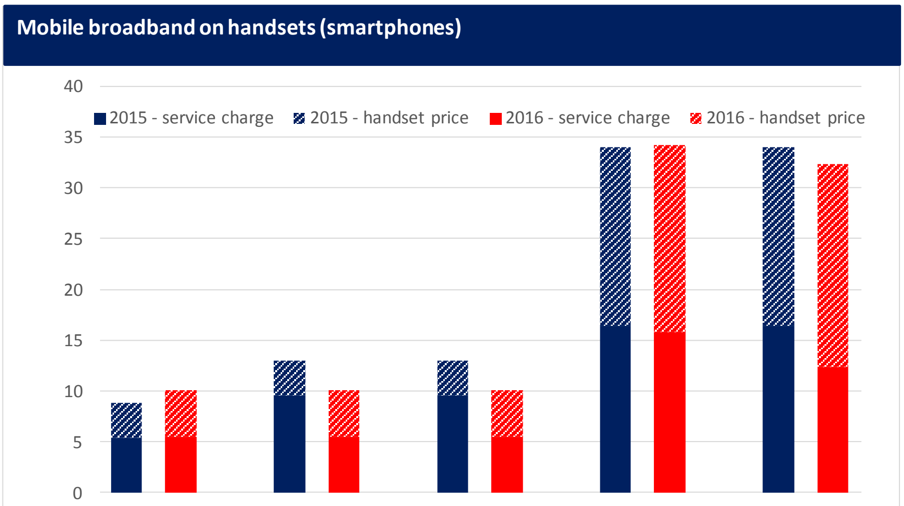


Table 39: Estonia: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband packages for handsets in Estonia are on average 40%[82] cheaper compared to the EU28[83] average, despite that fact that the cost of the handset is on average 37%[84] more expensive in Estonia. This could be related to the fact that many of the cheapest offers are SIM only. Prices for the predefined usage profiles for mobile broadband on laptops and tablets are on average 60%[85] cheaper in Estonia than in the EU28 on average.

[82] Compared to 42% cheaper in 2015
[83] Average of the least expensive offers of all mobile operators in the sample.
[84] Compared to 13% cheaper in 2015
[85] Compared to 25% cheaper in 2015

4.8.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 40: Estonia: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

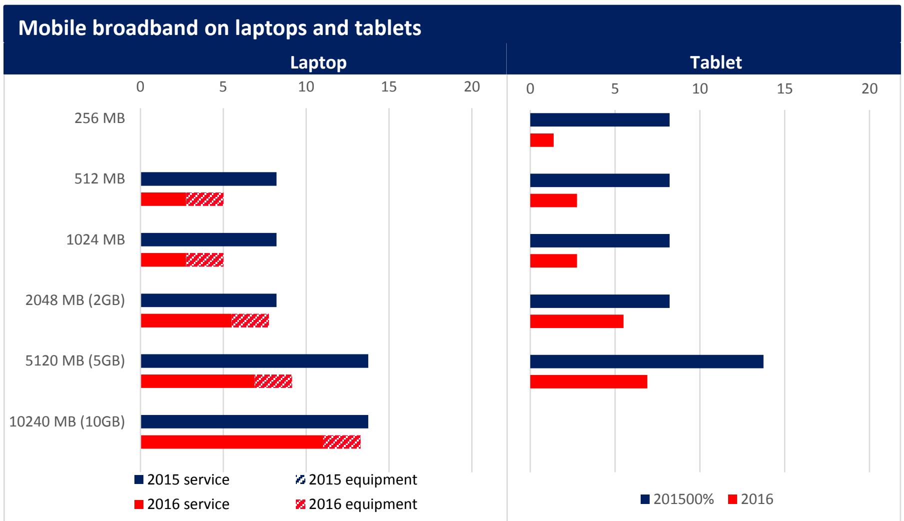


Table 41: Estonia: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

The average price evolution for mobile broadband packages for handsets is very much in line with the EU28[86] average evolution, and amounts to -7%. This global decrease is the combined effect of an important decrease of the service charge (-23%) and a significant increase in the price of the handsets (+24%).

Even if prices for mobile broadband on tablets and handsets were already very much below the EU28[87] average in 2015; they nevertheless significantly dropped further in 2016. More precisely, the price of the

[86] Average of the least expensive offers of all mobile operators in the sample.
[87] Average of the least expensive offers of all mobile operators in the sample.

laptop offers decreased by about 25% on average (compared to -3% for the EU28). For tablets, the price decrease was even sharper (-60% on average in Estonia, compared to -3% in the EU28).

4.8.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Telia (EMT)** 10.07 4.56	**Tele2** 11.38 4.56
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Telia (EMT)** 10.07 4.56	**Tele2** 14.65 3.64
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Telia (EMT)** 10.07 4.56	**Tele2** 19.47 3.64
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Tele2** 34.18 18.34	**Telia (EMT)** 43.29 19.88
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Telia (EMT)** 32.29 19.88	**Tele2** 34.18 18.34
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Tele2** 39.01 18.34	**Telia (EMT)** 46.04 19.88
Tablet		
256 MB EU28: 7.89	**Telia (EMT)** 1.38	**Tele2** 8.26
512 MB EU28: 8.4	**Telia (EMT)** 2.76	**Tele2** 8.26
1024 MB (1GB) EU28: 9.5	**Telia (EMT)** 2.76	**Tele2** 8.26
2048 MB (2GB) EU28: 12.8	**Telia (EMT)** 5.50	**Tele2** 8.26
5120 MB (5GB) EU28: 18.06	**Telia (EMT)** 6.89	**Tele2** 13.22
10240 MB (10GB) EU28: 26.67	**Telia (EMT)** 11.03	**Tele2** 13.22
Laptop		
512 MB EU28: 10.13	**Telia (EMT)** 5.02	**Tele2** 10.28
1024 MB (1GB) EU28: 11	**Telia (EMT)** 5.02	**Tele2** 10.28
2048 MB (2GB) EU28: 13.7	**Telia (EMT)** 7.76	**Tele2** 10.28
5120 MB (5GB) EU28: 18.71	**Telia (EMT)** 9.15	**Tele2** 21.16
10240 MB (10 GB) EU28: 27.05	**Telia (EMT)** 13.29	**Tele2** 21.16
20480 MB (20 GB) EU28: 42.14	**Telia (EMT)** 18.84	**Tele2** 21.16

Table 42: Estonia: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

In contrast to 2015, EMT almost systematically offers the best deal in Estonia in 2016. Moreover, the price differences with the second operator in the sample are often very important for the predefined usage profiles. This is especially so for laptop and tablet offers: even if abstraction is made of the lowest usage profile for tablets (256 MB), the lowest prices of Tele2 are on average 90% higher compared to the least expensive offer of EMT. Also, if only offers with data allowances of 2GB or above are considered, the average difference still amounts to around 60%.

4.8.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Estonia		
EMT	emt	4G available
Tele2 Estonia	TELE2	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Telia (EMT)	250MB to 48GB	300MB to 100GB
Tele2 Estonia	2GB to unlimited	100MB to 20GB

The highest data allowances included in the mobile broadband offers of both Estonian operators clearly exceed the data volumes included in the predefined user profiles. For handset offers, Telia (EMT)'s data allowances are clearly the largest (100 GB compared to 20 GB), while for laptop and tablet, the opposite is true, as Tele2 provides unlimited offers in this segment.

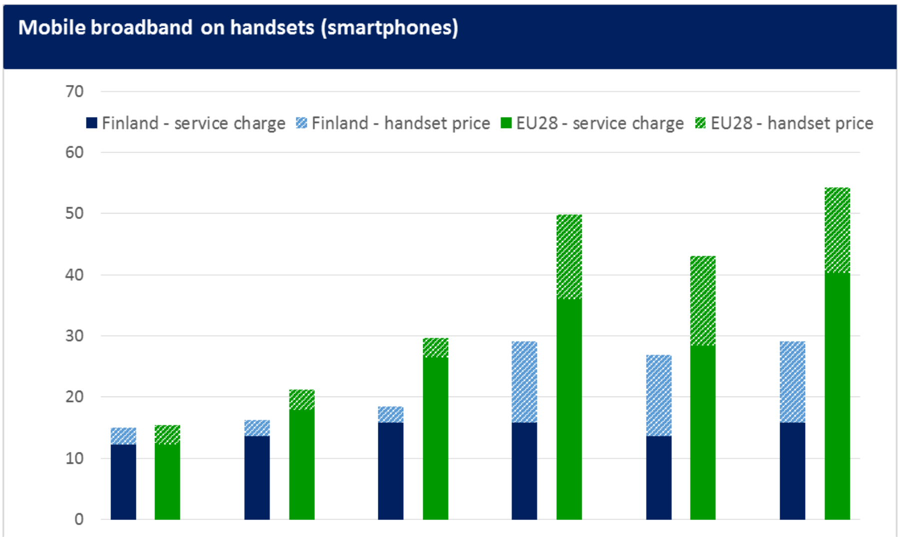
Take-up of mobile broadband offers

	Estonia	EU28
Mobile broadband penetration (subscriptions per 100 people)[88]	104.5%	75.3%
% of households having at least one mobile phone subscription giving access to internet[89]	72.0%	75.0%

[88] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[89] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.9. Finland

4.9.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 43: Finland: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

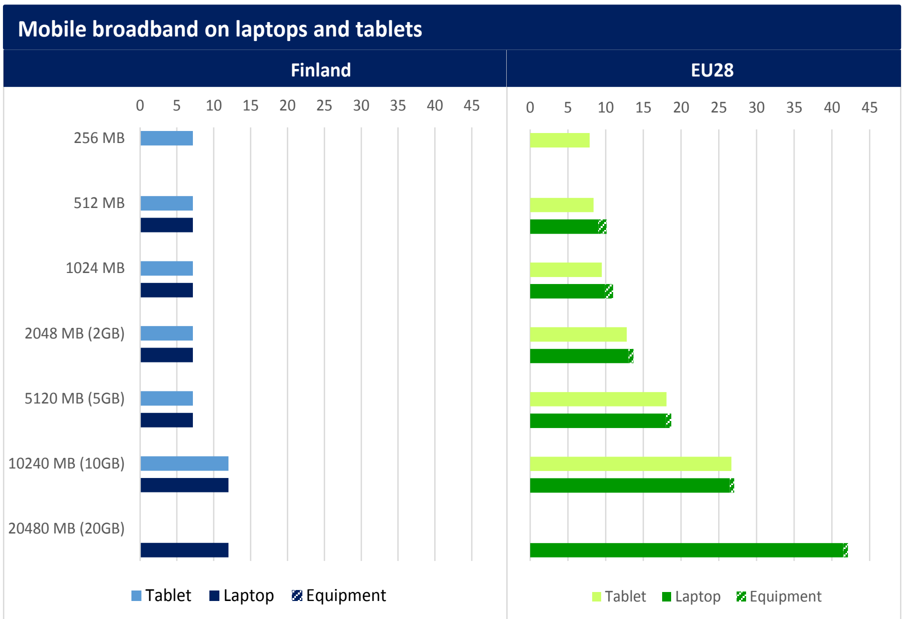
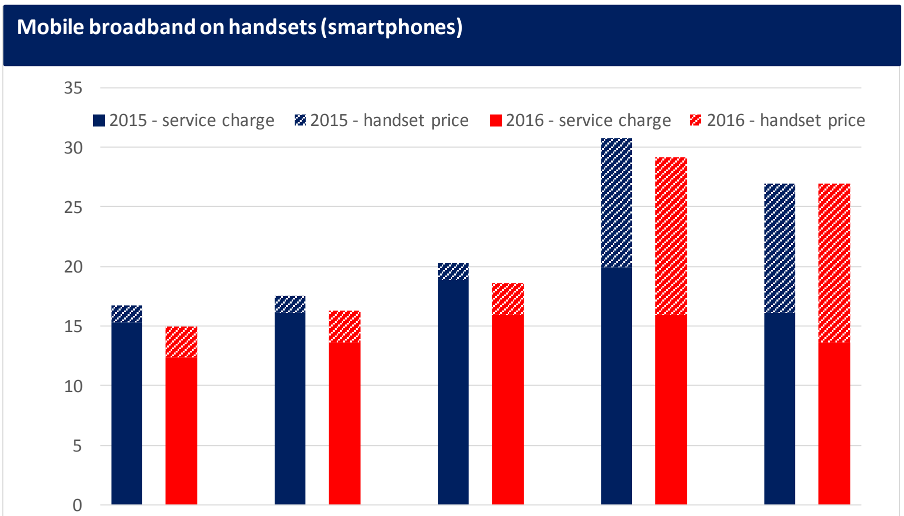


Table 44: Finland: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband packages for handsets in Finland are systematically cheaper than the EU28[90] average (around 32% cheaper on average[91]). The cheapest offer for mobile broadband on laptops and tablets is the same for all usage profiles up to 5GB. In contrast to 2015, this does however not lead to higher prices in Finland (compared to the EU28) for the lowest usage profiles. On average, prices for mobile broadband on tablets and laptops are respectively 35% and 50% lower in Finland compared to the EU28.

[90] Average of the least expensive offers of all mobile operators in the sample.
[91] Compared to 30% cheaper on average in 2015.

4.9.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 45: Finland: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

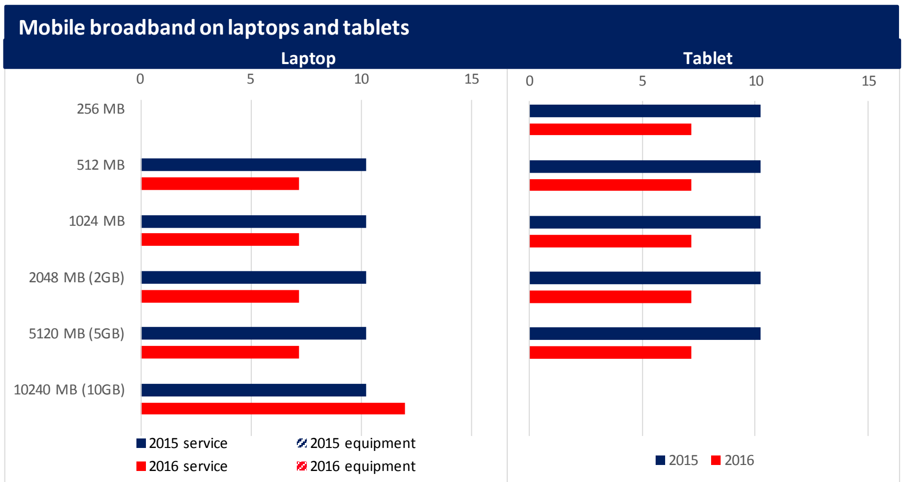


Table 46: Finland: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Mobile broadband packages for handsets in Finland follow the same overall price evolution as what is observed in the EU28 on average. More precisely, between 2015 and 2016, prices went down by around 6% on average in Finland, and by 7% for the EU28[92] on average.

The situation is very different for mobile broadband on laptops and tablets. For these types, the prices of the least expensive offers dropped significantly between 2015 and 2016. Indeed, the least expensive offers for tablets and laptops are respectively 30% and 21% less expensive in 2016. This is in sharp contrast with the average EU28 price decreases of about 3% (for both tablets and laptops).

[92] Average of the least expensive offers of all mobile operators in the sample.

4.9.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Elisa** 14.96 2.67	**Sonera** 16.28 2.67
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Sonera** 16.28 2.67	**Elisa** 18.51 2.67
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Elisa** 18.51 2.67	**Sonera** 18.70 2.67
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Elisa** 29.15 13.30	**Sonera** 40.61 13.30
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Sonera** 26.91 13.30	**Elisa** 29.15 13.30
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Elisa** 29.15 13.30	**Sonera** 40.61 13.30
Tablet		
256 MB EU28: 7.89	**Sonera** 7.17	**Elisa** 12.09
512 MB EU28: 8.4	**Sonera** 7.17	**Elisa** 12.09
1024 MB (1GB) EU28: 9.5	**Sonera** 7.17	**Elisa** 12.09
2048 MB (2GB) EU28: 12.8	**Sonera** 7.17	**Elisa** 12.09
5120 MB (5GB) EU28: 18.06	**Sonera** 7.17	**Elisa** 12.09
10240 MB (10GB) EU28: 26.67	**Sonera** 12.00	**Elisa** 12.09
Laptop		
512 MB EU28: 10.13	**Sonera** 7.17	**Elisa** 14.82
1024 MB (1GB) EU28: 11	**Sonera** 7.17	**Elisa** 14.82
2048 MB (2GB) EU28: 13.7	**Sonera** 7.17	**Elisa** 14.82
5120 MB (5GB) EU28: 18.71	**Sonera** 7.17	**Elisa** 14.82
10240 MB (10 GB) EU28: 27.05	**Sonera** 12.00	**Elisa** 14.82
20480 MB (20 GB) EU28: 42.14	**Sonera** 12.00	**Elisa** 14.82

Table 47: Finland: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Elisa is often the cheapest option for the predefined mobile broadband packages on handsets, and price differences with the least expensive offer of the second operator in the sample vary from 1% to about 40%.

Sonera is systematically the cheapest provider of mobile data on tablets and laptops. The difference in price with Elisa is significant, especially for the usage profiles up to 5GB. For these, Elisa charges prices which are respectively 70% (for tablets) and over 100% (for laptops) higher.

4.9.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Finland		
Elisa		4G available
TeliaSonera Finland		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Elisa	0 to unlimited	0 to unlimited
TeliaSonera Finland	5GB to unlimited	2GB to unlimited

Both operators offer unlimited data allowances on both laptops/tablets and handsets. While TeliaSonera's offer start at 2 and 5 GB for handsets and tablets/latops respectively, Elisa also has an offer with no data allowance. This tariff scheme allows low usage consumers to pay for the days that they actually access the internet.

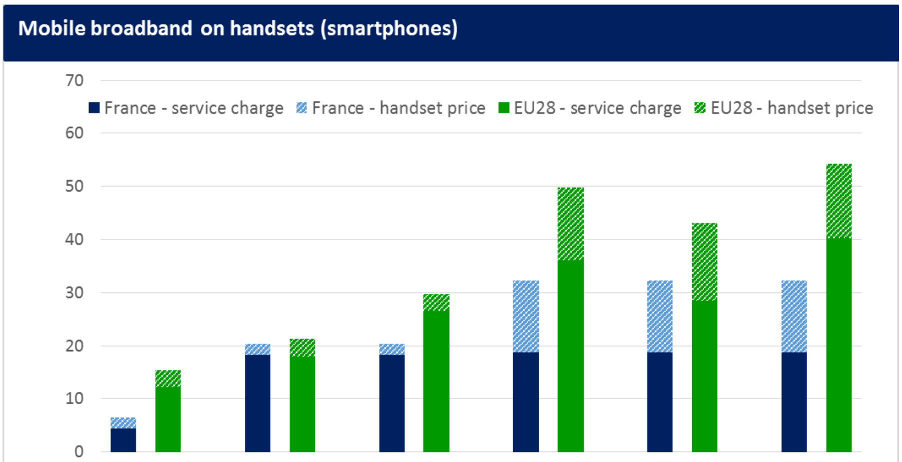
Take-up of mobile broadband offers

	Finland	EU28
Mobile broadband penetration (subscriptions per 100 people) [93]	138.6%	75.3%
% of households having at least one mobile phone subscription giving access to internet[94]	70.0%	75.0%

[93] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[94] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.10. France

4.10.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 48: France: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

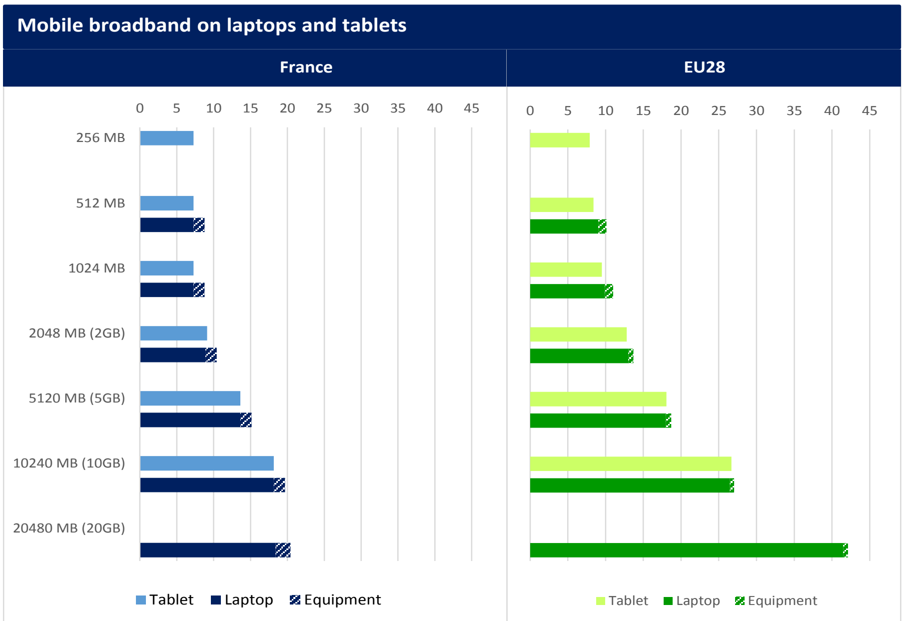
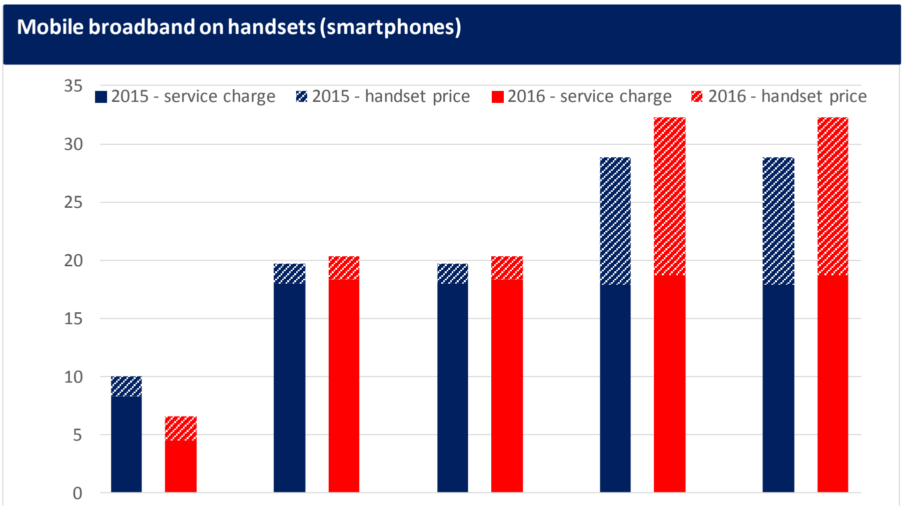


Table 49: France: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Regardless of the device used for accessing the mobile broadband services and of the predefined usage profile, prices are lower in France compared to the EU28 on average[95]. The average difference in prices between the EU28 average and France amounts respectively to -22% (for tablets), -32% (for laptops) and -33% (for handsets).

[95] Average of the least expensive offers of all mobile operators in the sample.

4.10.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 50: France: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

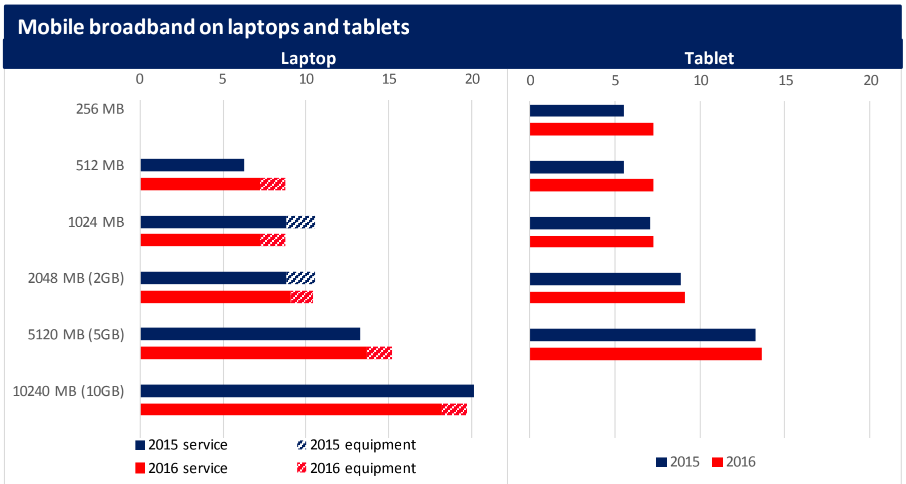


Table 51: France: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

If abstraction is made of the lowest usage profile (100MB), prices of the least expensive offers on handsets went up with 8% on average between 2015 and 2016. This evolution is quite the opposite of the situation in the EU28, where price decreases of on average 7% can be observed for handset based offers.

Also for tablets and laptops, the prices for mobile broadband are higher in 2016 compared to 2015. Average price increases of the least expensive offers amount to respectively 5% (for laptops) and 14% (for tablets). Again, this situation differs greatly from the overall trend in Europe. Indeed, the EU28 averages[96] are 3% lower in 2016 compared to 2015, for both tablets and laptops.

[96] Average of the least expensive offers of all mobile operators in the sample.

4.10.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Free** 6.45 2.02	**SFR** 7.59 2.02	**Orange** 14.76 2.02
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Orange** 20.29 2.02	**SFR** 20.29 2.02	**Free** 20.43 2.02
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**SFR** 20.29 2.02	**Free** 20.43 2.02	**Orange** 24.75 2.02
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Free** 32.28 13.61	**SFR** 32.30 14.14	**Orange** 39.29 9.32
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Free** 32.28 13.61	**SFR** 32.30 14.14	**Orange** 39.29 9.32
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Free** 32.28 13.61	**SFR** 37.75 14.14	**Orange** 39.29 9.32
Tablet			
256 MB EU28: 7.89	**SFR** 7.26	**Orange** 9.10	**Free** 11.38
512 MB EU28: 8.4	**SFR** 7.26	**Orange** 9.10	**Free** 18.42
1024 MB (1GB) EU28: 9.5	**SFR** 7.26	**Orange** 9.10	**Free** 18.42
2048 MB (2GB) EU28: 12.8	**Orange** 9.10	**SFR** 13.62	**Free** 18.42
5120 MB (5GB) EU28: 18.06	**SFR** 13.62	**Free** 18.42	**Orange** 22.73
10240 MB (10GB) EU28: 26.67	**SFR** 18.17	**Free** 18.42	**Orange** 50.00
Laptop			
512 MB EU28: 10.13	**SFR** 8.78	**Orange** 10.41	**Free** 20.41
1024 MB (1GB) EU28: 11	**SFR** 8.78	**Orange** 10.41	**Free** 20.41
2048 MB (2GB) EU28: 13.7	**Orange** 10.41	**SFR** 15.14	**Free** 20.41
5120 MB (5GB) EU28: 18.71	**SFR** 15.14	**Free** 20.41	**Orange** 24.04
10240 MB (10 GB) EU28: 27.05	**SFR** 19.68	**Free** 20.41	**Orange** 51.31
20480 MB (20 GB) EU28: 42.14	**Free** 20.41	**SFR** 40.61	**Orange** 51.31

Table 52: France: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Free provides most often the cheapest option for mobile data packages on handsets, but the price differences with the least expensive offers of SFR are generally[97] limited. Inversely, in the 512 MB and 1 GB usage profiles, in which Free respectively ranks 3rd and 2nd, its price is very close to that of the least expensive operator. For tablets and laptops, SFR offers almost systematically the least expensive offers for users requiring up to 10GB. For offers including 2GB of mobile data, Orange is however clearly less expensive. Free only has one offer for tablets and laptops and this includes 50GB[98]. As a consequence, Free is the most expensive provider for low usage profiles, but the absolute price champion when more than 10GB of mobile data is required.

[97] Except for the offer including 4GB.

[98] The 50GB downloadable volume is however only available on 4G networks; on 3G networks, the downloadable volume is limited to 3GB.

4.10.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - France		
Orange France	orange™	4G available
SFR	SFR	4G available
Free	free	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Orange France	2GB to 20GB	50MB to 10GB
SFR	1GB to 15GB	100MB to 40GB
Free	50MB to 50GB	50MB to 50GB

The data allowances included in the mobile broadband offers of the three French operators are somewhat divergent. With offers of up to 50 GB for both handsets and tablets/laptops, Free offers the highest data allowances. SFR comes rather close for handsets (up until 40 GB), but has the lowest of the three maximum data allowances for laptops and tablets (15 GB compared to 20 and 50 GB for Orange and Free respectively).

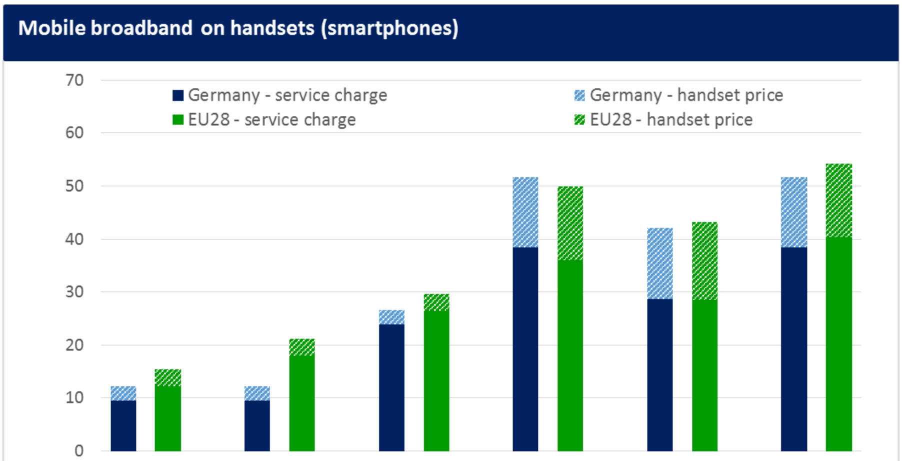
Take-up of mobile broadband offers

	France	EU28
Mobile broadband penetration (subscriptions per 100 people) [99]	73.3%	75.3%
% of households having at least one mobile phone subscription giving access to internet[100]	73.0%	75.0%

[99] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[100] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.11. Germany

4.11.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 53: Germany: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

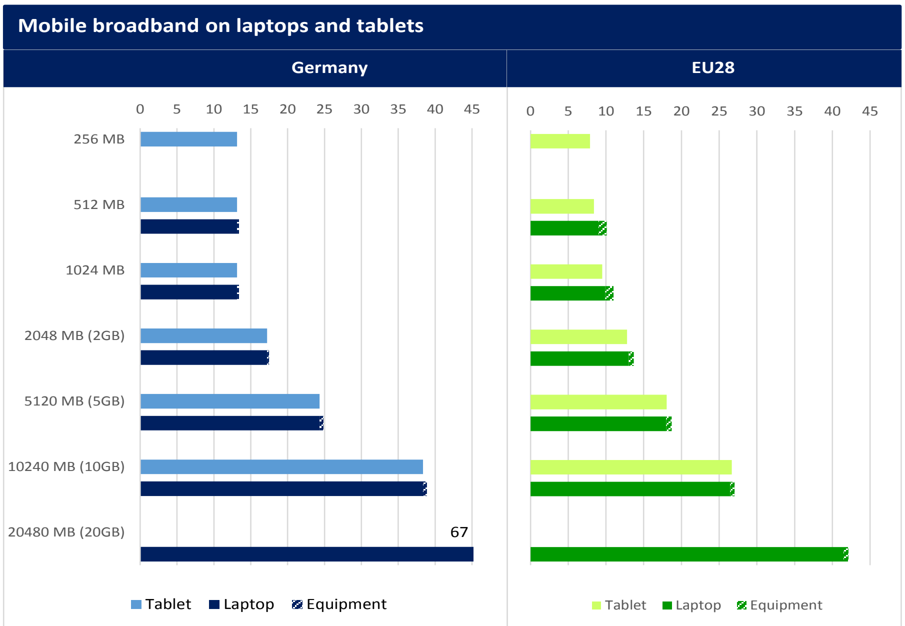
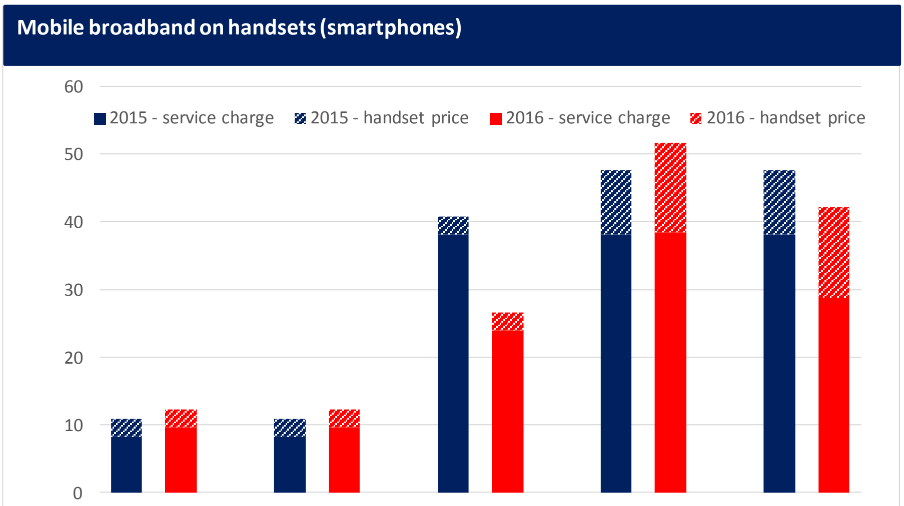


Table 54: Germany: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband packages for handsets are on average a bit cheaper in Germany compared to the EU28 (13% cheaper on average). Meanwhile, mobile broadband on laptops and tablets is systematically much more expensive than on average in the EU28[101] and the difference with the EU28 averages is increasing over time. Indeed, the price gap between the German least expensive offers and the EU28 averages amounted to about 25% in 2015, and has increased further to over 40% in 2016. This price difference applies rather uniformly to all user profiles.

[101] Average of the least expensive offers of all mobile operators in the sample.

4.11.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 55: Germany: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

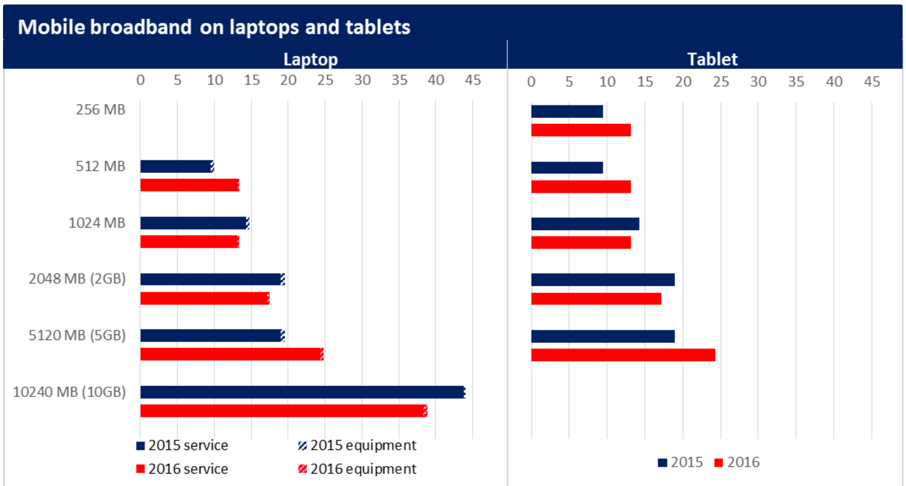


Table 56: Germany: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

On average, the prices for mobile data packages on handsets remained rather stable between 2015 and 2016. The average price decrease of -2% (compared to -7% at the EU28 level) results however from the combination of increases of around 10% for three out of the five usage profiles and a price decrease of respectively 35% and 12% for the offers including 1GB and 2GB with low volumes of minutes and SMS.

For laptops and tablets, prices on average increase (+17% for tablets and +6% for laptops), but the evolution of prices between 2015 and 2016 varies a lot depending on the usage profiles. Indeed, price differences range from an increase of about 40% for low usage tablet offers to a decrease of around 10% for 2GB and 10GB laptop offers. The price increases for laptop and tablet based offers contrast strongly with the evolution in the EU28 (i.e. -3% price decrease on average for both tablets and laptops).

4.11.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Vodafone** 12.24 2.67	**O2** 12.24 2.67	**Telekom** 13.72 2.67
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Vodafone** 12.24 2.67	**O2** 17.04 2.67	**Telekom** 26.20 2.67
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Vodafone** 26.57 2.67	**O2** 31.43 2.67	**Telekom** 41.90 2.67
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**O2** 51.64 13.30	**Telekom** 52.34 13.05	**Vodafone** 56.36 13.30
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**#N/A** 42.04 13.30	**#N/A** 42.05 13.30	**Telekom** 52.34 13.05
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**O2** 51.65 13.30	**Telekom** 61.93 13.05	**Vodafone** 66.95 13.30
Tablet			
256 MB EU28: 7.89	**Vodafone** 13.15	**O2** 14.39	**Telekom** 14.52
512 MB EU28: 8.4	**Vodafone** 13.15	**O2** 14.39	**Telekom** 14.52
1024 MB (1GB) EU28: 9.5	**Vodafone** 13.15	**O2** 14.39	**Telekom** 14.52
2048 MB (2GB) EU28: 12.8	**Vodafone** 17.22	**O2** 19.17	**Telekom** 29.65
5120 MB (5GB) EU28: 18.06	**O2** 24.33	**Vodafone** 25.37	**Telekom** 72.66
10240 MB (10GB) EU28: 26.67	**O2** 38.35	**Telekom** 144.33	
Laptop			
512 MB EU28: 10.13	**Vodafone** 13.41	**O2** 14.92	**Telekom** 15.32
1024 MB (1GB) EU28: 11	**Vodafone** 13.41	**O2** 14.92	**Telekom** 15.32
2048 MB (2GB) EU28: 13.7	**Vodafone** 17.49	**O2** 19.70	**Telekom** 20.64
5120 MB (5GB) EU28: 18.71	**O2** 24.87	**Vodafone** 25.64	**Telekom** 30.23
10240 MB (10 GB) EU28: 27.05	**O2** 38.88	**Telekom** 39.77	
20480 MB (20 GB) EU28: 42.14	**O2** 67.62	**Telekom** 70.36	

Table 57: Germany: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Regardless of the device used for accessing the mobile internet, Vodafone is systematically the cheapest choice for the lower usage profiles and O2 for the high usage profiles. Telekom never has the least expensive offer.

4.11.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Germany		
Telekom Deutschland		4G available
Vodafone Germany		4G available
O2		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Telekom Deutschland	1GB to 20GB	500 MB to 30GB
Vodafone Germany	1GB to 6GB	200MB to 8GB
O2	1GB to 6GB	500MB to 5GB

Maximum data allowances of Vodafone and O2 are rather similar. Both only offer tablet/laptop offers of up until 6 GB, which is substantially lower than the data allowance of the highest predefined user profile, and the maximum handset data allowance of both is somewhat higher than that of the highest user profile (8/5 GB versus 4 GB). Telekom Deutschland shows a very different offer set: offers on laptops and tablets go up to 20 GB, and handset offers of as high as 30 GB are provided.

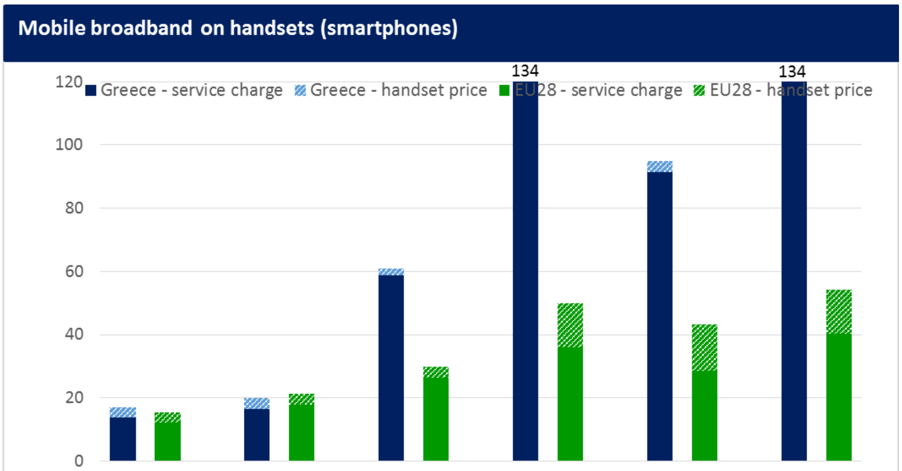
Take-up of mobile broadband offers

	Germany	EU28
Mobile broadband penetration (subscriptions per 100 people) [102]	66.4%	75.3%
% of households having at least one mobile phone subscription giving access to internet[103]	75.0%	75.0%

[102] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[103] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.12. Greece

4.12.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 58: Greece: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

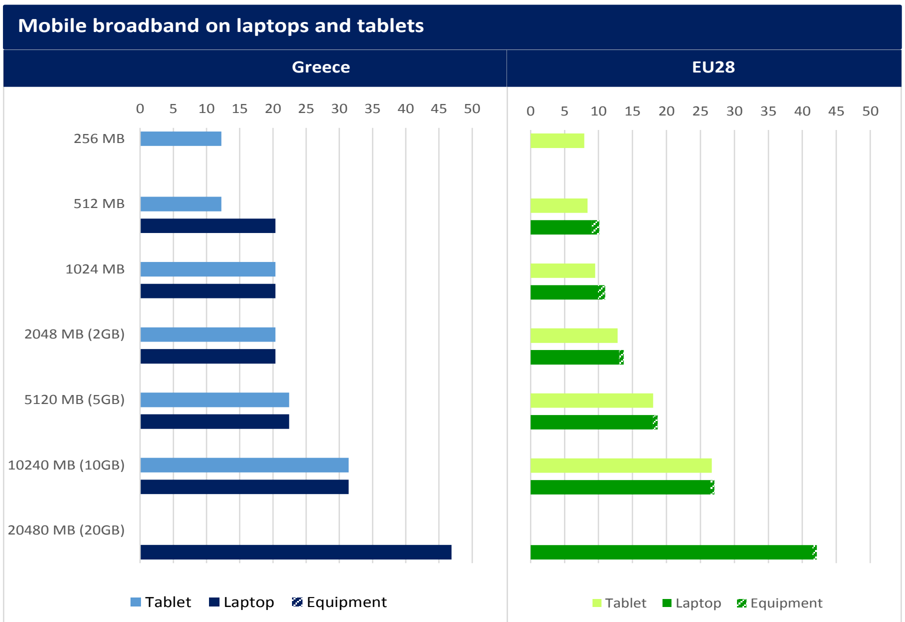
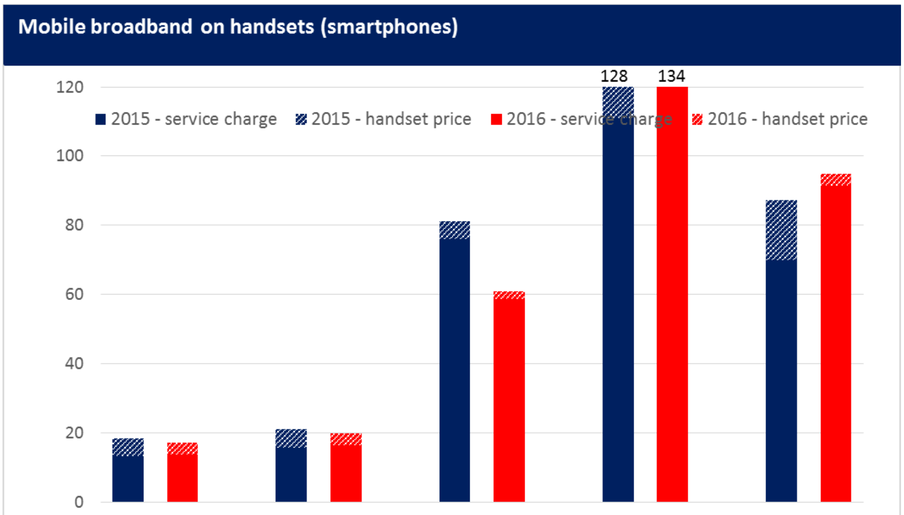


Table 59: Greece: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

As in 2015 and except for the two lowest usage profiles on handsets, prices in Greece are systematically more expensive than in the EU28. More precisely, handset based offers are on average 90% more expensive in Greece and the prices of the least expensive offers for laptops and tablets are 50% higher than the average prices in EU28[104]. For handset based offers, the differences are most striking for packages including large volumes of minutes and SMS. The difference between the Greek prices and the EU28 averages is less pronounced for the tablet and laptop based offers including 5GB or more. For these high usage profiles, the prices in Greece are on average about 20% more expensive than in the EU28 on average.

[104] Average of the least expensive offers of all mobile operators in the sample.

4.12.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 60: Greece: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

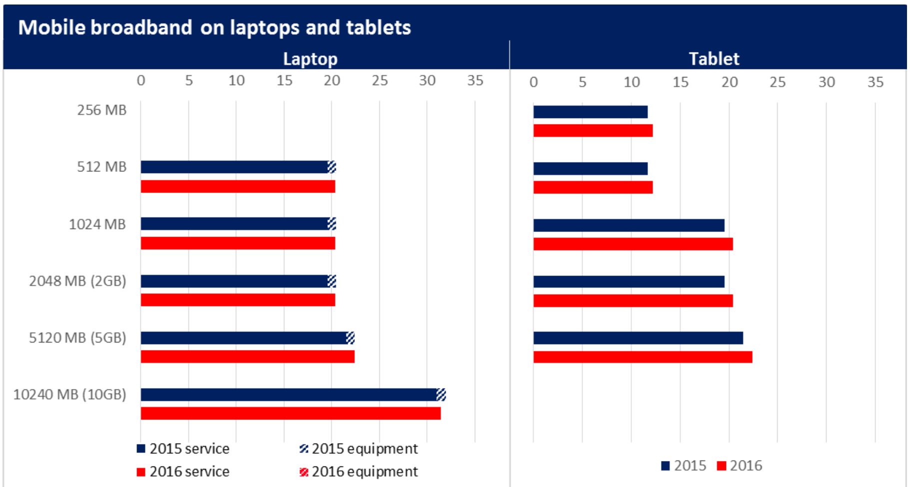


Table 61: Greece: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

The evolution of the price for mobile data packages on handsets varies strongly depending on the usage profile and ranges from -25% for the 1GB offer to +10% for the 2GB offer including low volumes of minutes and SMS. On average, the price of handset based offers decreased by 5% (compared to an average decrease of 7% in the EU28).

The prices for mobile data on tablet and laptops remained rather stable in 2016 compared to 2015. Overall, the prices for laptops stagnated (decrease of 1% on average), whereas the prices of all least expensive offers on tablets uniformly increased with 4%. These figures are to be compared with an average price decrease of 3% in the EU28.

4.12.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Vodafone** 17.09 3.39	**Cosmote** 18.42 4.73
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Vodafone** 19.83 3.39	**Cosmote** 21.16 4.73
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Cosmote** 60.77 2.01	**Vodafone** 91.43 0.00
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Vodafone** 133.63 0.00	**Cosmote** 149.80 9.14
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Vodafone** 94.96 3.53	**Cosmote** 105.70 16.96
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Vodafone** 133.63 0.00	**Cosmote** 149.80 9.14
Tablet		
256 MB EU28: 7.89	**Vodafone** 12.23	**Cosmote** 12.40
512 MB EU28: 8.4	**Vodafone** 12.23	**Cosmote** 12.40
1024 MB (1GB) EU28: 9.5	**Vodafone** 20.39	**Cosmote** 21.57
2048 MB (2GB) EU28: 12.8	**Vodafone** 20.39	**Cosmote** 21.57
5120 MB (5GB) EU28: 18.06	**Vodafone** 22.42	**Cosmote** 24.63
10240 MB (10GB) EU28: 26.67	**Vodafone** 31.39	**Cosmote** 33.81
Laptop		
512 MB EU28: 10.13	**Vodafone** 20.39	**Cosmote** 23.06
1024 MB (1GB) EU28: 11	**Vodafone** 20.39	**Cosmote** 23.06
2048 MB (2GB) EU28: 13.7	**Vodafone** 20.39	**Cosmote** 23.06
5120 MB (5GB) EU28: 18.71	**Vodafone** 22.42	**Cosmote** 26.12
10240 MB (10 GB) EU28: 27.05	**Vodafone** 31.39	**Cosmote** 35.29
20480 MB (20 GB) EU28: 42.14	**Vodafone** 46.89	**Cosmote** 50.58

Table 62: Greece: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

As in 2015, Vodafone is almost always the cheapest choice for mobile broadband in Greece, except for the handset based offer including 1GB for which Cosmote is 50% cheaper. For all user profiles for which Vodafone is providing the least expensive offer, the differences in price between the two operators amount to around 10% on average.

4.12.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Greece		
Cosmote	COSMOTE ο κόσμος μας, εσύ.	4G available
Vodafone	vodafone	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Cosmote	500MB to 20GB	100MB to 12GB
Vodafone	2GB to 20GB	50MB to 6GB

The data allowances included in the mobile broadband offers on laptop and tablet of both operators are rather equivalent, although Cosmote offers more diversity as offers start at 500 MB. For mobile broadband on handsets, Cosmote has offers with data allowances that are double the maximum data allowance of Vodafone (12 compared to 6 GB).

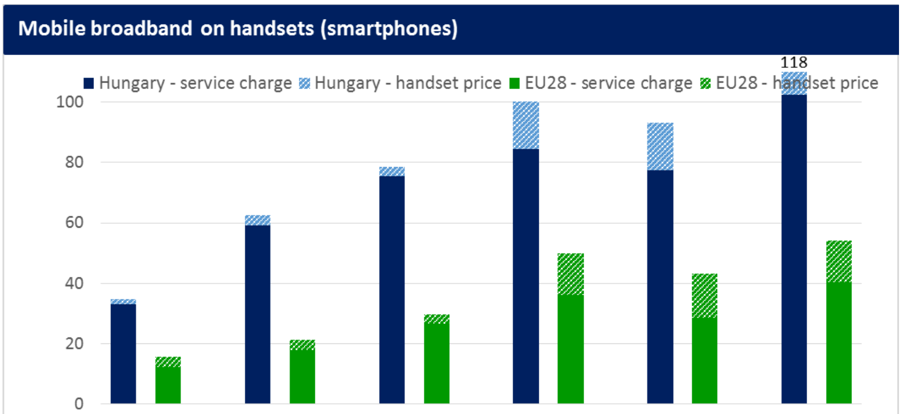
Take-up of mobile broadband offers

	Greece	EU28
Mobile broadband penetration (subscriptions per 100 people) [105]	44.3%	75.3%
% of households having at least one mobile phone subscription giving access to internet[106]	64.0%	75.0%

[105] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[106] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.13. Hungary

4.13.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 63: Hungary: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

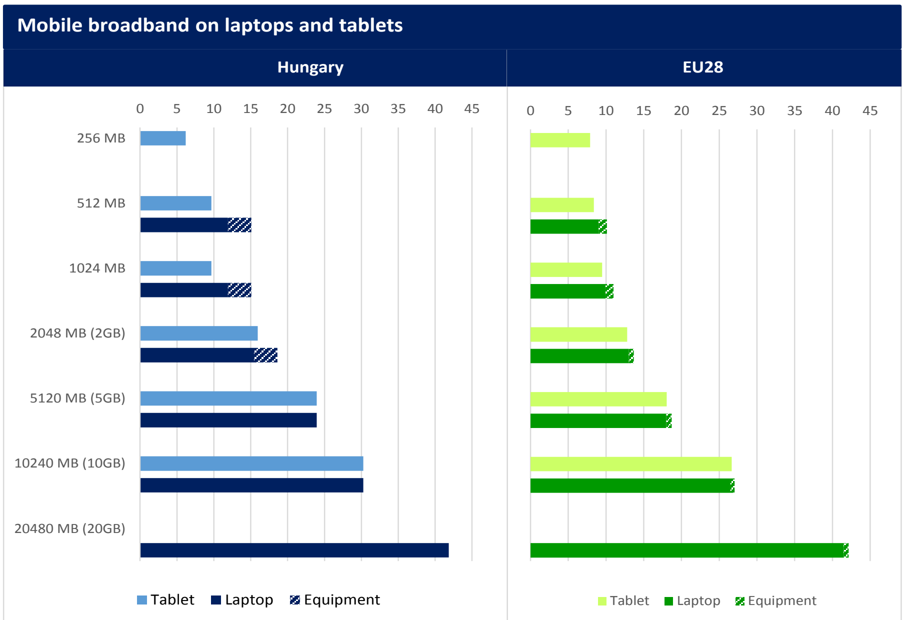
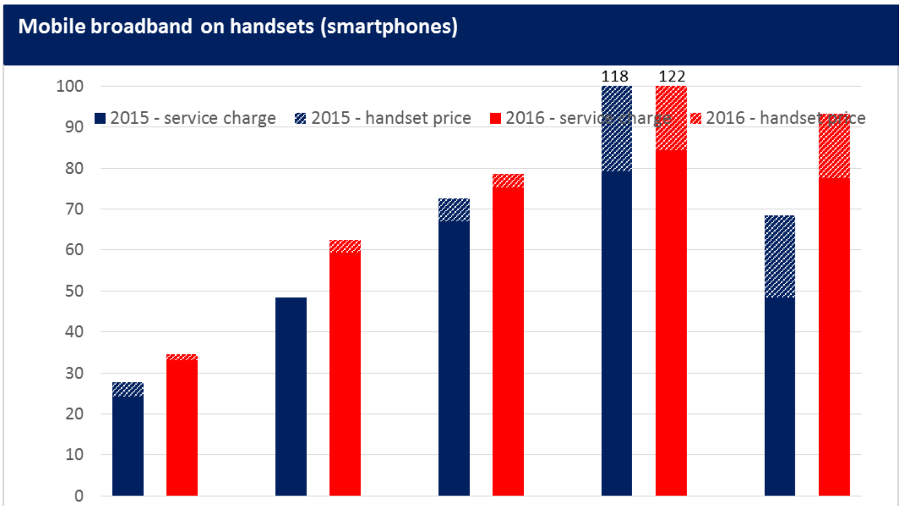


Table 64: Hungary: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Overall, mobile broadband packages on handsets are more than double as expensive in Hungary as in the EU28[107] on average. Prices for mobile broadband on tablets and laptops are on average respectively about 10% and 30% more expensive in Hungary compared to the EU28. Regardless of the device used for accessing mobile broadband services, the gap between the Hungarian and EU28 prices has increased in 2016 compared to 2015.

[107] Average of the least expensive offers of all mobile operators in the sample.

4.13.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 65: Hungary: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

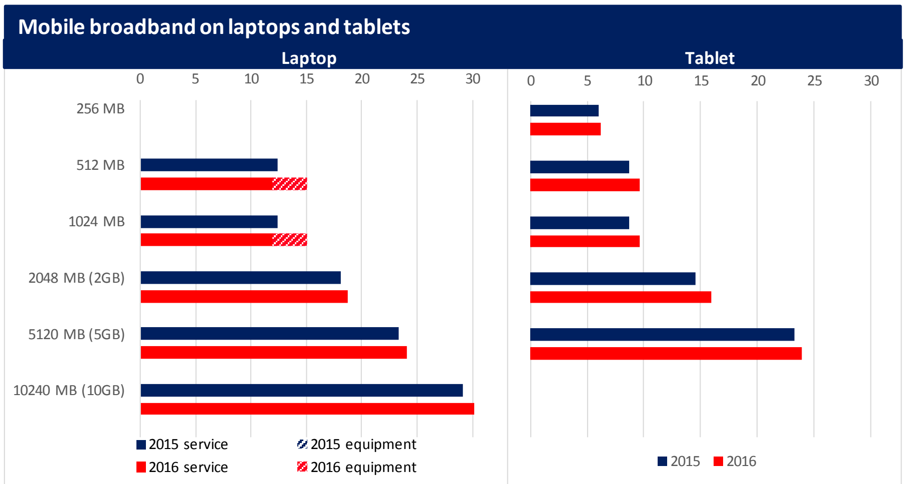


Table 66: Hungary: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Despite the fact that mobile broadband in Hungary was already in 2015 much more expensive than in the EU28[108] on average, prices further increased. Between 2015 and 2016, the least expensive offers for mobile data increased on average respectively by 20%, 10% and 8% for handsets, laptops and tablets. The situation in Hungary is in complete contrast to the overall trend in the EU28, where average price decreases are observed of 7% for handset based offers and 3% for both laptop and tablet based offers.

[108] Average of the least expensive offers of all mobile operators in the sample.

4.13.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Telekom (T-Mobile Hungary)** 34.66 1.56	**Telenor** 43.93 6.83
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Telekom (T-Mobile Hungary)** 62.50 3.21	**Telenor** 77.44 6.83
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Telekom (T-Mobile Hungary)** 78.57 3.21	**Telenor** 108.06 0.00
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Telekom (T-Mobile Hungary)** 100.30 15.86	**Telenor** 108.06 0.00
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Telekom (T-Mobile Hungary)** 93.32 15.86	**Telenor** 97.22 5.87
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Telekom (T-Mobile Hungary)** 118.48 15.86	**Telenor** 122.36 0.00
Tablet		
256 MB EU28: 7.89	**Telekom (T-Mobile Hungary)** 6.19	**Telenor** 9.66
512 MB EU28: 8.4	**Telenor** 9.66	**Telekom (T-Mobile Hungary)** 11.91
1024 MB (1GB) EU28: 9.5	**Telenor** 9.66	**Telekom (T-Mobile Hungary)** 11.91
2048 MB (2GB) EU28: 12.8	**Telenor** 15.95	**Telekom (T-Mobile Hungary)** 18.62
5120 MB (5GB) EU28: 18.06	**Telenor** 23.96	**Telekom (T-Mobile Hungary)** 24.02
10240 MB (10GB) EU28: 26.67	**Telenor** 30.25	**Telekom (T-Mobile Hungary)** 41.84
Laptop		
512 MB EU28: 10.13	**Telekom (T-Mobile Hungary)** 15.07	**Telenor** 18.42
1024 MB (1GB) EU28: 11	**Telekom (T-Mobile Hungary)** 15.07	**Telenor** 18.42
2048 MB (2GB) EU28: 13.7	**Telekom (T-Mobile Hungary)** 18.62	**Telenor** 19.38
5120 MB (5GB) EU28: 18.71	**Telenor** 23.96	**Telekom (T-Mobile Hungary)** 24.02
10240 MB (10 GB) EU28: 27.05	**Telenor** 30.25	**Telekom (T-Mobile Hungary)** 41.84
20480 MB (20 GB) EU28: 42.14	**Telekom (T-Mobile Hungary)** 41.84	**Telenor** 54.83

Table 67: Hungary: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

T-Mobile Hungary is systematically the least expensive provider of mobile broadband on handsets. For usage profiles up to 1GB, the price of the second provider in the sample is on average 30% more expensive. The price gap between the two operators is however reduced to only 5% for offers including 2GB or 4GB. Telenor most often has the best offer for tablets. Finally, for laptops T-Mobile Hungary is again most often the cheapest provider. Only for the 10GB usage profile, Telenor clearly offers a much cheaper price (about 40% cheaper than the least expensive offer of T-Mobile Hungary).

4.13.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Hungary		
Telekom (T-Mobile Hungary)		4G available
Telenor Hungary		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Telekom (T-Mobile Hungary)	200MB to 20GB	3GB to unlimited
Telenor Hungary	1GB to 30GB	200MB to 2GB

The data allowances included in the mobile broadband offers for laptop/tablet of both operators are somewhat divergent. Telenor offers the highest maximum data allowance, but offers only start at 1 GB (compared to 200 MB for T-Mobile Hungary). For handsets, the difference is even more extreme, as T-Mobile Hungary has unlimited offers, while Telenor Hungary's highest data allowance does not even equal the data allowance of the highest predefined user profiles.

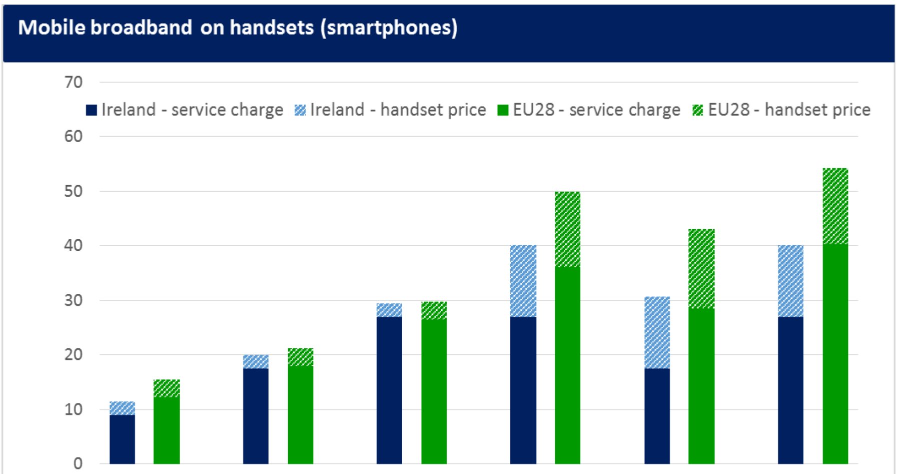
Take-up of mobile broadband offers

	Hungary	EU28
Mobile broadband penetration (subscriptions per 100 people) [109]	34.5%	75.3%
% of households having at least one mobile phone subscription giving access to internet[110]	65.0%	75.0%

[109] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[110] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.14. Ireland

4.14.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 68: Ireland: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

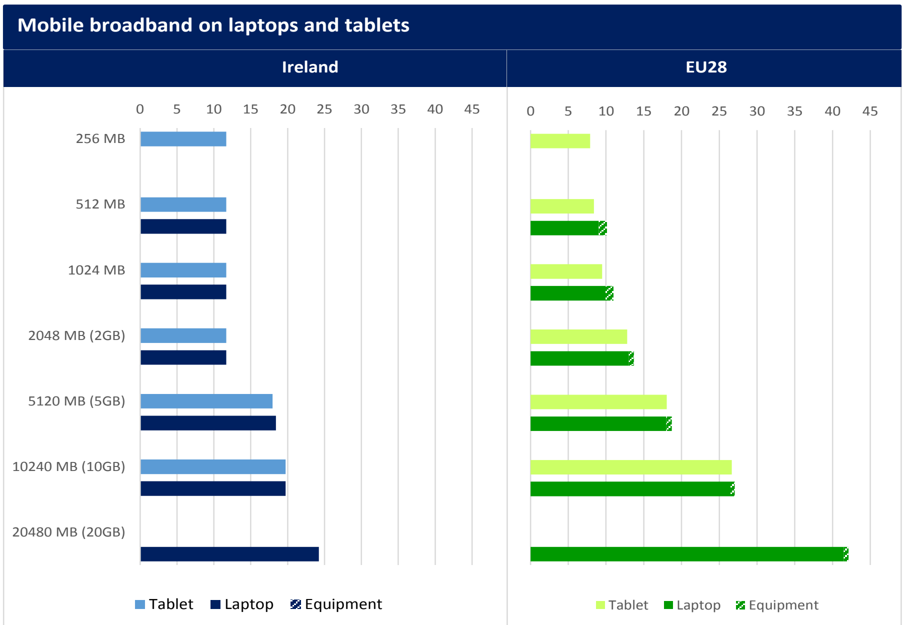
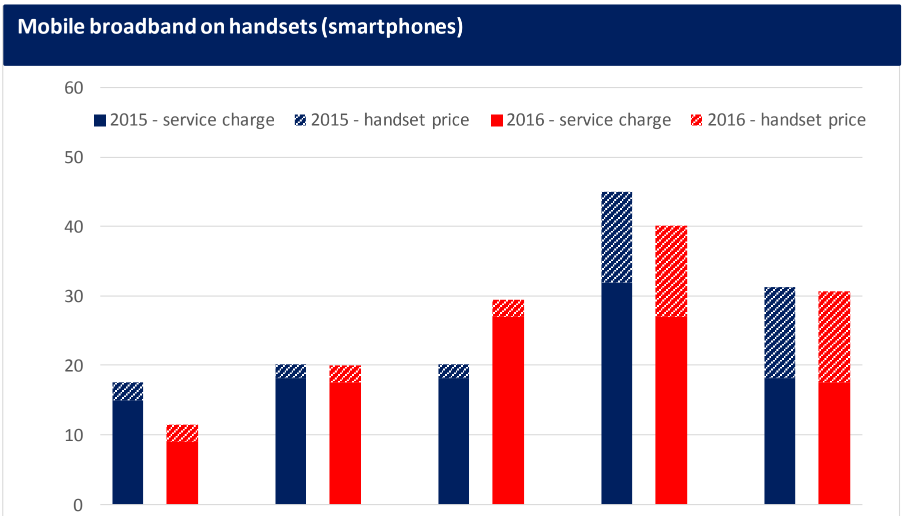


Table 69: Ireland: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband packages for handsets are always less expensive in Ireland than in the EU28[111] on average. On average, the difference amounts to around 20%. Mobile broadband on laptops and tablets is also less expensive on the condition that at least 2GB downloadable volume is included in the offer. Offers with less than 2GB included exist on the Irish market, but these are not cheaper than the least expensive offer of Three, which provides for 3GB of downloadable volume. This explains the stability in price for the low laptop/tablet usage profiles.

[111] Average of the least expensive offers of all mobile operators in the sample.

4.14.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 70: Ireland: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

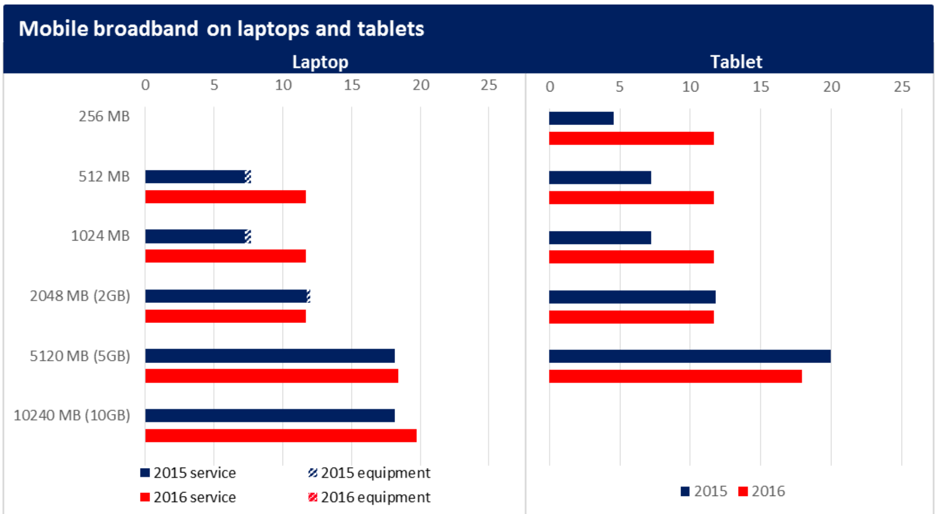


Table 71: Ireland: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Analysing all usage profiles together, the price for mobile broadband on handsets has not changed between 2015 and 2016. This 0% price evolution however averages out important price changes for the 100MB
(-35%) and 1GB (+45%) offers. Irish prices for mobile broadband on tablets and laptops increased significantly. The respective average price increases of 55% (for tablets) and over 20% (for laptops) mainly result however from very strong price increases for the lowest usage profiles.

Overall, for the predefined usage profiles, the evolution in mobile broadband prices in Ireland differs greatly from what is observed in the EU28 (i.e. -7% for handset based offers and -3% for both laptop and tablet based offers).

4.14.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS	**Three**	**Vodafone**
EU28: 15.45	11.44	28.89
includes 3.35 for the handset	2.47	2.47
512MB - 200 min - 140 SMS	**Three**	**Vodafone**
EU28: 21.23	19.92	29.39
includes 3.35 for the handset	2.47	2.47
1024 MB - 600 min - 225 SMS	**Vodafone**	**Three**
EU28: 29.71	29.39	47.14
includes 3 for the handset	2.47	1.52
2048 MB - 1800 min - 350 SMS	**Vodafone**	**Three**
EU28: 49.86	40.11	50.08
includes 14.26 for the handset	13.19	0.73
2048 MB - 200 min - 140 SMS	**Three**	**Vodafone**
EU28: 43.12	30.66	40.11
includes 14.81 for the handset	13.22	13.19
4096 MB - 1800 min - 350 SMS	**Vodafone**	**Three**
EU28: 54.23	40.11	50.08
includes 13.93 for the handset	13.19	0.73
Tablet		
256 MB	**Three**	**Vodafone**
EU28: 7.89	11.68	17.70
512 MB	**Three**	**Vodafone**
EU28: 8.4	11.68	17.95
1024 MB (1GB)	**Three**	**Vodafone**
EU28: 9.5	11.68	17.95
2048 MB (2GB)	**Three**	**Vodafone**
EU28: 12.8	11.68	17.95
5120 MB (5GB)	**Vodafone**	**Three**
EU28: 18.06	17.95	18.41
10240 MB (10GB)	**Vodafone**	**Three**
EU28: 26.67	19.73	24.25
Laptop		
512 MB	**Three**	**Vodafone**
EU28: 10.13	11.68	19.73
1024 MB (1GB)	**Three**	**Vodafone**
EU28: 11	11.68	19.73
2048 MB (2GB)	**Three**	**Vodafone**
EU28: 13.7	11.68	19.73
5120 MB (5GB)	**Three**	**Vodafone**
EU28: 18.71	18.41	19.73
10240 MB (10 GB)	**Vodafone**	**Three**
EU28: 27.05	19.73	24.25
20480 MB (20 GB)	**Three**	**Vodafone**
EU28: 42.14	24.25	26.91

Table 72: Ireland: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

In contrast to 2015, there is no clear trend regarding which operator is providing the cheapest offers for handsets. Moreover, the difference in price between the least expensive offers of the two operators amounts to around 40% on average (if abstraction is made of the 100MB offers).

For tablets and laptops, Three is systematically the cheapest provider for the lower usage profiles. Again, the average difference in price between the least expensive offers of the two operators is around 40%.

4.14.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Ireland		
Vodafone Ireland	vodafone	4G available
Three		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Vodafone Ireland	15GB to 30GB	1GB to 10GB
Three	3GB to 250GB	500 MB to unlimited

The data allowances included in the mobile broadband offers of both operators are very different. Three offers higher data allowances for both handset and laptop/tablet based offers, and at the same time provides for lower data volume entry levels. Vodafone's maximum data allowances however still exceed those of the highest predefined user profiles (on both types of devices).

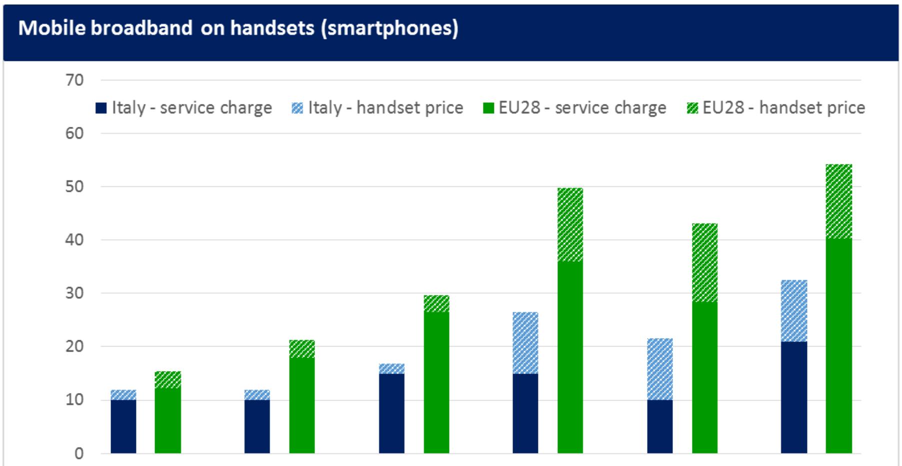
Take-up of mobile broadband offers

	Ireland	EU28
Mobile broadband penetration (subscriptions per 100 people) [112]	86.6%	75.3%
% of households having at least one mobile phone subscription giving access to internet[113]	84.0%	75.0%

[112] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[113] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.15. Italy

4.15.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 73: Italy: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

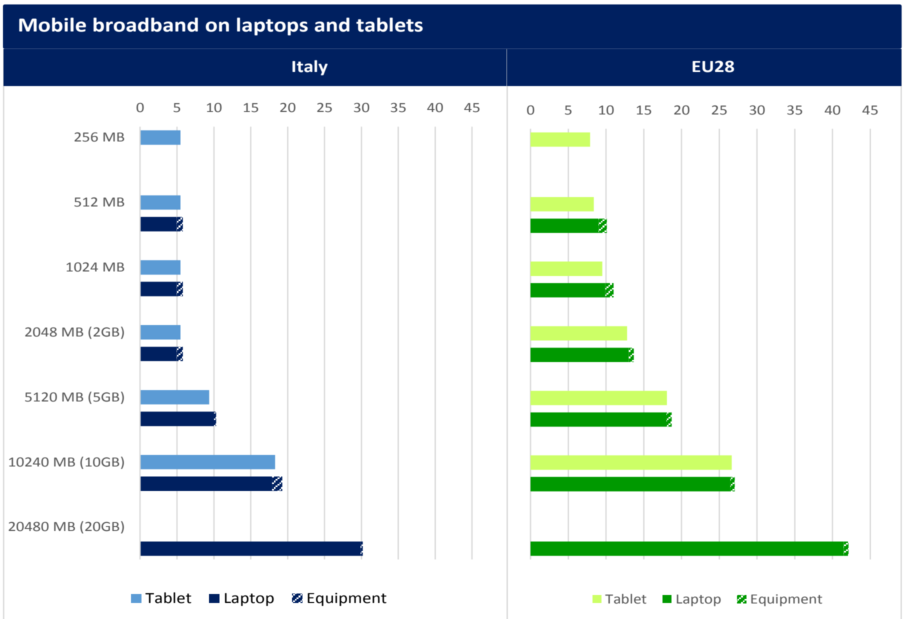
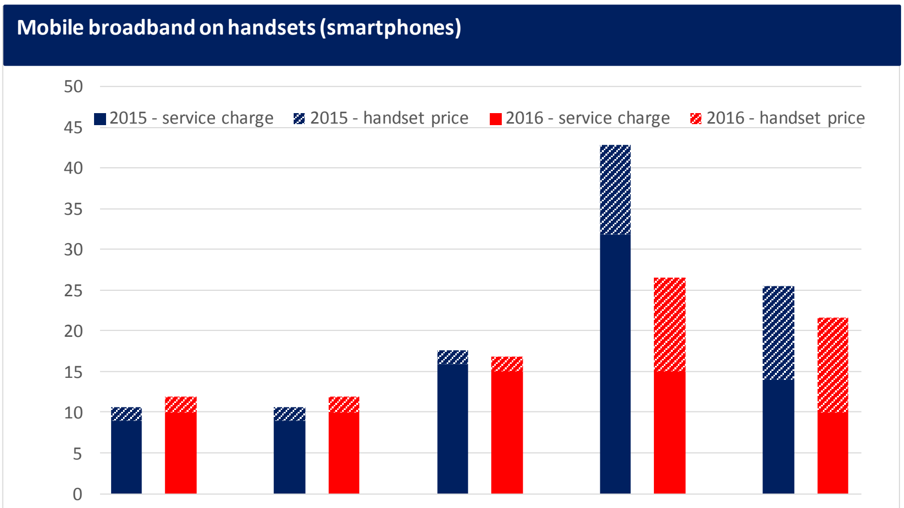


Table 74: Italy: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

As in 2015 and regardless of the device used for accessing mobile broadband services (handset, tablet or laptop) and the precise user profiles (low, medium or high), prices in Italy are systematically about 40% cheaper compared with the EU28[114] averages.

[114] Average of the least expensive offers of all mobile operators in the sample.

4.15.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 75: Italy: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

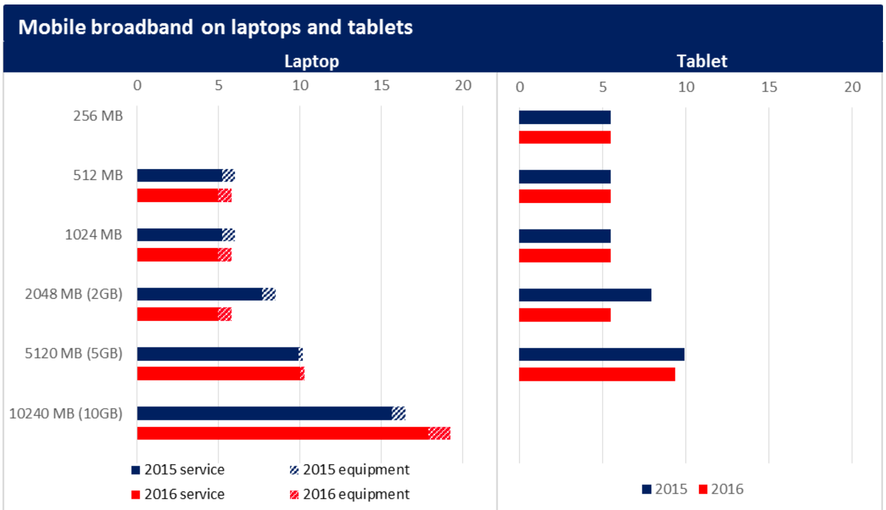


Table 76: Italy: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

In Italy, mobile broadband prices on handsets decreased by 7% between 2015 and 2016. This is fully in line with what is observed in the EU28 on average[115].

Prices for mobile broadband on laptops and tablets decreased (slightly) more in Italy than in the EU28 on average. Compared to 2015, prices for tablet based offers are on average 8% lower in 2016 (compared to 3% lower in the EU28); the least expensive price of laptop based offers is on average reduced by 4% (again compared to 3% in the EU28).

[115] Average of the least expensive offers of all mobile operators in the sample.

4.15.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	Wind 11.90 1.93	Vodafone 12.75 2.49	Telecom Italia (TIM) 22.89 2.49
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	Wind 11.90 1.93	Vodafone 20.12 2.49	Telecom Italia (TIM) 22.89 2.49
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	Wind 16.87 1.93	Vodafone 27.23 2.49	Telecom Italia (TIM) 27.86 2.49
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	Wind 26.53 11.60	Vodafone 43.73 9.94	Telecom Italia (TIM) 46.61 11.30
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	Wind 21.56 11.60	Telecom Italia (TIM) 36.67 11.30	Vodafone 43.73 9.94
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	Wind 32.49 11.60	Vodafone 48.70 9.94	Telecom Italia (TIM) 49.28 4.40
Tablet			
256 MB EU28: 7.89	Telecom Italia (TIM) 5.47	Wind 5.49	Vodafone 10.02
512 MB EU28: 8.4	Telecom Italia (TIM) 5.47	Wind 5.49	Vodafone 10.02
1024 MB (1GB) EU28: 9.5	Telecom Italia (TIM) 5.47	Wind 5.49	Vodafone 10.02
2048 MB (2GB) EU28: 12.8	Telecom Italia (TIM) 5.47	Wind 7.98	Vodafone 10.02
5120 MB (5GB) EU28: 18.06	Wind 9.36	Vodafone 10.02	Telecom Italia (TIM) 20.38
10240 MB (10GB) EU28: 26.67	Wind 18.31	Vodafone 19.96	Telecom Italia (TIM) 30.32
Laptop			
512 MB EU28: 10.13	Telecom Italia (TIM) 5.80	Wind 6.60	Vodafone 10.02
1024 MB (1GB) EU28: 11	Telecom Italia (TIM) 5.80	Wind 6.60	Vodafone 10.02
2048 MB (2GB) EU28: 13.7	Telecom Italia (TIM) 5.80	Wind 9.08	Vodafone 10.02
5120 MB (5GB) EU28: 18.71	Vodafone 10.30	Wind 10.32	Telecom Italia (TIM) 20.70
10240 MB (10 GB) EU28: 27.05	Wind 19.27	Vodafone 20.24	Telecom Italia (TIM) 30.64
20480 MB (20 GB) EU28: 42.14	Vodafone 30.18		

Table 77: Italy: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Wind is always the cheapest option for mobile broadband packages on handsets. For tablets and laptops, Telecom Italia (TIM) is systematically the least expensive operator for the lower usage profiles (up to 2GB), closely followed by Wind. Above 2GB, Telecom Italia (TIM) is the most expensive of the three operators in the sample. Finally, Vodafone is the only operator in Italy with an offer that allows for a monthly mobile data usage of 20GB.

4.15.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Italy		
Vodafone Italy		4G available
Telecom Italia (TIM)		4G available
Wind		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Vodafone Italy	5GB to 20GB	3GB
Telecom Italia (TIM)	2GB to 50GB	1GB to 4GB
Wind	4GB to 20GB	2GB to 10GB

The data volume entry level in Italy is 1 GB of data, regardless of the device used for accessing the internet. At 10 GB, Wind clearly offers the highest data allowance on handsets, while for laptops/tablets, it maximum data allowance of 20 GB is the same as that of Vodafone, and less than half of the 50 GB offered by Telecom Italia.

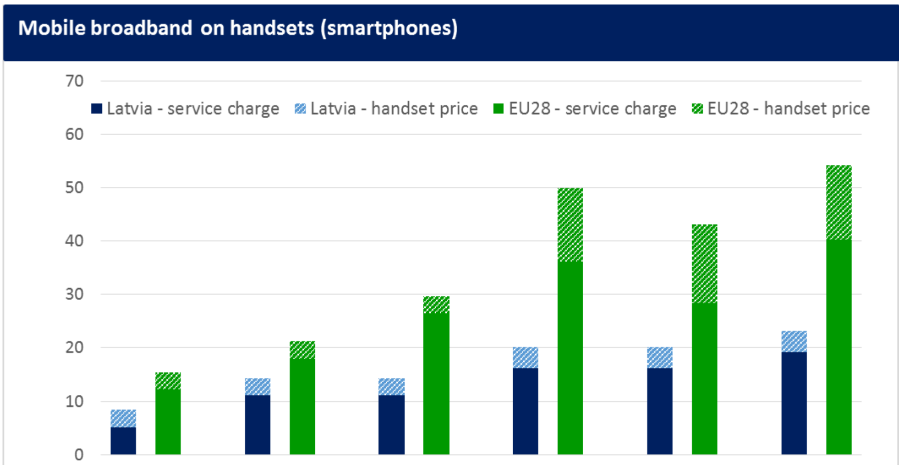
Take-up of mobile broadband offers

	Italy	EU28
Mobile broadband penetration (subscriptions per 100 people) [116]	75.3%	75.3%
% of households having at least one mobile phone subscription giving access to internet[117]	74.0%	75.0%

[116] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[117] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.16. Latvia

4.16.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 78: Latvia: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

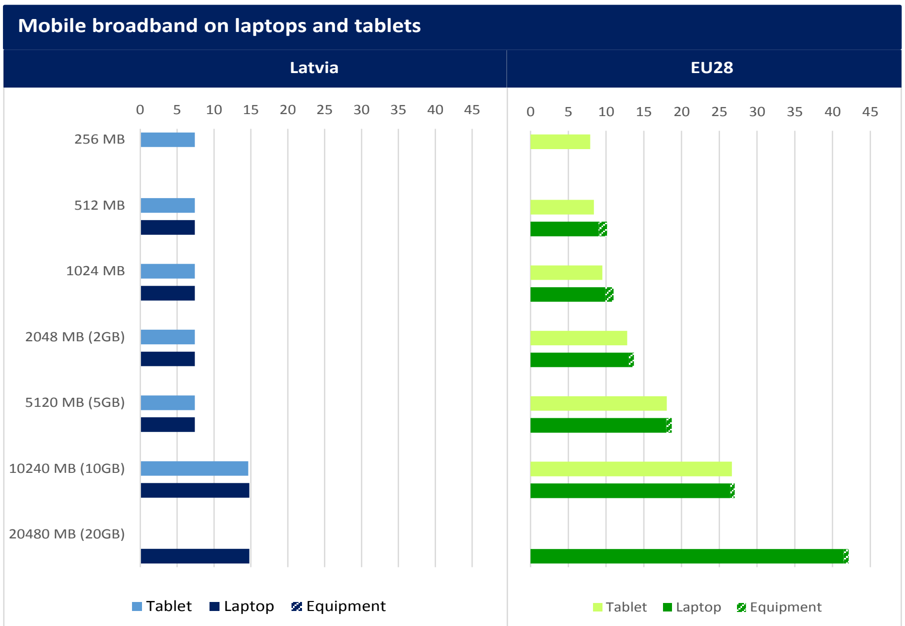
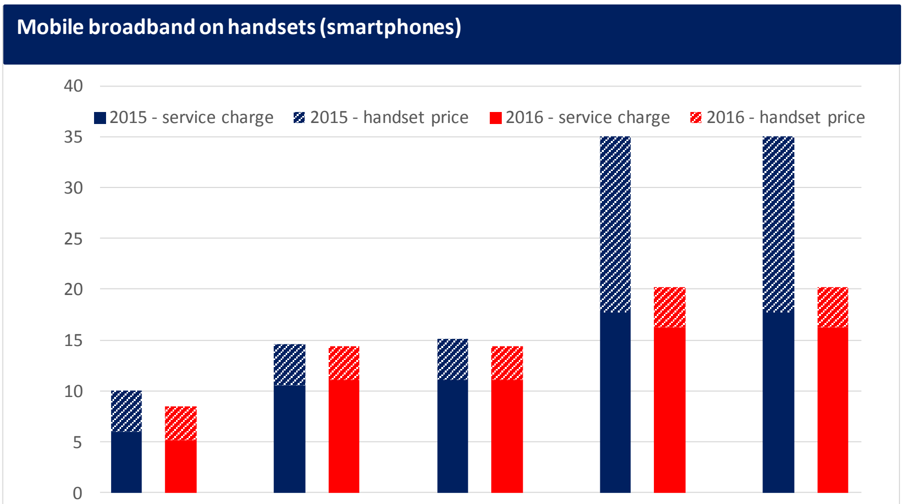


Table 79: Latvia: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

The prices for mobile broadband packages on handsets in Latvia are on average 50%[118] cheaper than in the EU28[119]. Mobile broadband on laptops and tablets respectively is on average about 45%[120] and 30%[121] less expensive in Latvia.

[118] Compared to 40% in 2015.
[119] Average of the least expensive offers of all mobile operators in the sample.
[120] Compared to 14% in 2015.
[121] As in 2015.

4.16.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 80: Latvia: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

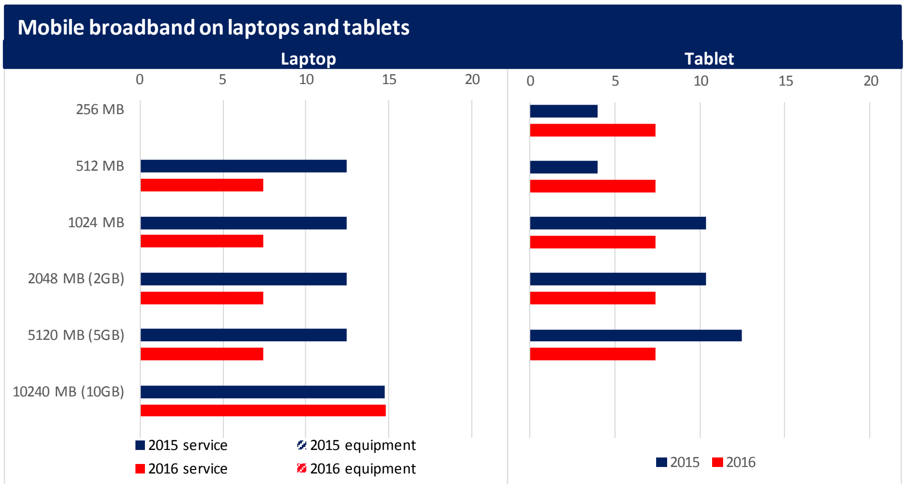


Table 81: Latvia: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Regardless of the device used for accessing the mobile broadband service, and with the exception of low usage profiles on tablets (up to 512MB), prices of the least expensive offers in Latvia dropped between 2015 and 2016, most often significantly .

Prices of handset based offers went down by 21% on average and by over 40% for the packages including 2GB (compared to -7% on average in the EU28[122]). Prices for offers on tablets with 1GB or more dropped by one third (compared to -3% for the EU28[123] on average). The least expensive price for offers on laptops with up to 5GB included decreased sharply by 40%, whereas the cost of the 10GB offer remained unchanged between 2015 and 2016. These figures for laptops also deviate strongly from the average decrease by 3% in the EU28.

[122] Average of the least expensive offers of all mobile operators in the sample.
[123] Average of the least expensive offers of all mobile operators in the sample.

4.16.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS	**Tele2**	**LMT**
EU28: 15.45	8.42	19.47
includes 3.35 for the handset	3.25	3.26
512MB - 200 min - 140 SMS	**Tele2**	**LMT**
EU28: 21.23	14.33	26.87
includes 3.35 for the handset	3.25	3.26
1024 MB - 600 min - 225 SMS	**Tele2**	**LMT**
EU28: 29.71	14.33	29.83
includes 3 for the handset	3.25	3.26
2048 MB - 1800 min - 350 SMS	**Tele2**	**LMT**
EU28: 49.86	20.21	46.13
includes 14.26 for the handset	3.94	18.07
2048 MB - 200 min - 140 SMS	**Tele2**	**LMT**
EU28: 43.12	20.21	46.13
includes 14.81 for the handset	3.94	18.07
4096 MB - 1800 min - 350 SMS	**Tele2**	**LMT**
EU28: 54.23	23.19	47.61
includes 13.93 for the handset	3.94	18.07
Tablet		
256 MB	**Tele2**	**LMT**
EU28: 7.89	7.39	10.44
512 MB	**Tele2**	**LMT**
EU28: 8.4	7.39	10.44
1024 MB (1GB)	**Tele2**	**LMT**
EU28: 9.5	7.39	10.44
2048 MB (2GB)	**Tele2**	**LMT**
EU28: 12.8	7.39	10.44
5120 MB (5GB)	**Tele2**	**LMT**
EU28: 18.06	7.39	14.65
10240 MB (10GB)	**LMT**	**Tele2**
EU28: 26.67	14.65	14.80
Laptop		
512 MB	**Tele2**	**LMT**
EU28: 10.13	7.39	13.08
1024 MB (1GB)	**Tele2**	**LMT**
EU28: 11	7.39	13.08
2048 MB (2GB)	**Tele2**	**LMT**
EU28: 13.7	7.39	13.08
5120 MB (5GB)	**Tele2**	**LMT**
EU28: 18.71	7.39	17.29
10240 MB (10 GB)	**Tele2**	**LMT**
EU28: 27.05	14.80	17.29
20480 MB (20 GB)	**Tele2**	**LMT**
EU28: 42.14	14.80	27.20

Table 82: Latvia: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Regardless of the device used for accessing the mobile broadband service, Tele2 Latvia is systematically the cheapest option. The only exception to this is the 10GB tablet offer, for which LMT has a very slightly better deal. Especially for the mobile broadband packages for handsets and as in 2015, the least expensive offers of both operators vary a lot (up to over 100% difference).

4.16.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Latvia		
Tele2 Latvia	TELE2	4G available
LMT	lmt	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Tele2 Latvia	5GB to unlimited	100MB to unlimited
LMT	2GB to 50GB	50MB to unlimited

Both mobile operators offer unlimited mobile data volumes on handsets, and combine this with a low data volume entry level. Tele2 Latvia also has an unlimited offer for laptops/tablets, whereas the maximum volume of mobile data included in this type of offer at LMT amounts to 50GB.

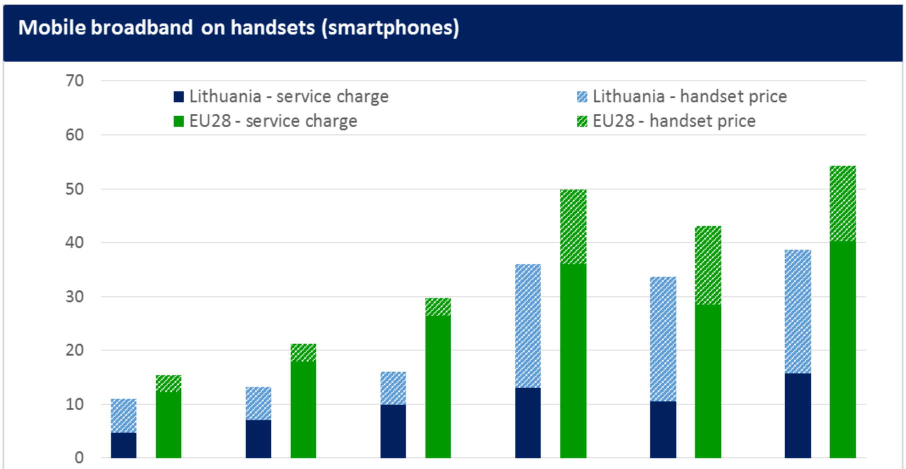
Take-up of mobile broadband offers

	Latvia	EU28
Mobile broadband penetration (subscriptions per 100 people) [124]	65.2%	75.3%
% of households having at least one mobile phone subscription giving access to internet[125]	61.0%	75.0%

[124] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[125] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.17. Lithuania

4.17.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 83: Lithuania: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

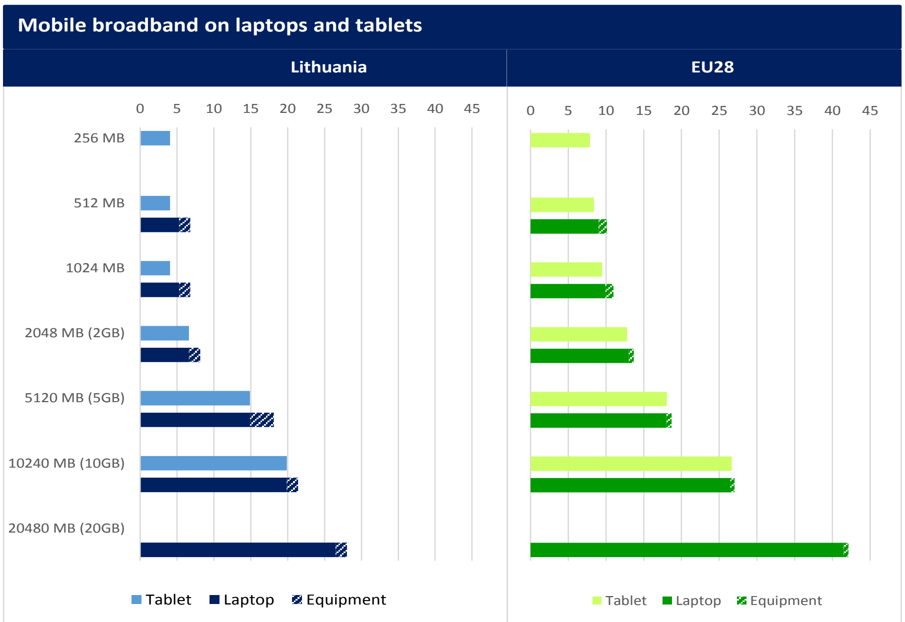
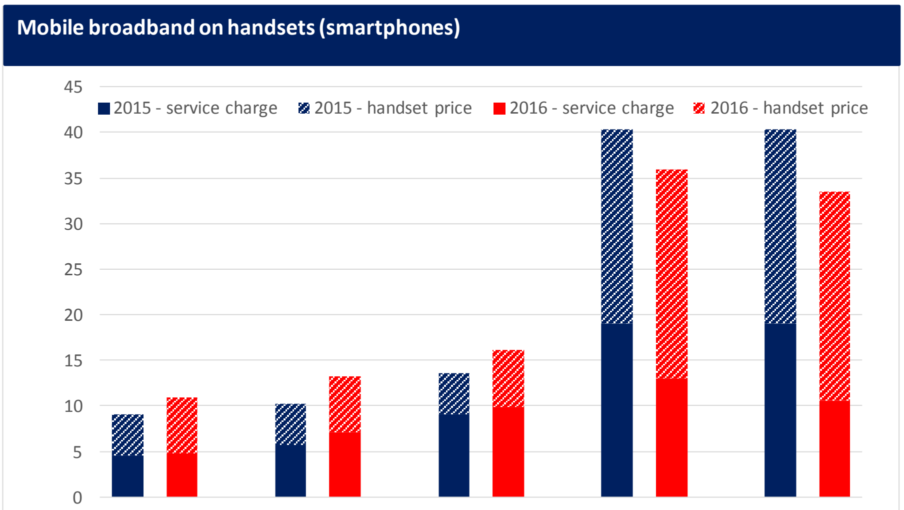


Table 84: Lithuania: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband is significantly cheaper in Lithuania than in the EU28[126] on average. Both mobile broadband packages on handset (including also voice minutes, SMS and a handset) and offers for laptops and tablets are on average around 35% less expensive[127] in Lithuania. The equipment costs related to handsets are however about 75% more expensive[128]; this could be related to the fact that many of the cheapest handset offers are SIM only (i.e. packages that do not include a handset). For laptop and handset offers, the relative price differences with the EU28 are largest for the lower speeds.

[126] Average of the least expensive offers of all mobile operators in the sample.
[127] Compared to 40% in 2015
[128] Compared to 50% in 2015

4.17.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 85: Lithuania: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

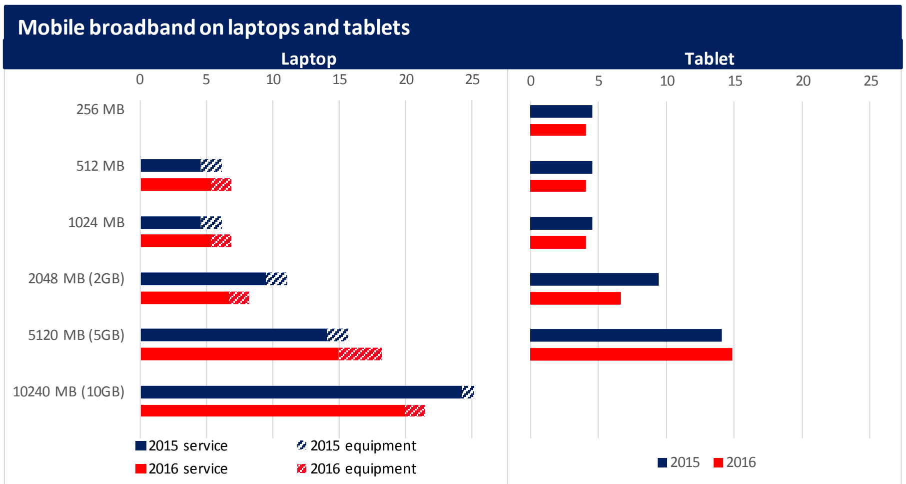


Table 86: Lithuania: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Between 2015 and 2016, prices for mobile data on handsets increased by around 25% in Lithuania for packages up to 1GB. Packages including 2GB are about 15% cheaper in 2016 compared to 2015. The prices for all handset based offers in the EU28[129] decreased by 7% on average. Prices for mobile data on laptops remained stable on average between 2015 and 2016 (compared to a price decrease of -3% for the EU28[130]). This average however hides price changes that range from -25% for 2GB offers to about +15% for 5GB offers. Finally, prices for mobile data on tablets dropped more in Lithuania than in the EU28 on average (-11% compared to -3% for the EU28[131]). Like for the laptop based offers however, the cost of the 5GB offer does not follow the trend, as it increased by 6% between 2015 and 2016.

[129] Average of the least expensive offers of all mobile operators in the sample.
[130] Average of the least expensive offers of all mobile operators in the sample.
[131] Average of the least expensive offers of all mobile operators in the sample.

4.17.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Omnitel** 10.93 6.17	**Tele2** 11.98 6.17	**Bite Lietuva** 12.70 6.17
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Tele2** 13.26 6.17	**Bite Lietuva** 13.61 6.17	**Omnitel** 15.27 6.17
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Bite Lietuva** 16.10 6.17	**Tele2** 16.70 6.17	**Omnitel** 19.23 3.49
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Bite Lietuva** 36.00 23.03	**Tele2** 38.46 23.03	**Omnitel** 41.24 23.03
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Tele2** 33.58 23.03	**Bite Lietuva** 33.70 23.03	**Omnitel** 41.24 23.03
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Bite Lietuva** 38.74 23.03	**Tele2** 41.43 23.03	**Omnitel** 47.87 23.03
Tablet			
256 MB EU28: 7.89	**Bite Lietuva** 4.06	**Omnitel** 4.97	**Tele2** 5.29
512 MB EU28: 8.4	**Bite Lietuva** 4.06	**Omnitel** 4.97	**Tele2** 5.29
1024 MB (1GB) EU28: 9.5	**Bite Lietuva** 4.06	**Omnitel** 4.97	**Tele2** 5.29
2048 MB (2GB) EU28: 12.8	**Tele2** 6.63	**Omnitel** 6.63	**Bite Lietuva** 8.27
5120 MB (5GB) EU28: 18.06	**Bite Lietuva** 14.90	**Tele2** 16.81	**Omnitel** 19.89
10240 MB (10GB) EU28: 26.67	**Tele2** 19.89	**Bite Lietuva** 24.85	**Omnitel** 26.78
Laptop			
512 MB EU28: 10.13	**Tele2** 6.81	**Omnitel** 7.46	**Bite Lietuva** 8.21
1024 MB (1GB) EU28: 11	**Tele2** 6.81	**Omnitel** 7.46	**Bite Lietuva** 8.21
2048 MB (2GB) EU28: 13.7	**Tele2** 8.15	**Omnitel** 9.12	**Bite Lietuva** 12.42
5120 MB (5GB) EU28: 18.71	**Bite Lietuva** 18.14	**Tele2** 18.33	**Omnitel** 19.94
10240 MB (10 GB) EU28: 27.05	**Tele2** 21.41	**Omnitel** 26.57	**Bite Lietuva** 27.17
20480 MB (20 GB) EU28: 42.14	**Tele2** 28.04	**Bite Lietuva** 28.99	**Omnitel** 33.20

Table 87: Lithuania: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Except for the lowest usage profile, Omnitel is always the most expensive operator for handset based offers. The prices of Tele2 and BiteLietuva are very close, which makes it impossible to say which provider offers the best deal for mobile data on handsets.

BiteLietuva has the cheapest offers for user profiles including up to 1GB for tablet based offers, but is the most expensive for low usage profiles on laptop. Tele2 is clearly the least expensive provider for laptop based offers. Omnitel never provides the least expensive offer on tablet and laptop.

4.17.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Lithuania		
Tele2 Lithuania		4G available
Bite Lietuva		4G available
Omnitel		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Tele2 Lithuania	3GB to 100GB	0 to 15GB
Bite Lietuva	5GB to unlimited	0 to unlimited
Omnitel	2GB to 64GB	50MB to 12GB

Omnitel has the lowest maximum data allowance of the three operators for both types of devices, but still largely exceeds the requirement of the predefined usage profiles. Bite Lietuva provides unlimited offers for both laptops/tablets and handsets. In the handset segment, they also have an offer that does not include any data allowance, as does Tele2. Capacity packs can be bought according to the user's needs.

Take-up of mobile broadband offers

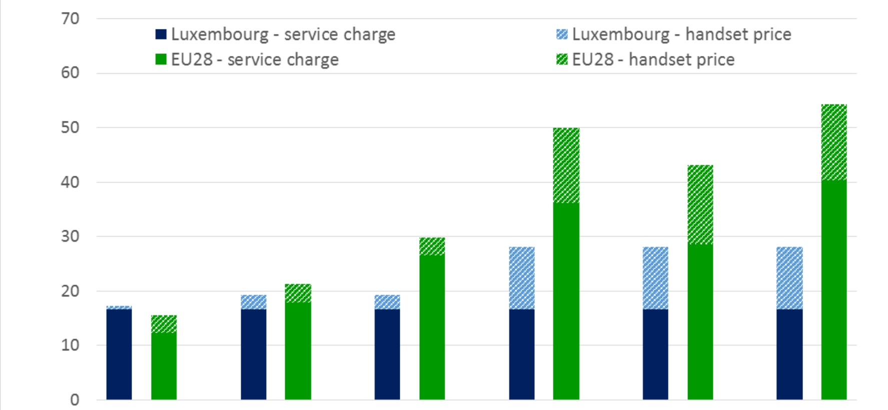
	Lithuania	EU28
Mobile broadband penetration (subscriptions per 100 people) [132]	64.3%	75.3%
% of households having at least one mobile phone subscription giving access to internet[133]	62.0%	75.0%

[132] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[133] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.18. Luxembourg

4.18.1. Price of mobile broadband

Mobile broadband on handsets (smartphones)



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 88: Luxembourg: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

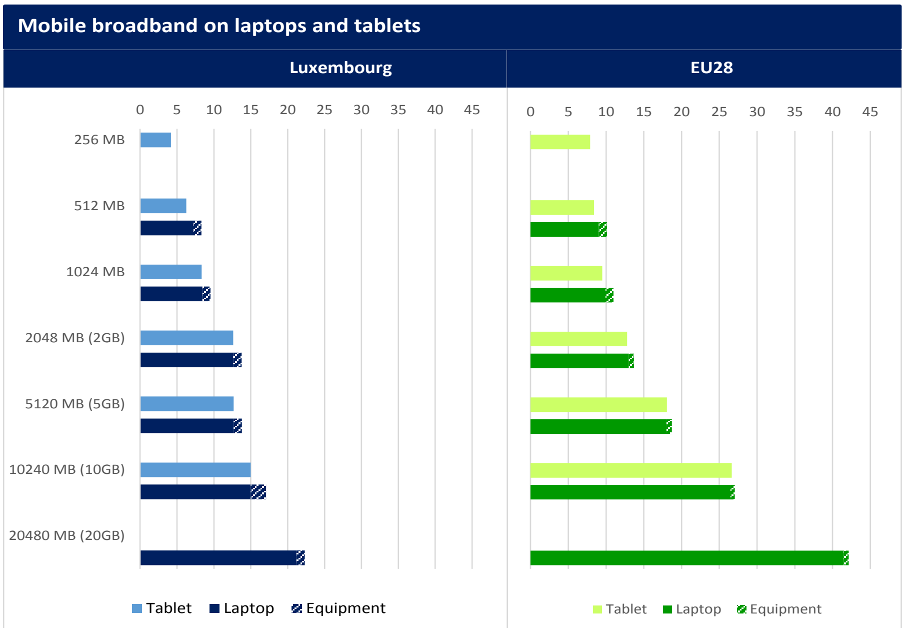
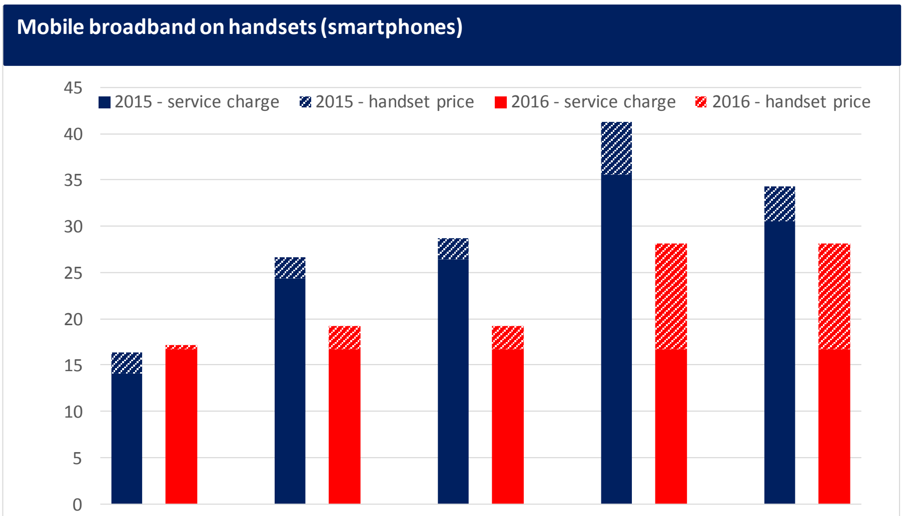


Table 89: Luxembourg: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Regardless of the device used for accessing the mobile data services, prices in Luxembourg are on average about 25% lower than in the EU28[134] on average. This is in line with the situation in 2015 for laptops and tablets, but prices for handset based offers were on average more or less in line with the EU28 average in 2015. For all types of devices, the gap between the prices in Luxembourg and those in the EU28 on average increases when the volume of mobile data increases.

[134] Average of the least expensive offers of all mobile operators in the sample.

4.18.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 90: Luxembourg: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

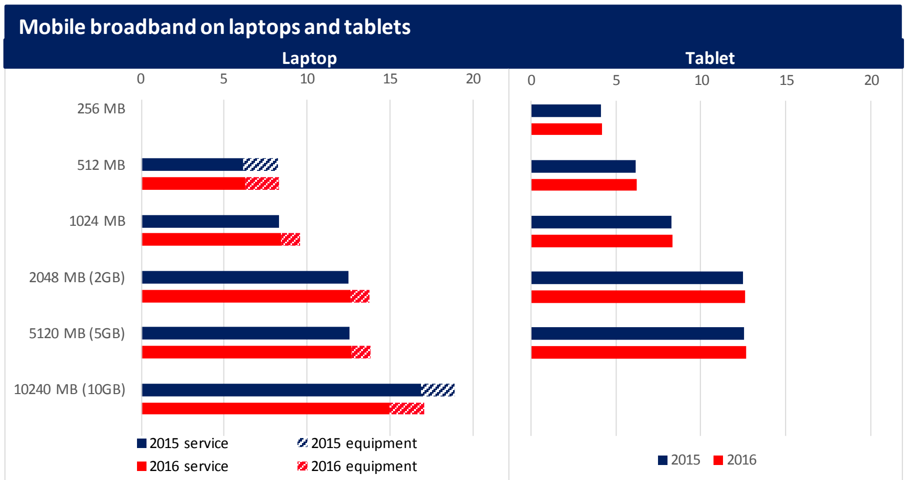


Table 91: Luxembourg: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

In Luxembourg, the price of mobile broadband for the predefined user profiles on handsets dropped significantly between 2015 and 2016. On average, prices decreased by 21% (compared to a 7% decrease on average in the EU28[135]). Prices for tablets remained stable (compared to a 3% price decrease in the EU28). Mobile data on laptops however is 10% more expensive on average in 2016 compared to 2015 for volumes up to 5GB. The price of the 10GB offer is 10% lower than in 2015. As a result, on average, prices for laptop based offers increased by 5% (compared to a 3% price decrease in the EU28).

[135] Average of the least expensive offers of all mobile operators in the sample.

4.18.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Post Télécom** 17.16 0.49	**Tango** 19.19 2.53
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Tango** 19.19 2.53	**Post Télécom** 25.49 0.49
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Tango** 19.19 2.53	**Post Télécom** 25.49 0.49
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Tango** 28.13 11.47	**Post Télécom** 39.11 9.94
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Tango** 28.13 11.47	**Post Télécom** 39.11 9.94
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Tango** 28.13 11.47	**Post Télécom** 41.89 8.55
Tablet		
256 MB EU28: 7.89	**Post Télécom** 4.17	**Tango** 4.21
512 MB EU28: 8.4	**Post Télécom** 6.25	**Tango** 8.42
1024 MB (1GB) EU28: 9.5	**Post Télécom** 8.34	**Tango** 8.42
2048 MB (2GB) EU28: 12.8	**Tango** 12.63	**Post Télécom** 13.34
5120 MB (5GB) EU28: 18.06	**Tango** 12.67	**Post Télécom** 15.00
10240 MB (10GB) EU28: 26.67	**Post Télécom** 15.00	**Tango** 21.17
Laptop		
512 MB EU28: 10.13	**Post Télécom** 8.31	**Tango** 9.55
1024 MB (1GB) EU28: 11	**Tango** 9.55	**Post Télécom** 10.40
2048 MB (2GB) EU28: 13.7	**Tango** 13.76	**Post Télécom** 15.40
5120 MB (5GB) EU28: 18.71	**Tango** 13.80	**Post Télécom** 17.06
10240 MB (10 GB) EU28: 27.05	**Post Télécom** 17.06	**Tango** 22.31
20480 MB (20 GB) EU28: 42.14	**Tango** 22.31	**Post Télécom** 100.42

Table 92: Luxembourg: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Except for the lowest usage profile, Tango is always the least expensive provider of mobile broadband packages on handsets. On average, the least expensive offer of Post Télécom is about 40% higher. For mobile broadband on tablets and laptops, there is no clear trend regarding which operator offers the best deal. The difference between the prices of the least expensive offers of the two operators is especially important for the higher usage profiles. The 20GB offer is 4.5 times more expensive at Post Télécom than at Tango.

4.18.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Luxembourg		
Post Télécom		4G available
Tango		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Post Télécom	240MB to 10GB	1 to 15GB
Tango	300MB to 30GB	1 to 15GB

Minimum and maximum data allowances for handsets are the same for both operators. Tango offers higher data allowances for laptop and tablet based offers, while Post Télécom's maximum data allowance does not reach the requirements of the predefined usage profiles (10 versus 20 GB).

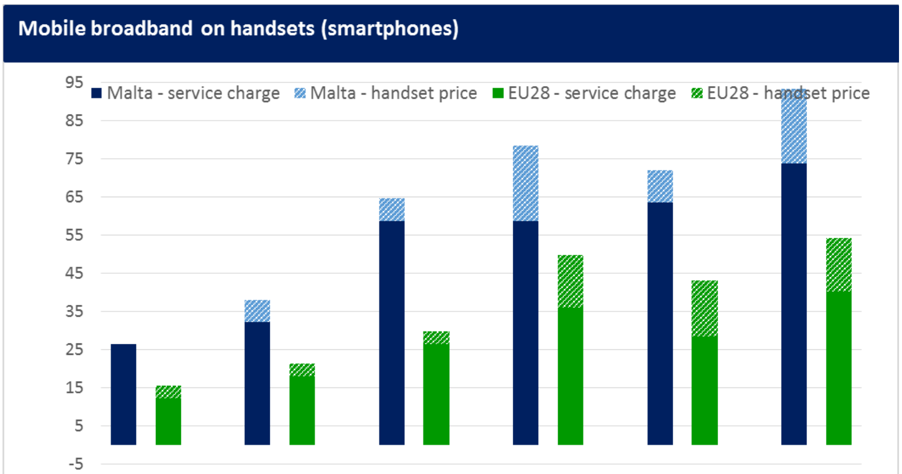
Take-up of mobile broadband offers

	Luxembourg	EU28
Mobile broadband penetration (subscriptions per 100 people) [136]	72.8%	75.3%
% of households having at least one mobile phone subscription giving access to internet[137]	81.0%	75.0%

[136] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[137] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.19. Malta

4.19.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 93: Malta: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

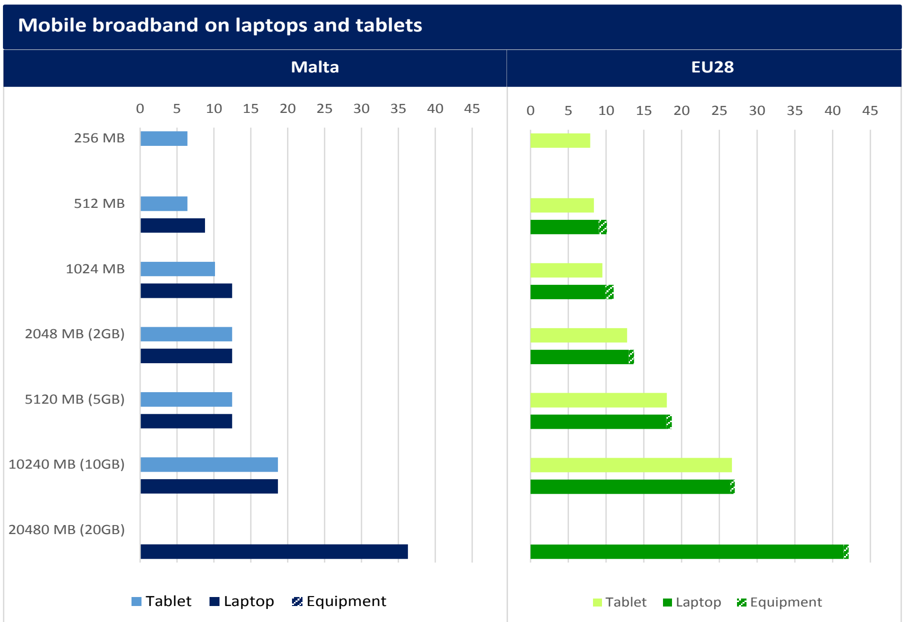
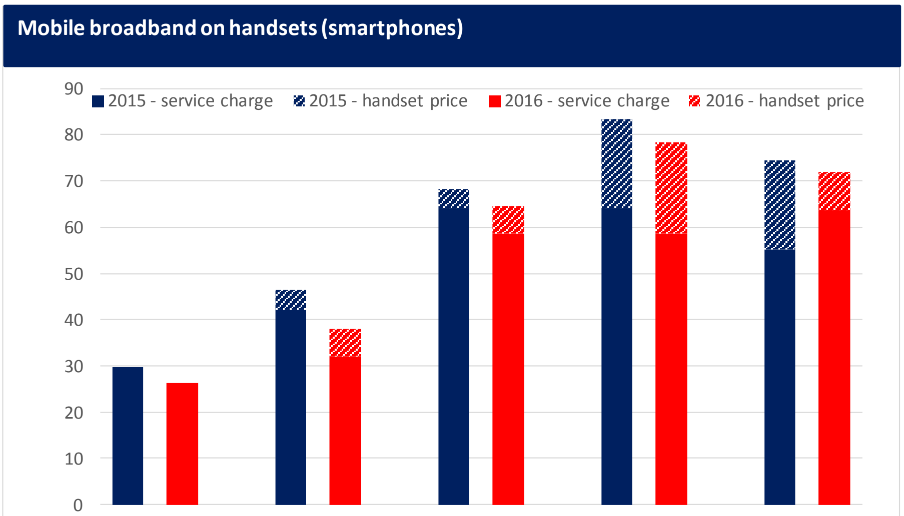


Table 94: Malta: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

As in 2015, prices for mobile broadband packages on handsets are a lot more expensive in Malta compared to the EU28[138] (75% more expensive on average[139], including charges for voice minutes, SMS and a handset). On the other hand, mobile broadband on laptops and tablets is on average 15%[140] cheaper in Malta than in the EU28. For the usage profiles including 5GB and 10GB, offers in Malta are even around one third less expensive.

[138] Average of the least expensive offers of all mobile operators in the sample.
[139] Compared to 85% in 2015.
[140] Compared to 12% in 2015.

4.19.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 95: Malta: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

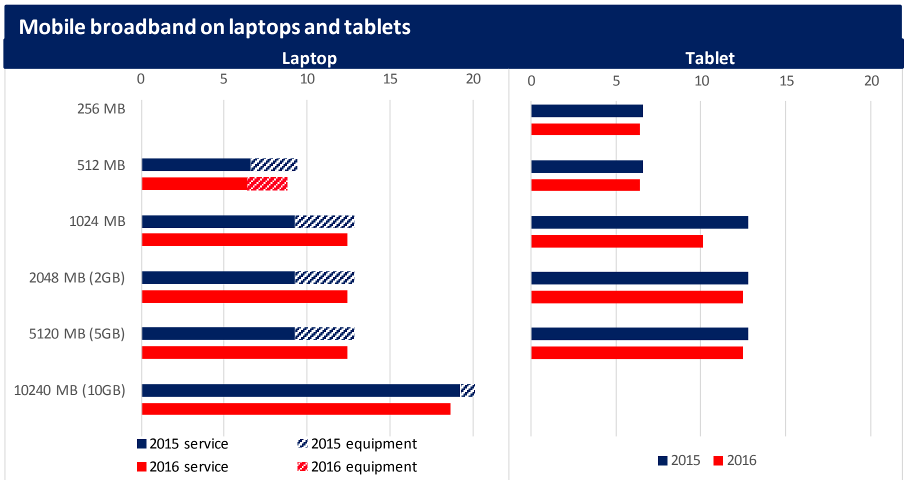


Table 96: Malta: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Regardless of the device used for accessing mobile broadband services in Malta, prices went down between 2015 and 2016. More precisely, prices for handset based offers dropped by 9% on average (compared to -7% in the EU28[141] on average). Mobile broadband on laptops and tablets is on average 7% cheaper in Malta in 2015 compared to 2016 (compared to 3% cheaper on average in the EU28).

[141] Average of the least expensive offers of all mobile operators in the sample.

4.19.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**GO Mobile** 26.33 0.00	**Vodafone** 26.65 5.85
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Vodafone** 37.99 5.85	**GO Mobile** 54.49 5.85
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**GO Mobile** 64.57 5.85	**Vodafone** 74.36 5.85
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**GO Mobile** 78.41 19.69	**Vodafone** 85.12 16.61
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**GO Mobile** 71.89 8.31	**Vodafone** 71.92 15.92
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**GO Mobile** 93.35 19.69	**Vodafone** 110.03 16.61
Tablet		
256 MB EU28: 7.89	**GO Mobile** 6.40	**Vodafone** 12.46
512 MB EU28: 8.4	**GO Mobile** 6.40	**Vodafone** 12.46
1024 MB (1GB) EU28: 9.5	**GO Mobile** 10.14	**Vodafone** 12.46
2048 MB (2GB) EU28: 12.8	**Vodafone** 12.46	**GO Mobile** 12.62
5120 MB (5GB) EU28: 18.06	**Vodafone** 12.46	**GO Mobile** 12.62
10240 MB (10GB) EU28: 26.67	**Vodafone** 18.68	**GO Mobile** 18.85
Laptop		
512 MB EU28: 10.13	**GO Mobile** 8.79	**Vodafone** 12.46
1024 MB (1GB) EU28: 11	**Vodafone** 12.46	**GO Mobile** 12.53
2048 MB (2GB) EU28: 13.7	**Vodafone** 12.46	**GO Mobile** 12.62
5120 MB (5GB) EU28: 18.71	**Vodafone** 12.46	**GO Mobile** 12.62
10240 MB (10 GB) EU28: 27.05	**Vodafone** 18.68	**GO Mobile** 18.85
20480 MB (20 GB) EU28: 42.14	**GO Mobile** 36.30	**Vodafone** 64.67

Table 97: Malta: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

In contrast to 2015, GO Mobile is most often the least expensive operator for handset based offers. Moreover, the differences between the prices of the least expensive offers of the two operators are more important than last year (about 15% on average, compared to 3% in 2015). Go Mobile also has the best deals for low usage profiles on tablets. For the higher usage profiles on tablets and for most laptop based offers, GO Mobile and Vodafone apply about the same prices (1% of difference, for all user profiles). this is not the case for the 20 GB offer however: GO Mobile is again clearly cheaper (the offer of Vodafone is about 80% more expensive).

4.19.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Malta		
Vodafone Malta	vodafone	4G available
GO Mobile	GO	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Vodafone Malta	5GB to 15GB	1,20 to 7GB
GO Mobile	5GB to 20GB	1GB to 5GB

The data allowances included in the mobile broadband packages on laptops/tablets are rather similar at Vodafone and GO Mobile, although the former does not reach the highest predefined user profiles (15 versus 20 GB). for handsets, Vodafone offers the highest maximum data allowance, but both operators offer higher volumes than the 4 GB that is included in the highest user profile under consideration.

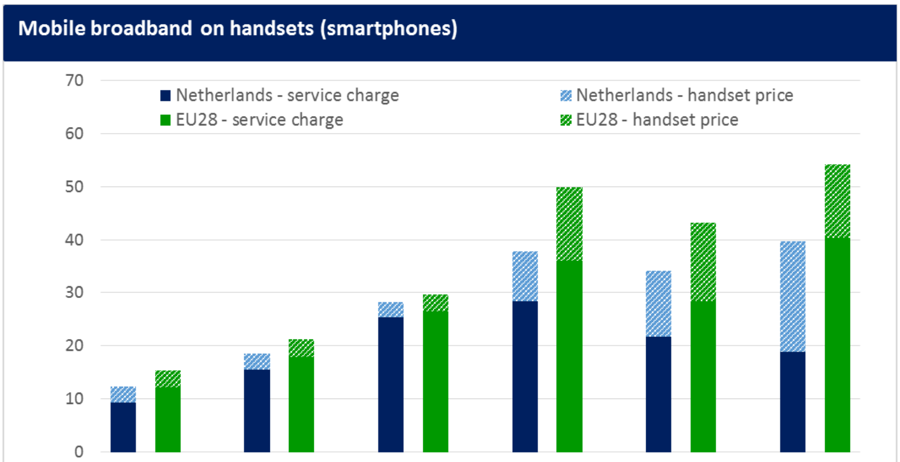
Take-up of mobile broadband offers

	Malta	EU28
Mobile broadband penetration (subscriptions per 100 people) [142]	63.4%	75.3%
% of households having at least one mobile phone subscription giving access to internet[143]	63.0%	75.0%

[142] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[143] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.20. The Netherlands

4.20.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 98: The Netherlands: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

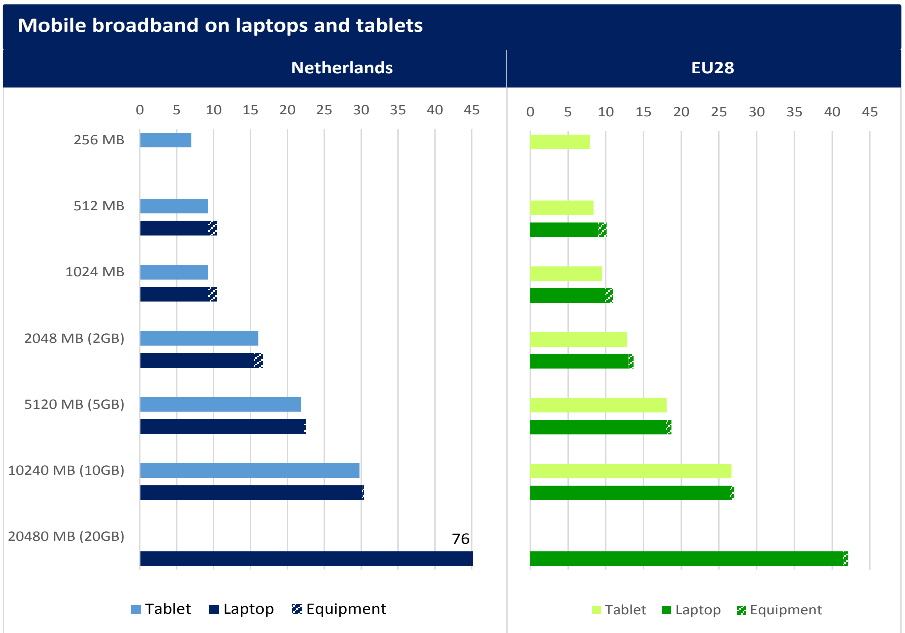
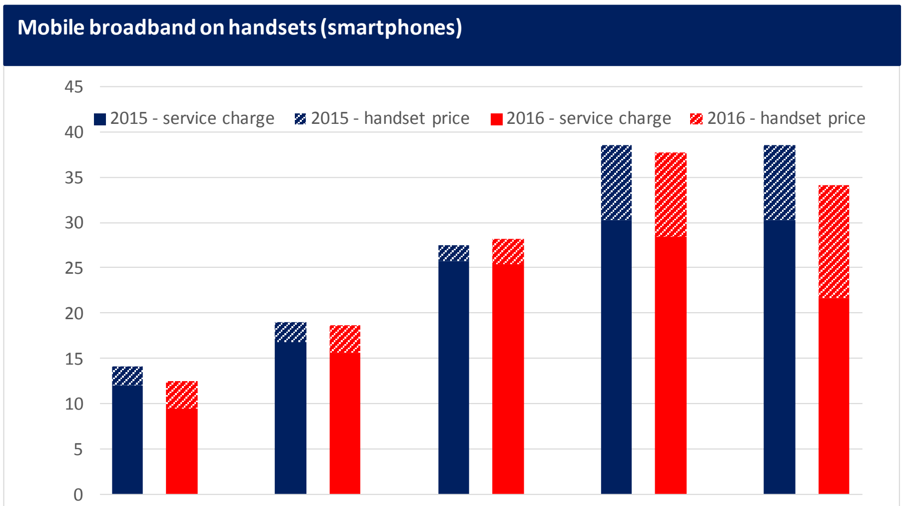


Table 99: The Netherlands: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2016 data)

As in 2015, prices of mobile broadband packages on handsets are on average about 20% lower in the Netherlands than in the EU28[144] on average. Meanwhile, prices for mobile broadband on laptops and tablets are on average respectively around 20%[145] and 10%[146] more expensive in the Netherlands.

[144] Average of the least expensive offers of all mobile operators in the sample.
[145] Same as in 2015; if however abstraction is made of the 20GB offer in 2016, the difference with the EU28 on average is only about 10%.
[146] Compared to about 30% in 2015.

4.20.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 100: The Netherlands: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

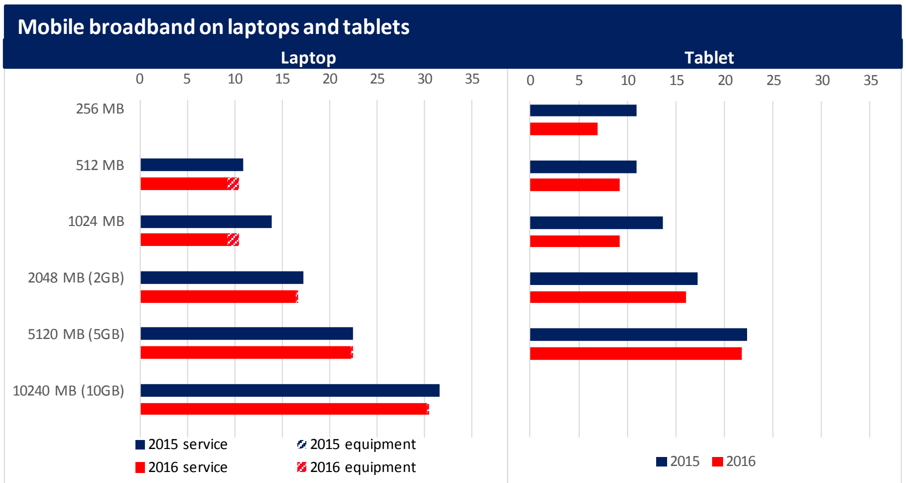


Table 101: The Netherlands: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Regardless of the device used for accessing the mobile broadband services, prices went down in the Netherlands between 2015 and 2016. For handset based offers, the decrease is slightly lower in the Netherlands than in the EU28 on average (-5% on average, compared to -7% in the EU28). The prices for laptop based offers and especially the prices for tablet based offers dropped more significantly (respectively -7% and -19% compared to -3% on average in the EU28).

4.20.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**T-mobile** 12.43 3.03	**KPN** 13.80 3.03	**Vodafone** 16.52 3.03
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**T-mobile** 18.60 3.03	**Vodafone** 28.25 3.03	**KPN** 28.97 3.03
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**T-mobile** 28.20 2.77	**KPN** 31.70 3.03	**Vodafone** 33.43 3.03
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Vodafone** 37.72 9.25	**T-mobile** 38.17 10.01	**KPN** 43.66 7.12
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**T-mobile** 34.15 12.50	**Vodafone** 34.98 9.25	**KPN** 43.66 7.12
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**T-mobile** 39.70 20.81	**KPN** 43.66 7.12	**Vodafone** 44.57 9.25
Tablet			
256 MB EU28: 7.89	**T-mobile** 6.99	**KPN** 10.05	**Vodafone** 11.58
512 MB EU28: 8.4	**T-mobile** 9.22	**KPN** 10.96	**Vodafone** 13.35
1024 MB (1GB) EU28: 9.5	**T-mobile** 9.22	**Vodafone** 13.35	**KPN** 14.62
2048 MB (2GB) EU28: 12.8	**T-mobile** 16.06	**Vodafone** 20.96	**KPN** 24.87
5120 MB (5GB) EU28: 18.06	**T-mobile** 21.85	**KPN** 25.63	**Vodafone** 33.15
10240 MB (10GB) EU28: 26.67	**T-mobile** 29.77	**KPN** 34.77	**Vodafone** 55.99
Laptop			
512 MB EU28: 10.13	**T-mobile** 10.43	**KPN** 12.49	**Vodafone** 13.35
1024 MB (1GB) EU28: 11	**T-mobile** 10.43	**Vodafone** 13.35	**KPN** 16.14
2048 MB (2GB) EU28: 13.7	**T-mobile** 16.70	**Vodafone** 20.96	**KPN** 26.40
5120 MB (5GB) EU28: 18.71	**T-mobile** 22.48	**KPN** 27.16	**Vodafone** 33.15
10240 MB (10 GB) EU28: 27.05	**T-mobile** 30.40	**KPN** 36.29	**Vodafone** 55.99
20480 MB (20 GB) EU28: 42.14	**T-mobile** 76.09	**KPN** 104.82	**Vodafone** 757.69

Table 102: Netherlands: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

As in 2015 and regardless of the device used for accessing mobile broadband services, T-Mobile is most often the cheapest option in the Netherlands. Only for the 2GB handset based offer with important volumes of voice minutes and SMS included, does Vodafone have a slightly better offer (about 1.5% difference).

The prices of the least expensive offers of the cheapest and most expensive mobile operators vary quite strongly. The difference amounts to about 25% on average for the handset based offers and over 50% for the tablet and laptop based offers, even if abstraction is made of the 20GB profile.

4.20.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Netherlands		
KPN	kpn	4G available
Vodafone	vodafone	4G available
T-Mobile	T-Mobile	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
KPN	500MB to 10GB	0 to 10GB
Vodafone	200MB to 8GB	0 to 25GB
T-Mobile	0 to 12GB	0 to 12GB

All three operators provide handset offers that start at 0 GB and go up to capacities that exceed those of the highest user profiles. The range offered is largest for Vodafone, as they provide capacities up to 25 GB. For laptops/tablets, maximum data allowances go from 8 to 12 GB depending on the operator, which is largely below the 20 GB of the highest user profile under consideration in the study.

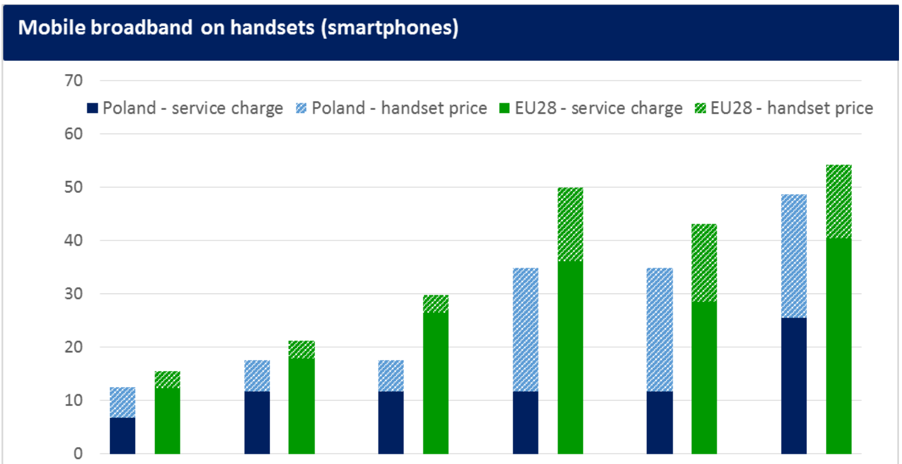
Take-up of mobile broadband offers

	The Netherlands	EU28
Mobile broadband penetration (subscriptions per 100 people) [147]	79.5%	75.3%
% of households having at least one mobile phone subscription giving access to internet[148]	90.0%	75.0%

[147] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[148] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.21. Poland

4.21.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 103: Poland: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

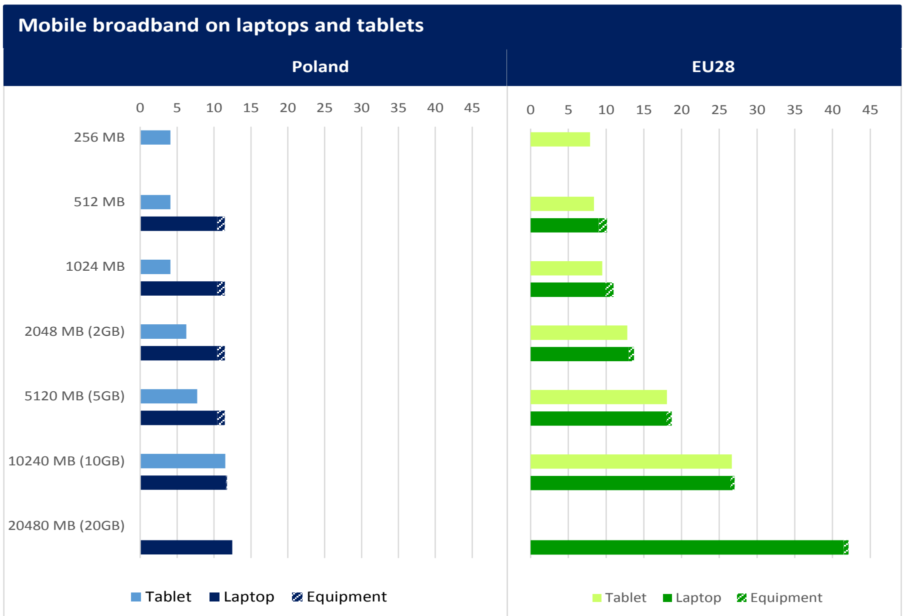


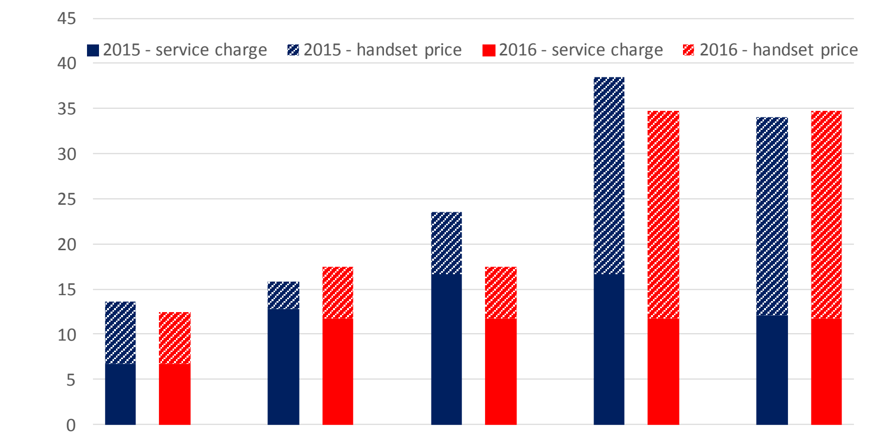
Table 104: Poland: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Prices for mobile broadband packages on handsets are on average 25%[149] cheaper in Poland compared to the EU28[150], despite the fact that the cost of the handsets is on average about 70%[151] more expensive. Mobile broadband on laptops and tablets is on average 40%[152] less expensive in Poland compared to the EU28 average. The gap between the prices in Poland and the EU28 is especially important for the 20GB offer, as this is no less than 70% less expensive in Poland.

[149] Compared to 25% in 2015.
[150] Average of the least expensive offers of all mobile operators in the sample.
[151] Same as in 2015.
[152] Same as in 2015.

4.21.2. Recent evolutions in mobile broadband prices

Mobile broadband on handsets (smartphones)



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 105: Poland: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Mobile broadband on laptops and tablets

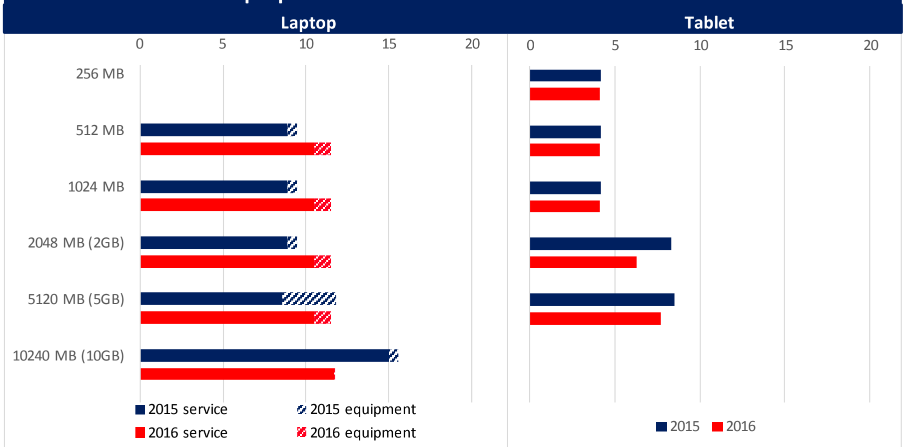


Table 106: Poland: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Between 2015 and 2016, Polish prices for mobile broadband packages on handsets have evolved in line with what is observed in the EU28 on average (in Poland, prices went down by 6% on average, compared to -7% in the EU28[153]). Mobile broadband on laptops is more expensive in 2016 compared to 2015, at least for the lower usage profiles (average price increase of over 20%). The price for 5GB remained rather stable and the least expensive offer for a 10GB user profile dropped by about a quarter. Finally, for tablets, prices remained unchanged for offers including up to 1GB. Prices of higher usage profiles decreased by 17% on average. In the EU28, mobile broadband on tablets and laptops is on average 3% cheaper in 2016 compared to 2015.

[153] Average of the least expensive offers of all mobile operators in the sample.

4.21.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Orange** 12.47 5.77	**T-Mobile** 16.03 5.77	**Polkomtel** 18.35 5.77
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Orange** 17.46 5.77	**Polkomtel** 18.35 5.77	**T-Mobile** 18.80 5.77
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Orange** 17.46 2.02	**Polkomtel** 18.41 5.77	**T-Mobile** 18.80 3.12
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Orange** 34.78 23.08	**T-Mobile** 44.43 23.08	**Polkomtel** 48.01 23.08
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Orange** 34.78 23.08	**Polkomtel** 35.66 23.08	**T-Mobile** 41.66 23.08
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Orange** 34.78 23.08	**T-Mobile** 47.78 13.96	**Polkomtel** 48.01 23.08
Tablet			
256 MB EU28: 7.89	**T-Mobile** 4.10	**Polkomtel** 7.72	**Orange** 8.61
512 MB EU28: 8.4	**T-Mobile** 4.10	**Polkomtel** 7.72	**Orange** 8.61
1024 MB (1GB) EU28: 9.5	**T-Mobile** 4.10	**Polkomtel** 7.72	**Orange** 8.61
2048 MB (2GB) EU28: 12.8	**T-Mobile** 6.23	**Polkomtel** 7.72	**Orange** 8.61
5120 MB (5GB) EU28: 18.06	**Polkomtel** 7.72	**Orange** 8.61	**T-Mobile** 12.53
10240 MB (10GB) EU28: 26.67	**Polkomtel** 11.53	**Orange** 12.76	**T-Mobile** 20.84
Laptop			
512 MB EU28: 10.13	**Orange** 11.48	**T-Mobile** 11.76	**Polkomtel** 13.61
1024 MB (1GB) EU28: 11	**Orange** 11.48	**T-Mobile** 11.76	**Polkomtel** 13.61
2048 MB (2GB) EU28: 13.7	**Orange** 11.48	**T-Mobile** 11.76	**Polkomtel** 13.61
5120 MB (5GB) EU28: 18.71	**Orange** 11.48	**T-Mobile** 11.76	**Polkomtel** 13.61
10240 MB (10 GB) EU28: 27.05	**T-Mobile** 11.76	**Polkomtel** 15.37	**Orange** 17.02
20480 MB (20 GB) EU28: 42.14	**T-Mobile** 12.48	**Polkomtel** 15.37	**Orange** 17.02

Table 107: Poland: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Orange is always the cheapest option for mobile broadband packs on handsets and for laptop based offers including up to 5GB mobile data. For these latter, Orange is closely followed by T-Mobile (which has prices that are only about 2.5% higher). T-Mobile is also the cheapest provider of tablet based offers with up to 2GB included and of laptop based offers with 10 or 20GB included.

4.21.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Poland		
Orange Poland		4G available
T-Mobile Poland		4G available
Polkomtel		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Orange Poland	5GB to 60GB	300MB to 20GB
T-Mobile Poland	1GB to unlimited	300MB to 10GB
Polkomtel	30GB to 100GB	2GB to 10GB

For laptop and tablet, data volume entry levels are at least 1 GB, and Polkomtel does not provide offers below 30 GB. T-Mobile clearly has the widest range, as they also have unlimited offers on laptop/tablet. For both types of devices, the data allowances included in the offers significantly exceed the predefined usage profiles. Those for handsets however differ less between operators.

Take-up of mobile broadband offers

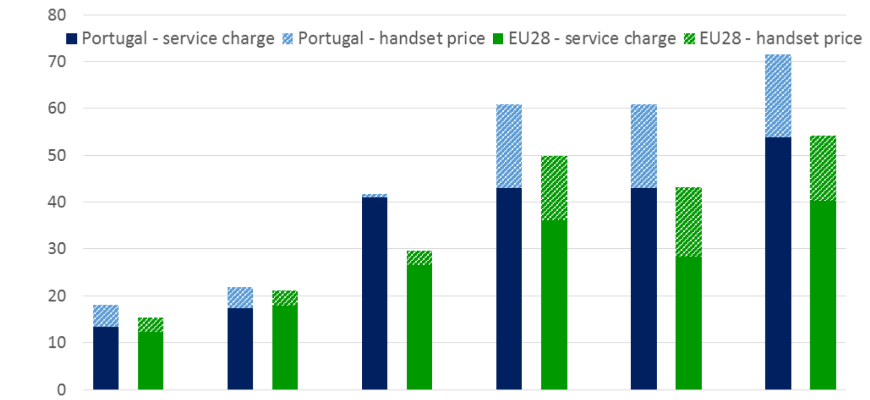
	Poland	EU28
Mobile broadband penetration (subscriptions per 100 people) [154]	94.1%	75.3%
% of households having at least one mobile phone subscription giving access to internet[155]	69.0%	75.0%

[154] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[155] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.22. Portugal

4.22.1. Price of mobile broadband

Mobile broadband on handsets (smartphones)



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 108: Portugal: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband on laptops and tablets

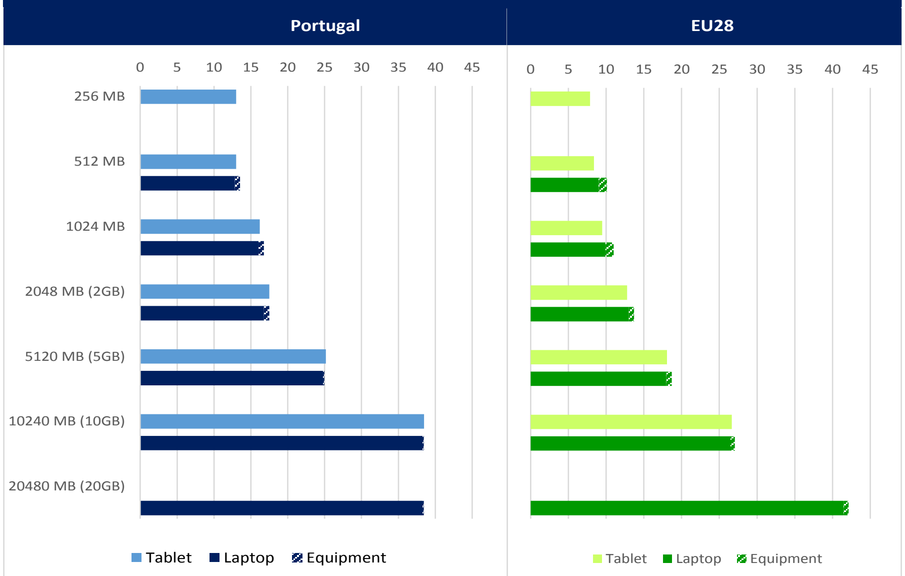
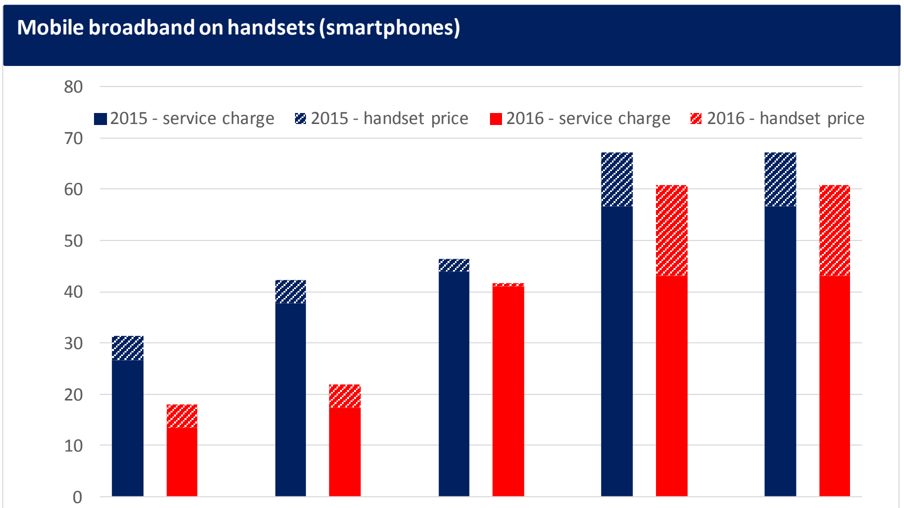


Table 109: Portugal: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

The price of mobile broadband packages for handsets is on average 25%[156] more expensive in Portugal than in the EU28[157] on average. The gap with the EU28 is the largest for the high usage profiles (around 35% difference for offers with 1GB or more). Mobile broadband on tablets and laptops is overall around 40%[158] more expensive compared to the EU28.

[156] Compared to 60% in 2015.
[157] Average of the least expensive offers of all mobile operators in the sample.
[158] Compared to 45% in 2015.

4.22.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 110: Portugal: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

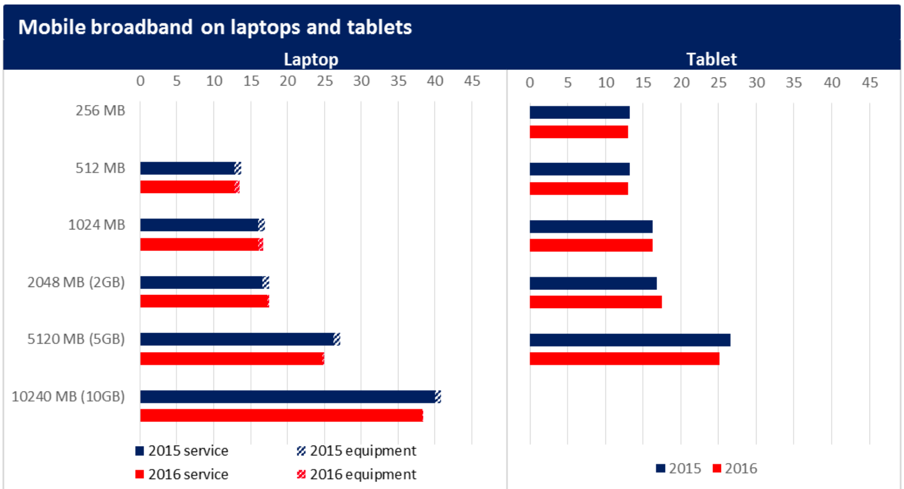


Table 111: Portugal: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Between 2015 and 2016, prices of packs with mobile broadband for handsets decreased more strongly in Portugal compared to the EU28[159] on average. More precisely, the prices dropped by about 25% on average, but the price decrease is clearly more limited for packs with higher data volumes (-10% for packs with 1GB included or more). This is however still more than the EU28 average price decrease for handsets, which equals -7%. Prices for mobile broadband on tablets are more or less stable (compared to -3% in the EU28), while laptop based offers follow the same price evolution as the EU28 on average (i.e. -3%).

[159] Average of the least expensive offers of all mobile operators in the sample.

4.22.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS	**Vodafone**	**NOS**	**MEO**
EU28: 15.45	18.10	18.10	29.97
includes 3.35 for the handset	4.64	4.64	2.39
512MB - 200 min - 140 SMS	**Vodafone**	**NOS**	**MEO**
EU28: 21.23	21.95	21.95	43.44
includes 3.35 for the handset	4.64	4.64	2.39
1024 MB - 600 min - 225 SMS	**NOS**	**Vodafone**	**MEO**
EU28: 29.71	41.76	44.24	56.28
includes 3 for the handset	0.71	3.31	2.39
2048 MB - 1800 min - 350 SMS	**Vodafone**	**MEO**	**NOS**
EU28: 49.86	60.86	61.10	64.55
includes 14.26 for the handset	17.79	6.86	11.95
2048 MB - 200 min - 140 SMS	**Vodafone**	**MEO**	**NOS**
EU28: 43.12	60.86	61.10	64.55
includes 14.81 for the handset	20.81	6.86	11.95
4096 MB - 1800 min - 350 SMS	**Vodafone**	**MEO**	**NOS**
EU28: 54.23	71.55	73.92	92.03
includes 13.93 for the handset	17.79	6.86	11.95
Tablet			
256 MB	**Vodafone**	**MEO**	**NOS**
EU28: 7.89	13.01	17.67	17.67
512 MB	**Vodafone**	**MEO**	**NOS**
EU28: 8.4	13.01	17.67	17.67
1024 MB (1GB)	**Vodafone**	**MEO**	**NOS**
EU28: 9.5	16.22	17.67	17.67
2048 MB (2GB)	**Vodafone**	**MEO**	**NOS**
EU28: 12.8	17.50	17.67	17.67
5120 MB (5GB)	**NOS**	**Vodafone**	**MEO**
EU28: 18.06	25.15	26.14	27.94
10240 MB (10GB)	**Vodafone**	**NOS**	**MEO**
EU28: 26.67	38.46	38.63	49.11
Laptop			
512 MB	**Vodafone**	**NOS**	**MEO**
EU28: 10.13	13.54	17.49	17.67
1024 MB (1GB)	**Vodafone**	**NOS**	**MEO**
EU28: 11	16.75	17.49	17.67
2048 MB (2GB)	**NOS**	**MEO**	**Vodafone**
EU28: 13.7	17.49	17.67	18.03
5120 MB (5GB)	**NOS**	**Vodafone**	**MEO**
EU28: 18.71	24.97	26.68	27.94
10240 MB (10 GB)	**NOS**	**Vodafone**	**MEO**
EU28: 27.05	38.45	39.00	49.11
20480 MB (20 GB)	**NOS**	**Vodafone**	**MEO**
EU28: 42.14	38.45	39.00	49.11

Table 112: Portugal: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Vodafone is most often the cheapest provider of mobile data on handsets and tablets. Only for two user profiles, NOS is less expensive, but price differences with Vodafone remain limited to about 5%. NOS also offers the best deal for laptops in case 2GB mobile data or more is required. Again however, the difference with the second least expensive operator is very small (around 3% on average).

4.22.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Portugal		
MEO		4G available
NOS		4G available
Vodafone Portugal		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
MEO	2GB to 30GB	500MB to 30GB
NOS	2GB to unlimited	200MB to 3GB
Vodafone Portugal	2GB to unlimited	200MB to 5GB

Vodafone and NOS have the same minimum and maximum data allowances for tablets/laptops, but for handsets the former only goes up to 3 GB and thereby does not reach the data allowance of the highest predefined user profile. MEO's handset offers go up to 30 GB, which is also their maximum data allowance for tablets/laptops.

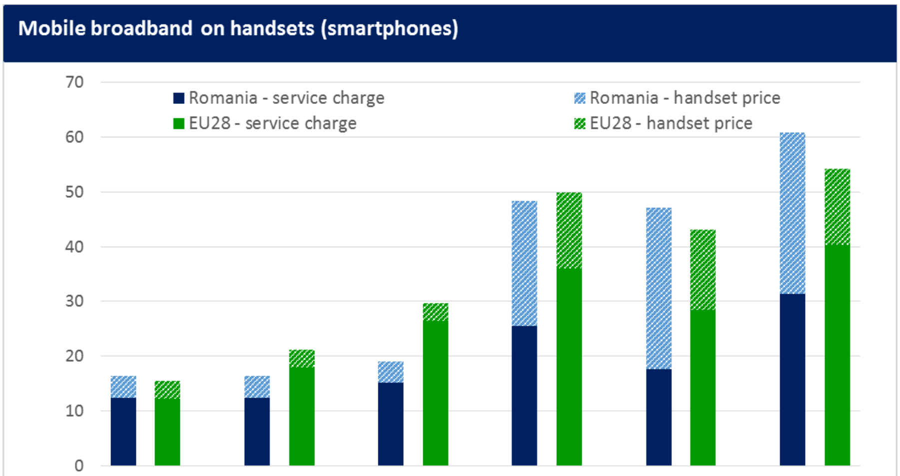
Take-up of mobile broadband offers

	Portugal	EU28
Mobile broadband penetration (subscriptions per 100 people) [160]	46.0%	75.3%
% of households having at least one mobile phone subscription giving access to internet[161]	61.0%	75.0%

[160] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[161] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.23. Romania

4.23.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 113: Romania: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

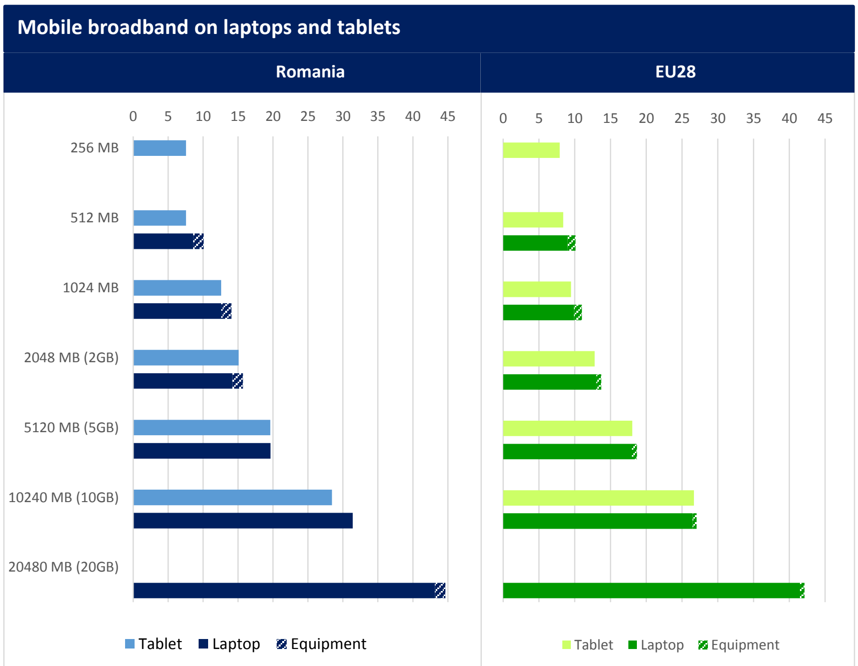
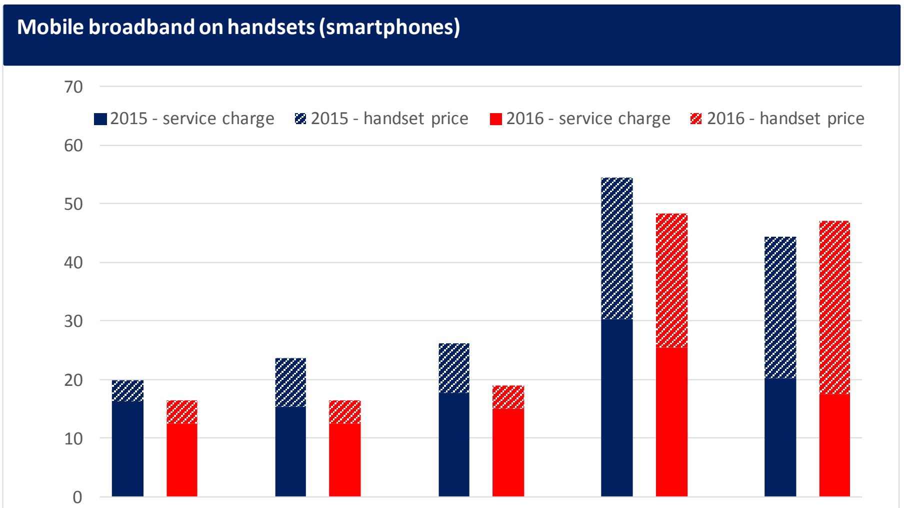


Table 114: Romania: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

In Romania, prices for mobile broadband packages on handsets are about 6% cheaper than in the EU28[162] on average, despite the fact that the cost of the handsets is more than twice as high. Mobile broadband on laptops and tablets is on average 10% more expensive than in the EU28 on average. Price differences with the EU28 do however vary strongly depending on the user profile. For instance, tablet based offers including 512MB mobile data are 10% less expensive in Romania compared to the EU28 on average, those including 1GB are a third more expensive).

[162] Average of the least expensive offers of all mobile operators in the sample.

4.23.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 115: Romania: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

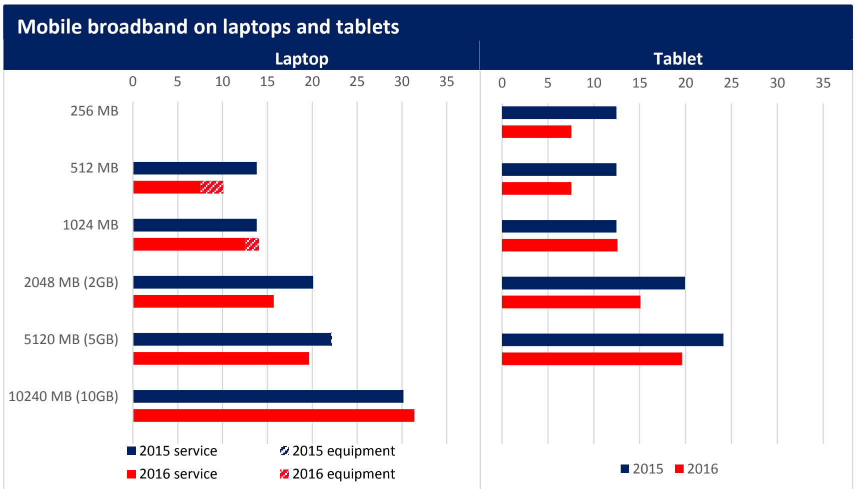


Table 116: Romania: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Between 2015 and 2016, prices for handset based offers decreased more strongly in Romania (-16% on average) than in the EU28 on average (-7% on average for all user profiles). The difference in price evolution with the EU28 is even more pronounced for the laptop and tablet based offers. The price for mobile data on these devices dropped on average by 24% for tablets and by 11% for laptops. These figures should be compared with average price decreases of 3% for both devices on average in the EU28.

4.23.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	Telekom Romania Mobile 16.39 3.95	Orange 16.51 3.94	Vodafone 16.51 3.94
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	Telekom Romania Mobile 16.39 3.95	Vodafone 16.51 3.94	Orange 19.03 3.94
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	Vodafone 19.03 3.94	Telekom Romania Mobile 23.93 3.95	Orange 24.06 3.94
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	Orange 48.32 22.81	Vodafone 49.12 29.49	Telekom Romania Mobile 55.41 16.26
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	Vodafone 47.09 29.49	Orange 48.32 22.81	Telekom Romania Mobile 49.48 29.49
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	Orange 60.88 29.49	Vodafone 70.75 29.49	Telekom Romania Mobile 78.53 16.26
Tablet			
256 MB EU28: 7.89	Orange 7.54	Telekom Romania Mobile 11.78	Vodafone 12.57
512 MB EU28: 8.4	Orange 7.54	Telekom Romania Mobile 11.78	Vodafone 12.57
1024 MB (1GB) EU28: 9.5	Orange 12.57	Telekom Romania Mobile 12.57	Vodafone 12.57
2048 MB (2GB) EU28: 12.8	Orange 15.09	Vodafone 15.70	Telekom Romania Mobile 17.60
5120 MB (5GB) EU28: 18.06	Orange 19.61	Vodafone 19.63	Telekom Romania Mobile 25.15
10240 MB (10GB) EU28: 26.67	Orange 28.43	Telekom Romania Mobile 31.39	Vodafone 31.39
Laptop			
512 MB EU28: 10.13	Orange 10.08	Telekom Romania Mobile 13.27	Vodafone 14.15
1024 MB (1GB) EU28: 11	Telekom Romania Mobile 14.06	Vodafone 14.15	Orange 15.11
2048 MB (2GB) EU28: 13.7	Vodafone 15.70	Orange 17.62	Telekom Romania Mobile 19.09
5120 MB (5GB) EU28: 18.71	Vodafone 19.63	Orange 26.50	Telekom Romania Mobile 26.63
10240 MB (10 GB) EU28: 27.05	Vodafone 31.39	Orange 32.71	Telekom Romania Mobile 32.88
20480 MB (20 GB) EU28: 42.14	Telekom Romania Mobile 44.66	Orange 50.03	Vodafone 58.87

Table 117: Romania: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

There is no overall trend regarding which operator provides the least expensive mobile broadband offers for handsets and laptops in Romania. Orange does however have the best deals for tablets, regardless of the volume of mobile data included. The difference in price between the least expensive and the most expensive operator varies a lot depending on the user profile and device considered. Price differences between operators are the least uniform for mobile broadband on tablets. For this device, all three operators apply the same price for the 1GB tablet based offer, whereas the least expensive offer of Vodafone for the lowest usage profiles is two thirds more expensive than the best offer available at Orange.

4.23.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Romania		
Orange	orange™	4G available
Telekom Romania Mobile	T · ·	4G available
Vodafone	vodafone™	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Orange Romania	4GB to 20GB	300MB to 5GB
Telekom Romania Mobile	500MB to 60GB	100MB to 8GB
Vodafone Romania	3GB to 30GB	300MB to 5GB

Regardless of the device used for accessing mobile broadband services, Telekom Romania Mobile offers higher data allowances, and combines this with the lowest data volume entry level. Their maximum allowance in both cases is at least double that of the highest predefined user profile. Orange and Vodafone's data allowances lie closer together, and in all cases still reach the highest predefined user profile.

Take-up of mobile broadband offers

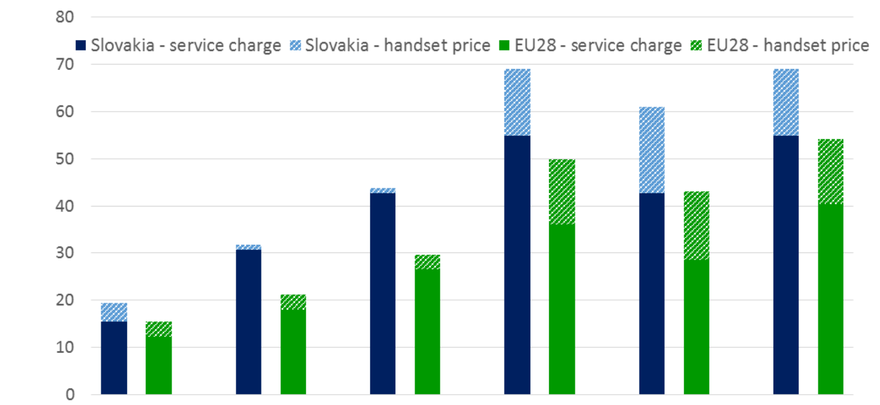
	Romania	EU28
Mobile broadband penetration (subscriptions per 100 people) [163]	58.6%	75.3%
% of households having at least one mobile phone subscription giving access to internet[164]	71.0%	75.0%

[163] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 January 2015
[164] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.24. Slovakia

4.24.1. Price of mobile broadband

Mobile broadband on handsets (smartphones)



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 118: Slovakia: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband on laptops and tablets

Table 119: Slovakia: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Regardless of the device used for accessing mobile broadband in Slovakia, prices are on average about 40% higher[165] compared to the EU28[166]. For mobile broadband on tablets and laptops, the differences are the largest (up to around 100%) for the low usage profiles, but this is linked to the fact that the least expensive offer on the market already includes 2GB. For the offers including 5GB or more, the average price gap with the EU28 amounts to 40%.

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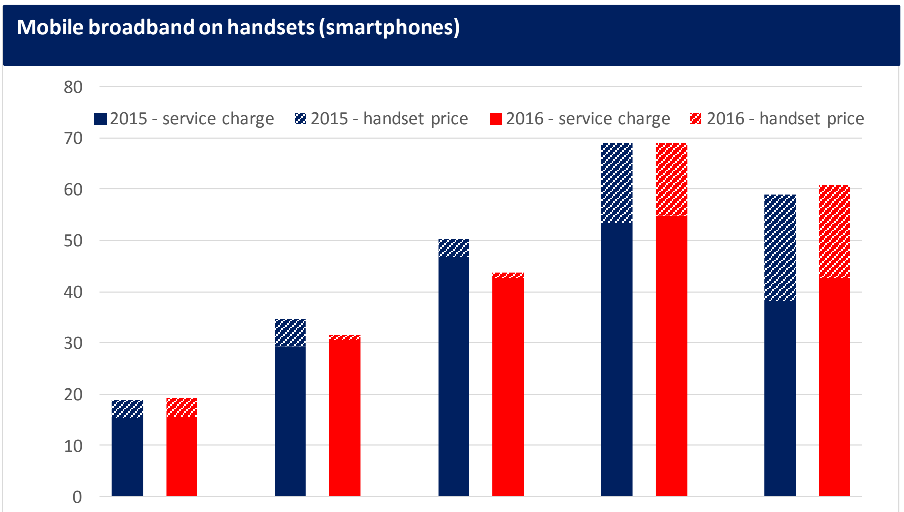
[165] Same as in 2015

[166] Average of the least expensive offers of all mobile operators in the sample.

4.24.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 120: Slovakia: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

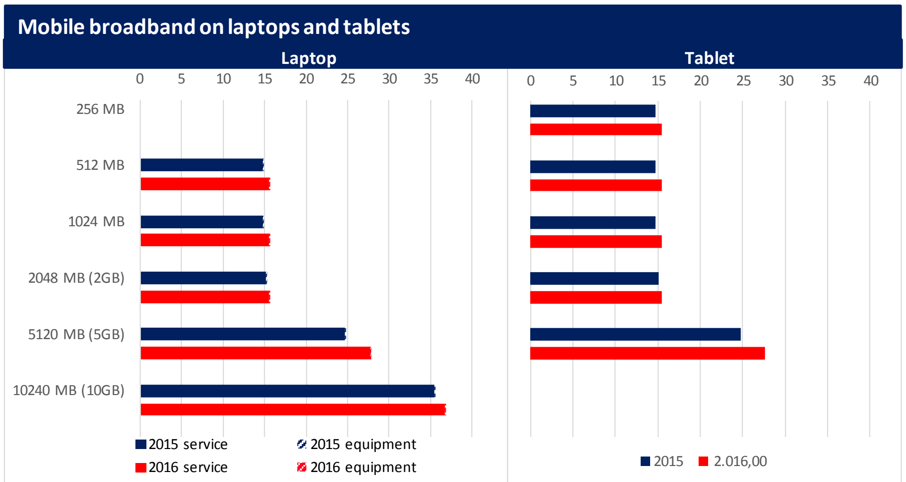


Table 121: Slovakia: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

In Slovakia, the prices for handset based mobile data packages decreased less between 2015 and 2016 than in the EU28 on average (-3% in Slovakia, compared to -7% in the EU28 on average). The main exception to this is the 1GB usage profile, for which the best deal costs 13% less in 2016 compared to 2015.

The prices for laptop and tablet based offers in Slovakia follow an inverse evolution in comparison with the EU28[167] on average. Indeed, the prices for all usage profiles on both these devices increased. The average price increase between 2015 and 2016 in Slovakia amounts to 6%, compared to a price decrease of 3% for the same period in the EU28.

[167] Average of the least expensive offers of all mobile operators in the sample.

4.24.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS	Slovak Telekom	Orange
EU28: 15.45	19.34	21.44
includes 3.35 for the handset	3.83	4.20
512MB - 200 min - 140 SMS	Slovak Telekom	Orange
EU28: 21.23	31.69	47.81
includes 3.35 for the handset	1.05	3.36
1024 MB - 600 min - 225 SMS	Slovak Telekom	Orange
EU28: 29.71	43.78	53.41
includes 3 for the handset	1.05	0.04
2048 MB - 1800 min - 350 SMS	Slovak Telekom	Orange
EU28: 49.86	69.14	76.88
includes 14.26 for the handset	14.32	15.96
2048 MB - 200 min - 140 SMS	Slovak Telekom	Orange
EU28: 43.12	60.91	76.88
includes 14.81 for the handset	18.19	15.96
4096 MB - 1800 min - 350 SMS	Slovak Telekom	Orange
EU28: 54.23	69.14	76.88
includes 13.93 for the handset	14.32	15.96
Tablet		
256 MB	Slovak Telekom	Orange
EU28: 7.89	15.52	15.56
512 MB	Slovak Telekom	Orange
EU28: 8.4	15.52	15.56
1024 MB (1GB)	Slovak Telekom	Orange
EU28: 9.5	15.52	15.56
2048 MB (2GB)	Slovak Telekom	Orange
EU28: 12.8	15.52	21.61
5120 MB (5GB)	Slovak Telekom	Orange
EU28: 18.06	27.61	27.66
10240 MB (10GB)	Orange	Slovak Telekom
EU28: 26.67	36.72	39.71
Laptop		
512 MB	Slovak Telekom	Orange
EU28: 10.13	15.56	15.60
1024 MB (1GB)	Slovak Telekom	Orange
EU28: 11	15.56	15.60
2048 MB (2GB)	Slovak Telekom	Orange
EU28: 13.7	15.56	21.65
5120 MB (5GB)	Slovak Telekom	Orange
EU28: 18.71	27.66	27.70
10240 MB (10 GB)	Orange	Slovak Telekom
EU28: 27.05	36.77	39.75
20480 MB (20 GB)	Orange	Slovak Telekom
EU28: 42.14	53.39	92.58

Table 122: Slovakia: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Regardless of the user profile, Slovak Telekom always offers the best deal for handset based offers. The difference with the least expensive offers of Orange amount to around 20% on average. For tablet and handset based mobile broadband, the picture is quite different. For offers including up to 1GB, there is a 0% price difference between the least expensive offers of both operators. For the 2GB offer, Orange is about 40% more expensive than Slovak Telekom. Meanwhile, for offers including 20GB, Orange clearly offers a better deal since Slovak Telekom is up to about 75% more expensive. Finally, price differences for the offers including 5GB and 10GB remain limited.

4.24.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Slovakia		
Orange Slovakia		4G available
Slovak Telekom		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Orange Slovakia	1.5GB to 35GB	100MB to 6GB
Slovak Telekom	0 to 12GB	0 to 12GB

Data allowances of the two operators in Slovakia are very divergent. Slovak Telekom has the same minimum and maximum data allowance regardless of the device, while Orange's laptop/tablet offers go up until much higher data volumes and their maximum handset data allowance is only half that of Slovak Telekom. Because of its lack of difference between devices, the latter does not reach the data volume of the highest predefined user profile.

Take-up of mobile broadband offers

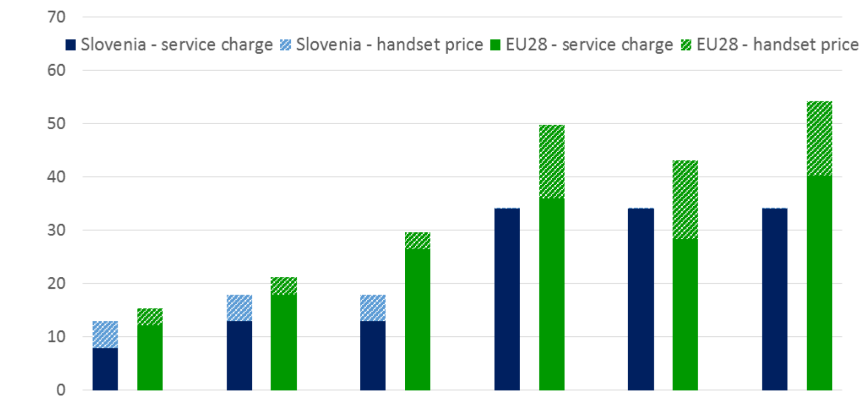
	Slovakia	EU28
Mobile broadband penetration (subscriptions per 100 people) [168]	63.4%	75.3%
% of households having at least one mobile phone subscription giving access to internet[169]	70.0%	75.0%

[168] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[169] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.25. Slovenia

4.25.1. Price of mobile broadband

Mobile broadband on handsets (smartphones)



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 123: Slovenia: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband on laptops and tablets

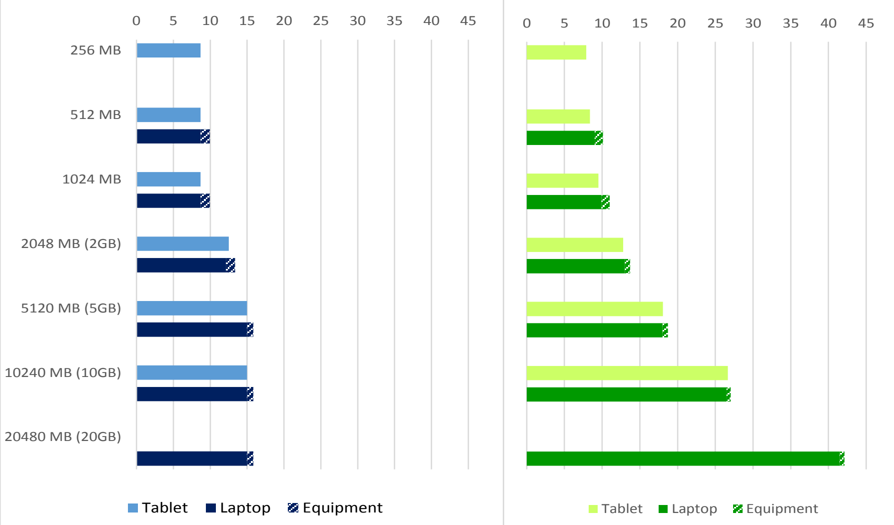


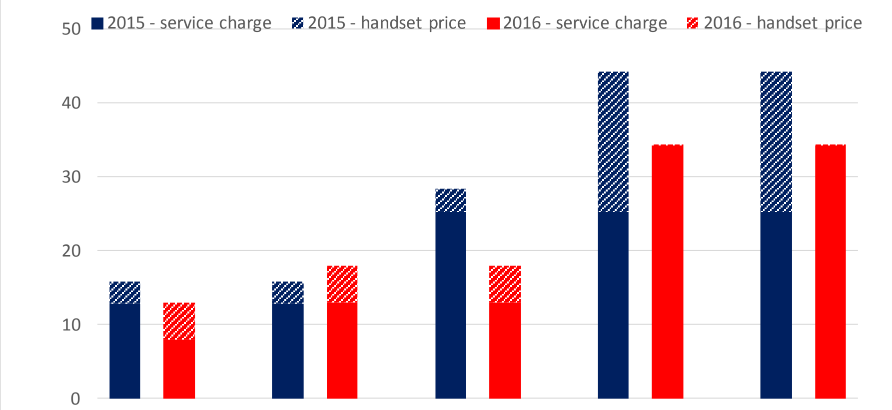
Table 124: Slovenia: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

On average, mobile broadband packages on handsets are 27%[170] cheaper in Slovenia than in the EU28[171]. Mobile broadband on tablets and laptops is 15% cheaper on average, but the prices of the least expensive offers do not vary strongly for the different predefined usage profiles. As a consequence, the highest usage profiles (10GB and 20GB) are respectively 45% and 65% cheaper in Slovenia compared to the EU28.

[170] Compared to 13% cheaper in 2015.
[171] Average of the least expensive offers of all mobile operators in the sample.

4.25.2. Recent evolutions in mobile broadband prices

Mobile broadband on handsets (smartphones)



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 125: Slovenia: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Mobile broadband on laptops and tablets

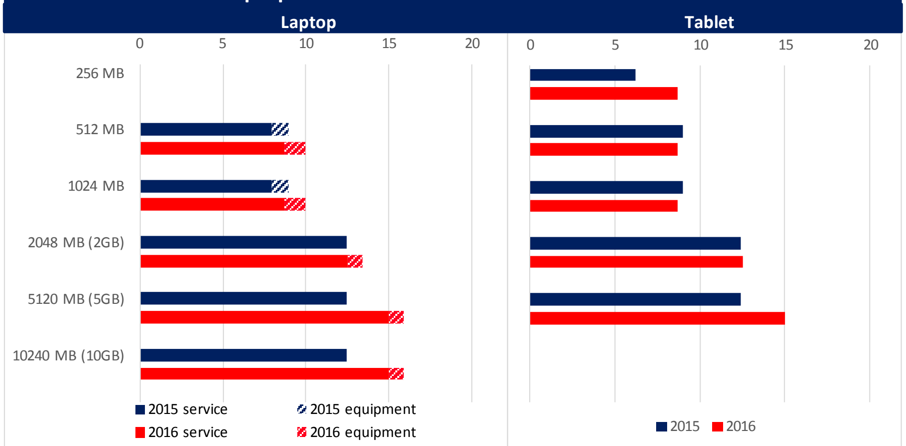


Table 126: Slovenia: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Between 2015 and 2016, prices for mobile data packages on handsets have decreased more strongly in Slovenia (-17% on average) than in the EU28 on average (-7%). The price decreases are largest for the higher usage profiles (above 1GB).

Meanwhile, prices for mobile broadband on both tablets and laptops have increased (by 11% on average for tablets, and by 17% on average for laptops). These price evolutions are opposite to the overall trend in the EU28 (price decrease of -3% for both tablets and laptops).

4.25.3. Competition in the mobile broadband market

The least expensive offers of the two largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)		
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Si.mobil** 12.92 5.01	**Telekom Slovenije** 18.97 5.01
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Si.mobil** 17.92 5.01	**Telekom Slovenije** 23.28 2.92
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Si.mobil** 17.92 5.01	**Telekom Slovenije** 34.54 2.92
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Si.mobil** 34.20 0.04	**Telekom Slovenije** 59.09 19.97
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Si.mobil** 34.20 0.04	**Telekom Slovenije** 59.09 19.97
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Si.mobil** 34.20 0.04	**Telekom Slovenije** 66.59 19.97
Tablet		
256 MB EU28: 7.89	**Telekom Slovenije** 8.69	**Si.mobil** 9.99
512 MB EU28: 8.4	**Telekom Slovenije** 8.69	**Si.mobil** 9.99
1024 MB (1GB) EU28: 9.5	**Telekom Slovenije** 8.69	**Si.mobil** 9.99
2048 MB (2GB) EU28: 12.8	**Si.mobil** 12.51	**Telekom Slovenije** 14.94
5120 MB (5GB) EU28: 18.06	**Si.mobil** 14.99	**Telekom Slovenije** 17.86
10240 MB (10GB) EU28: 26.67	**Si.mobil** 14.99	**Telekom Slovenije** 17.86
Laptop		
512 MB EU28: 10.13	**Telekom Slovenije** 9.94	**Si.mobil** 10.86
1024 MB (1GB) EU28: 11	**Telekom Slovenije** 9.94	**Si.mobil** 10.86
2048 MB (2GB) EU28: 13.7	**Si.mobil** 13.37	**Telekom Slovenije** 16.19
5120 MB (5GB) EU28: 18.71	**Si.mobil** 15.86	**Telekom Slovenije** 19.11
10240 MB (10 GB) EU28: 27.05	**Si.mobil** 15.86	**Telekom Slovenije** 19.11
20480 MB (20 GB) EU28: 42.14	**Si.mobil** 15.86	**Telekom Slovenije** 39.12

Table 127: Slovenia: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

As in 2015, Si.mobil is systematically the cheapest operator for handset based offers. Telekom Slovenije is on average about 70% more expensive than Si.mobil on handsets. Meanwhile, Telekom Slovenije has the best deal for the low usage profiles (up to 1GB) on laptops and tablets. For higher usage profiles, Si.mobil is however again significantly less expensive than Telekom Slovenije. Telecom Slovenije is 20% more expensive for offers including 2GB, 5GB or 10GB and 1.5 time more expensive for the laptop based offer including 20GB.

4.25.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Slovenia		
Telekom Slovenije	TelekomSlovenije	4G available
Si.mobil	si mobil	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Telekom Slovenije	100MB to unlimited	1GB to unlimited
Si.mobil	400MB to unlimited	1GB to 40GB

The data allowances included in the mobile broadband tablet/laptop offers of both operators are rather equivalent. Both Telekom Slovenije and Si.mobil have low data volume entry levels and also provide offers without a capacity limit. For handsets, only Telekom Slovenije has unlimited offers, but the maximum data allowance of Si.mobil is still ten times as high as the data allowance of the highest predefined user profile.

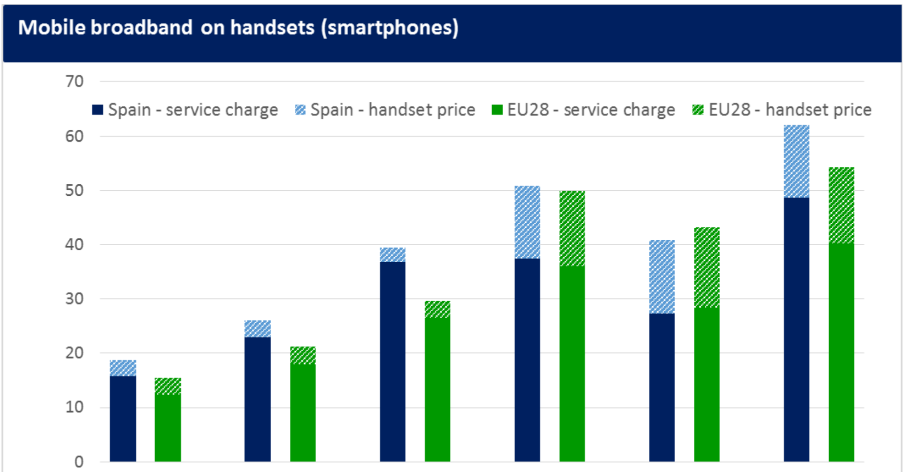
Take-up of mobile broadband offers

	Slovenia	EU28
Mobile broadband penetration (subscriptions per 100 people) [172]	49.7%	75.3%
% of households having at least one mobile phone subscription giving access to internet[173]	79.0%	75.0%

[172] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[173] Source: Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.26. Spain

4.26.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 128: Spain: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

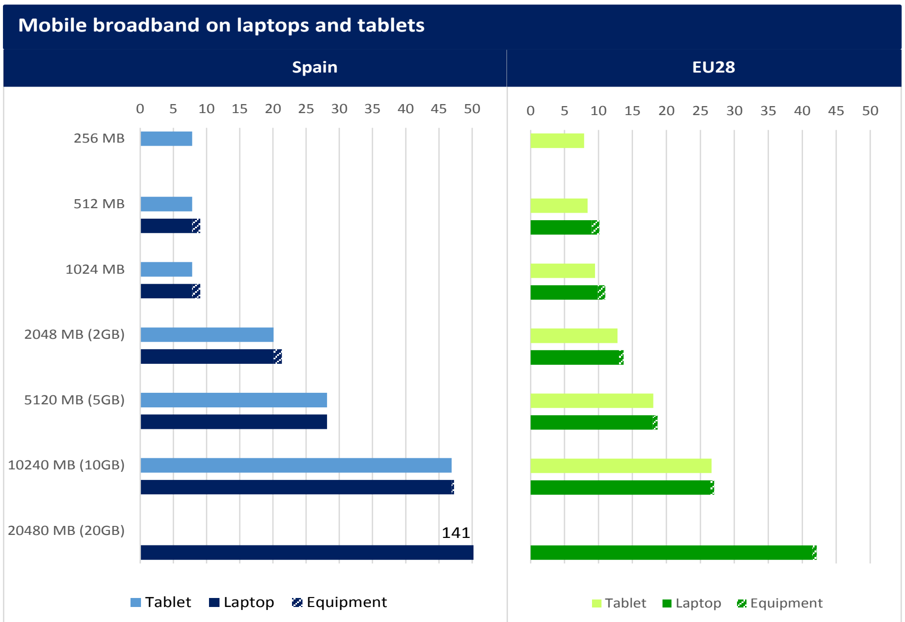
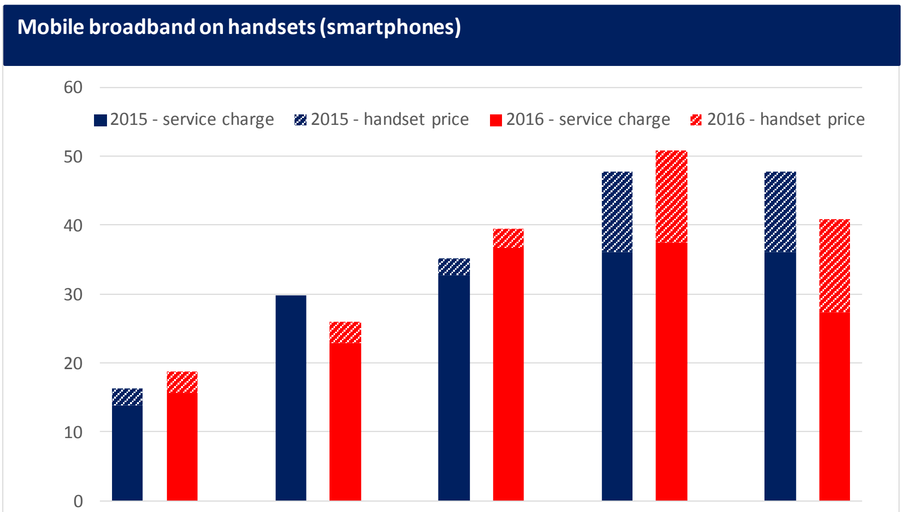


Table 129: Spain: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Mobile broadband packages on handsets are on average 15%[174] more expensive in Spain than in the EU28[175] on average. For the packs including the lowest volumes of mobile data (up to 1GB), the gap with the EU28 even amounts to about 25%. Mobile broadband on laptops and tablets is on average around 30%[176] more expensive, when abstraction is made of the 20GB usage profile. The price of this latter is about 3.5 times higher in Spain compared to the EU28[177] on average.

[174] Compared to 8% more expensive in 2015.
[175] Average of the least expensive offers of all mobile operators in the sample.
[176] Same as in 2015.
[177] Average of the least expensive offers of all mobile operators in the sample.

4.26.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 130: Spain: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

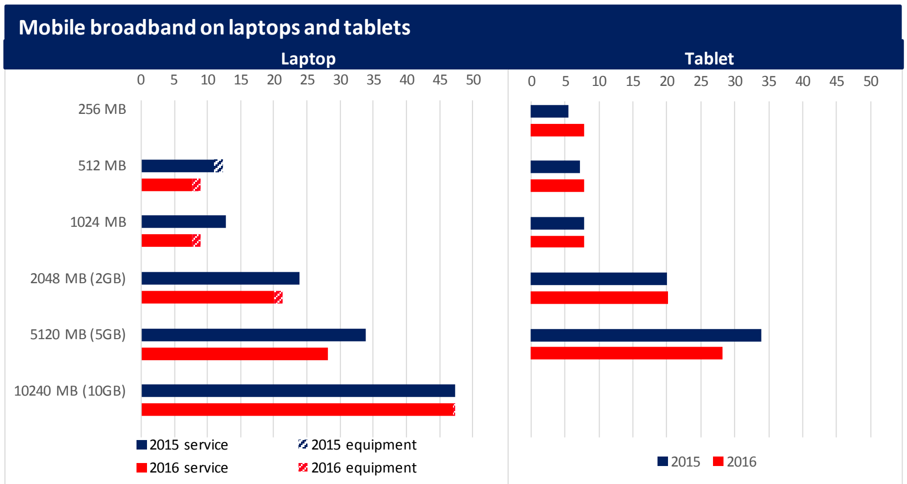


Table 131: Spain: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Prices for mobile broadband packs on handsets remained rather stable between 2015 and 2016 (+1% on average, with variations per user profile ranging from -14% for the 2GB offer with low volumes of minutes and SMS to +15% for the 100MB profile). In the EU28[178], mobile broadband packs on handsets are on average 7% cheaper in 2016 compared to 2015.

The evolution of the price of mobile broadband on tablets in Spain is in line with the EU28 average (-3% price decrease between 2015 and 2016), on the condition that abstraction is made of the lowest user profile (256MB). The price of this latter offer increased by 40%. The prices for laptop based offers decreased more significantly. On average, prices went down by 17% (compared to an average price decrease of -3% in the EU28).

[178] Average of the least expensive offers of all mobile operators in the sample.

4.26.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Orange** 18.78 3.07	**Vodafone** 20.39 3.07	**Movistar** 25.91 2.46
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Vodafone** 25.98 3.07	**Movistar** 33.73 2.46	**Orange** 36.53 3.07
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Orange** 39.44 2.64	**Movistar** 40.43 2.46	**Vodafone** 40.50 3.07
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Vodafone** 50.83 13.40	**Orange** 51.11 14.30	**Movistar** 51.48 13.50
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Vodafone** 40.87 13.50	**Orange** 51.11 14.30	**Movistar** 51.48 13.50
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Vodafone** 62.00 13.40	**Orange** 62.28 14.30	**Movistar** 63.76 13.50
Tablet			
256 MB EU28: 7.89	**Movistar** 7.82	**Vodafone** 11.17	**Orange** 12.44
512 MB EU28: 8.4	**Movistar** 7.82	**Vodafone** 11.17	**Orange** 12.44
1024 MB (1GB) EU28: 9.5	**Movistar** 7.82	**Vodafone** 12.29	**Orange** 12.44
2048 MB (2GB) EU28: 12.8	**Movistar** 20.11	**Vodafone** 23.46	**Orange** 28.15
5120 MB (5GB) EU28: 18.06	**Orange** 28.15	**Vodafone** 33.51	**Movistar** 50.27
10240 MB (10GB) EU28: 26.67	**Vodafone** 46.92	**Movistar** 83.78	
Laptop			
512 MB EU28: 10.13	**Movistar** 9.06	**Vodafone** 12.07	**Orange** 12.44
1024 MB (1GB) EU28: 11	**Movistar** 9.06	**Orange** 12.44	**Vodafone** 13.03
2048 MB (2GB) EU28: 13.7	**Movistar** 21.35	**Vodafone** 24.20	**Orange** 28.15
5120 MB (5GB) EU28: 18.71	**Orange** 28.15	**Vodafone** 34.26	**Movistar** 51.51
10240 MB (10 GB) EU28: 27.05	**Vodafone** 47.29	**Movistar** 85.02	
20480 MB (20 GB) EU28: 42.14	**Vodafone** 141.12	**Movistar** 768.73	

Table 132: Spain: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

For mobile broadband packages on handsets, Vodafone is most often the cheapest provider. Moreover, for the user profiles for which another operator has a better deal, the price difference with Vodafone remains limited. Movistar has the least expensive offers on laptop and tablet for the lowest user profiles (up to 2GB), Orange offers the best deal for 5GB offers and Vodafone has significantly lower prices for 10GB and 20GB offers. These two latter are not available at Orange.

4.26.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Spain		
Movistar	movistar	4G available
Vodafone	vodafone™	4G available
Orange	orange™	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Movistar	1GB to 5GB	1GB to 5GB
Vodafone	1GB to 15GB	100MB to 10GB
Orange	500MB to 6GB	500 MB to 5GB

Regardless of the device, Vodafone offers the highest maximum data allowance. Movistar and Orange's data allowances are more comparable, although the latter has lower data volume entry levels. For laptop and tablet however, none of the three operators reaches the data allowance of the highest predefined user profile (i.e. 20 GB).

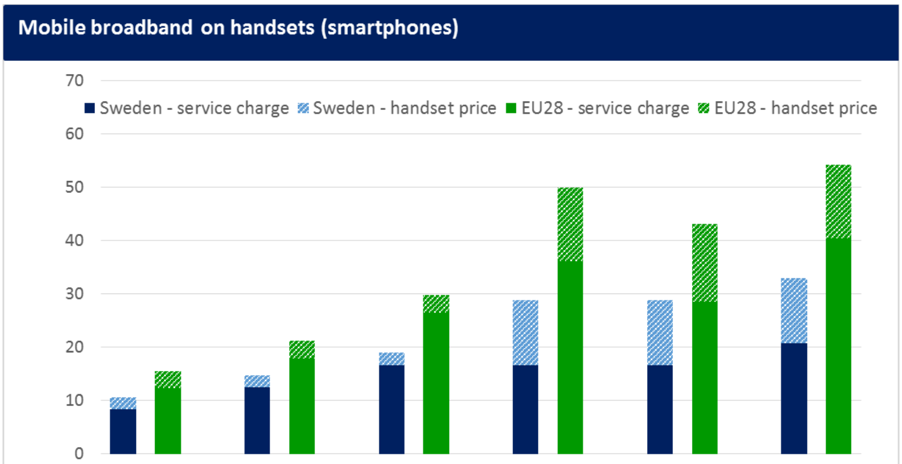
Take-up of mobile broadband offers

	Spain	EU28
Mobile broadband penetration (subscriptions per 100 people) [179]	80.3%	75.3%
% of households having at least one mobile phone subscription giving access to internet[180]	75.0%	75.0%

[179] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[180] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.27. Sweden

4.27.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 133: Sweden: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

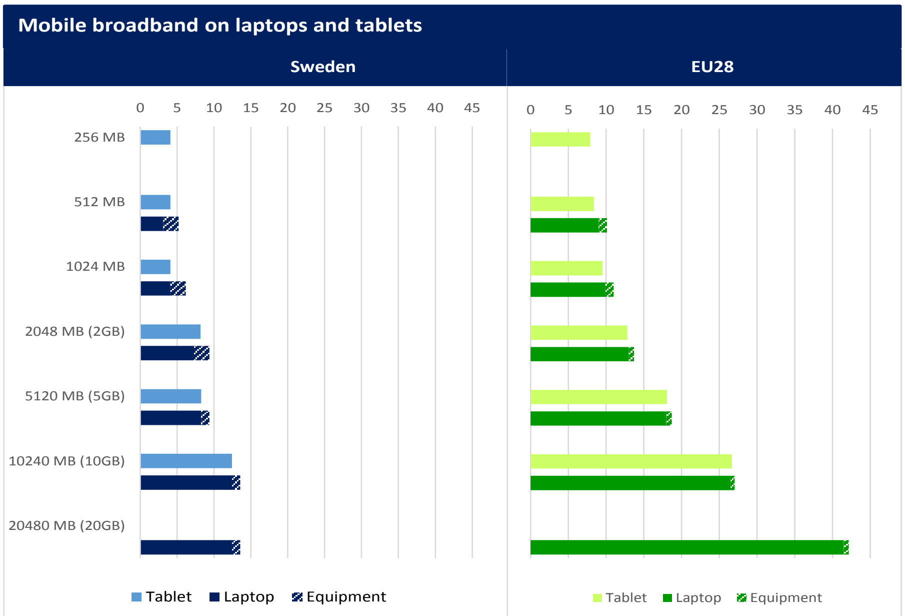
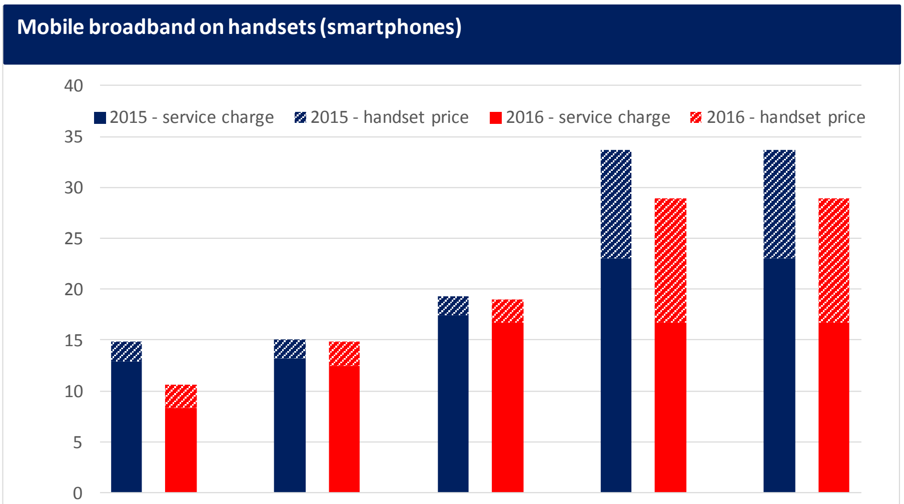


Table 134: Sweden: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, February 2016 data)

Mobile data packages for handsets are on average 35%[181] cheaper in Sweden compared to the EU28[182] average; also the prices of the handsets included in the total cost per usage profile are on average about 20%[183] less expensive. For mobile broadband on laptops and tablets, Swedish prices are on average 50% lower[184] than those of the EU28 on average.

[181] Compared to 30% cheaper in 2015.
[182] Average of the least expensive offers of all mobile operators in the sample.
[183] Compared to 35% less expensive in 2015.
[184] Compared to 40% lower in 2015.

4.27.2. Recent evolutions in mobile broadband prices



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 135: Sweden: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

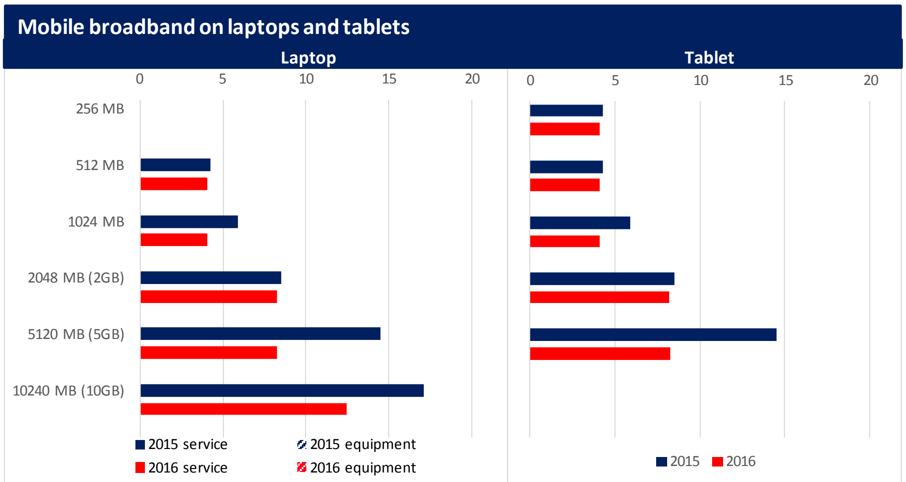


Table 136: Sweden: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

Regardless of the device used for accessing the mobile broadband services, prices in Sweden dropped significantly between 2015 and 2016. For handsets, prices decreased by 12% on average in Sweden (compared to -7% in the EU28[185] on average). The price decreases are even more marked for the tablet and handset based offers. The least expensive offers for these devices dropped respectively with 17% (for tablets) and 22% (for laptops), which is much more significant than the average price evolution of -3% for offers on both types of devices in the EU28 on average.

[185] Average of the least expensive offers of all mobile operators in the sample.

4.27.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Telenor** 10.56 2.31	**TeliaSonera** 10.56 2.31	**Tele2** 16.80 2.31
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Telenor** 14.73 2.31	**TeliaSonera** 18.82 2.31	**Tele2** 18.82 2.31
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Telenor** 18.90 2.31	**Tele2** 22.99 2.31	**TeliaSonera** 26.42 0.91
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Telenor** 28.86 12.26	**Tele2** 32.94 12.26	**TeliaSonera** 35.53 10.01
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Telenor** 28.86 12.26	**Tele2** 32.94 12.26	**TeliaSonera** 35.53 10.01
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Tele2** 32.94 12.26	**Telenor** 33.03 12.26	**TeliaSonera** 35.53 10.01
Tablet			
256 MB EU28: 7.89	**TeliaSonera** 4.09	**Tele2** 4.09	**Telenor** 20.77
512 MB EU28: 8.4	**TeliaSonera** 4.09	**Tele2** 4.09	**Telenor** 20.77
1024 MB (1GB) EU28: 9.5	**TeliaSonera** 4.09	**Tele2** 8.26	**Telenor** 20.77
2048 MB (2GB) EU28: 12.8	**TeliaSonera** 8.17	**Tele2** 8.26	**Telenor** 20.77
5120 MB (5GB) EU28: 18.06	**Tele2** 8.26	**TeliaSonera** 8.84	**Telenor** 20.77
10240 MB (10GB) EU28: 26.67	**Tele2** 12.43	**TeliaSonera** 17.18	**Telenor** 20.77
Laptop			
512 MB EU28: 10.13	**Tele2** 5.20	**TeliaSonera** 6.16	**Telenor** 21.88
1024 MB (1GB) EU28: 11	**TeliaSonera** 6.16	**Tele2** 9.37	**Telenor** 21.88
2048 MB (2GB) EU28: 13.7	**Tele2** 9.37	**TeliaSonera** 9.75	**Telenor** 21.88
5120 MB (5GB) EU28: 18.71	**Tele2** 9.37	**TeliaSonera** 9.75	**Telenor** 21.88
10240 MB (10 GB) EU28: 27.05	**Tele2** 13.54	**TeliaSonera** 18.09	**Telenor** 21.88
20480 MB (20 GB) EU28: 42.14	**Tele2** 13.54	**TeliaSonera** 18.09	**Telenor** 21.88

Table 137: Sweden: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Telenor clearly has the best deal for handset based packages with mobile data. It is the least expensive provider for all except the 4GB profile; for this latter however, the price difference with the least expensive offer of Tele2 is negligible (< 0.5%). TeliaSonera has the best mobile broadband offers for tablets with up to 2GB included. Tele2 is the least expensive provider for the higher usage profiles on tablets, as well as for almost all of the laptop profiles. Price differences between Telenor and the two other operators are important for the tablet and laptop based offers, since Telenor only has one offer for these two devices, which includes 40GB.

4.27.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - Sweden		
TeliaSonera Sweden	TeliaSonera	4G available
Tele2 Sweden	TELE2	4G available
Telenor Sweden	telenor	4G available

Range of data allowances offered

	Laptop and Tablet	Handset
TeliaSonera Sweden	200MB to 40GB	6GB to 40GB
Tele2 Sweden	500MB to 100GB	500MB to 100GB
Telenor Sweden	40GB	500MB to 50GB

With data allowances that go up to 100 GB for both laptop/tablet and handsets, Tele2 offers the highest volumes of the three operators. The maximum data allowance of the others is only half of that or even lower, but in all cases still much higher than what is included in the highest predefined user profile under consideration. Telenor however does not appear to offer any diversity for mobile broadband on laptops and tablets: the only data allowance provided is 40 GB.

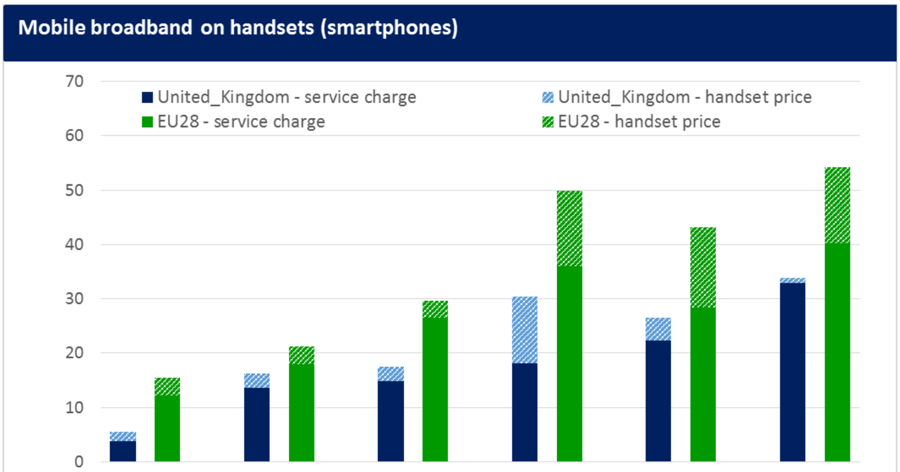
Take-up of mobile broadband offers

	Sweden	EU28
Mobile broadband penetration (subscriptions per 100 people) [186]	114.6%	75.3%
% of households having at least one mobile phone subscription giving access to internet[187]	90.0%	75.0%

[186]Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[187] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

4.28. United Kingdom

4.28.1. Price of mobile broadband



MB	102.4	512	1024	2048	2048	4096
Min	60	200	600	1800	200	1800
SMS	100	140	225	350	140	350
Handset	Basic	Basic	Basic	Advanced	Advanced	Advanced

Table 138: United Kingdom: mobile broadband prices on handsets (least expensive offer in EUR/PPP, February 2016 data)

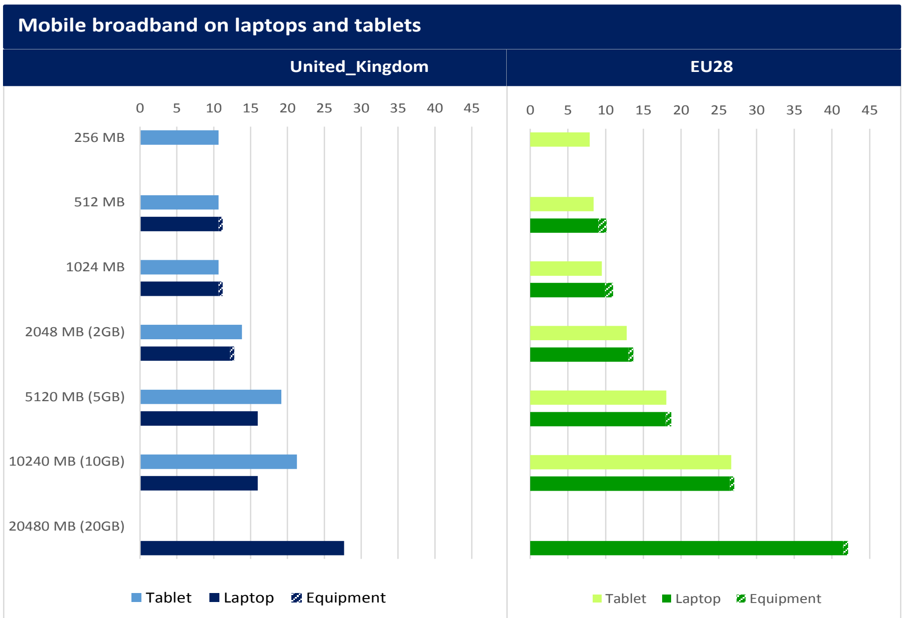
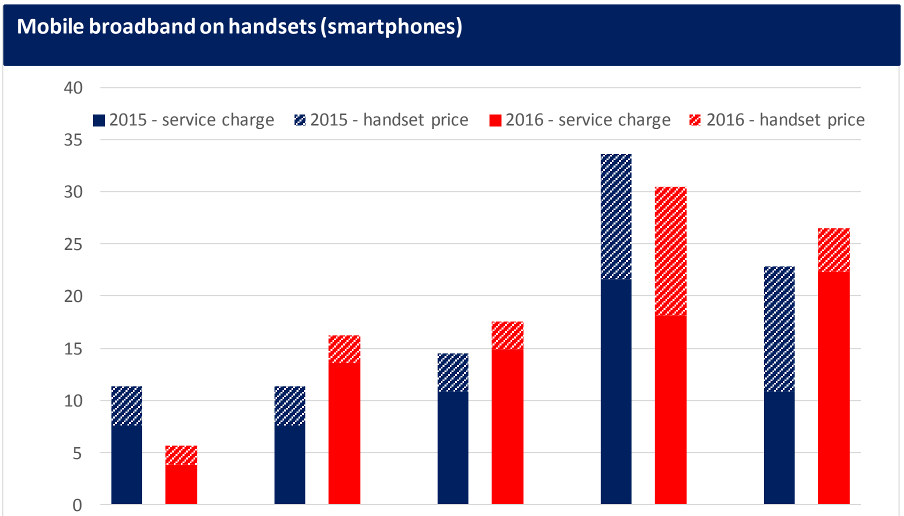


Table 139: United Kingdom: mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2016 data)

Mobile broadband packages on handsets are on average 40%[188] less expensive in the UK compared to in the EU28[189] on average. Prices for mobile broadband for laptops and tablets are on average in line with the EU28. This average however results from British prices which are higher for lower usage profiles (up to 5GB), whereas for 10GB and 20GB, offers in the UK are about a third cheaper than the EU28 average.

4.28.2. Recent evolutions in mobile broadband prices

[188] Compared to 45% in 2015.
[189] Average of the least expensive offers of all mobile operators in the sample.



MB	102.4	512	1024	2048	2048
Min	60	200	600	1800	200
SMS	100	140	225	350	140
Handset	Basic	Basic	Basic	Advanced	Advanced

Table 140: United Kingdom: evolution in mobile broadband prices on handsets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

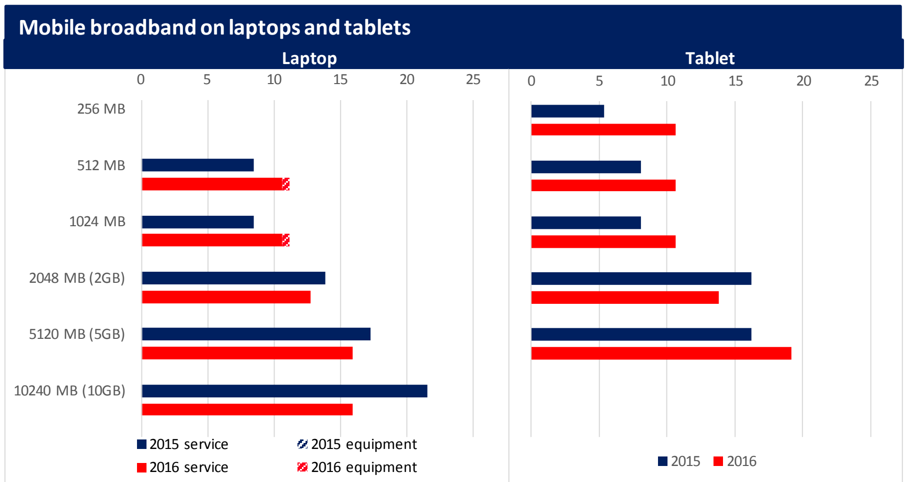


Table 141: United Kingdom: evolution in mobile broadband prices on laptops and tablets (least expensive offer in EUR/PPP, Feb 2015 and Feb 2016 data)

On average, prices for mobile broadband increased between 2015 and 2016 in the UK. Overall, the price for mobile broadband packs for handsets increased by 4% on average (compared to -7% for the EU28). Mobile broadband on laptops and tablets is in 2016 significantly more expensive for the low usage profiles (the 256MB offer almost doubled in price and the 512MB and 1GB offer increased by one third). The price of the offers of the higher usage profiles decreased by 7% on average. In the EU28, prices for both laptops and tablets decreased by 3% between 2015 and 2016.

4.28.3. Competition in the mobile broadband market

The least expensive offers of the three largest mobile operators, covering at least 70% of the market, compare as follows per type of device:

Handsets (smartphones)			
100 MB - 60 min - 100 SMS EU28: 15.45 includes 3.35 for the handset	**Three** 5.56 1.77	**Vodafone** 12.41 1.77	**EE** 12.71 2.07
512MB - 200 min - 140 SMS EU28: 21.23 includes 3.35 for the handset	**Three** 16.18 2.64	**EE** 16.45 2.64	**Vodafone** 17.53 2.64
1024 MB - 600 min - 225 SMS EU28: 29.71 includes 3 for the handset	**Vodafone** 17.53 2.64	**EE** 18.58 2.64	**Three** 19.66 2.64
2048 MB - 1800 min - 350 SMS EU28: 49.86 includes 14.26 for the handset	**Vodafone** 30.47 12.39	**EE** 30.73 12.39	**Three** 35.62 18.59
2048 MB - 200 min - 140 SMS EU28: 43.12 includes 14.81 for the handset	**Vodafone** 26.45 4.11	**EE** 28.35 12.39	**Three** 29.41 12.39
4096 MB - 1800 min - 350 SMS EU28: 54.23 includes 13.93 for the handset	**Vodafone** 33.84 0.87	**EE** 34.81 12.39	**Three** 40.05 12.39
Tablet			
256 MB EU28: 7.89	**Vodafone** 10.64	**Three** 10.64	**EE** 23.41
512 MB EU28: 8.4	**Vodafone** 10.64	**Three** 10.64	**EE** 23.41
1024 MB (1GB) EU28: 9.5	**Vodafone** 10.64	**Three** 10.64	**EE** 23.41
2048 MB (2GB) EU28: 12.8	**Three** 13.83	**Vodafone** 15.96	**EE** 23.41
5120 MB (5GB) EU28: 18.06	**Three** 19.15	**Vodafone** 21.28	**EE** 23.41
10240 MB (10GB) EU28: 26.67	**Vodafone** 21.28	**EE** 23.41	**Three** 24.47
Laptop			
512 MB EU28: 10.13	**Vodafone** 11.20	**Three** 13.83	**EE** 21.27
1024 MB (1GB) EU28: 11	**Vodafone** 11.20	**Three** 13.83	**EE** 21.27
2048 MB (2GB) EU28: 13.7	**Vodafone** 12.77	**Three** 13.83	**EE** 21.27
5120 MB (5GB) EU28: 18.71	**Vodafone** 15.96	**Three** 19.15	**EE** 23.41
10240 MB (10 GB) EU28: 27.05	**Vodafone** 15.96	**EE** 23.41	**Three** 24.47
20480 MB (20 GB) EU28: 42.14	**Three** 27.67	**EE** 29.79	**Vodafone** 229.80

Table 142: United Kingdom: Least expensive offers per mobile operator (in EUR/PPP, February 2016 data)

Three and Vodafone are providing the cheapest mobile broadband offers in the UK. Price differences with EE can be important[190], especially for the lower usage profiles. Vodafone is most often offering the best handset based deals (except for the packs including 256MB or 512MB, for which Three is less expensive). On tablets, Vodafone and Three apply the same prices for offers up to 1GB. Vodafone is almost

[190] Except for handset based offers

systematically the least expensive operator for laptop based offers. However, for the 20GB user profile, Three and EE provide remarkably cheaper offers.

4.28.4. Background information

Mobile operators considered in the sample

Mobile operators in 2016 sample - United Kingdom		
Vodafone UK		4G available
Three UK		4G available
EE		4G available

Range of data allowances offered

	Laptop and Tablet	Handset
Vodafone UK	1GB to 10GB	250MB to 20GB
Three UK	1GB to 20GB	500MB to unlimited
EE	500MB to 50GB	10GB to 32GB

The data allowances included in the mobile broadband offers of the three operators vary considerably. EE offers the highest data volumes on laptops and tablets, and at the same time also has the lowest data volume entry levels. At 10 GB, Vodafone's highest offer for tablet/laptop does not reach the capacity of the highest predefined user profile. In the handset segment, all operators largely exceed the maximum data allowance considered in the study (4 GB). Three stands out as it offers unlimited access to mobile data, and EE as it does not provide for handset offers below 10 GB.

Take-up of mobile broadband offers

	United Kingdom	EU28
Mobile broadband penetration (subscriptions per 100 people) [191]	86.5%	75.3%
% of households having at least one mobile phone subscription giving access to internet[192]	78.0%	75.0%

[191] Source: Digital Agenda for Europe, Broadband Access in the EU: Situation at 1 June 2015
[192] Source: Special Eurobarometer 438: e-communication and Digital Single market, October 2015 data.

5. Annexes

Annex 1: Handset OECD baskets – details of voice and SMS services

Mobile basket parameters

Table 16. Mobile: Overall basket volumes and destination distribution

Volume per month	Total calls per month	Call distribution				
		Mobile to fixed	On-net	Off-net	Voicemail	SMS
30 calls basket	30	16%	55%	25%	4%	100
100 calls basket	100	17%	52%	28%	3%	140
300 calls basket	300	14%	46%	37%	3%	225
900 calls basket	900	14%	55%	28%	3%	350
40 calls prepaid basket	40	14%	64%	18%	4%	60
400 messages basket	8	8%	55%	25%	12%	400

Table 17. Mobile time of day distribution

	Voice call distribution			Message distribution			
	Day	Evening	Weekend	Peak	Off-peak	On-net	Off-net
30 calls basket	46%	29%	25%	66%	34%	53%	47%
100 calls basket	51%	26%	23%	66%	34%	51%	49%
300 calls basket	49%	32%	19%	66%	34%	50%	50%
900 calls basket	49%	32%	19%	66%	34%	50%	50%
40 calls prepaid basket	46%	29%	25%	66%	34%	53%	47%
400 messages basket	46%	29%	25%	66%	34%	50%	50%

Table 18. Mobile voice call durations

	Call duration (minutes / call)			
	Mobile to fixed	On-net	Off-net	Voicemail
30 calls basket	2.0	1.6	1.7	0.9
100 calls basket	2.1	1.9	1.8	1.0
300 calls basket	2.0	2.0	1.8	1.0
900 calls basket	1.9	2.1	1.9	1.1
40 calls prepaid basket	1.9	1.9	2.0	0.9
400 messages basket	1.6	2.2	1.6	1.1

Source: OECD (2009), "Revision of the methodology for construction telecommunications price basket" (DSTI/ICCP/CISP(2009)14/FINAL)

Annex 2: List of mobile operators included in the sample

Country	Mobile operators
Austria	A1 Telekom Austria AG
	T-Mobile Austria GmbH
	Hutchison 3 Austria
Belgium	Proximus
	Base
	Mobistar sa
Bulgaria	Vivacom
	Telenor
Croatia	HT
	VIPnet
Cyprus	Cyta
	MTN
Czech_Republic	T-mobile
	Vodafone
	O2
Denmark	TDC
	Telenor
	Teliasonera
Estonia	Telia (EMT)
	Tele2
Finland	Elisa
	Sonera
France	Orange
	SFR
	Free
Germany	Telekom
	Vodafone
	O2
Greece	Cosmote
	Vodafone
Hungary	Telekom (T-Mobile Hungary)
	Telenor
Iceland	Nova
	Vodafone
	Síminn
Ireland	Vodafone
	Three
Italy	Vodafone
	Telecom Italia (TIM)
	Wind
Japan	NTT DoCoMo
	KDDI

Country	Mobile operators
Korea	SKT
	KT
Latvia	Tele2
	LMT
Lithuania	Tele2
	Bite Lietuva
	Omnitel
Luxembourg	Post Télécom
	Tango
Malta	Vodafone
	GO Mobile
Norway	Telenor
	TeliaSonera
Netherlands	KPN
	Vodafone
	T-mobile
Poland	Orange
	T-Mobile
	Polkomtel
Portugal	MEO
	NOS
	Vodafone
Romania	Orange
	Telekom Romania Mobile
	Vodafone
Slovakia	Orange
	Slovak Telekom
Slovenia	Telekom Slovenije
	Si.mobil
Spain	Movistar
	Vodafone
	Orange
Sweden	TeliaSonera
	Tele2
	Telenor
Turkey	Turkcell
	Vodafone
United Kingdom	Vodafone
	Three
	EE
USA	Verizon Wireless
	AT&T
	Sprint

Annex 3: Taxonomy of pre-paid offers

<table>
<tr><th colspan="2">Type of Prepaid offer</th><th>What is paid ?</th><th>What is available for consumption ?</th><th>Invoicing of the consumption ?</th></tr>
<tr><td rowspan="4">"METERED" PREPAID

Without any service volumes included
(# min; # SMS and/or # MB)</td><td>Metered</td><td rowspan="4">Starter pack
+
(monthly) amount of money</td><td rowspan="2">Credit allowance = amount of money loaded</td><td>Consumption is charged according to a unit price per minute, SMS and data and is automatically deducted from the credit allowance until this credit allowance is ended.</td></tr>
<tr><td>Metered
with add-on</td><td>The credit allowance can be used to buy add-ons (pack of minutes/SMS/data).</td></tr>
<tr><td>Metered + Bonus</td><td rowspan="2">Credit allowance > amount of money on the SIM card (e.g. bonus)</td><td>Consumption is charged according to a unit price per minute, SMS and data and is automatically deducted from the credit allowance until this credit allowance is ended.</td></tr>
<tr><td>Metered + Bonus
with add-on</td><td>The credit allowance can be used to buy add-ons (pack of minutes/SMS/data).</td></tr>
<tr><td rowspan="4">"HYBRID" PREPAID
(Flat + additional metered)

With predefined service volumes included
(# min; # SMS and/or # MB)</td><td>Hybrid
(flat + per unit metered, for full amount paid)</td><td rowspan="4">Starter pack
+
(monthly) amount of money</td><td rowspan="2">Credit allowance = amount of money loaded
+
Predefined minutes, SMS and/or data allowance</td><td>When the predefined minutes/SMS/data allowance is consumed, the additional consumption is charged per unit and deducted from the credit allowance.</td></tr>
<tr><td>Hybrid
(flat + additional add-ons, for full amount paid)</td><td>When the predefined minutes/SMS/data allowance is consumed, possibility to buy add-ons (pack of additional minutes/SMS/data) deducted from the credit allowance.</td></tr>
<tr><td>Hybrid
(flat + per unit metered, for part of the amount paid)</td><td rowspan="2">Credit allowance < amount of money loaded
+
Predefined minutes, SMS and/or data allowance</td><td>When the predefined minutes/SMS/data allowance is consumed, the additional consumption is charged per unit and deducted from the credit allowance.</td></tr>
<tr><td>Hybrid
(flat + additional add-ons, for part of the amount paid)</td><td>When the predefined minutes/SMS/data allowance is consumed, possibility to buy add-ons (pack of additional minutes/SMS/data) deducted from the credit allowance.</td></tr>
<tr><td rowspan="3">"TAILORED" PREPAID
(Flat + additional metered)

With selected service volumes included
(# min; # SMS and/or # MB)</td><td>Tailored
(with no possibility for additional services)</td><td>Starter pack
+
(monthly) amount of money</td><td>Credit allowance can be used for buying minutes, SMS and data allowance, offered in different packs that are chosen (in advance) according to the consumer's preference</td><td>When the minutes/SMS/data allowance is consumed, services are stopped or reduced (e.g. reduced speed for mobile internet and only incoming calls and SMS).

There is no possibility to pay per unit for extra service volumes or to buy additional add-ons.</td></tr>
<tr><td>Tailored
(with possibility to further buy add-ons)</td><td rowspan="2">Starter pack
+
(monthly) amount of money</td><td rowspan="2">Credit allowance can be used for buying minutes, SMS and data allowance, offered in different packs that are chosen (in advance) according to the consumer's preference
+
Credit allowance</td><td>When the minutes/SMS/data allowance is consumed, possibility to use the credit allowance to buy add-ons (pack of additional minutes/SMS/data).</td></tr>
<tr><td>Tailored
(with possibility to further buy per unit)</td><td>When the minutes/SMS/data allowance is consumed, additional consumption is charged per unit.</td></tr>
</table>

Source: Van Dijk Management Consultant

Annex 4: Overview of additional taxes on mobile broadband services

(February 2016 data)

Austria

Depending on the operator, a yearly administration fee of 19.9EUR or 20 EUR is taken into account for post-paid offers.

Croatia

Since 12 July 2014, post-paid subscribers pay 2 additional fees per month:

- 10 kuna fee (1.30 EUR) for access to the mobile network
- 5 kuna fee (0.65 EUR) for the right to use addresses, phone numbers and radio frequency spectrum).

Prepaid customers pay a tax of 10% on the value of the prepaid cards/top-ups.

Greece[193]

Specific taxes apply to mobile voice subscription, irrespective of whether the subscription also includes mobile broadband. These taxes are applied before the VAT is added. A distinction is made between taxes for post-paid and for pre-paid offers:

- **Tax of mobile telephony subscribers**: this tax is applied as a percentage of the total monthly bill, it is not yet included in the charges on the operators' websites. The percentage varies with the amount of the bill:

Amount of monthly bill	Tax of mobile telephony subscribers
≤ €50	12%
≥€ 50,01 and ≤ €100	15%
≥ €100,01 and ≤€150	18%
≥ €150,01	20%

- **Tax of prepaid telephony**: a tax of 12% is applied to the value of the mobile communication services; this tax is most often already included in the prepaid tariff plans (i.e. the refill cards or 'connection packs'). It is not yet included however in the cost of the add-ons or the cost per unit of additional services (e.g. tariff per SMS, per min).

No taxes apply to mobile broadband connections which are exclusively used for *data connections* (e.g. mobile broadband plans for tablets and laptops).

Italy

A monthly government license fee ("TCG") of 5.16€ to all residential post-paid handset subscriptions.

Turkey

For new customers, there is a one-time radio license fee of 17.5 TL (11.88 EUR). In addition, a monthly radio usage tax of 1.5 TL (1.02 EUR) is applied for all customers (pre-paid and post-paid).

[193] See e.g. Law 3775/2009, article 33 and Law 3842/2010, article 70.

Annex 5: Parameters for EUR/PPP conversion and VAT rates per country

Country	VAT percentage	Local Currency (LC)	1 EURO in LC	EURO PPP
Austria	20%	EUR	1.00	1.09
Belgium	21%	EUR	1.00	1.10
Bulgaria	20%	BGN	1.96	0.90
Croatia	25%	HRK	7.64	4.81
Cyprus	19%	EUR	1.00	0.91
Czech Republic	21%	CZK	27.04	17.44
Denmark	25%	DKK	7.46	10.06
Estonia	20%	EUR	1.00	0.73
Finland	24%	EUR	1.00	1.24
France	20%	EUR	1.00	1.10
Germany	19%	EUR	1.00	1.04
Greece	23%	EUR	1.00	0.82
Hungary	27%	HUF	310.60	174.90
Iceland	24%	ISK	142.37	185.61
Ireland	23 %	EUR	1.00	1.11
Italy	22%	EUR	1.00	1.01
Japan	8%	JPY	128.79	140.73
Korea (South Korea)	10%	KRW	1,347.09	1,198.27
Latvia	21%	EUR	1.00	0.67
Lithuania	21%	LTL	1.00	0.60
Luxembourg	17%	EUR	1.00	1.20
Malta	18%	EUR	1.00	0.80
Norway	25%	NOK	9.58	12.56
The Netherlands	21%	EUR	1.00	1.09
Poland	23%	PLN	4.41	2.41
Portugal	23%	EUR	1.00	0.78
Romania	24%	RON	4.43	2.20
Slovakia	20%	EUR	1.00	0.66
Slovenia	22%	EUR	1.00	0.80
Spain	21%	EUR	1.00	0.90
Sweden	25%	SEK	9.43	11.99
Turkey	18%	TRY	3.28	1.56
The United Kingdom	20%	GBP	0.77	0.94
USA	7.97%	USD	1.11	1.34

Annex 6: Overview of data allowance per operator

(February 2016 data)

Country	Operator	Laptop and tablet		Handset	
		Min	Max	Min	Max
AT	A1 Telekom Austria AG	0	unlimited	0,1	30
	T-Mobile Austria GmbH	15	15	2	6
	Hutchison 3 Austria	1	unlimited	0,1	40
BE	Proximus	0,5	5	1	10
	Base	1	6	0,05	10
	Mobistar	2	5	0,5	10
BG	Vivacom	1,5	35	0,05	20
	Telenor Bulgaria	0,65	34	0,3	25
HR	HT	2	25	0,3	10
	VIPnet	0,5	25	0,25	8
CY	Cyta	0,03	20	0,1	5
	MTN	0,03	20	0,15	6
CZ	T-mobile	0,05	10	1,50	10
	Vodafone	0,5	10	0,1	10
	O2	1,5	10	0,05	10
DK	TDC	2	300	3	40
	Telenor Denmark	1	100	2	30
	TeliaSonera	1	200	0,3	100
EE	Telia (EMT)	0,25	48	0,3	100
	Tele 2	2	unlimited	0,1	20
FI	Elisa	0	unlimited	0	unlimited
	TeliaSonera	5	unlimited	2	unlimited
FR	Orange	2	20	0,05	10
	SFR	1	15	0,1	40
	Free	0,05	50	0,05	50
DE	Telekom Deutschland	1	20	0,5	30
	Vodafone	1	6	0,2	8
	O2	1	6	0,5	5
EL	Cosmote	0,5	20	0,1	12
	Vodafone	2	20	0,05	6
HU	Telekom (T-Mobile Hungary)	0,20	20	3,0	unlimited
	Telenor Hungary	1	30	0,2	2
IE	Vodafone	15	30	1	10
	Three	3	250	0,5	unlimited
IT	Vodafone	5	20	3	3
	Telecom Italia (TIM)	2	50	1	4
	Wind	4	20	2	10
LV	Tele2 Latvia	5	unlimited	0,1	unlimited
	LMT	2	50	0,05	unlimited
LT	Tele2	3	100	0	15

Country	Operator	Laptop and tablet		Handset	
	Bite Lietuva	5	unlimited	0	unlimited
	Omnitel	2	64	0,05	12
LU	Post Télécom	0,24	10	1	15
	Tango	0,3	30	1	15
MT	Vodafone	5	15	1,20	7
	GO Mobile	5	20	1	5
NL	KPN	0,5	10	0	10
	Vodafone	0,2	8	0	25
	T-mobile	0	12	0	12
PL	Orange	5	60	0,3	20
	T-Mobile	1	unlimited	0,3	10
	Polkomotel	30	100	2	10
PT	MEO	2	30	0,5	30
	NOS	2	unlimited	0,2	3
	Vodafone	2	unlimited	0,2	5
RO	Orange	4	20	0,3	5
	Telekom Romania Mobile	0,5	60	0,1	8
	Vodafone	3	30	0,3	5
SK	Orange	1,5	35	0,1	6
	Slovak Telekom	0	12	0	12
SI	Telekom Slovenije	0,1	unlimited	1	unlimited
	Si.mobil	0,4	unlimited	1,0	40
ES	Movistar	1	5	1	5
	Vodafone	1	15	0,1	10
	Orange	0,5	6	0,5	5
SE	TeliaSonera	0,2	40	6	40
	Tele2	0,5	100	0,5	100
	Telenor	40	40	0,5	50
UK	Vodafone	1	10	0,25	20
	Three	1	20	0,5	unlimited
	EE	0,5	50	10	32
EU28 average		**2,8**	**40,6**	**0,8**	**19,7**
Number of operators			71		71
Number of operators whose upper limit is higher than **10GB** (for laptop and tablet) or **2GB** (for handset)			57 80%		70 99%
Number of operators whose upper limit is higher than **20GB** (for laptop and tablet) or **4GB** (for handset)			39 55%		67 94%
Number of operators whose lower limit is higher than **256MB** (for laptop and tablet) or **102.4MB** (for handset)		57 80%		45 63%	
Number of operators whose lower limit is higher than **512MB** (for laptop and tablet) or **256MB** (for handset)		0 0%		0 0%	

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