

**International Roaming  
BEREC Benchmark Data Report  
April – September 2016**

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## 1. Introduction

This BEREC Benchmark Report on International Roaming (the “Report”) presents the results of the 18th round of data collection on European international roaming services undertaken by the Body of European Regulators for Electronic Communications (BEREC). The Report covers the period 1 April - 30 September 2016, i.e. the 2<sup>nd</sup> and 3<sup>rd</sup> quarter 2016. The Report also includes data from previous rounds of data collection conducted by BEREC and its predecessor, the European Regulators Group (ERG), to provide context for the current figures. The earliest data is from the 2<sup>nd</sup> quarter 2007, when the Roaming Regulation was about to enter into force.

The applicable regulatory framework for this data collection is Roaming Regulation (EU) No. 531/2012, as amended by Regulation (EU) No. 2120/2015<sup>1</sup>, applied in the European Union (EU)<sup>2</sup>, which includes new requirements for the retail and wholesale regulated tariffs for voice, SMS and data roaming. For the 18<sup>th</sup> Benchmarking exercise, significant changes were made to meet these new requirements. This was considered necessary, as the TSM Regulation incorporates substantial changes to the Roaming Regulation, which leads to the new roaming regime. In addition, according to Article 19 paragraph (4) of the Roaming Regulation (EU) No. 531/2012 as amended by Regulation (EU) No. 2120/2015, BEREC is obliged to regularly collect data from national regulatory authorities (NRAs) on the development of retail and wholesale charges for regulated voice, SMS and data roaming services. Those data are used to assess the competitive developments in the Union-wide roaming markets and are notified to the Commission at least twice a year. Furthermore, there is a new requirement for BEREC to report regularly on the evolution of pricing and consumption patterns in the Member States for both domestic and roaming services and the evolution of actual wholesale roaming rates for unbalanced traffic between roaming providers.

BEREC is coordinating this process of data collection by pursuing the following objectives:

- simplifying the process not only for NRAs as BEREC acts as a central point for the data collection, but also for the Commission, as the data are received from a single source and following uniform data processing;
- coordinating the procedures of individual NRAs, as the data collection exercise uses a single and commonly agreed data collection model, and the process is synchronised and based on the same collection periods. BEREC consults the market players and the Commission before finalising the data collection templates;
- providing, as far as possible, a common response to the different questions posed during the collection process by operators and NRAs, as BEREC serves as the forum where these questions are commonly debated and addressed.

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<sup>1</sup> Regulation (EU) No. 2120/2015, hereinafter ‘TSM Regulation’, available at: <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32015R2120>

<sup>2</sup> The amendments were incorporated in the EEA agreement 29 April 2016, but did not enter into force for the EEA/EFTA countries Norway, Liechtenstein and Iceland since the three countries had made reservations for approval by their respective Parliaments. However, in Norway the Electronic Communications Regulation was changed, and the amendments entered into force 1 June 2016

## 2. Regulatory evolution

The ERG initially worked on the long-standing issue of high prices for international roaming services. Following its creation in January 2010, BEREC took over responsibility for this work from ERG.

### *The 2007 Regulation*

In 2005, ERG undertook a study on international roaming that concluded that the EC Regulatory Framework did not provide the necessary tool-kit for NRAs to tackle the problems identified. ERG wrote to the Commission in December 2005 highlighting its concerns.

After significant debate, the first Regulation on international roaming services was published on 29 June 2007. The primary provisions capped wholesale and retail charges for voice calls under Eurotariff and set a number of transparency provisions to help to ensure that consumers were well informed. The provisions of the Regulation entered into force at different times, with retail and transparency provisions taking full effect by the end of September 2007 and wholesale provisions calculated annually from the end of August 2007<sup>3</sup>.

### *The 2009 amended Regulation*

On 7 May 2008, the Commission launched a public consultation on the functioning of the 2007 Regulation. ERG's views expressed in response to the consultation were substantially reflected in the Commission's legislative proposals,<sup>4</sup> published on 23 September 2008, to extend the 2007 Regulation in duration and scope.

On 22 April 2009, the European Parliament adopted Regulation (EC) No. 544/2009 at first reading, with a view to amending Regulation (EC) No. 717/2007. Subsequently, on 8 June 2009, the Council of EU Telecoms Ministers formally adopted the new EU roaming rules approved by the European Parliament. The definitive text of Regulation (EC) No. 544/2009 was published in the Official Journal of the European Union on 29 June 2009<sup>5,6</sup>.

In particular, the Regulation introduced the following measures related to price control, applicable from 1 July 2009 to 30 June 2012:

- an extension of wholesale and retail price regulation for voice services, with yearly decreases in the levels of the caps;
- price regulation of SMS roaming services at both the wholesale and retail level;
- price regulation of data roaming services at the wholesale level.

And from July 2010 to June 2012:

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<sup>3</sup> In Norway and Iceland the 2007 Regulation was in force from the end of 2007 to the 2<sup>nd</sup> quarter 2010.

<sup>4</sup> [http://ec.europa.eu/information\\_society/activities/roaming/docs/regulation/reg\\_en.pdf](http://ec.europa.eu/information_society/activities/roaming/docs/regulation/reg_en.pdf)

<sup>5</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:167:0012:0023:EN:PDF>

<sup>6</sup> From the 3<sup>rd</sup> quarter 2009 to the 1<sup>st</sup> quarter 2010, Regulation 544/2009 applied in the EU while the first Roaming Regulation (EC) No. 717/2007 remained in force in Norway, Iceland and Liechtenstein, with slightly higher voice caps, no SMS caps and no wholesale data cap.

- retail transparency measures to protect consumers from “bill shock” when data roaming.

### ***The 2012 Regulation***

On 29 June 2010, the Commission published an interim report<sup>7</sup> on the functioning of the 2009 Regulation. The Commission’s Digital Agenda for Europe<sup>8</sup> also included a target for roaming, where ‘the difference between roaming and national tariffs should approach zero by 2015’.

In accordance with the 2009 Regulation, BEREC provided advice to the Commission on the functioning of the Regulation and future regulatory options in its December 2010 Report<sup>9</sup>, supplemented by its February 2011 response to the Commission’s public consultation<sup>10</sup>.

The Commission then published a full review of the functioning of the Regulation and legislative proposals for a new Regulation in July 2011<sup>11</sup>.

On 30 May 2012 the Council of the European Union approved the International Roaming Regulation III<sup>12</sup>, which entered into force on 1 July 2012<sup>13</sup>.

The Regulation introduced the following measures, applicable from 1 July 2012:

- an extension of wholesale and retail price regulation for voice and SMS with yearly decreases in the levels of the caps until 30 June 2014 with those caps to remain in force until 30 June 2022 for wholesale services, and until 30 June 2017 for the Eurotariffs, subject to a further review by 30 June 2016;
- an extension of wholesale price regulation for data with yearly decreases in the levels of the caps until 30 June 2014 with those caps to remain in force until 30 June 2022;
- price regulation of data roaming services at the retail level with a yearly decrease in the level of the cap until 30 June 2014 with the cap to remain in force until 30 June 2017, being subject to a further review by 30 June 2016;
- the obligation for MNOs to meet all reasonable requests for wholesale roaming access, which comprises direct wholesale roaming access and wholesale roaming resale access under the rules set out in the Roaming Regulation. The Regulation also included provisions on the separate sale of roaming services which entered into force on 1 July 2014.

### ***The 2012 Regulation as amended by Regulation (EU) No. 2120/2015***

On 3 April 2014, the European Parliament (EP) took up the position, within the framework of the procedure for the adoption of a Regulation for a European Single Market for Electronic

<sup>7</sup> [http://ec.europa.eu/information\\_society/activities/roaming/docs/interim\\_report2010.pdf](http://ec.europa.eu/information_society/activities/roaming/docs/interim_report2010.pdf)

<sup>8</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0245:FIN:EN:PDF>

<sup>9</sup> [http://erg.eu.int/doc/berec/bor\\_10\\_58.pdf](http://erg.eu.int/doc/berec/bor_10_58.pdf)

<sup>10</sup> [http://ec.europa.eu/information\\_society/activities/roaming/docs/cons11/Berec.pdf](http://ec.europa.eu/information_society/activities/roaming/docs/cons11/Berec.pdf)

<sup>11</sup> [http://ec.europa.eu/information\\_society/activities/roaming/index\\_en.htm](http://ec.europa.eu/information_society/activities/roaming/index_en.htm)

<sup>12</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:172:0010:0035:EN:PDF>

<sup>13</sup> With regard to the EEA EFTA countries, it must be noted that the Roaming Regulation applies in these countries as from 7 December (Norway and Liechtenstein) and 21 December (Iceland) 2012.

Communications (TSM Regulation), to abolish retail roaming surcharges in order to allow customers to “Roam Like at Home” (RLAH) with a fair use limit.

Regulation (EU) No. 2015/2120<sup>14</sup>, adopted by the European Parliament on 27 October 2015 and published in the Official Journal of 26 November 2015, includes amendments to Roaming Regulation No. 531/2012<sup>15</sup>, the main one being the principle of Roam-Like-At-Home, i.e. requiring roaming providers not to levy any surcharge in addition to the domestic retail price on roaming customers as of 15 June 2017 (RLAH tariffs). But the Roaming Regulation allows providers to add a surcharge for regulated roaming services in addition to the domestic price during the transitional period (30 April until 14 June 2017). Furthermore, similar to the provisions set out in the third Roaming Regulation, roaming providers can also offer alternative roaming tariffs as an alternative to RLAH and RLAH+<sup>16</sup> and customers may deliberately choose those alternative tariffs.

The amendments to the Roaming Regulation resulted in an update of the BEREC Benchmark Report and the current Report includes RLAH, RLAH+, fixed period tariffs and alternative tariffs offered by operators.

### 3. Methodology for the data collection

Because of the broad scope and complexity of the new requirements stemming from the TSM Regulation, new key indicators have been developed for the data collection. In addition, while the results are derived from the same questionnaire, the methodology used for some data from these new key indicators can differ between countries for a number of reasons, particularly relevant are the following:

- Differences in the methods used by operators to allocate volumes for the different roaming services. For instance, complex tariff structures in which different roaming plans apply (for example after exceeding roaming limits, the user is automatically switched to a different roaming tariff plan) can affect the interpretation of the results since there is not an harmonized methodology among operators for allocating the volumes between the different types of services (RLAH, RLAH+, fixed periodic tariffs and/or alternative tariffs).
- Difficulties in estimating the actual revenues for the roaming services. Most of the operators provide domestic bundled services and it is therefore difficult i) to estimate how much of the bundle the user used for roaming services and ii) to allocate revenues to the domestic individual services (e.g.: fixed voice, mobile, internet, TV). Therefore, in the report all revenues resulting from bundled services are allocated to domestic services regardless of whether the service is provided in the domestic network or in a visited network.

Therefore, the results presented in the Report should be read with the aforementioned caveats in mind and taking into account the operators' problems with data reporting. The development of a proper methodology to present comparable characteristics of EU/EEA international

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<sup>14</sup> Available at: <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32015R2120>

<sup>15</sup> Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012R0531>

<sup>16</sup> RLAH + allows the roaming provider to apply a surcharge in addition to the domestic retail price during the transitional period (from 30 April 2016 until 14 June 2017)

roaming markets is work in progress. Due to the revision of the methodology it may be necessary to revise the current data collection and therefore this report.

The assessment of the international roaming market was based on the requirements set out in Article 19 (4) of the Roaming Regulation. In order to assess the competitive developments in the Union-wide roaming markets, BEREC has to regularly collect data from national regulatory authorities on the development of retail and wholesale charges for regulated voice, SMS and data roaming services. On the basis of the collected data, BEREC also has to report regularly on the evolution of pricing and consumption patterns in the Member States for both domestic and roaming services and the evolution of actual wholesale roaming rates for unbalanced traffic between roaming providers.

While the changes to the Roaming Regulation refer to the RLAH regime, these requirements are applicable from 17 June 2017 and the current Report includes RLAH tariffs offered by the operators prior to the date set out in the Roaming Regulation. In this context, it is necessary to underline that the RLAH offers may include different restrictions or 'add-ons'. BEREC notes that there is much variation in how such offers are provided which resulted in monitoring general consumption patterns. A further assessment of RLAH tariffs within the Roaming Regulation framework will be considered in the future BEREC Reports.

Legislative amendments were also made to address the transitional period from 30 April 2016 until 14 June 2017. Article 6f (2) of the Roaming Regulation allows providers to add a surcharge for regulated roaming services in addition to the domestic price during the transitional period (RLAH+ tariffs). Where a roaming provider applies a surcharge for the consumption of regulated retail roaming services, the sum of the domestic retail price and any surcharge applied must not exceed the price cap set out in Article 6e (1) (b). For calls received, which are not charged domestically, Article 6e (1) (c) provides that any surcharge applied shall not exceed the weighted average of the maximum mobile termination rates set out in the Implementing Act<sup>17</sup>. For calls made, SMS sent and data used, Article 6e (1) (a) provides that any surcharge must not exceed the wholesale caps, which are currently 5 cents per minute, 2 cents per SMS and 5 cents per MB respectively<sup>18</sup>. Due to the complexity of such tariffs and operators reporting capabilities, the current BEREC Benchmark Report includes an assessment of RLAH+ tariffs with respect to consumption patterns.

The Roaming Regulation allows tariff packages which provide roaming customers with a per diem, or any other fixed periodic roaming charge (hereinafter "fixed periodic roaming tariff") and which contain a certain volume of regulated roaming services (Article 6e (1), subparagraph 4). Therefore, operators can offer fixed periodic roaming tariffs with a volume allowance as an option to their customers during the transitional period in addition to the regulated roaming tariffs. This means that these fixed periodic roaming tariffs cannot be the only tariff option available to roaming customers. A fixed periodic roaming tariff complies with Article 6e (1) Roaming Regulation - and should not be treated as an alternative tariff pursuant to Article 6e (3) - on condition that the consumption of the full amount of that volume leads to a unit price for regulated roaming calls made, calls received, SMS messages sent and data roaming services which does not exceed the sum of the domestic retail price and the maximum

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<sup>17</sup> Pursuant to Regulation (EU) No. 531/2012 the Commission is to review the weighted average of maximum mobile termination rates across the Union annually, available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L.2015.331.01.0007.01.ENG>

<sup>18</sup> The prices do not include VAT.

applicable surcharge as set out in 6e (1) first subparagraph. Fixed periodic roaming tariffs are sometimes linked to other roaming tariff plans (for example after the caps of the domestic FUP are reached, the value of the roaming price is a daily tariff). As different tariffs are applied this results in some operators having problems to split traffic and revenues between roaming tariff plans. Due to this fact, this Report assesses the consumption patterns related to the fixed periodic tariffs.

BEREC also has to report about the evolution of actual wholesale roaming rates for unbalanced traffic between roaming providers. This requirement is also reflected in the current BEREC Benchmark Report.

Furthermore, BEREC also reports about the evolution of pricing and consumption patterns in the Member States for domestic services. The BEREC Benchmark Report was also changed in view of this requirement.

Over 184 providers of international roaming services provided information for this Report. This number includes virtually all of the mobile network operators in the EU and in Norway, as well as a significant number of MVNOs that provide EEA roaming services. BEREC estimates that this covers around 95% of EU consumers using international roaming services today.

Considering the aforementioned difficulties in obtaining reliable data, for some indicators, there is a limited number of countries which have opted for not supplying the data relative to those indicators. This is not at all unusual for a comprehensive data collection of this type. In most cases the NRA was able to work with the company to resolve or alleviate the problem. In other cases, where system upgrades are necessary to comply with the new format of the data collection, the operator was asked to provide the best possible estimate currently available and to complete upgrades in time to provide high quality data for the next data collection. Some NRAs expressed major data quality challenges at the national operators' level as well as the use of different reporting systems by operators. In this context, the terminology for some elements of the questionnaire will be clarified in order to allow operators to make the necessary changes in the reporting systems<sup>19</sup>.

At the wholesale level, operators often receive discounts based on variables like volume of traffic, calculated at the end of a 12-month period. When providing data for these reports, operators may estimate the effect of such discounts on data for each quarter. Because the actual discount may vary from the estimate, there may be an apparently 'anomalous' result for the quarter when the discount is actually applied. This should be kept in mind when comparing wholesale figures for different quarters in the same year.

In a few cases the number of operators changed, which may cause an apparent change in prices between quarters. This can also lead to strong volume changes.

When wholesale prices are above the price caps, in most cases the reason is that the average price to comply with the Regulation is the annual price and not a quarterly one, and in such

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<sup>19</sup> ANACOM took the option not to ask the operators to adapt their systems before a common set of consistent assumptions is defined to be applied in all the countries for allocating revenues to roaming services and to mobiles domestic services and to allocate volumes for the different roaming tariff types. UK were unable to provide data for some specific indicators due to the impact of the changes in the request form. The missing wholesale data will be verified during the next data collection.



cases some quarters compensate for others. Another reason may also be inaccuracies in reporting for the data collection itself.

For ease of comparison, the Euro is used throughout this Report. Within the EEA, currency fluctuations between the Euro and other national currencies are likely to have affected the average prices reported for EEA countries outside the Euro zone.

All retail prices included in the charts below exclude VAT. They are an average of prices paid by postpaid and prepaid tariff plan customers. All averages are based on billed minutes of voice calls or billed megabytes of data, unless expressly stated otherwise.

With regard to wholesale roaming resale access according to Article 3 (4) of the Roaming Regulation, MNOs may charge fair and reasonable prices for components not covered by para. 3. Thus prices may be higher than the price caps given in Article 7 (1). Some data also include volumes and tariffs coming from roaming in non-EU countries in Europe. It should also be noted that the average wholesale roaming voice tariff for agreements applying Article 3 of the Roaming Regulation might be above the cap because the calculation is based on actual minutes (the Regulation permits to invoice 30 seconds for calls that are shorter).

The EU Roaming Regulation also applies to the EEA EFTA States Norway, Iceland and Liechtenstein.

In addition, Switzerland contributed to the data collections, although the 2007, 2009 and 2012 Roaming Regulation is not applicable there<sup>20</sup>.

## 4. Main findings

The information gathered by BEREC continues to show a good level of compliance with the Roaming Regulation in EU Member States.

### Wholesale rates

At the wholesale level, the voice, SMS and data roaming charges set between operators are in line with the declining regulated average caps. Some countries reported average prices slightly above the price caps.<sup>21</sup>

The applicable price caps and the related EEA average prices during the data collection period were:

Service at wholesale level (no VAT)	Q2 2016		Q3 2016	
	Price Cap	EEA Average	Price Cap	EEA Average
Wholesale voice (€/minute)	5	2.921	5	2.905
Wholesale SMS (€/SMS)	2	0.919	2	0.868
Wholesale data (€/MB)	5	0.961	5	0.954

<sup>20</sup> Figures from Switzerland are excluded from both “EEA” and “EEA EFTA” averages.

<sup>21</sup> The reasons for most such cases are explained in the Methodology chapter. Moreover, NRAs are monitoring compliance with the provisions of the Regulation to gather further information on possible reasons for reported prices that are higher than the caps. BEREC will keep monitoring this issue closely.

### **Retail domestic prices (ARRPU)**

BEREC has analysed the retail domestic prices and found that it is hard to disaggregate the different mobile communications services since they are often provided as part of a bundle. Operators are finding it difficult to organize their revenue data by individual service categories (ISCs), such as fixed telephony, mobile telephony, fixed broadband and others. Bundles challenge this practice as ISCs require allocating bundle revenues to their components. Therefore, BEREC examined the alternative of presenting data on the evolution of ARRPU. However, in the context of the BoR (16) 33 BEREC Report on the wholesale roaming market it was emphasized that the ARRPU depends on many different parameters (volumes, handset subsidies, sensitivity to the number of active SIM cards, etc.). In general, the ARRPU is quite a weak index for comparing domestic price levels. Further conclusions on price levels of mobile communications services can be made only by a thorough review of retail prices for mobile communications services. For the calculation of ARRPU, BEREC used the data submitted by operators<sup>22</sup>. The domestic monthly ARRPU for Q3 2016 varies considerably between the countries, ranging from € 1.286 per month to € 32.204 per month, with a weighted EEA average of € 8.697, see Figure 1. Disproportion between individual ARRPU's could be caused by different methodologies used by operators.

### **Wholesale rates for calls made**

At the wholesale level (Figures 10 -11), the EEA average Eurotariff was 2.921 Euro cents in Q2 2016 and 2.905 Euro cents in Q3 2016 compared to a cap of 5 Euro cents. The regulation has led to a constant reduction in the average EEA wholesale prices for intra-EEA roaming voice calls (Figure 12). BEREC also assessed also the prices for balanced and unbalanced traffic (Figure 8 – 9). The EEA average wholesale price for balanced traffic was 3.214 Euro cents during Q2 2016 and 3.130 Euro cents during Q3 2016. Meanwhile, the EEA average payments for unbalanced traffic were at 2.748 Euro cents during Q2 2016 and 2.841 Euro cents during Q3 2016.

### **Wholesale rates for SMS**

At the wholesale level, the 2012 Regulation led to a reduction in the average EEA SMS price (Figures 30 - 35) to 0.919 Euro cents in Q2 2016 and 0.868 Euro cents in Q3 2016. In comparison, the EEA average price was 13.314 Euro cents in Q2 2009, before the 2009 Regulation came into force. The average price for the balanced traffic was 1.099 Euro cents in Q2 2016 and 1.102 Euro cents in Q3 2016. Over the same time, the average price for the unbalanced traffic was 0.790 Euro cents in Q2 2016 and 0.788 Euro cents in Q3 2016.

### **Wholesale rates for data**

At the wholesale level, the average data cap of 5 Euro cents in Q2 2016 and Q3 2016 applies in the EEA under the 2012 Regulation. The EEA average price for wholesale data (Figures 47 - 48) fell to 0.961 Euro cents per MB in Q2 2016 and 0.954 Euro cents per MB in Q3 2016, compared to € 1.812 Euro cents and € 1.690 Euro Cents in Q2 2015 and Q3 2015. In the

<sup>22</sup> The monthly ARRPU was calculated per country by dividing retail revenues (i.e total revenues related to mobile voice, SMS and data traffic. Any other type of revenue, such as those originating from mobile devices, subscription fees to services etc. are not included) in the respective quarters with the total number of domestic and roaming subscribers per country within the same period and dividing it by 3.

context of the wholesale inbound roaming costs, the EEA average cost of handling the balanced traffic was 1.259 Euro Cents per MB in Q2 2016 and 1.233 Euro Cents per MB in Q3 2016, whereas the EEA average price for handling the extra traffic was € 0.869 Euro Cents per MB in Q2 2016 and € 0.892 Euro Cents per MB in Q3 2016 (Figures 45 – 46).

### **Wholesale agreements (Article 3)**

In the case of wholesale agreements based on Article 3 of the Roaming Regulation, only some operators submitted these data. BEREC's International Roaming Compliance Report<sup>23</sup> showed that operators negotiated roaming services at the wholesale level individually and that the provision of such services was based on commercial agreements. Some light MVNOs as well as resellers stated that these services continued to be provided on the basis of the existing contracts with national host MNOs.

### **Rest of the world (RoW) retail prices**

With regard to 'Rest of World' retail voice roaming calls (Figures 6 - 7), the EEA average RoW tariff for calls made was 61.149 Euro cents in Q2 2016 and 58.025 Euro cents in Q3 2016. The EEA average prices for calls received are given in Figure 7. Receiving calls when roaming outside the EEA area cost 35.968 Euro cents in Q2 2016 and 26.473 Euro cents in Q3 2016. At the same time, data from the operators reveals that the average price for data consumption outside EEA (Figure 44) cost 34.340 Euro cents per MB in Q2 2016 and 23.422 Euro cents per MB in Q3 2016.

### **EEA roaming consumption patterns**

In respect of EEA volumes of voice, SMS and data roaming services (Figures 21 - 22, 27 – 28, 42 – 43 and 58-59), one particular issue stands out which is the significant difference between these services. While volumes for voice and SMS services show a minimal or small increase from 2012 (1.5 times for calls made, 1.6 times for calls received and 0.8 times for SMS sent comparing Q3 2015 and Q3 2012), data service volumes increased up to around 17.8 times in Q3 2016 compared to Q3 2012 corresponding quarters<sup>24</sup>.

The data shows that the consumption patterns and the used roaming tariff plans vary significantly between Member States (Figure 17 – 19). The minutes generated under RLAH+ tariffs account for the majority of voice traffic. Nevertheless customers opted for the RLAH tariffs and in Q3 2015, 29.00 % of minutes of calls made and 18.10 % of minutes of calls received were generated by subscribers of RLAH tariffs (Figures 17-18 and 23 - 24). For text messages sent while roaming within EEA countries. RLAH tariffs accounted for 33.75 % of the total volume in Q3 2016 (Figures 38-39). There is a significantly different trend in the case of data roaming services. In Q3 2015 around 41.92 % of data traffic was based on the RLAH

<sup>23</sup> BEREC International Roaming Compliance Report (Regulation (EU) No 531/512 of the European Parliament and of the Council of 13 June 2012 on roaming), the link: [http://berec.europa.eu/eng/document\\_register/subject\\_matter/berec/reports/1482-berec-international-roaming-compliance-report-regulation-eu-no-531512-of-the-european-parliament-and-of-the-council-of-13-june-2012-on-roaming](http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/1482-berec-international-roaming-compliance-report-regulation-eu-no-531512-of-the-european-parliament-and-of-the-council-of-13-june-2012-on-roaming)

<sup>24</sup> It should be noted that the results displayed in the charts might take into account values from a different number of operators that submitted data in the relevant quarters. In this Report Croatia is also included which could affect total volumes as well.

data tariff while roaming (Figures 54-55)<sup>25</sup>. However, these results must be analysed with considerable caution due to the difficulties to split roaming traffic related to the tariff plans introduced under the new roaming regime (as explained in the Methodology chapter).

The average number of roaming call minutes, SMS and data consumption are given in Figures 20, 26, 41, 57. The average EEA subscriber spent only 8.8 minutes per month calling other mobile users in Q3 2016. The number of received call minutes for subscribers abroad amounted to 9.5 minutes per EEA average roaming subscriber per month in Q3 2016. Data roaming sessions ranged from 8 to 342 Megabyte per roaming subscriber per month. It should be noted that these figures include business traffic.

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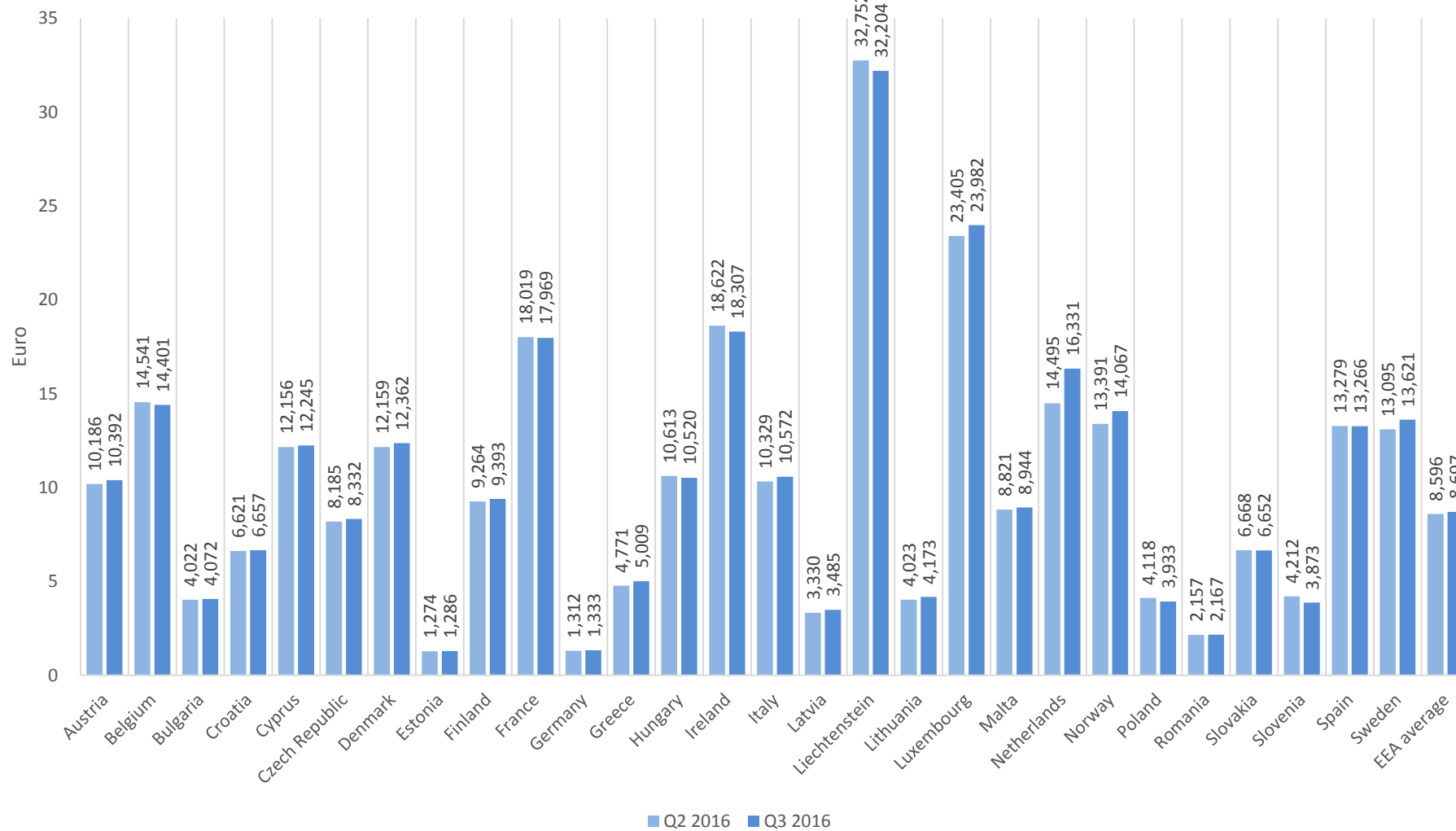
<sup>25</sup> It must be noted that not all countries provided data for prepaid or postpaid alternative tariffs and care should be taken when comparing percentages with voice and SMS services.

# 5. Charts

## **5.1. Domestic services - ARRPU and consumption patterns**

### **5.1.1. Average Retail Revenue per User (ARRPU)**

Figure 1: Domestic service: monthly retail revenue per subscriber (ARRPU)  
(prepaid+ postpaid)

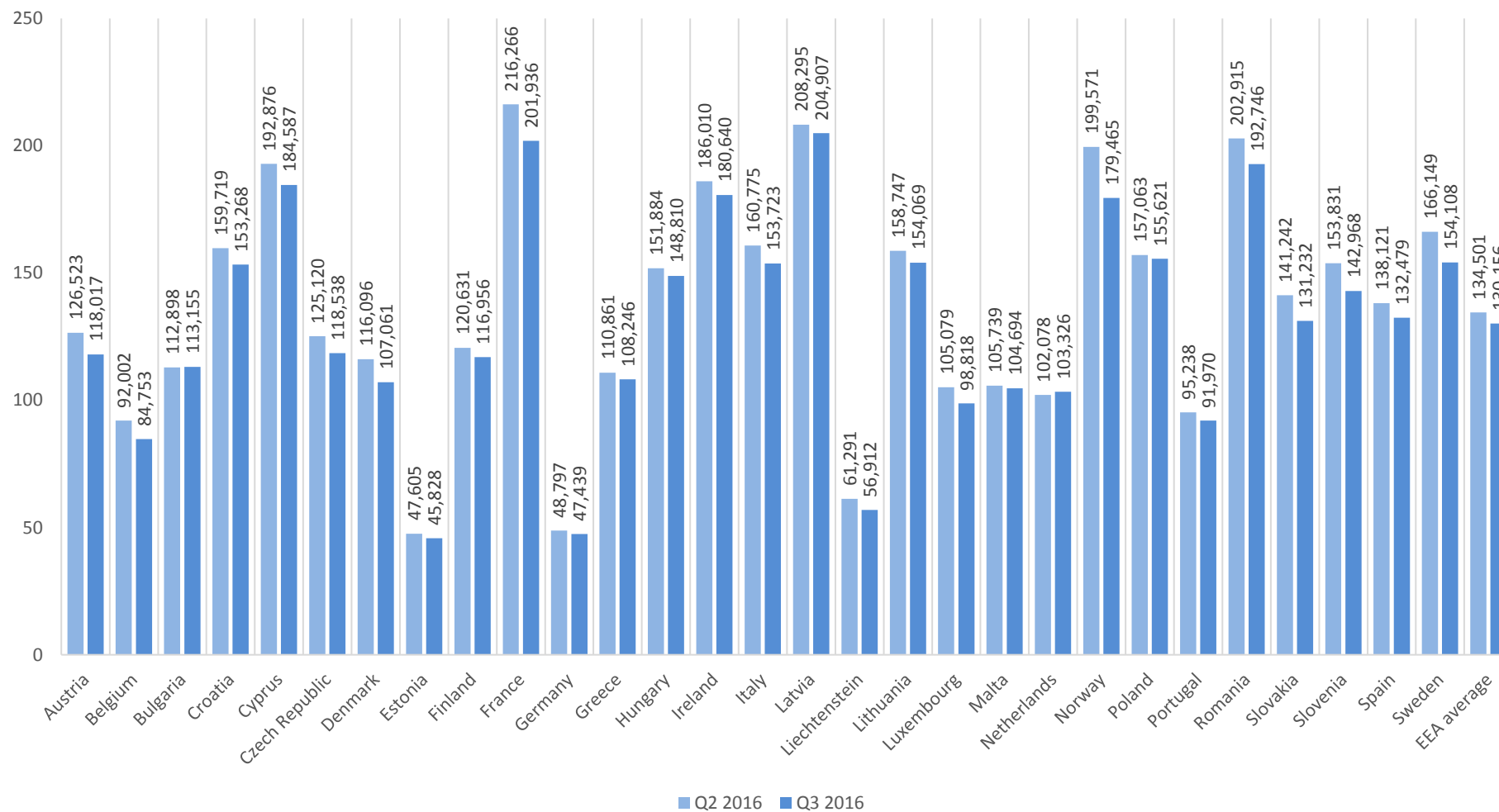


EEA average excludes Iceland, Portugal, UK

## **5.1.2. Consumption patterns for domestic retail services**

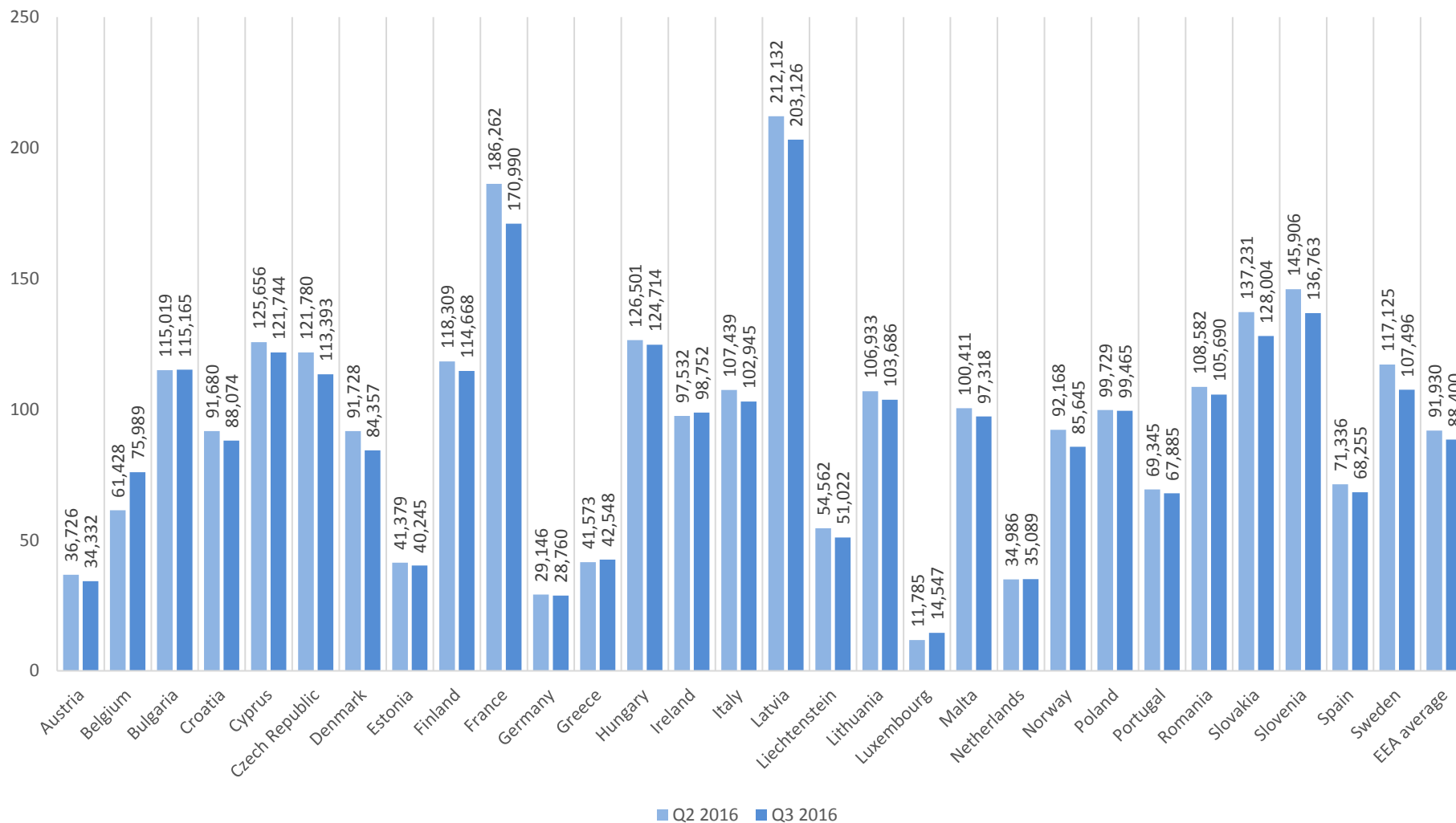


Figure 2: domestic calls made  
Average number of minutes per month per subscriber (prepaid+ postpaid)  
Q2 and Q3 2016



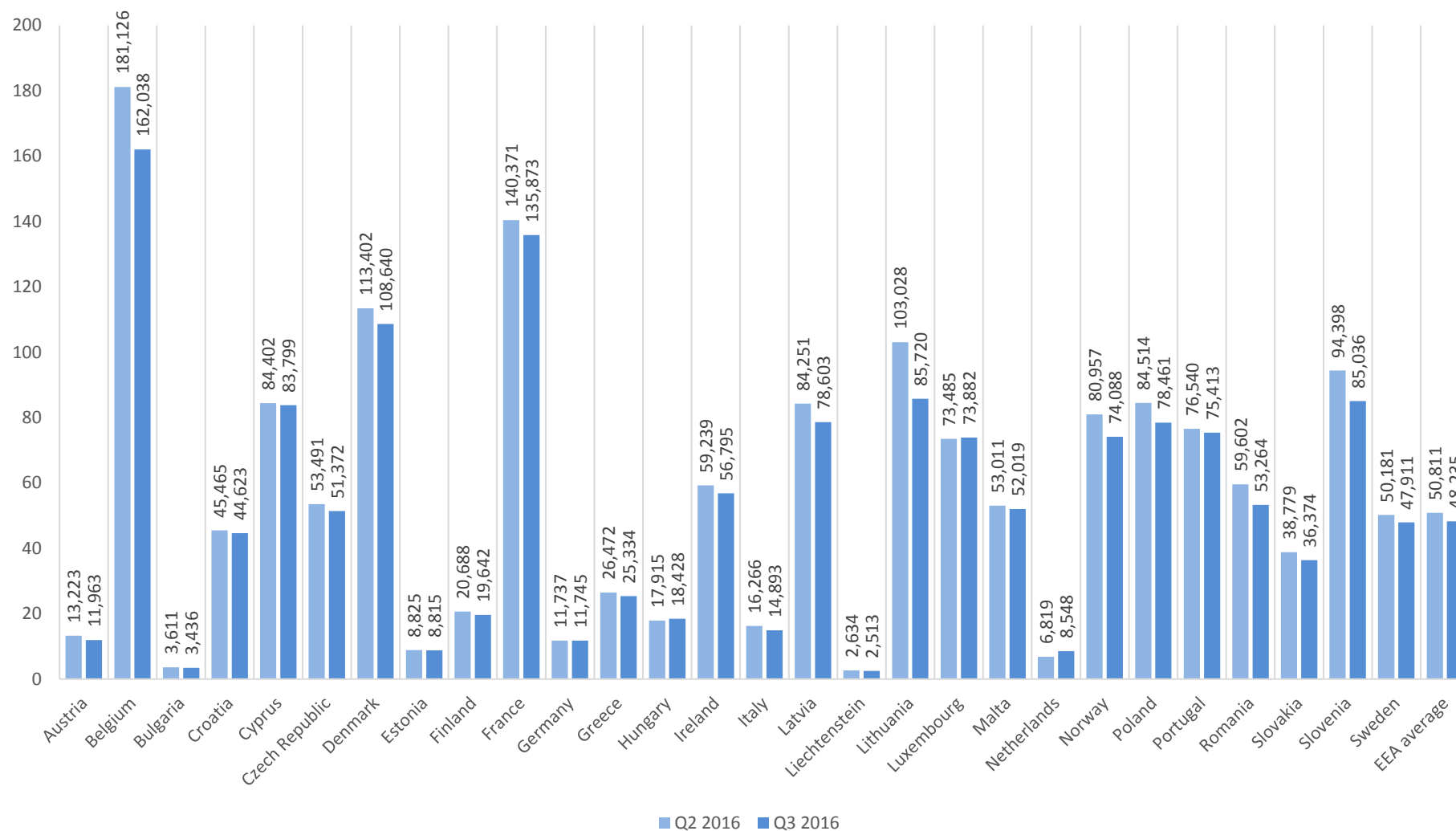
EEA average excludes Iceland, UK

Figure 3: domestic calls received  
Average number of minutes per month per subscriber (prepaid+ postpaid)  
Q2 and Q3 2016



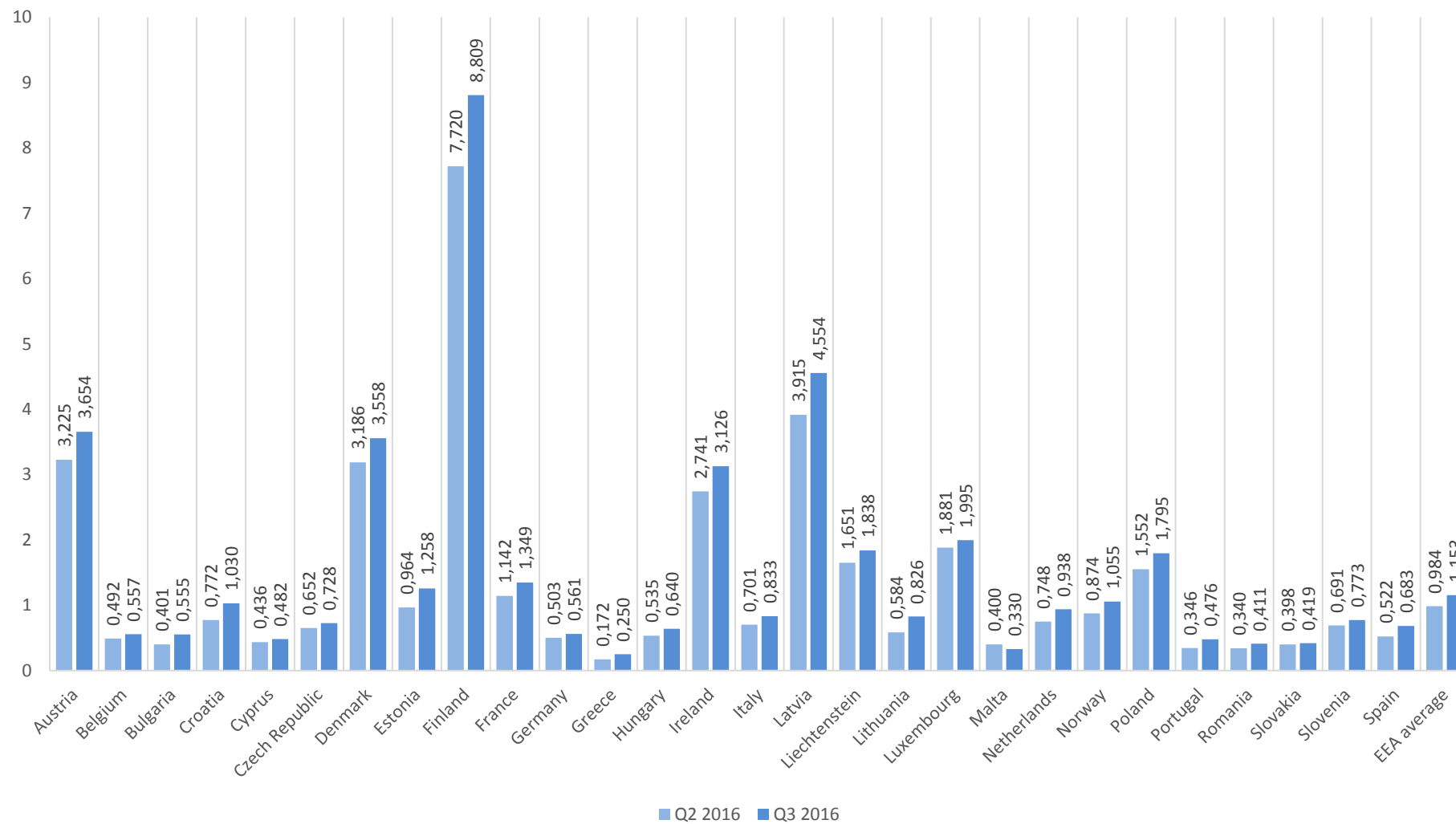
EEA average excludes Iceland, UK

Figure 4: domestic SMS  
Average number of SMS per month per subscriber (prepaid+ postpaid)  
Q2 and Q3 2016



EEA average excludes Iceland, Spain, UK

Figure 5: domestic data services  
Average consumption per subscriber per month (Gb, prepaid+ postpaid)  
Q2 and Q3 2016



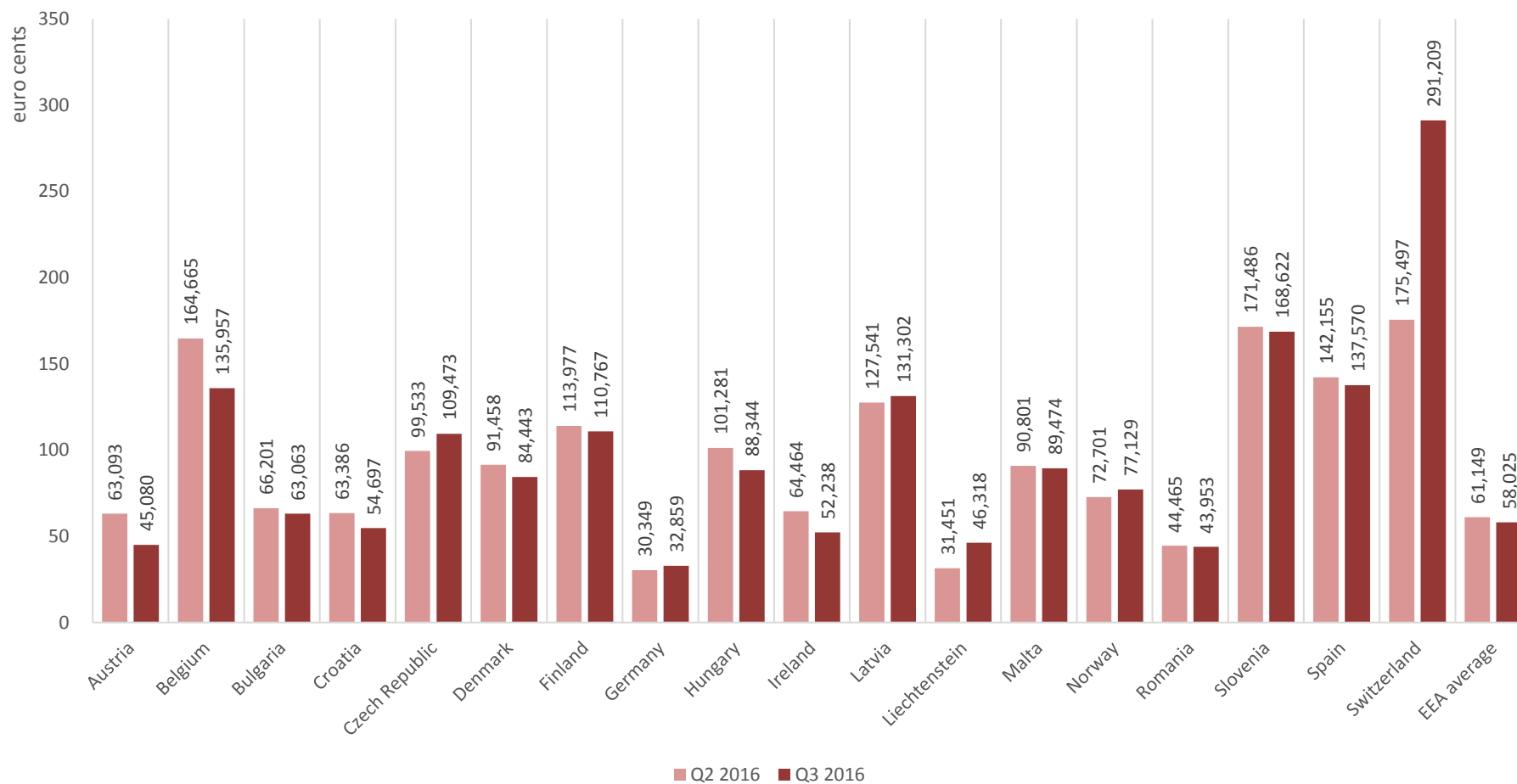
EEA average excludes Iceland, Sweden, UK

## **5.2. The development of Roaming Services**

### **5.2.1. Voice roaming services**

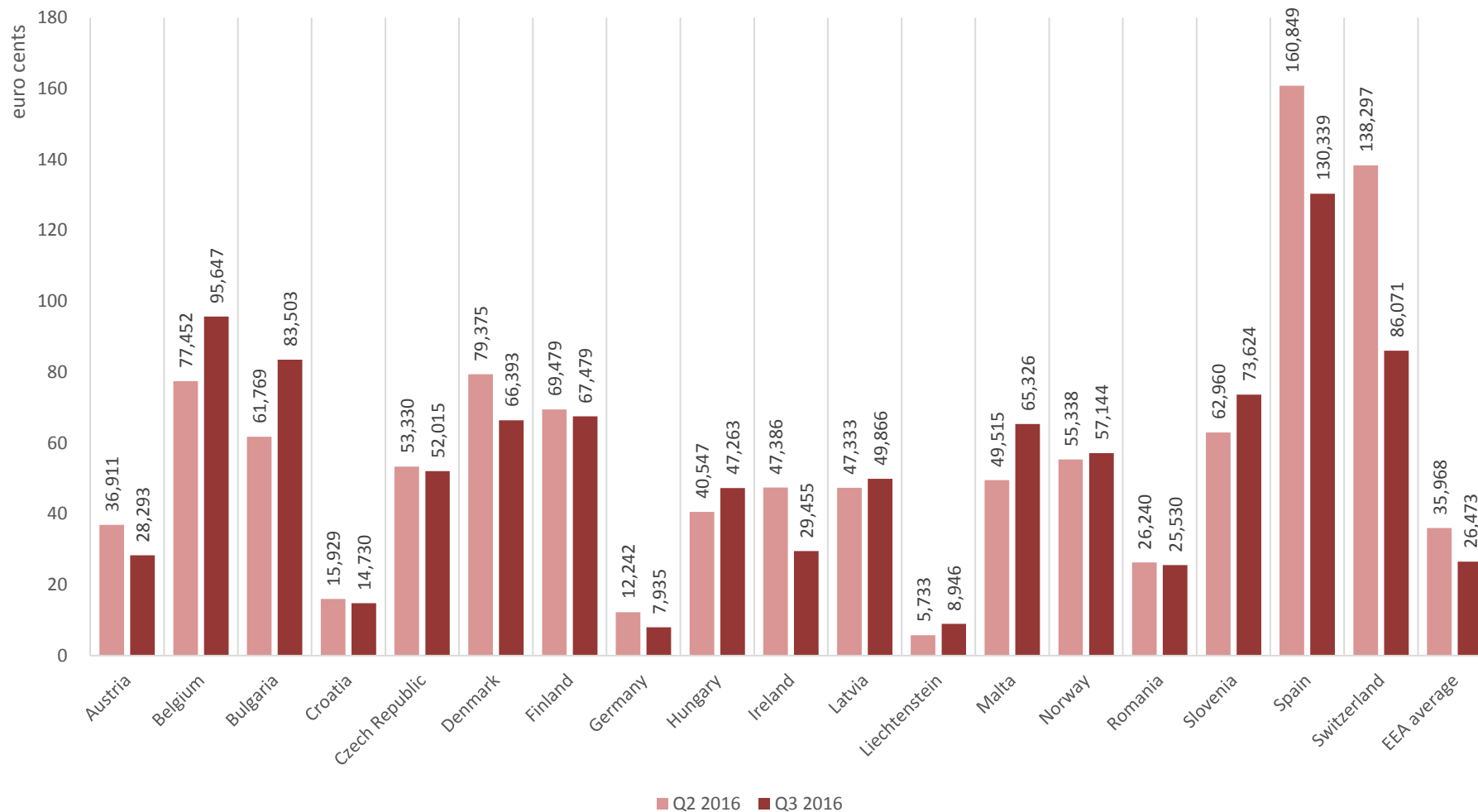
#### **5.2.1.1 RoW retail prices**

Figure 6: RoW  
Average retail price per minute for RoW roaming voice calls made  
(billed minutes, prepaid+ postpaid)  
Q2 and Q3 2016



EEA average excludes Cyprus, Estonia, France, Greece, Iceland, Italy, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Sweden, UK

Figure 7: RoW  
Average retail price per minute for RoW roaming voice calls received  
(billed minutes, prepaid+ postpaid)  
Q2 and Q3 2016

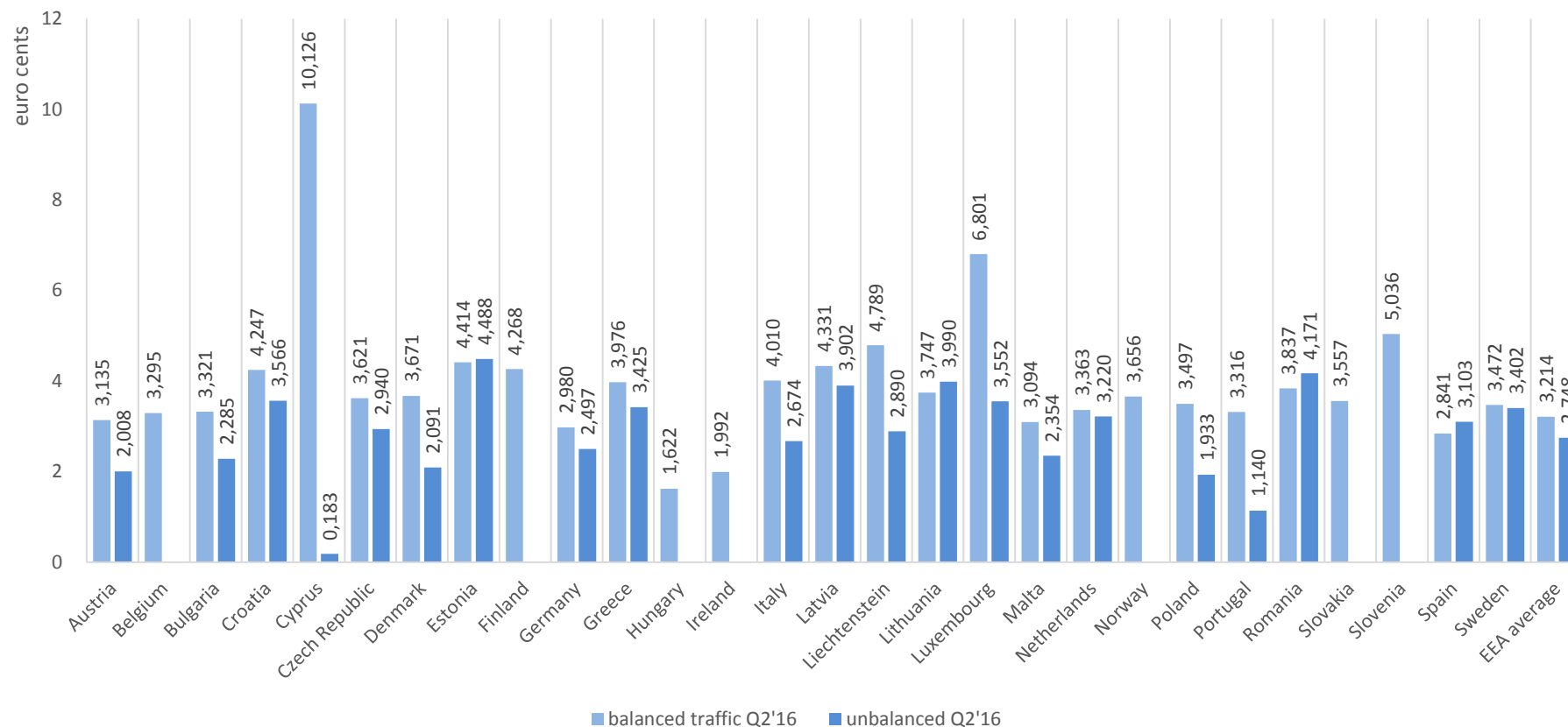


EEA average excludes Cyprus, Estonia, France, Greece, Iceland, Italy, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Sweden, UK

## **5.2.1.2 Wholesale prices**



Figure 8: Average wholesale price per minute for intra EEA roaming voice calls:  
charges for balanced and unbalanced traffic (wholesale roaming inbound)  
Q2 2016



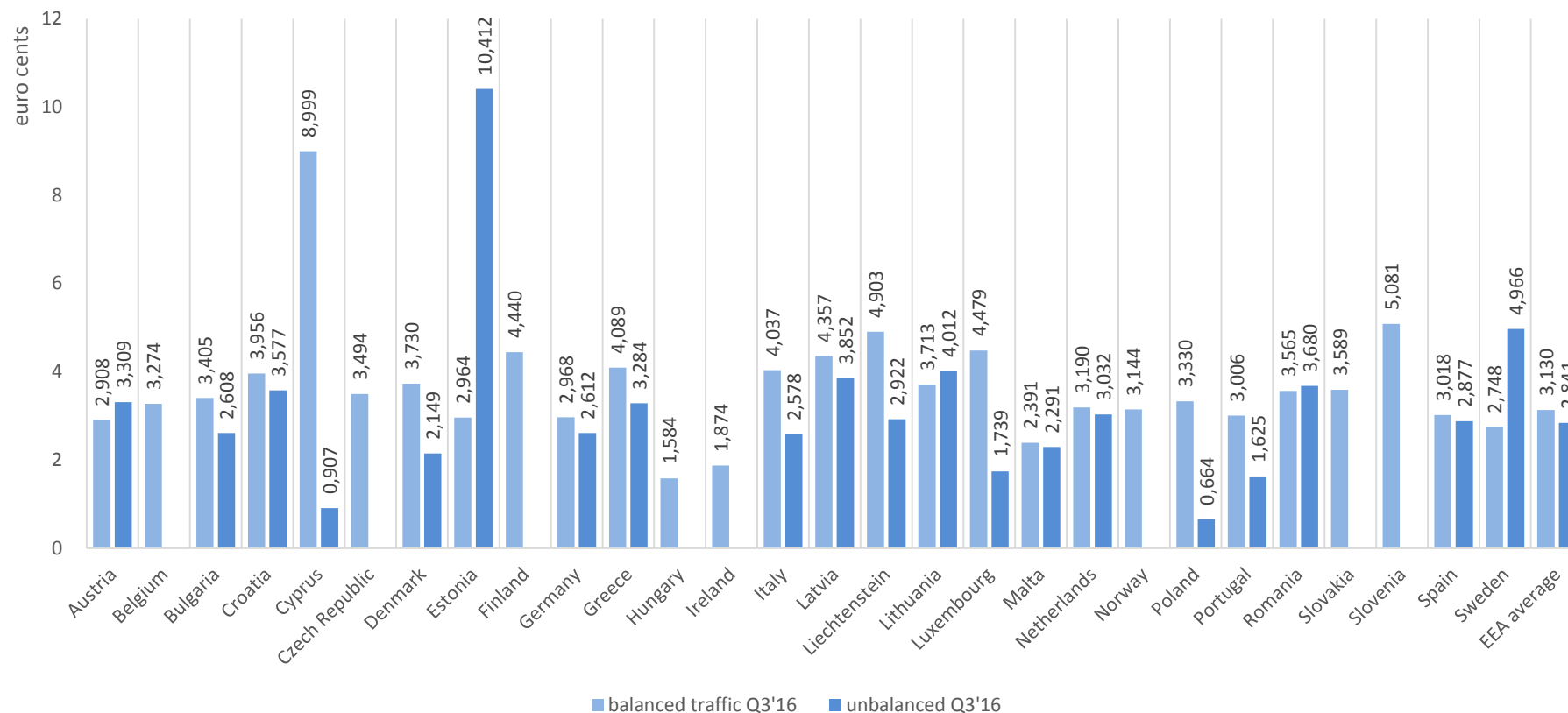
While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Cyprus: statistics on revenues have been stated by the providers as received and not as billed therefore revenue received corresponding to other periods with higher rates might be included in the data reported, Norway: the Q2'16 value is based on data from June 2016, Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 10 and 11,

EEA average (balanced traffic) excludes Cyprus, France, Iceland, UK

EEA average (unbalanced traffic) excludes Cyprus, France, Iceland, UK

Figure 9: Average wholesale price per minute for intra EEA roaming voice calls: charges for balanced and unbalanced traffic (wholesale roaming inbound) Q3 2016



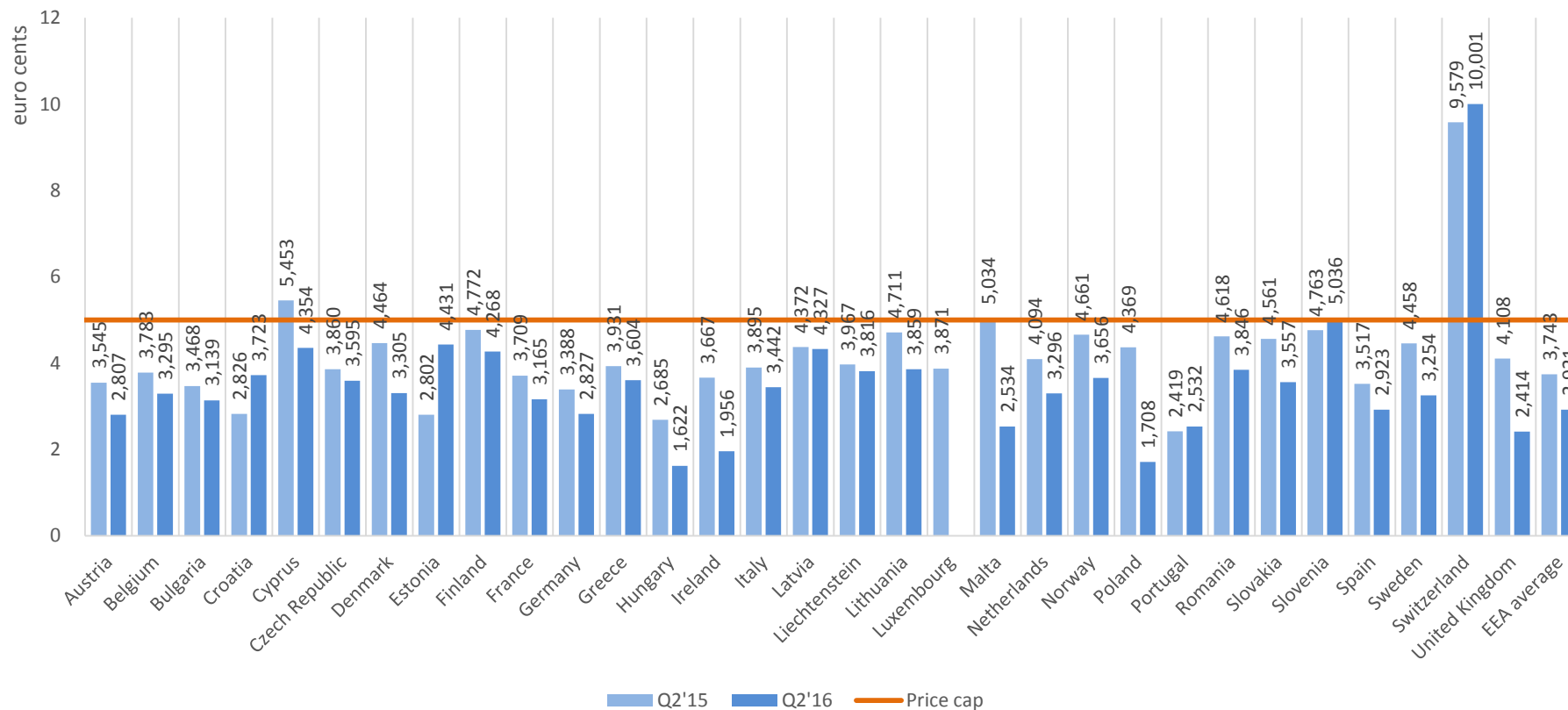
While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Cyprus: statistics on revenues have been stated by the providers as received and not as billed therefore revenue received corresponding to other periods with higher rates might be included in the data reported, Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 10 and 11

EEA average (balanced traffic) excludes Cyprus, France, Iceland, UK

EEA average (unbalanced traffic) excludes Cyprus, France, Iceland, Norway, UK

Figure 10: Total wholesale traffic (wholesale roaming inbound)  
Average wholesale price per minute for intra EEA roaming voice calls  
Q2 2016

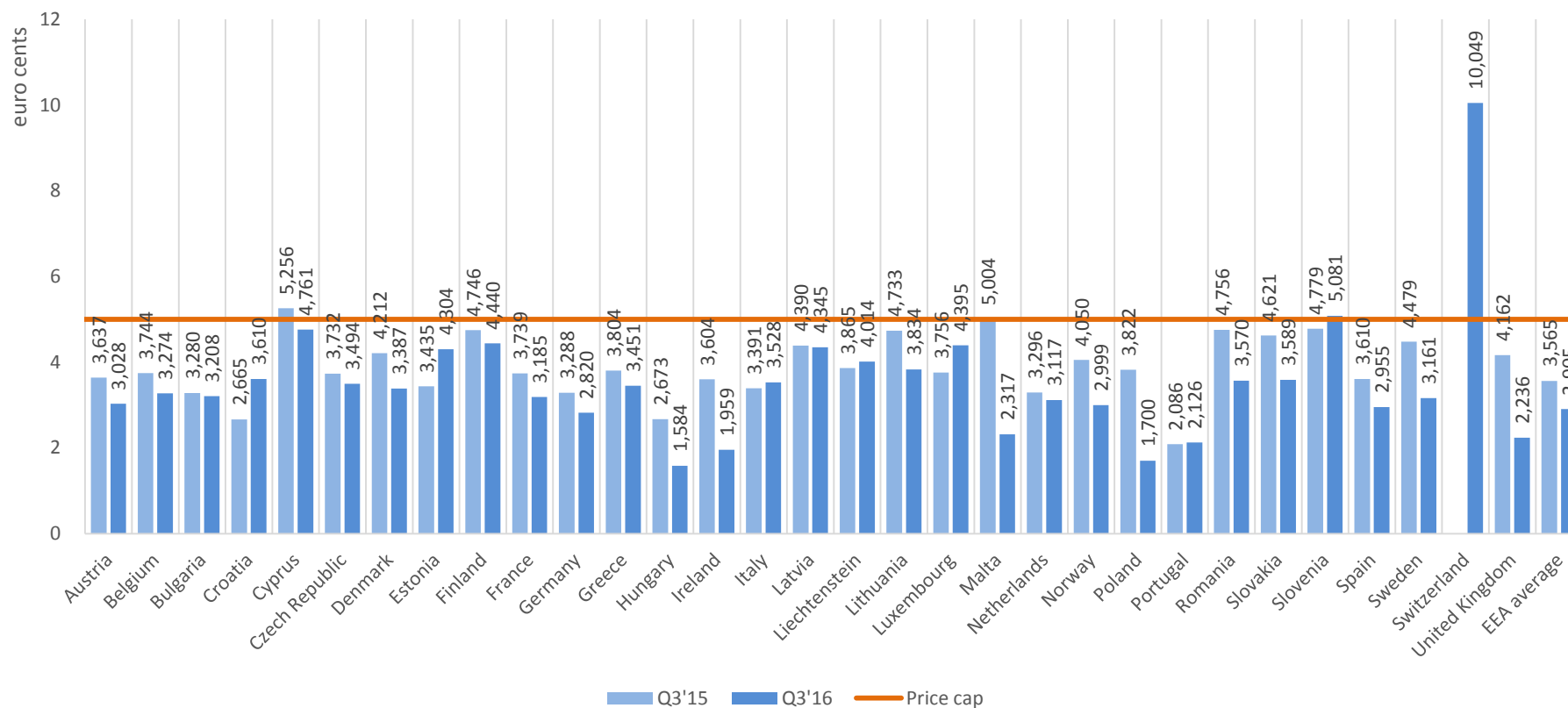


While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Cyprus: statistics on revenues have been stated by the providers as received and not as billed therefore revenue received corresponding to other periods with higher rates might be included in the data reported, Norway: the Q2'16 value is based on data from June 2016, Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 8 and 9

EEA average (Q2 2016) excludes Cyprus, Iceland, Luxembourg

Figure 11: Total traffic (wholesale roaming inbound)  
Average wholesale price per minute for intra EEA roaming voice calls  
Q3 2016



While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Cyprus: statistics on revenues have been stated by the providers as received and not as billed therefore revenue received corresponding to other periods with higher rates might be included in the data reported, Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 8 and 9  
EEA average (Q3 2016) excludes Cyprus, Iceland

Figure 12: EEA average wholesale price per minute for wholesale roaming voice calls

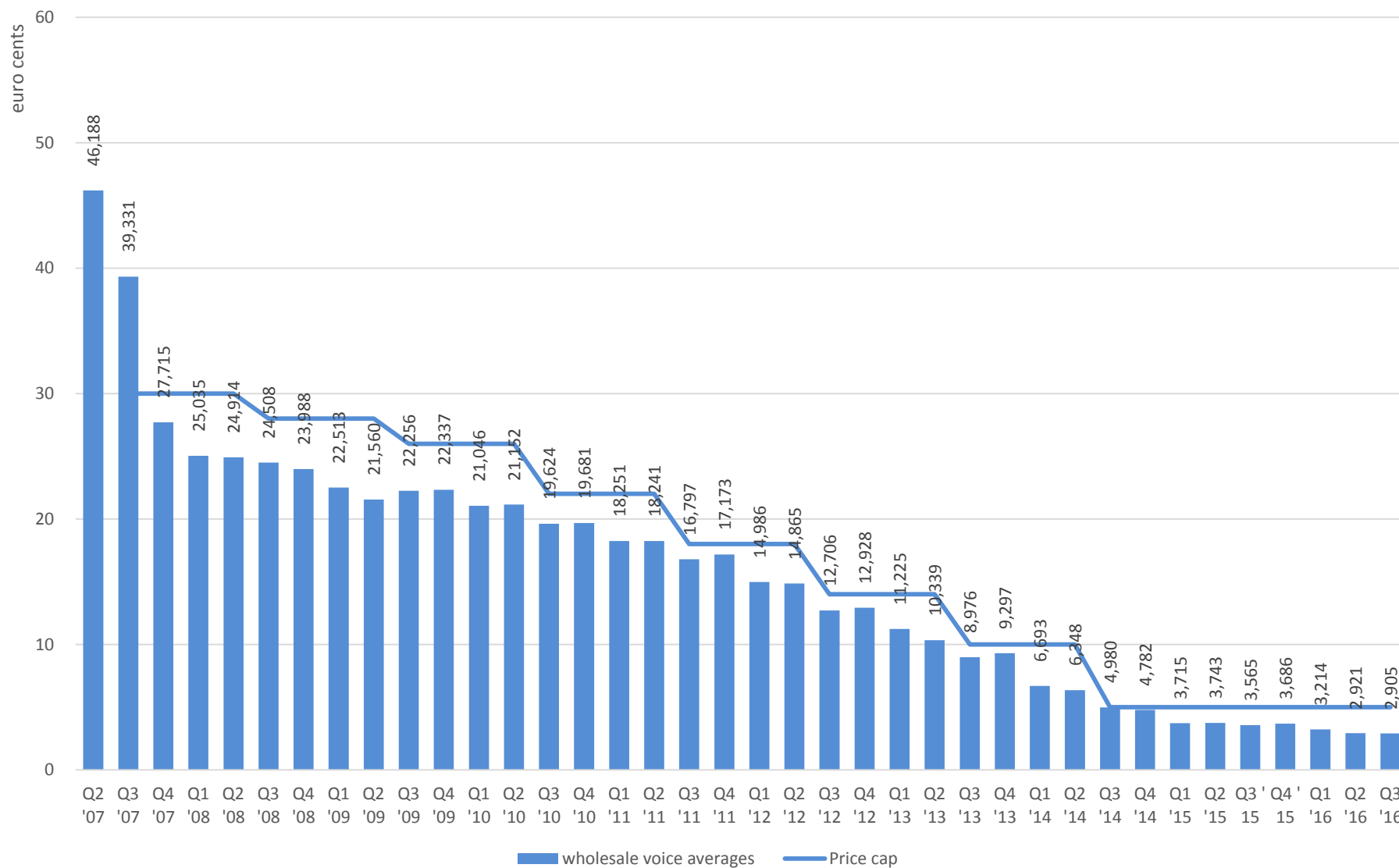


Figure 13: Average wholesale price per minute in Q2 and Q3 2016 (prepaid+postpaid)  
RoW traffic

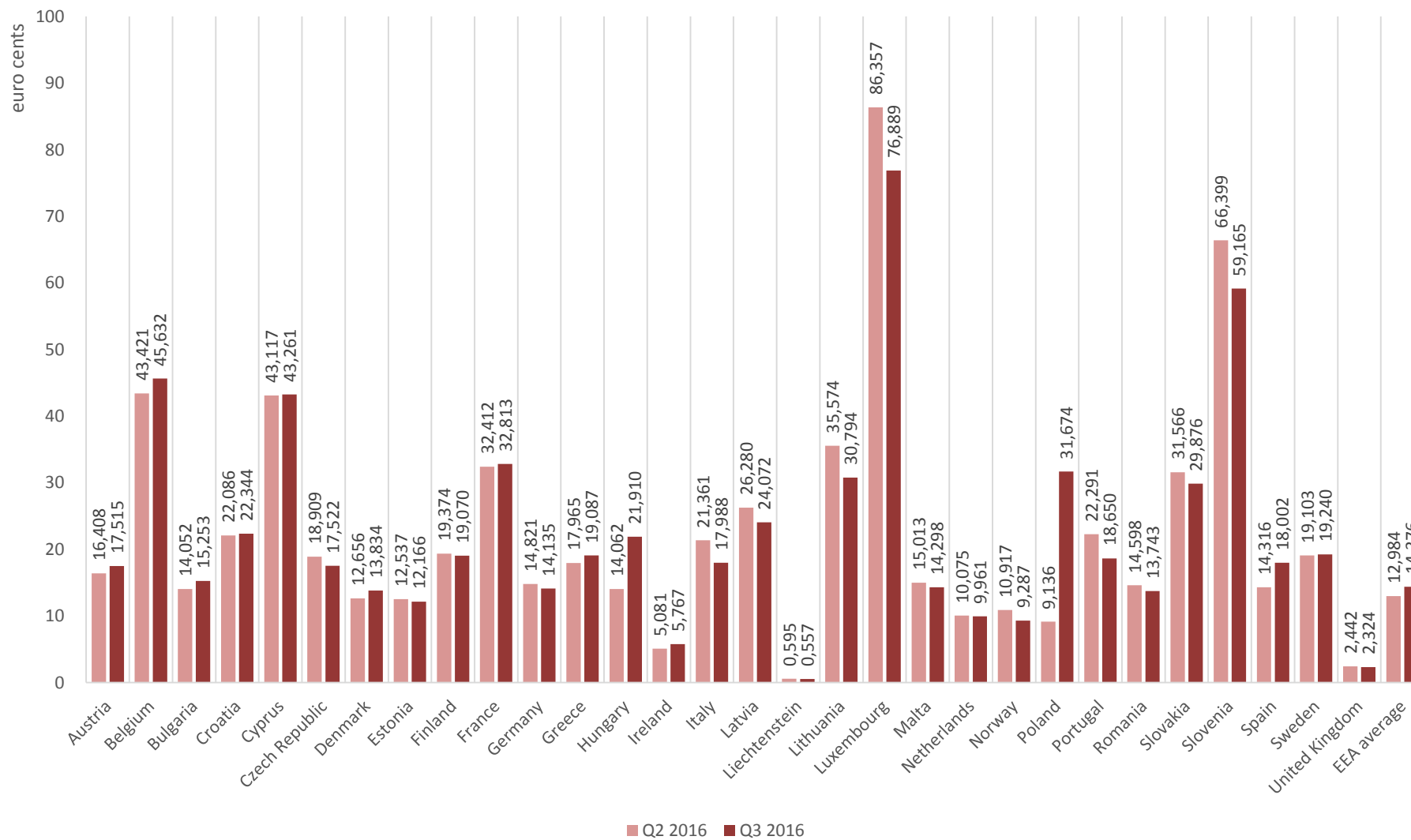


Figure 14: EEA and RoW average wholesale price per minute

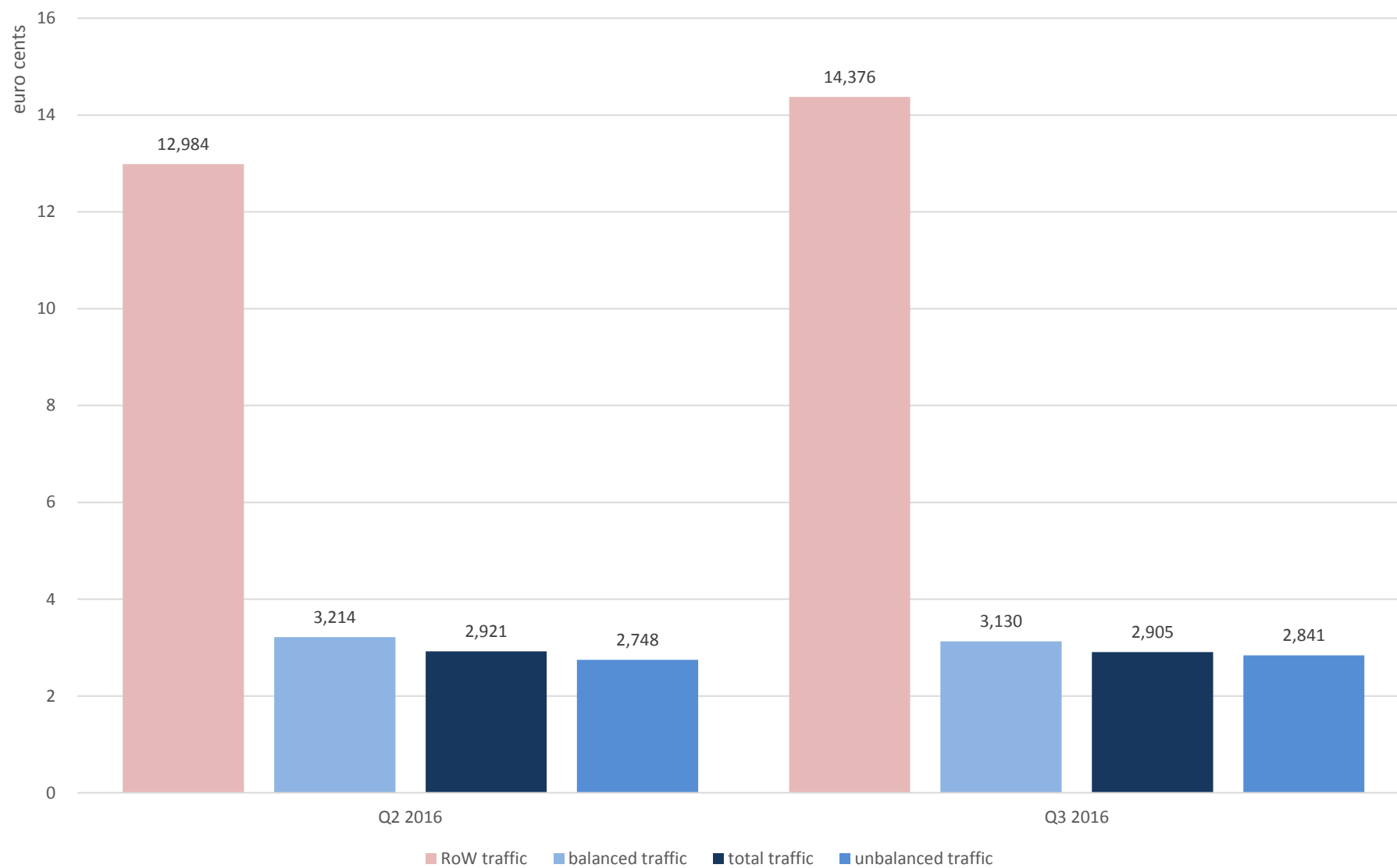
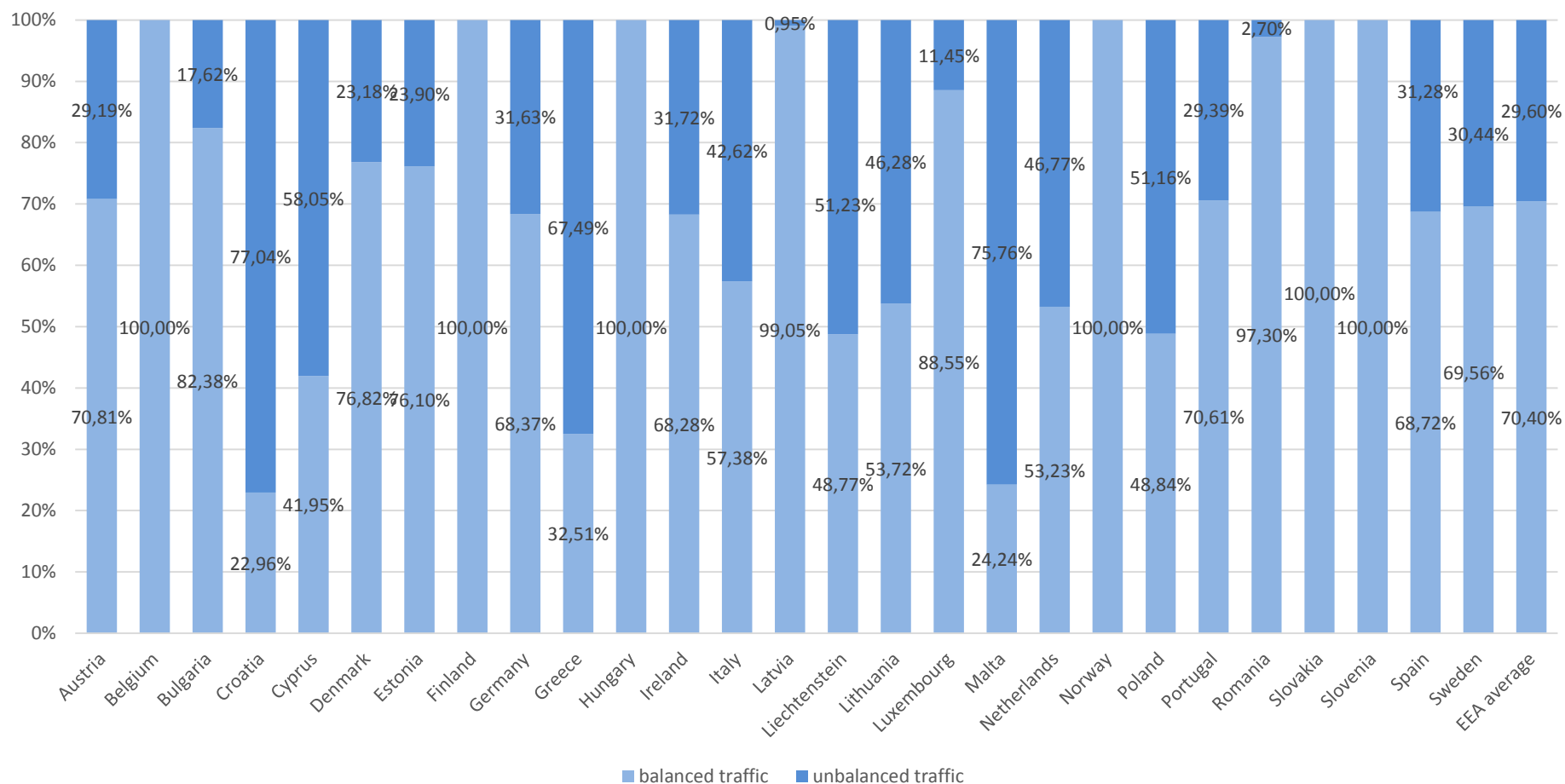


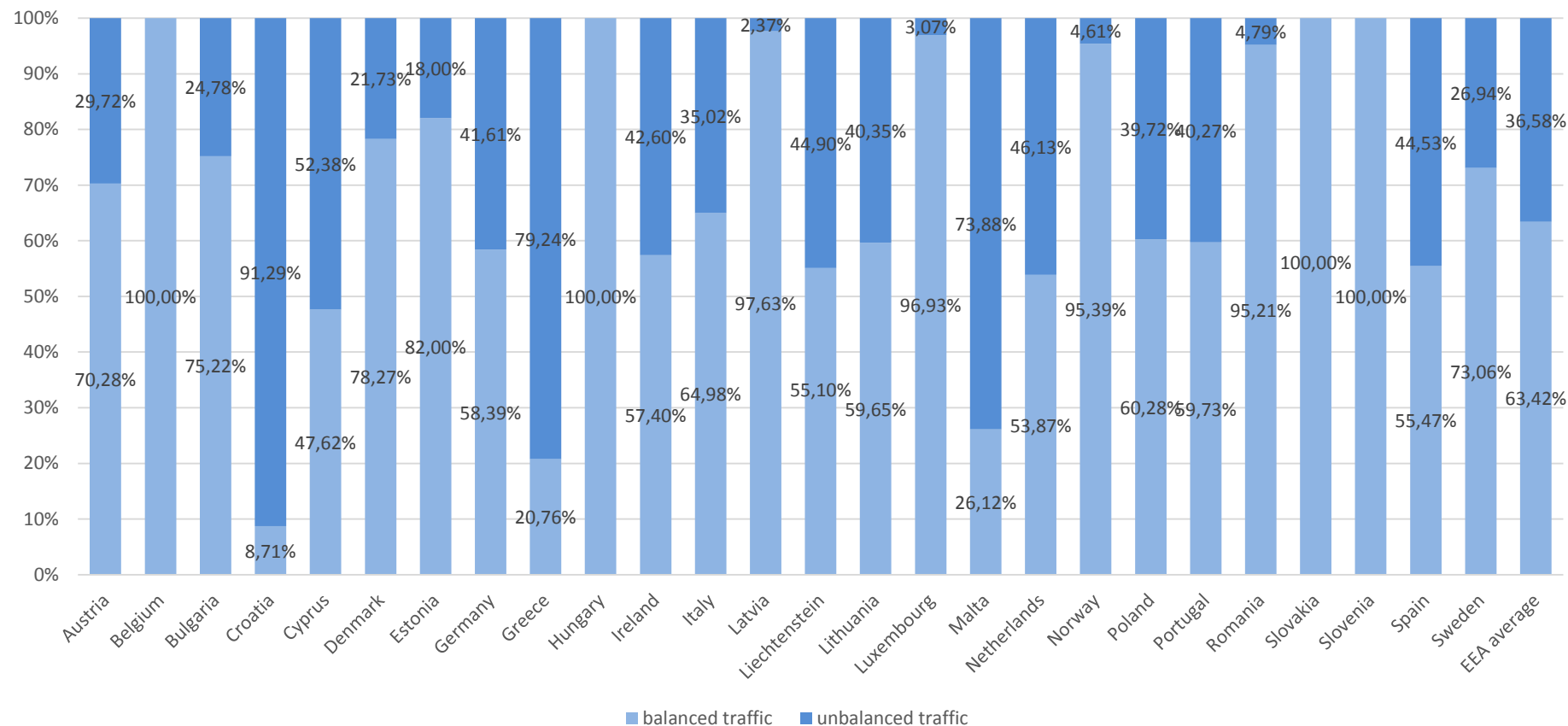
Figure 15: Wholesale roaming inbound  
Proportion of balanced/unbalanced traffic within EEA countries  
Q2 2016



While the measure of balanced/unbalanced traffic should include volumes from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6. Italy: Operators reported that the splitting balanced/unbalanced traffic has been estimated and no accounting/certified information is available. Portugal: estimates are based on partial information provided by two operators, Norway: the Q2'16 value is based on data from June 2016, EEA excludes Czech Republic, France, Iceland, UK



Figure 16: Wholesale roaming inbound  
Proportion of balanced/unbalanced traffic within EEA countries  
Q3 2016



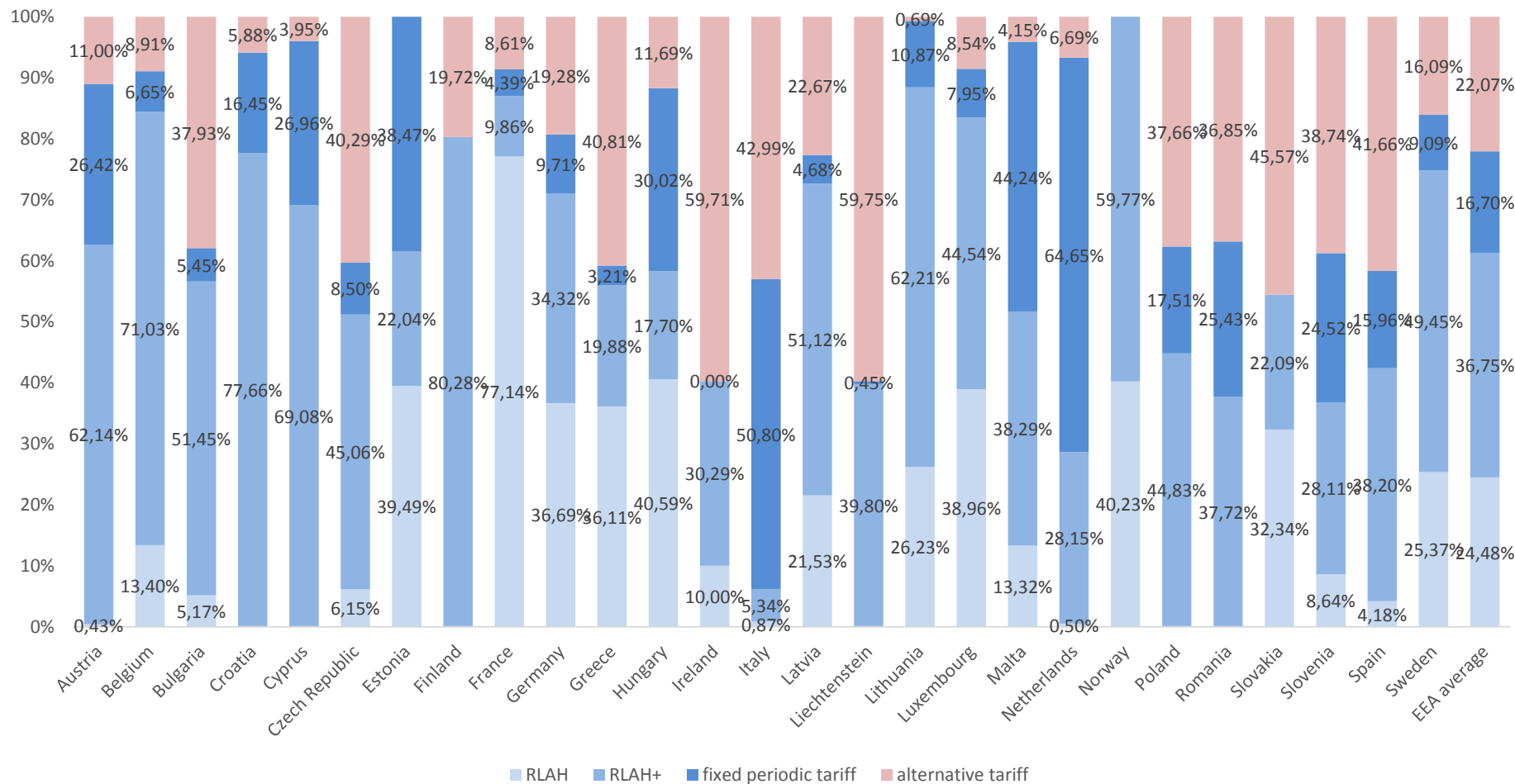
While the measure of balanced/unbalanced traffic should include volumes from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Italy: Operators reported that the splitting balanced/unbalanced traffic has been estimated and no accounting/certified information is available, Portugal: estimates are based on partial information provided by two operators

EEA excludes Czech Republic, France, Iceland, UK

### **5.2.1.3 Consumption patterns**

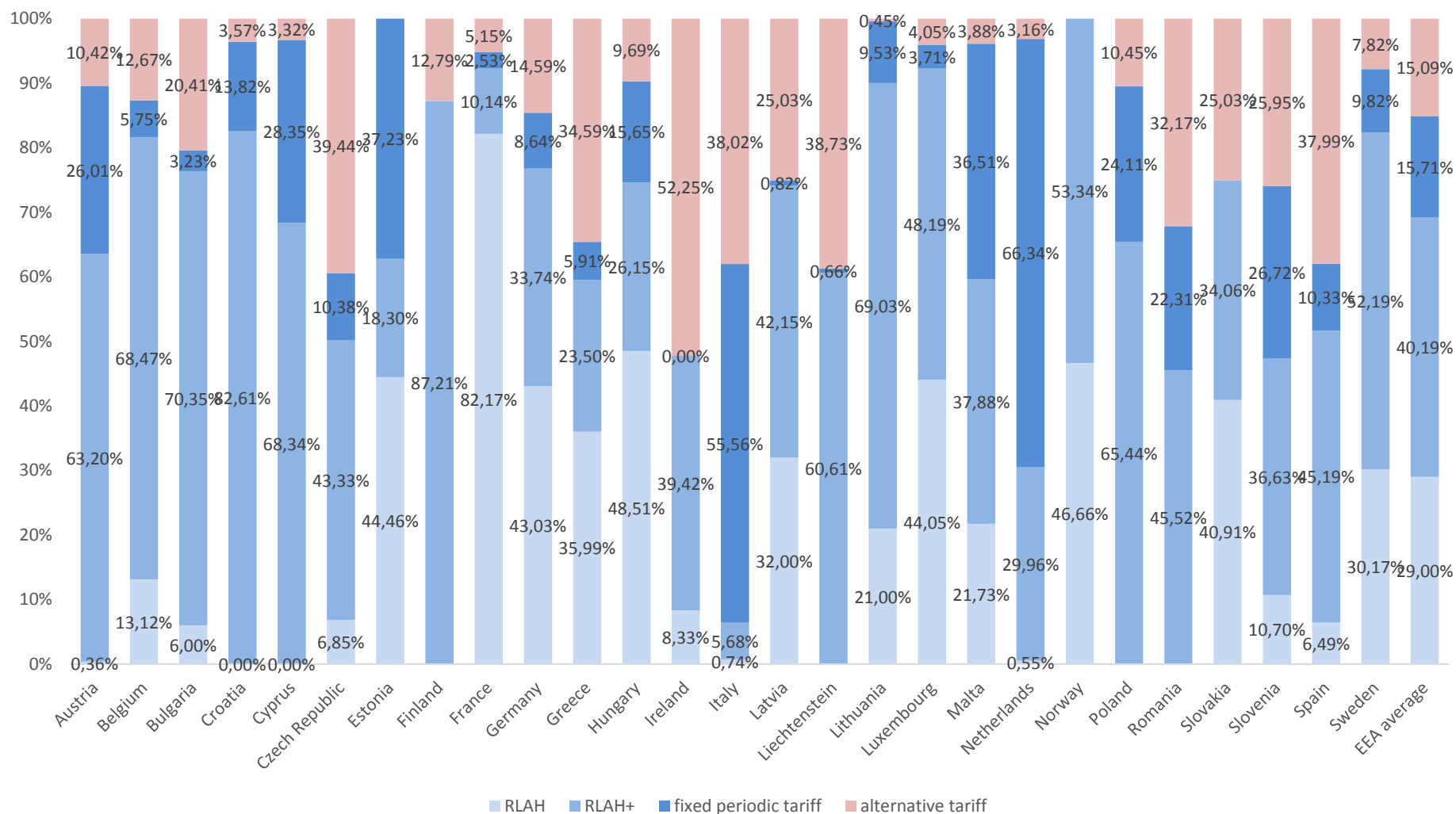
Figure 17: Percentage of total minutes of calls made: RLAH, RLAH +, fixed periodic tariff, alternative tariff Q2 2016



EEA average excludes Denmark, Finland, Iceland, Portugal, UK

Finland: fixed periodic tariff data has been combined with alternative tariff data, RLAH has been combined with RLAH+

Figure 18: Percentage of total minutes of calls made: RLAH, RLAH +, fixed periodic tariff, alternative tariff Q3 2016



EEA average excludes Denmark, Finland Iceland, Portugal, UK

Finland: fixed periodic tariff data has been combined with alternative tariff data, RLAH has been combined with RLAH+

Figure 19: EEA percentage and volumes of total minutes of calls made: RLAH, RLAH+, fixed periodic tariff, alternative tariff (millions of minutes)

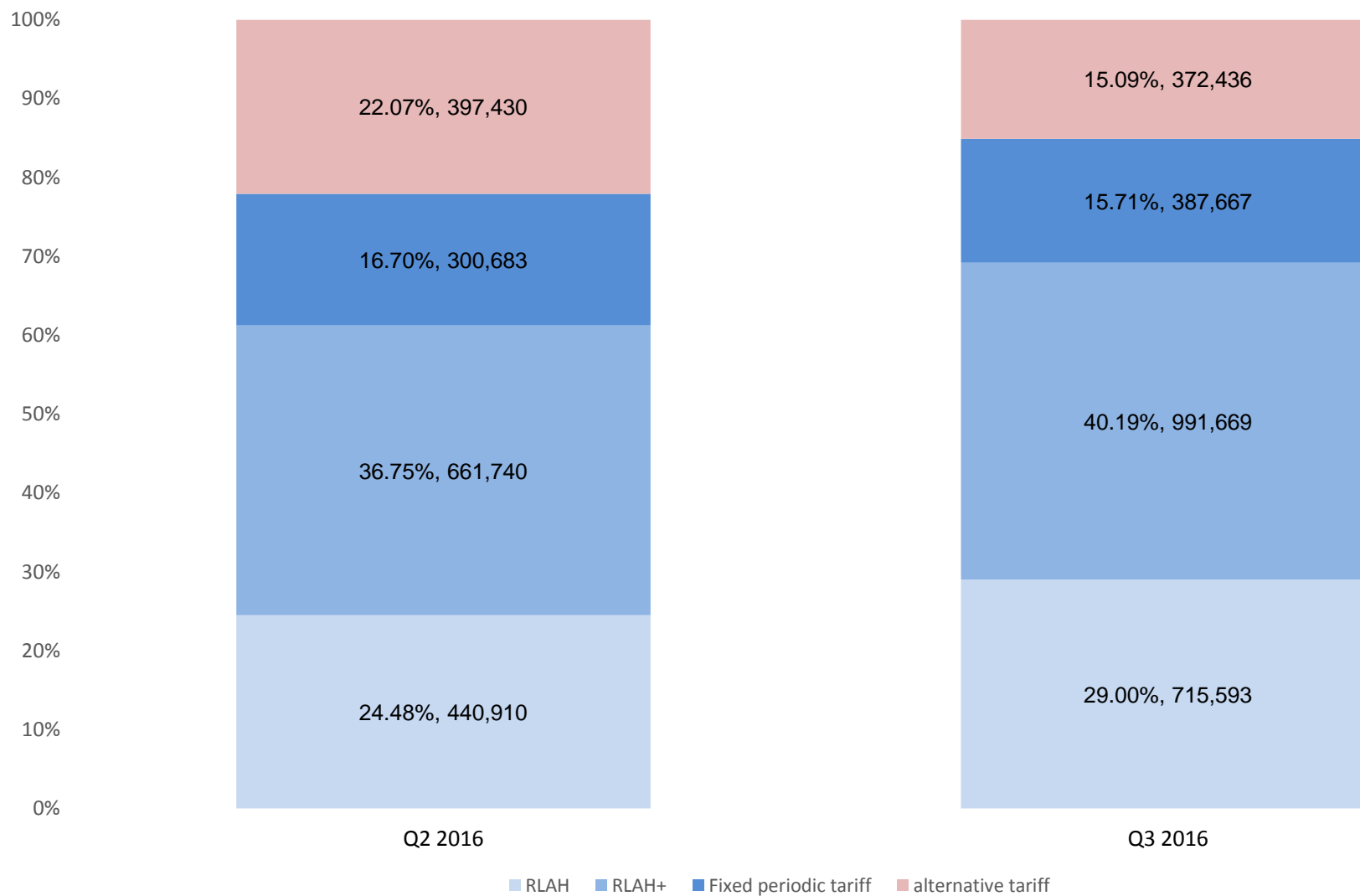
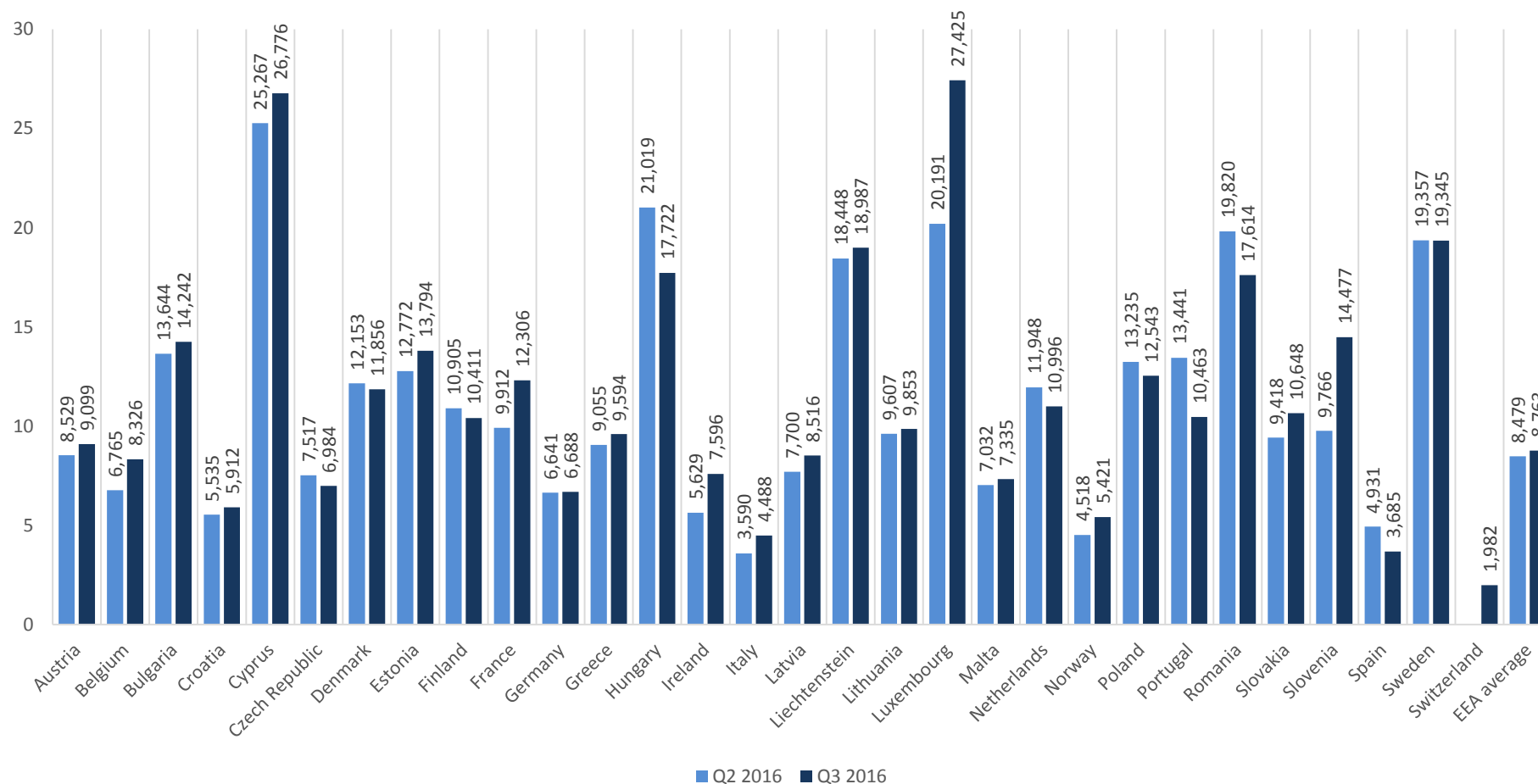


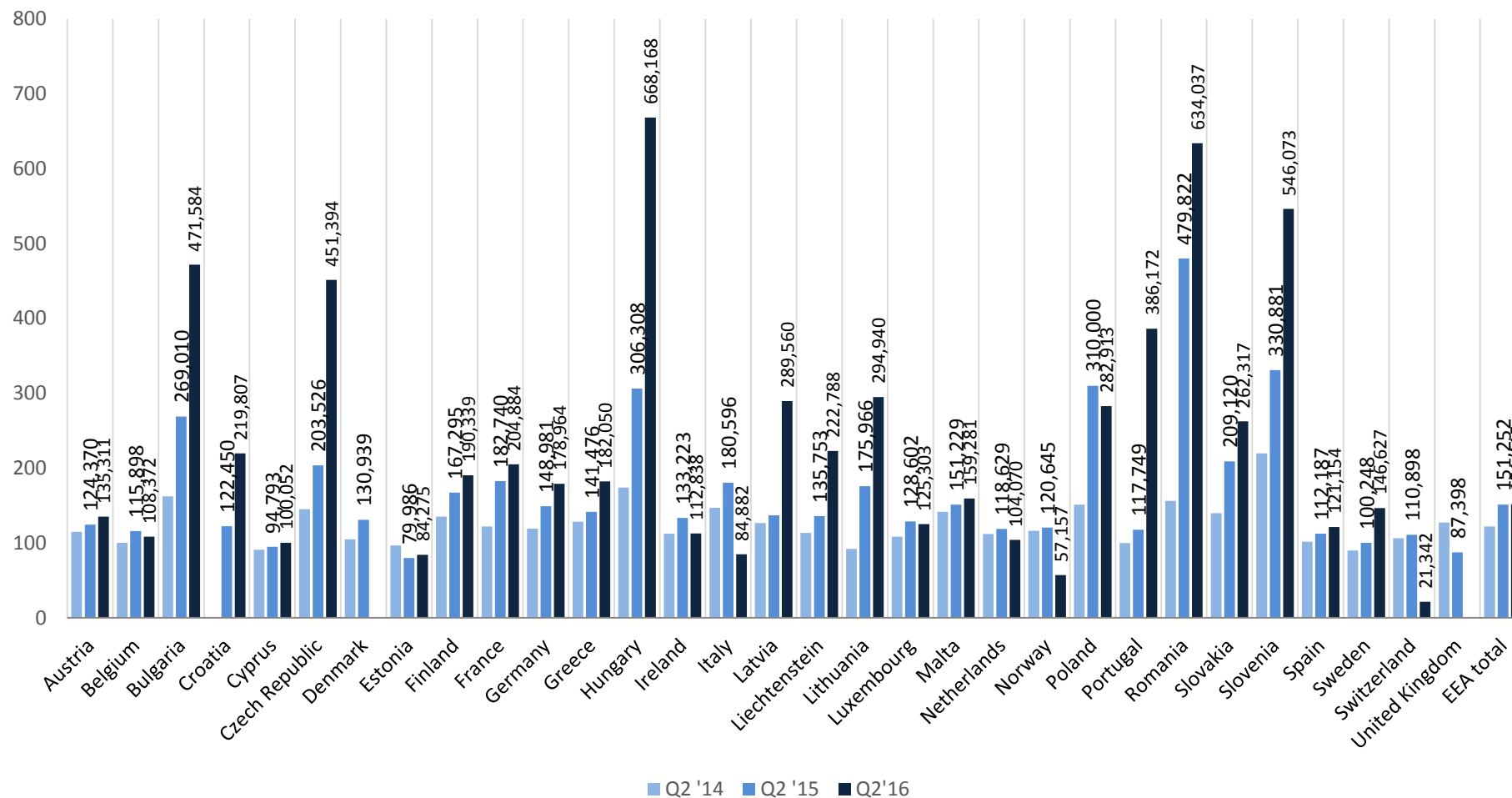
Figure 20: roaming calls made  
Average number of minutes per month per roaming subscriber  
Q2 and Q3 2016



Norway: the Q2'16 value is based on data from June 2016

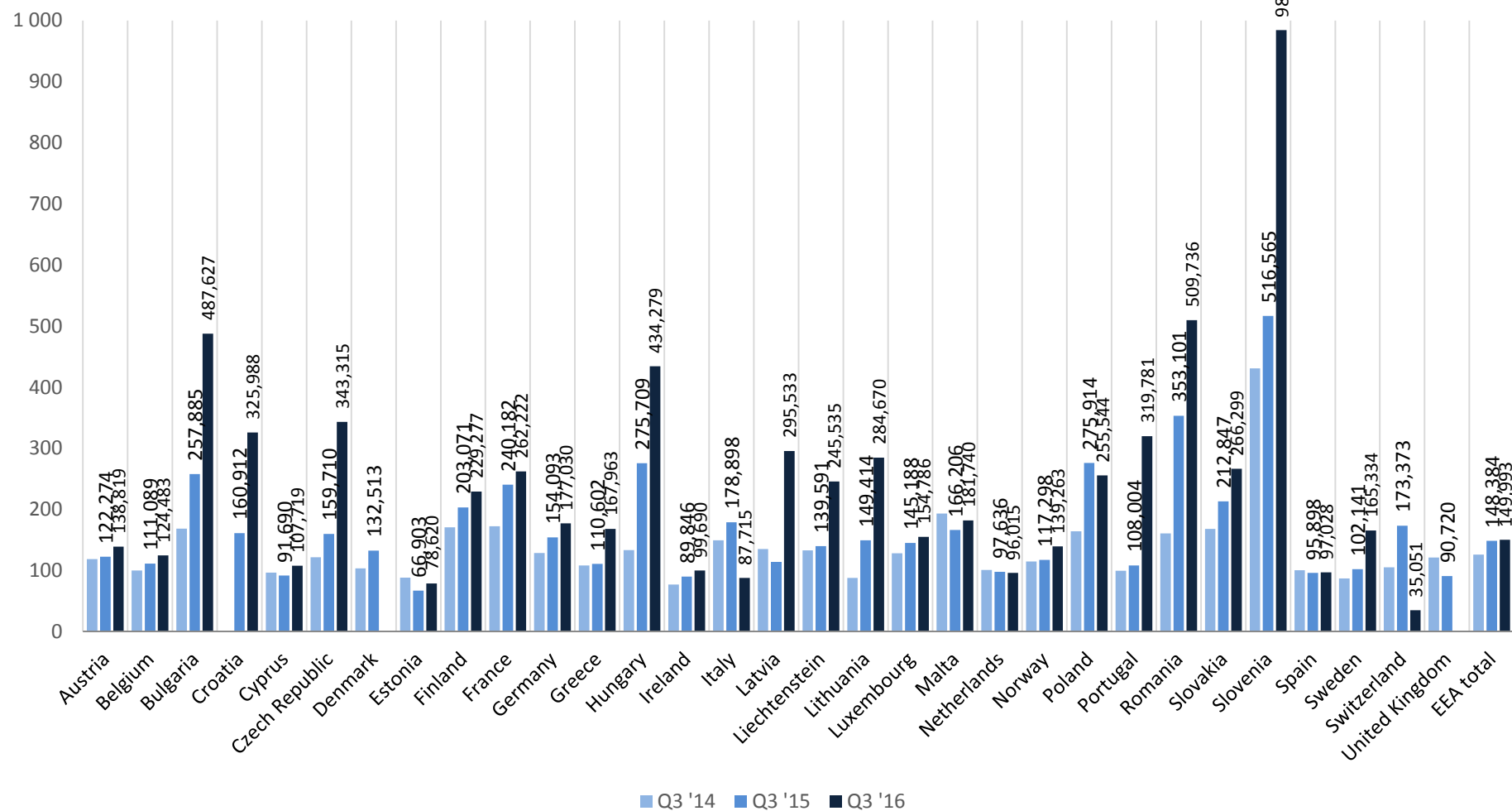
EEA average excludes Iceland, UK

Figure 21: Outgoing international roaming traffic Index,  
intra-EEA roaming calls in Q2 2016  
(Q2 2012 = 100, Croatia, Liechtenstein: Q2 2013 = 100)



Norway: the Q2'16 value is based on data from June 2016  
EEA average Q2 2016 excludes, Denmark, Iceland, UK

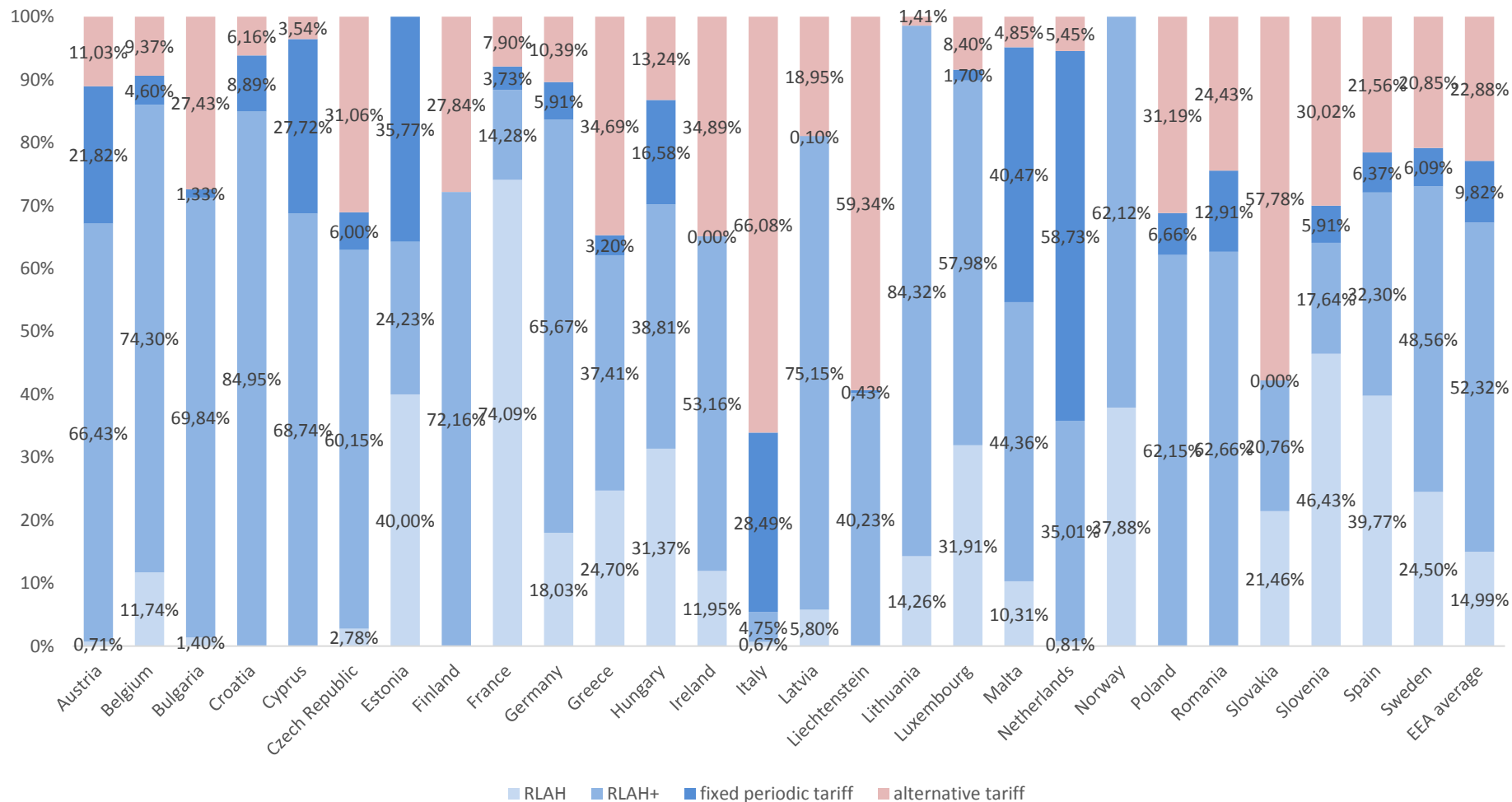
Figure 22: Outgoing international roaming traffic Index,  
intra-EEA roaming calls in Q3 2016  
(Q3 2012 = 100, Croatia, Liechtenstein: Q3 2013 = 100)



EEA average Q3 2016 excludes, Denmark, Iceland, UK



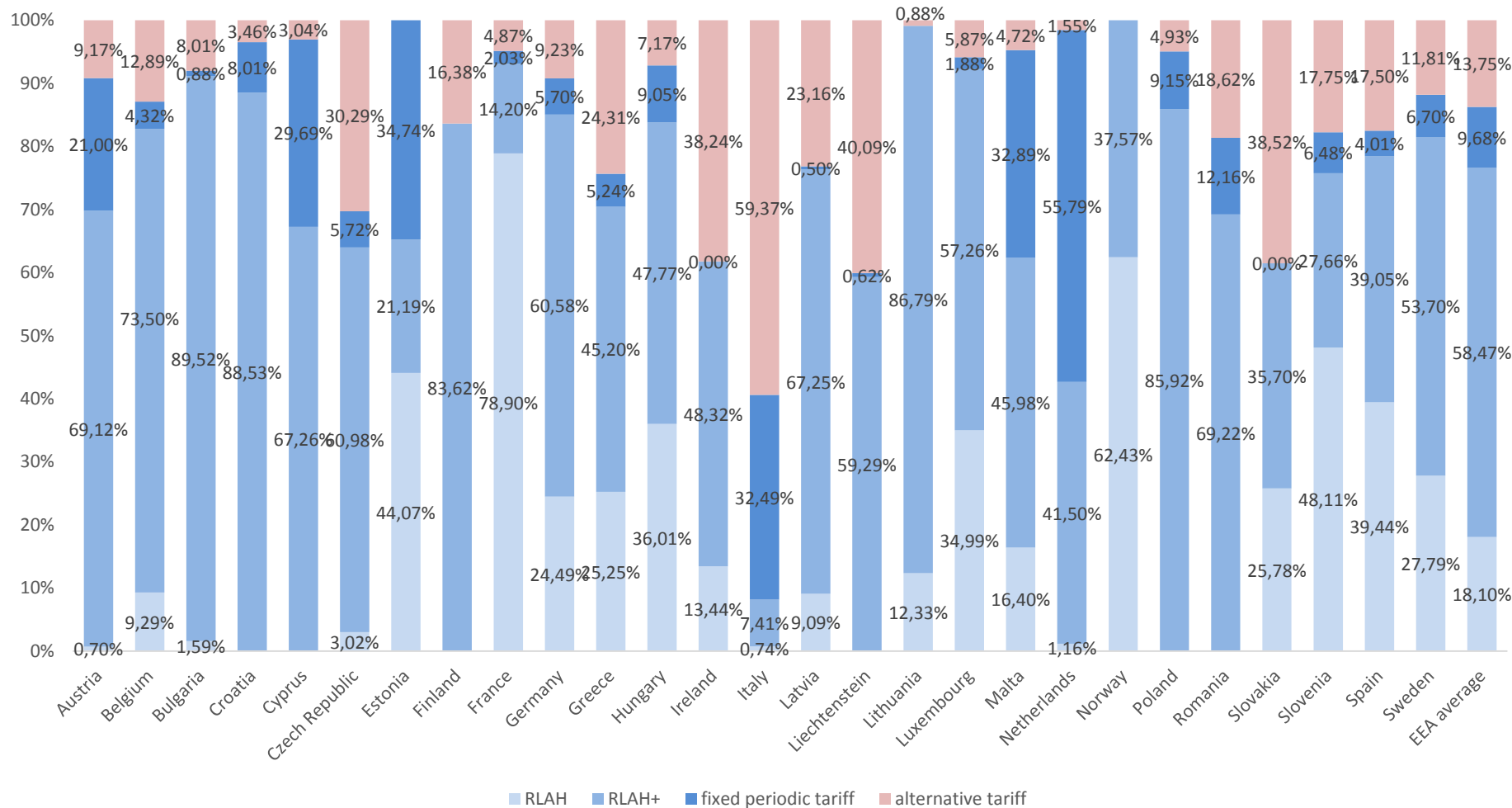
Figure 23: Percentage of total minutes of calls received: RLAH, RLAH+, fixed periodic tariff and alternative tariff  
Q2 2016



EEA average excludes Denmark, Finland, Iceland, Portugal, UK

Finland: fixed periodic tariff data has been combined with alternative tariff data, RLAH has been combined with RLAH+

Figure 24: Percentage of total minutes calls of received: RLAH, RLAH+, fixed periodic tariff and alternative tariff Q3 2016



EEA average excludes Denmark, Finland, Iceland, Portugal, UK

Finland: fixed periodic tariff data has been combined with alternative tariff data, RLAH has been combined with RLAH+

Figure 25: EEA Volumes and percentage of total minutes calls received: RLAH, RLAH+, fixed periodic tariff and alternative tariff (millions of minutes)

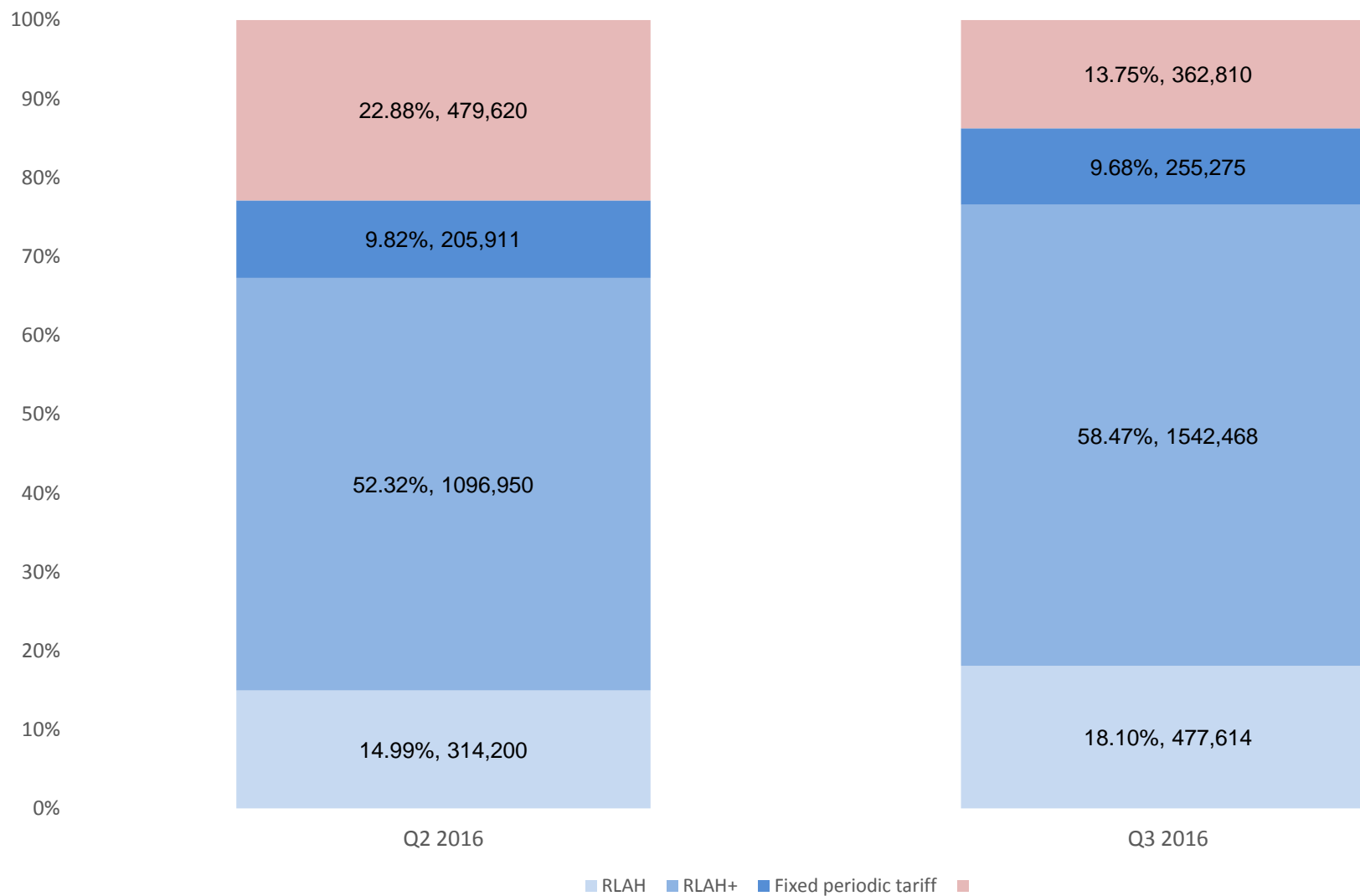
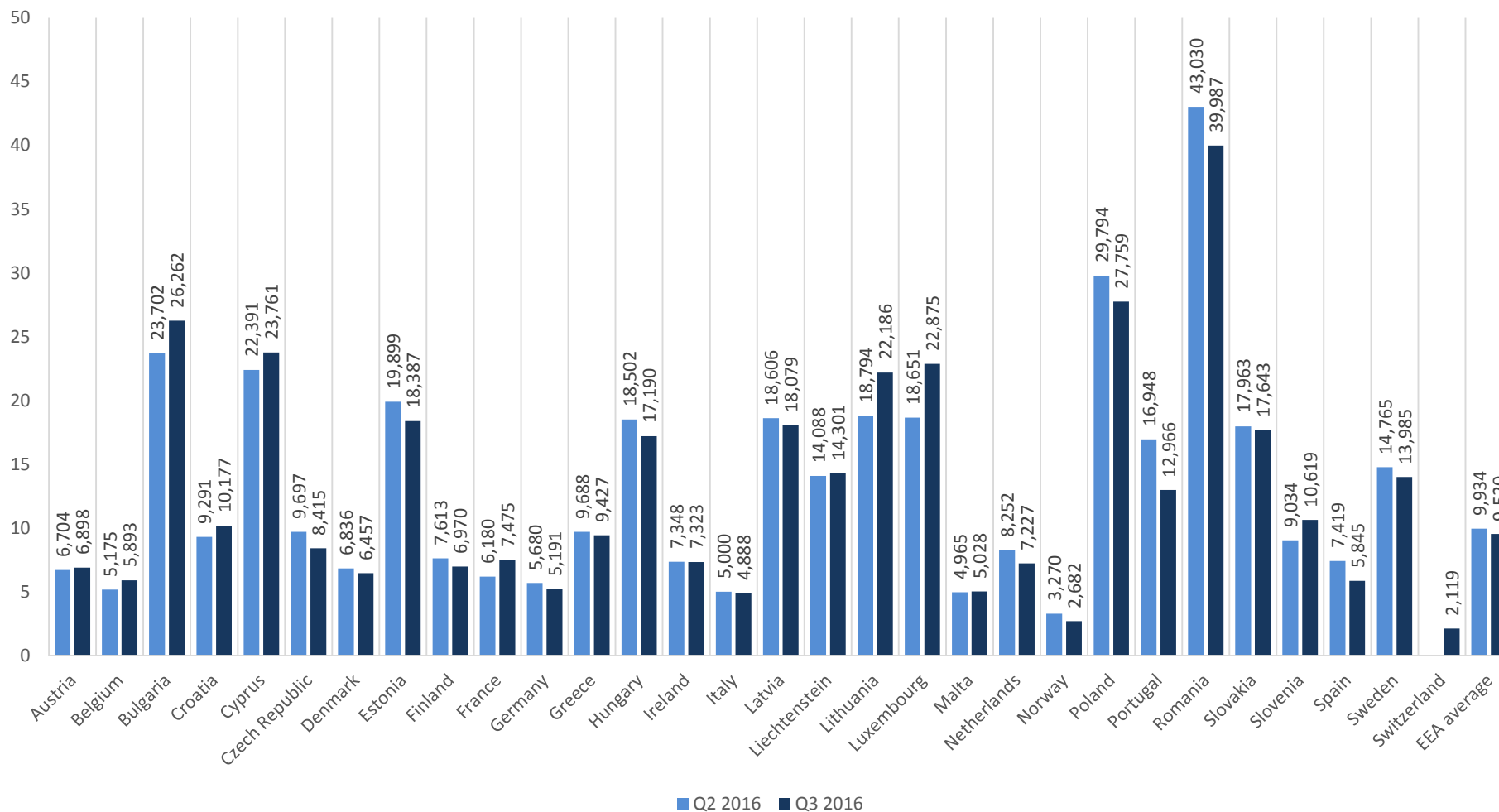


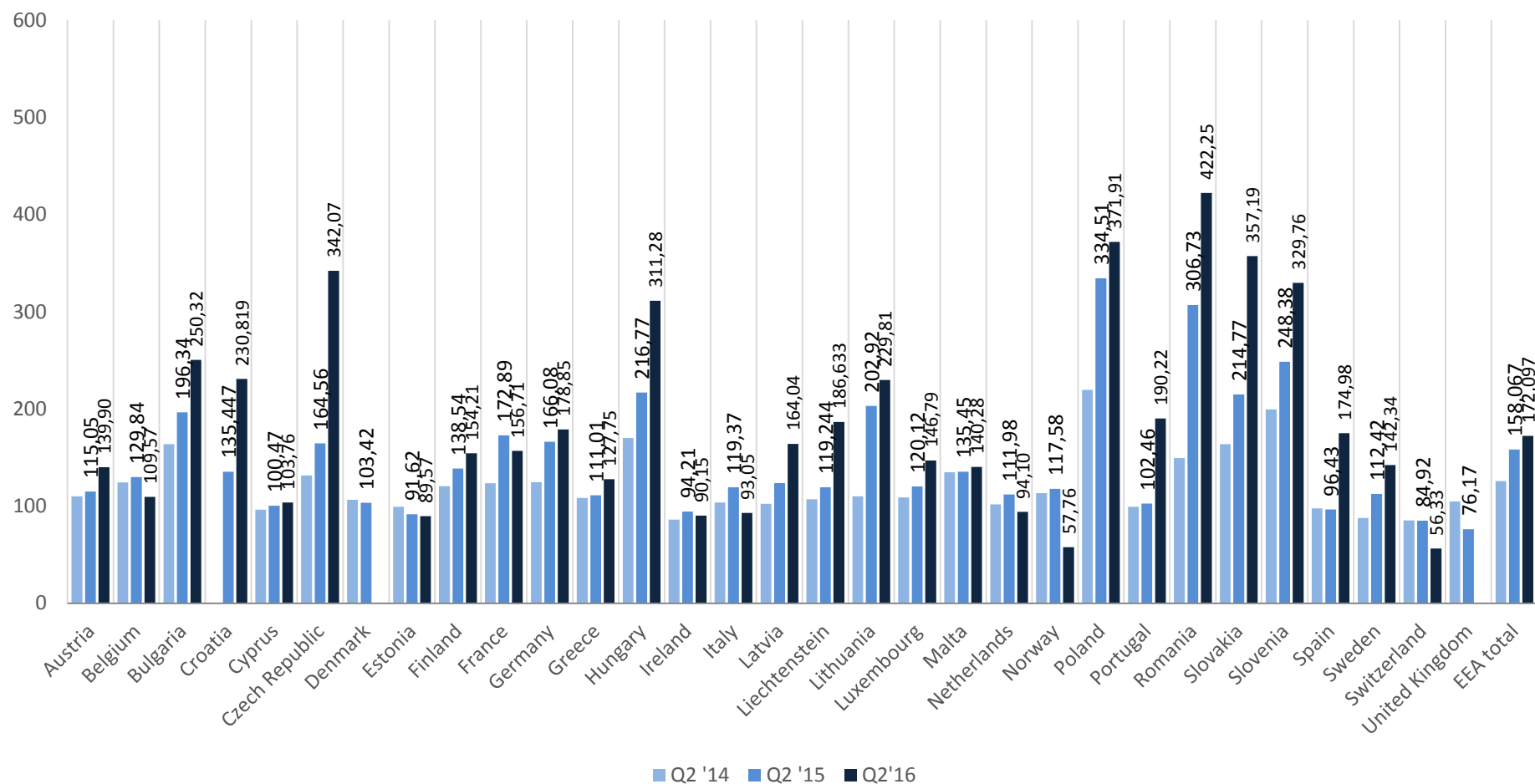
Figure 26: roaming calls received  
Average number of minutes per month per roaming subscriber  
Q2 and Q3 2016



Norway: the Q2'16 value is based on data from June 2016

EEA average excludes Iceland, UK

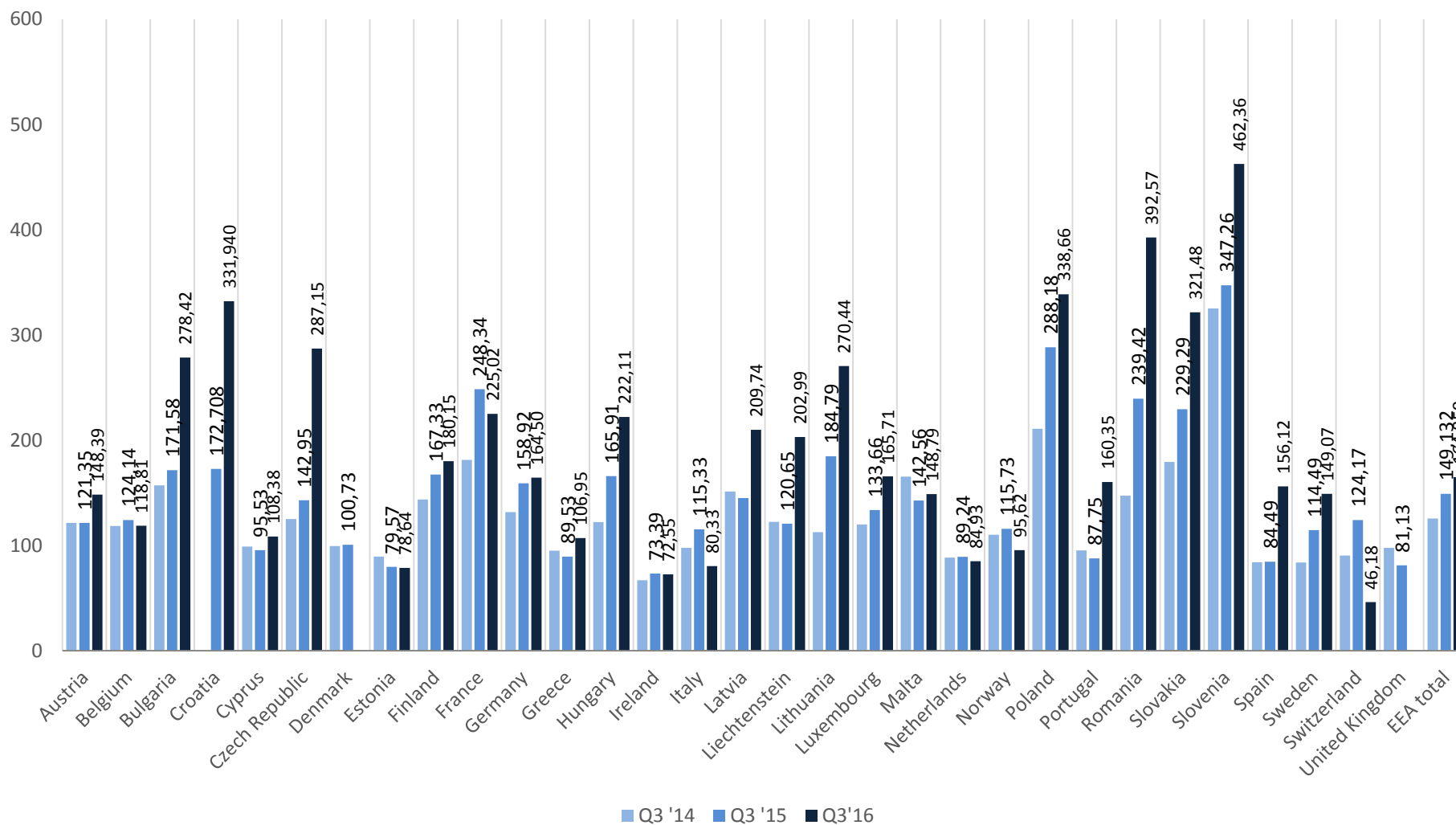
Figure 27: Incoming international roaming traffic Index,  
intra-EEA roaming calls in Q2 2016  
(Q2 2012 = 100, Croatia, Liechtenstein: Q2 2013 = 100)



Norway: the Q2'16 value is based on data from June 2016

EEA average excludes Denmark, Iceland, UK

Figure 28: Incoming international roaming traffic Index, intra-EEA roaming calls in Q3 2016 (Q3 2012 = 100, Croatia, Liechtenstein: Q3 2013 = 100)

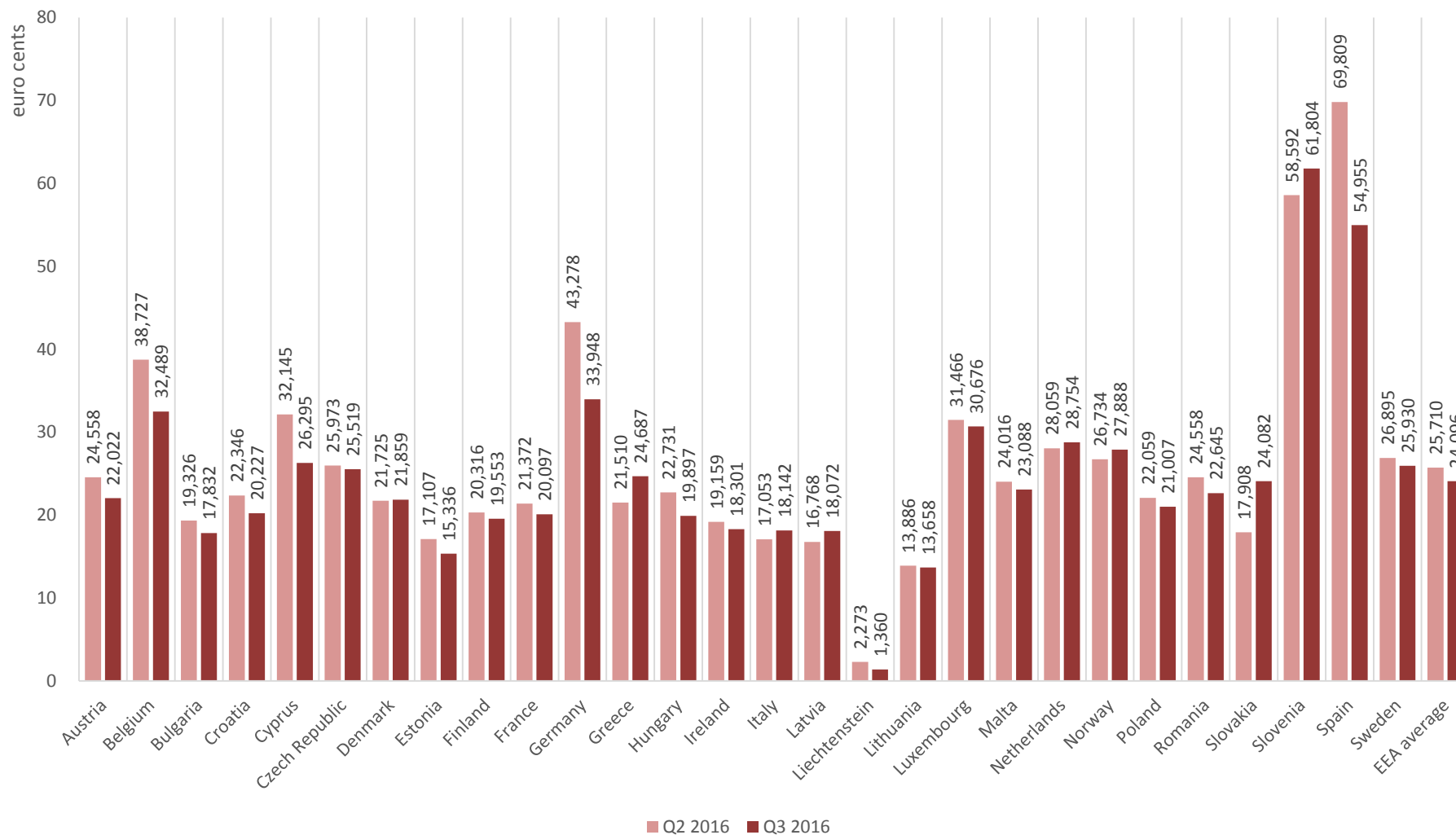


EEA average excludes Denmark, Iceland, UK

## **5.2.2. SMS roaming services**

### **5.2.2.1 RoW retail prices**

Figure 29: RoW  
Average retail price per SMS for RoW roaming SMS services (prepaid+postpaid)  
Q2 and Q3 2016

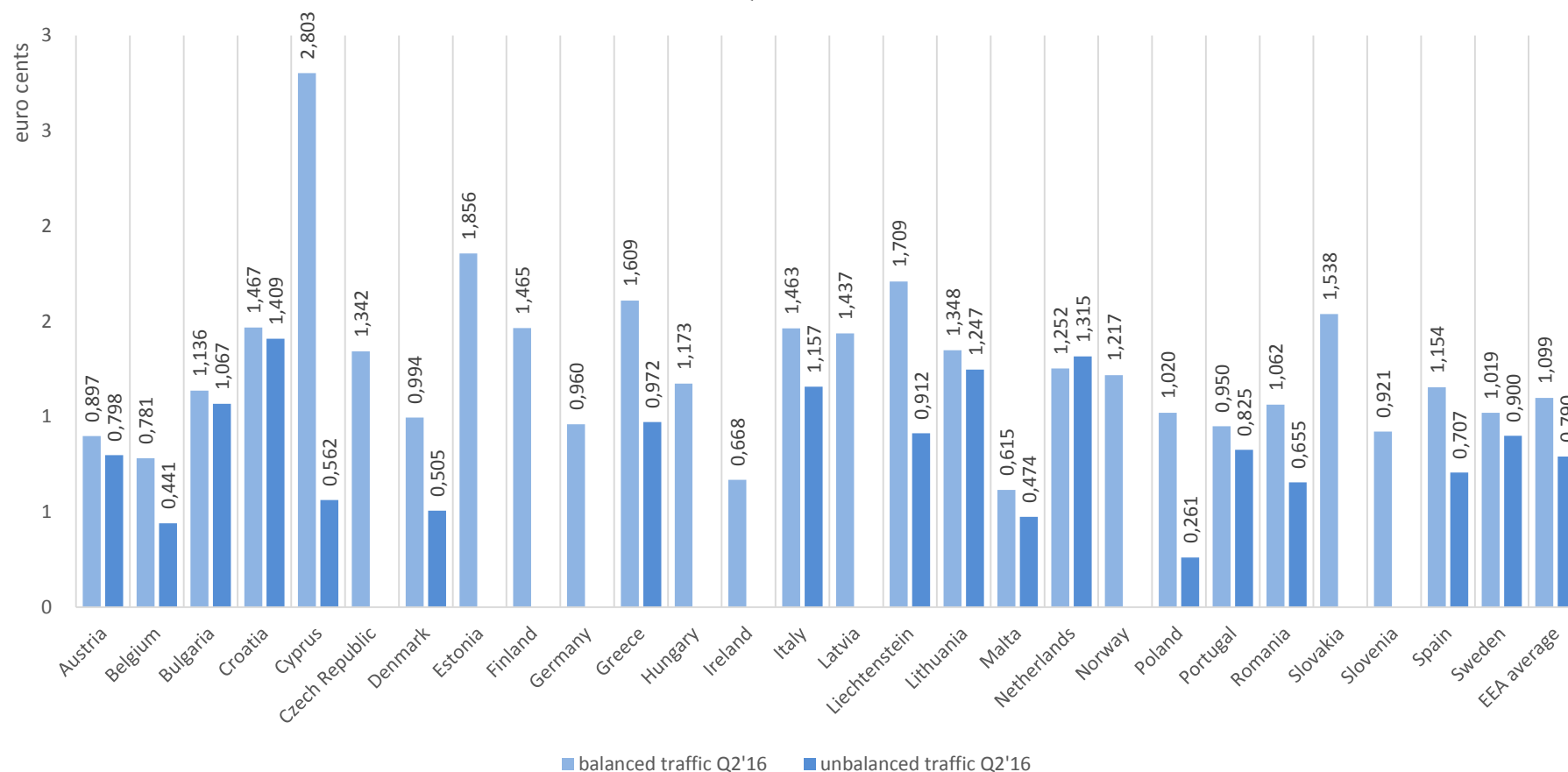


EEA average excludes Iceland, Portugal, UK



## **5.2.2.2 Wholesale prices**

Figure 30: Average wholesale price per intra EEA roaming SMS charges for balanced and unbalanced traffic  
Q2 2016



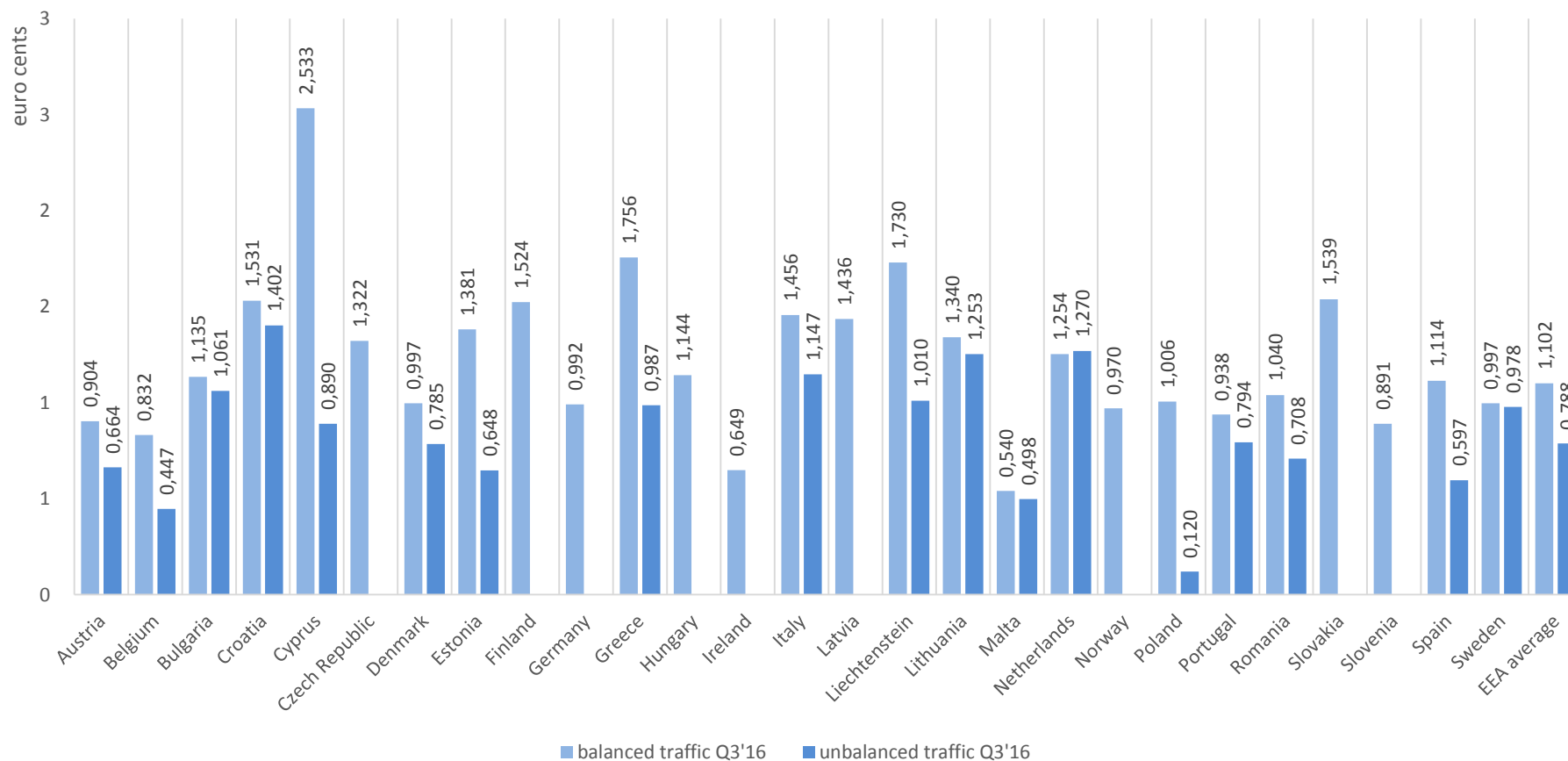
While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Norway: the Q2'16 value is based on data from June 2016, Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 32 and 33

EEA average (balanced traffic) excludes France, Iceland, Luxembourg, UK

EEA average (unbalanced traffic) France, Iceland, Latvia, Luxembourg, Norway, UK

Figure 31: Average wholesale price per intra EEA roaming SMS charges for balanced and unbalanced traffic  
Q3 2016



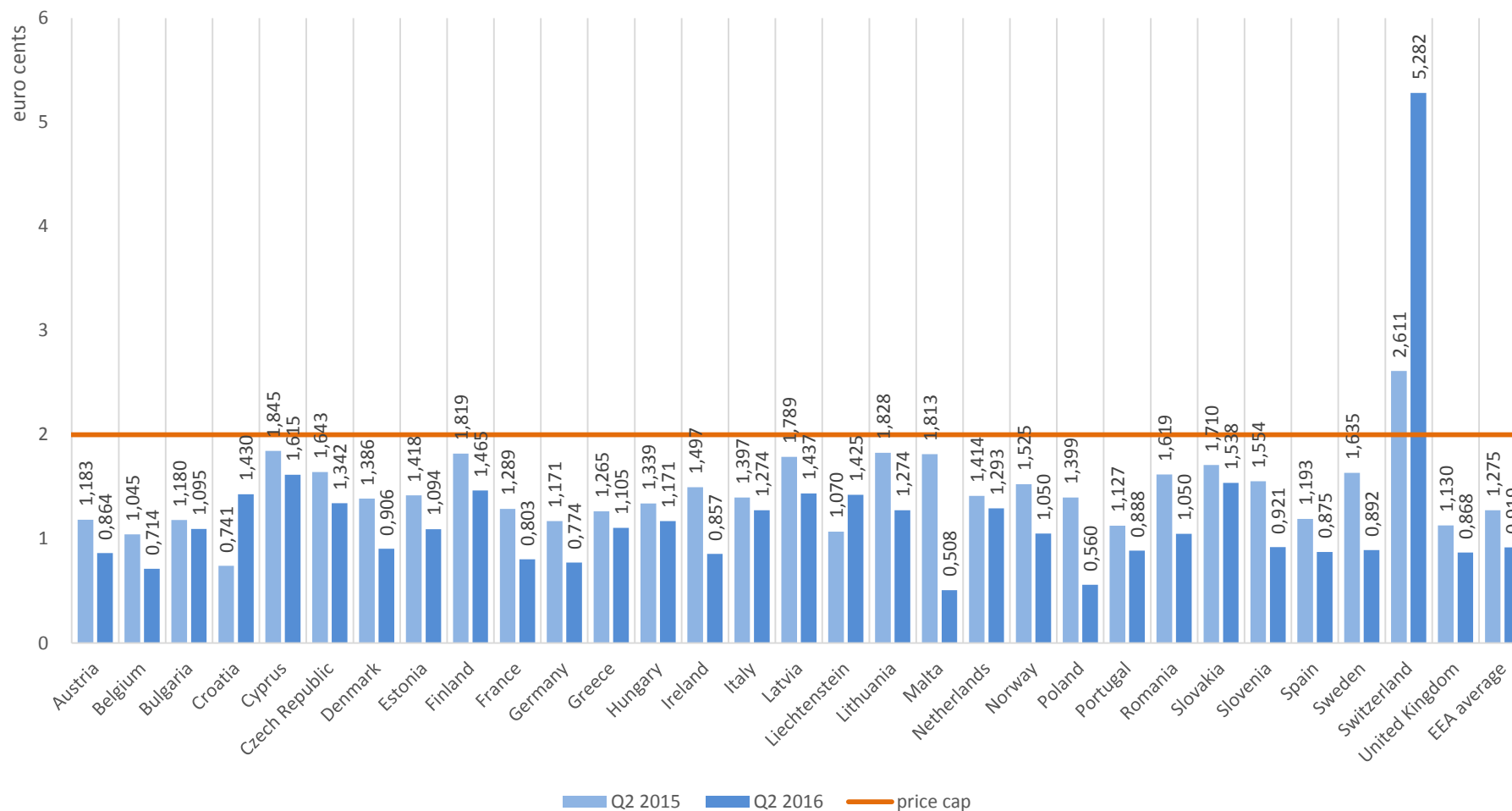
While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 32 and 33

EEA average (balanced traffic) excludes France, Iceland, Luxembourg, UK

EEA average (unbalanced traffic) France, Latvia, Luxembourg, Norway, UK

Figure 32: Average wholesale price per intra-EEA roaming SMS (Total traffic) in Q2 2016



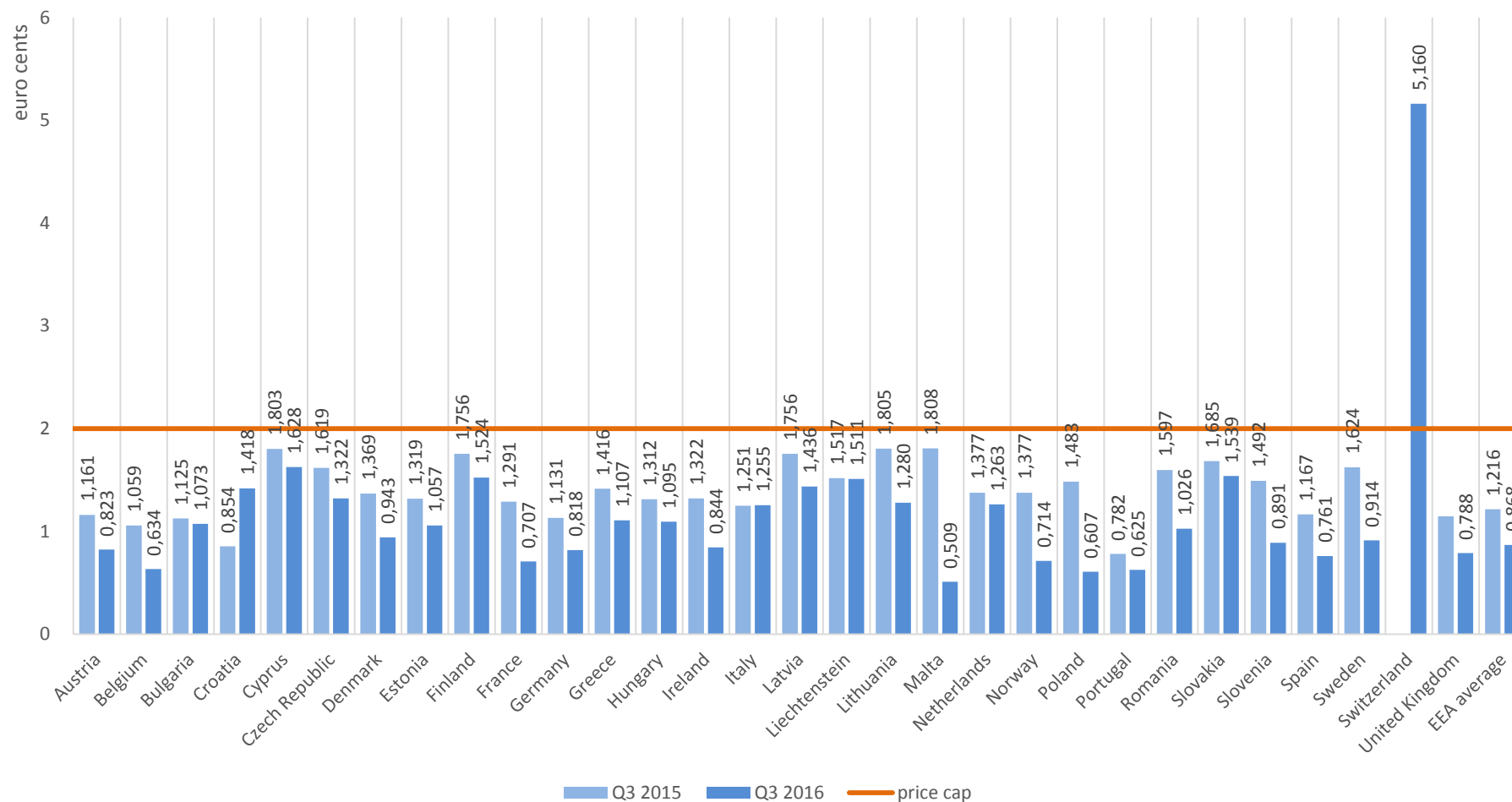
While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Norway: the Q2'16 value is based on data from June 2016,

Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 30 and 31

EEA average excludes: Iceland, Luxembourg

Figure 33: Average wholesale price per intra-EEA roaming SMS (Total traffic) in Q3 2016



While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 30 and 31

EEA average excludes: Iceland, Luxembourg

Figure 34: EEA average wholesale price per SMS (balanced, unbalanced, total traffic)

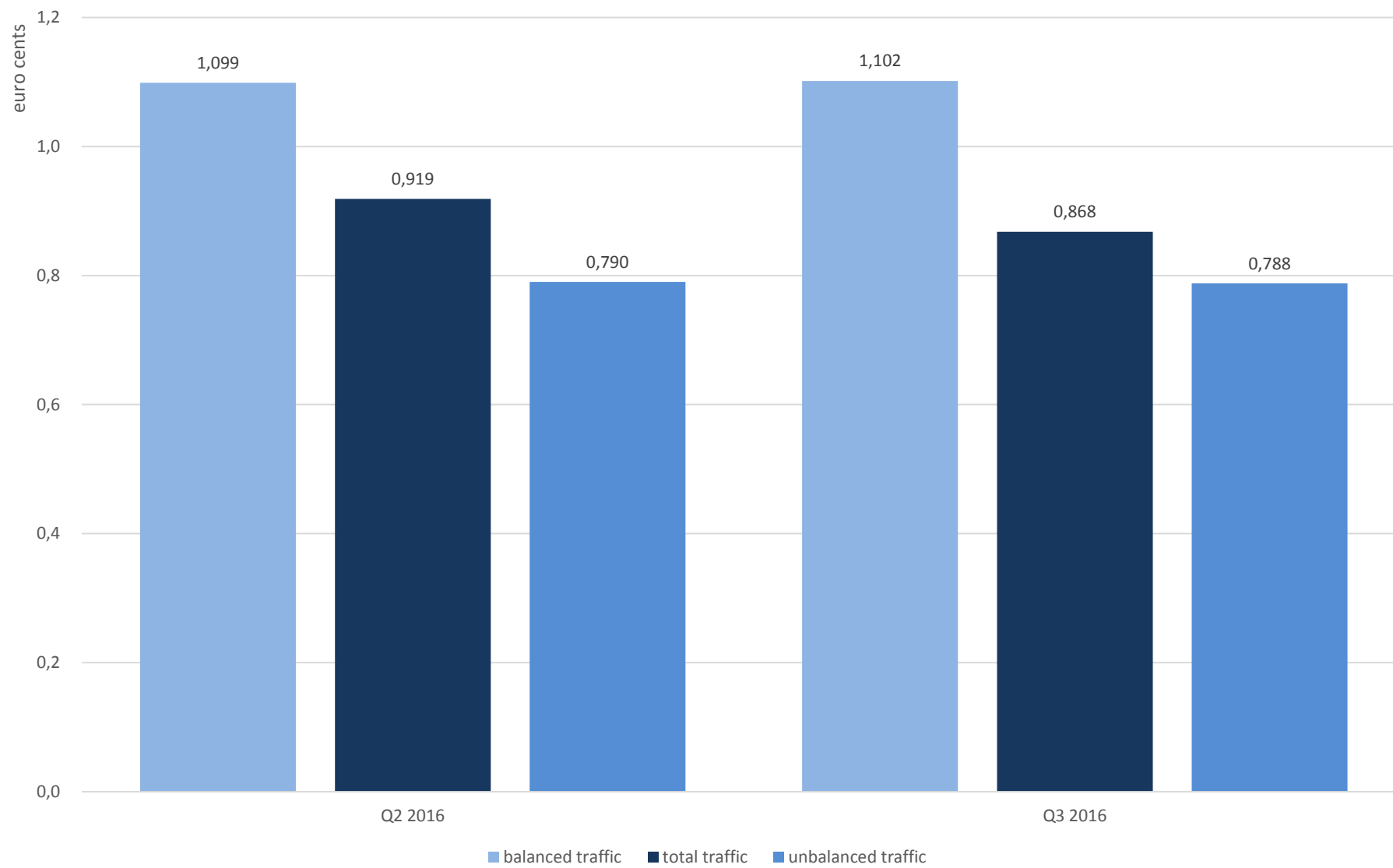


Figure 35: Average wholesale price per intra-EEA roaming SMS  
(Q2 2007 - Q1 2016 - charges to non groups only)

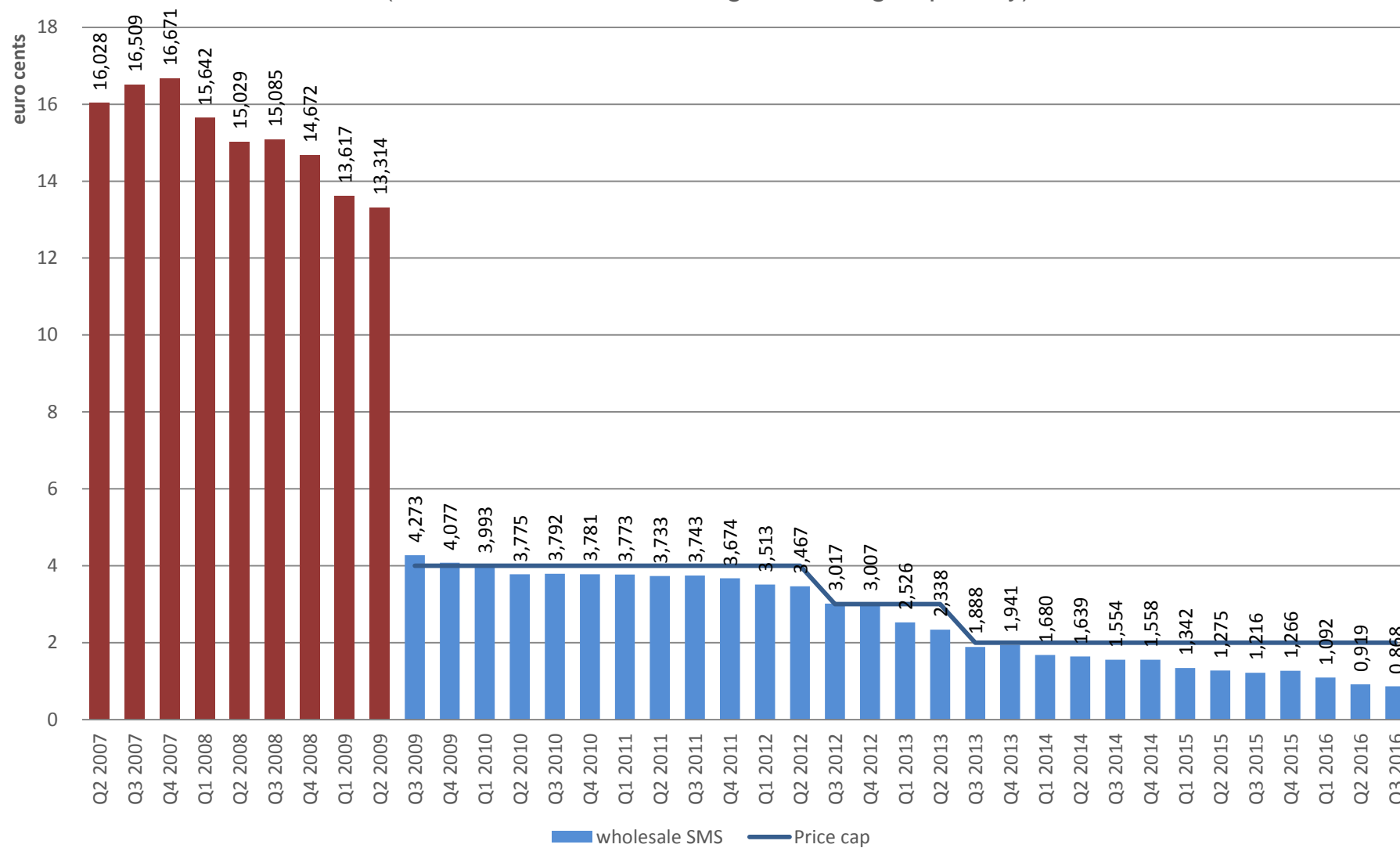
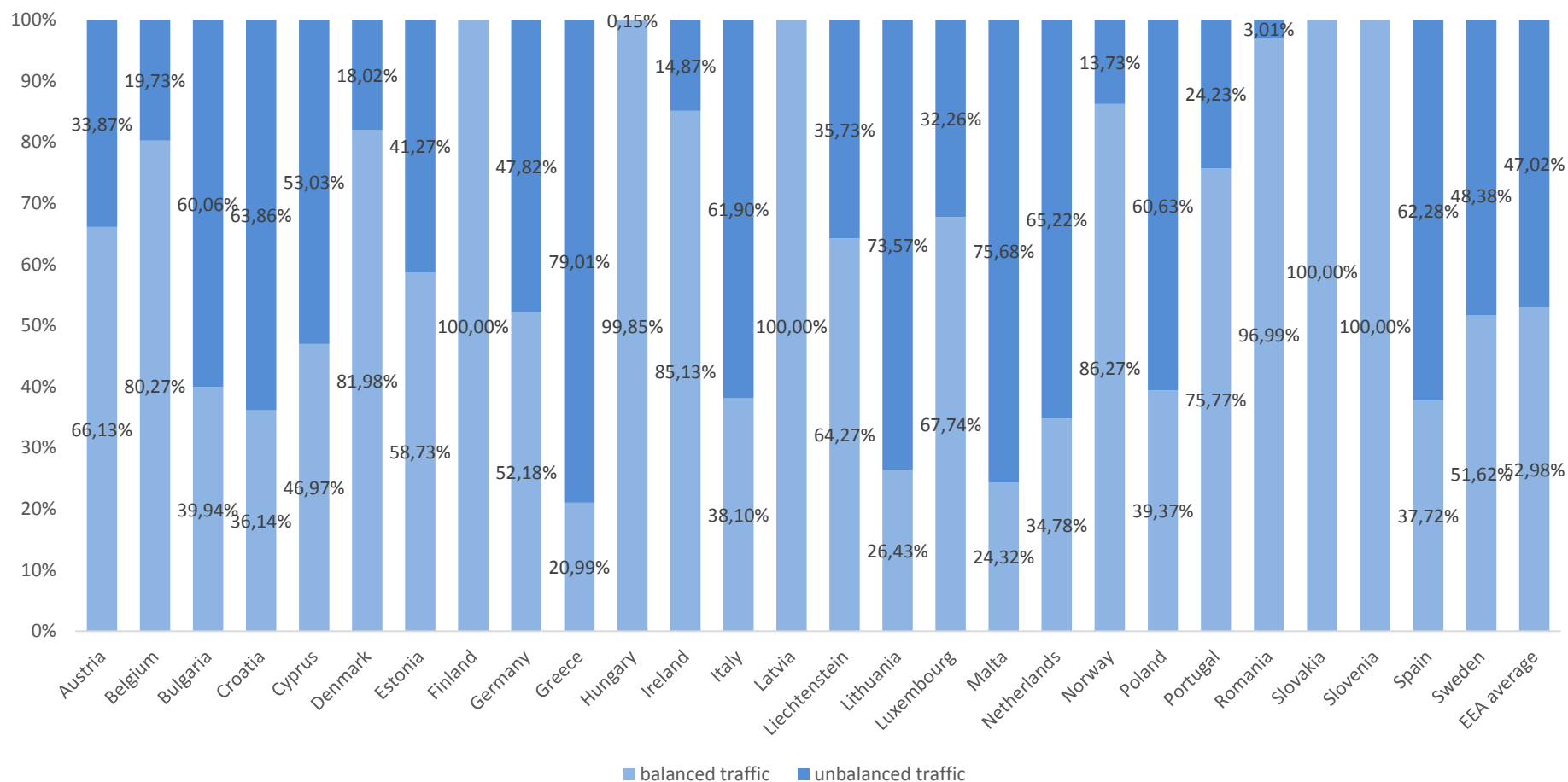


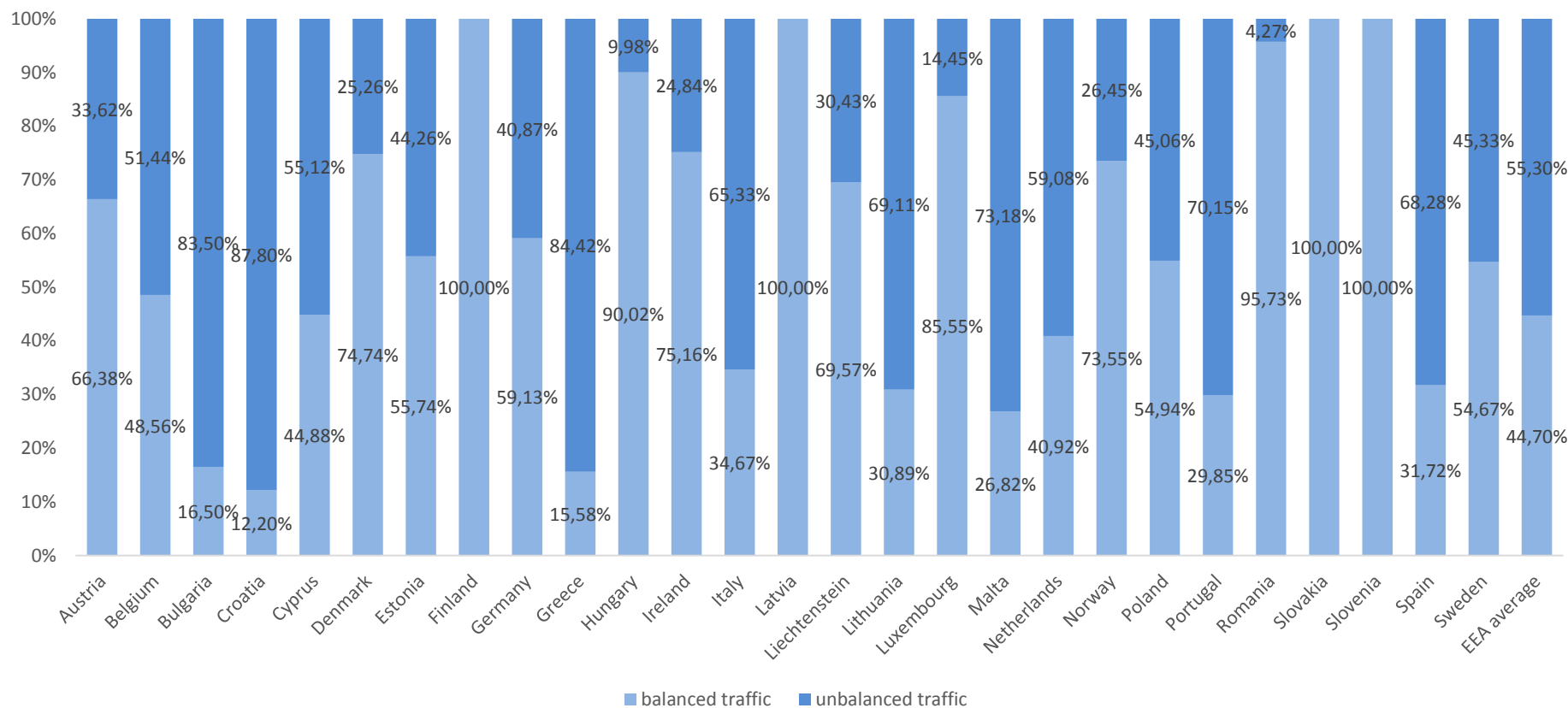
Figure 36: Proportion of balanced/unbalanced traffic within EEA countries  
Wholesale roaming inbound  
Q2 2016



While the measure of balanced/unbalanced traffic should include volumes from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6. Italy: Operators reported that the splitting balanced/unbalanced traffic has been estimated and no accounting/certified information is available, Norway: the Q2'16 value is based on data from June 2016, Portugal: estimates are based on partial information provided by two operators  
EEA excludes Czech Republic, France, UK



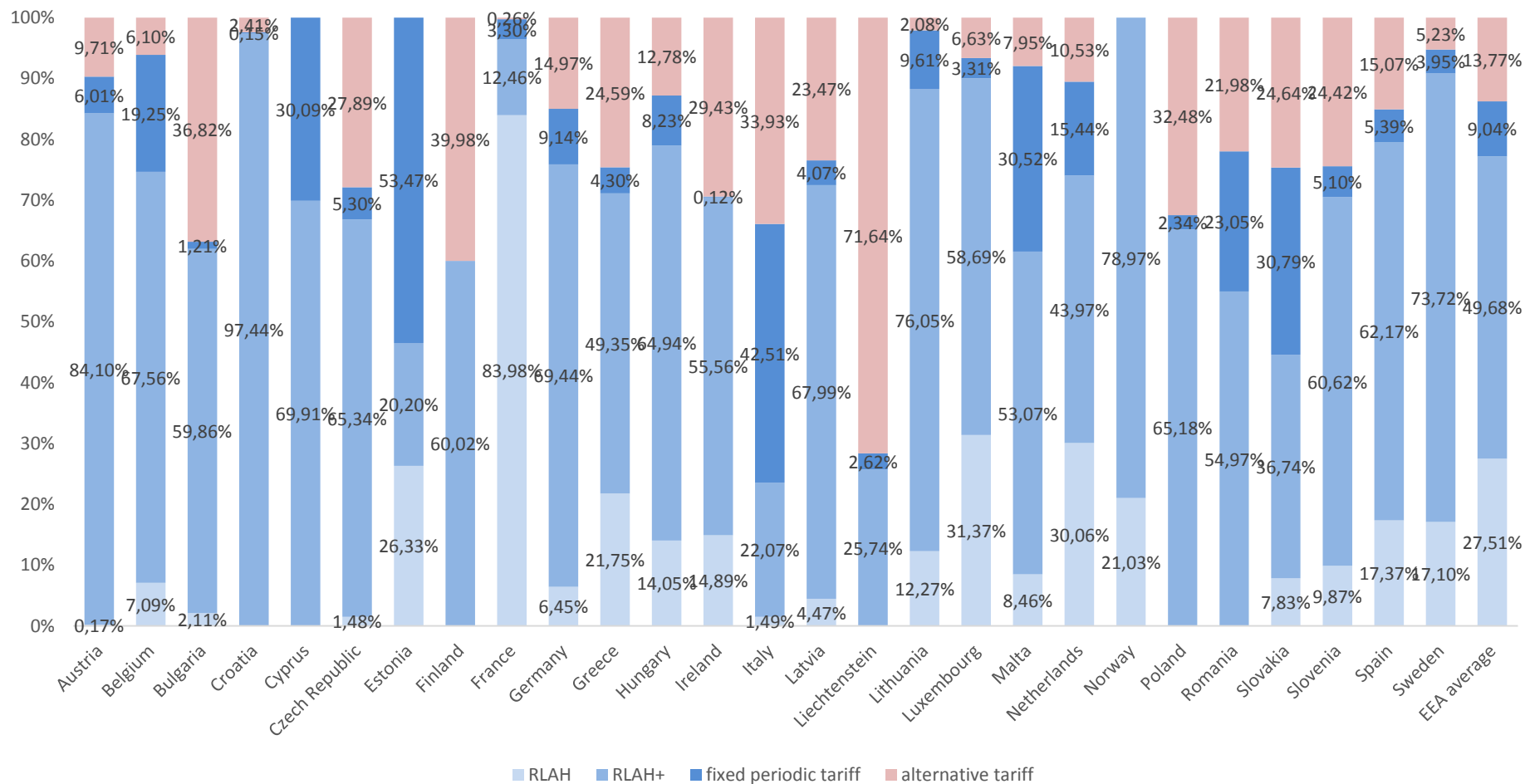
Figure 37: Proportion of balanced/unbalanced traffic within EEA countries  
Wholesale roaming inbound  
Q3 2016



While the measure of balanced/unbalanced traffic should include volumes from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6. Italy: Operators reported that the splitting balanced/unbalanced traffic has been estimated and no accounting/certified information is available, Portugal: estimates are based on partial information provided by two operators  
EEA excludes Czech Republic, France, UK

### **5.2.2.3 Consumption patterns**

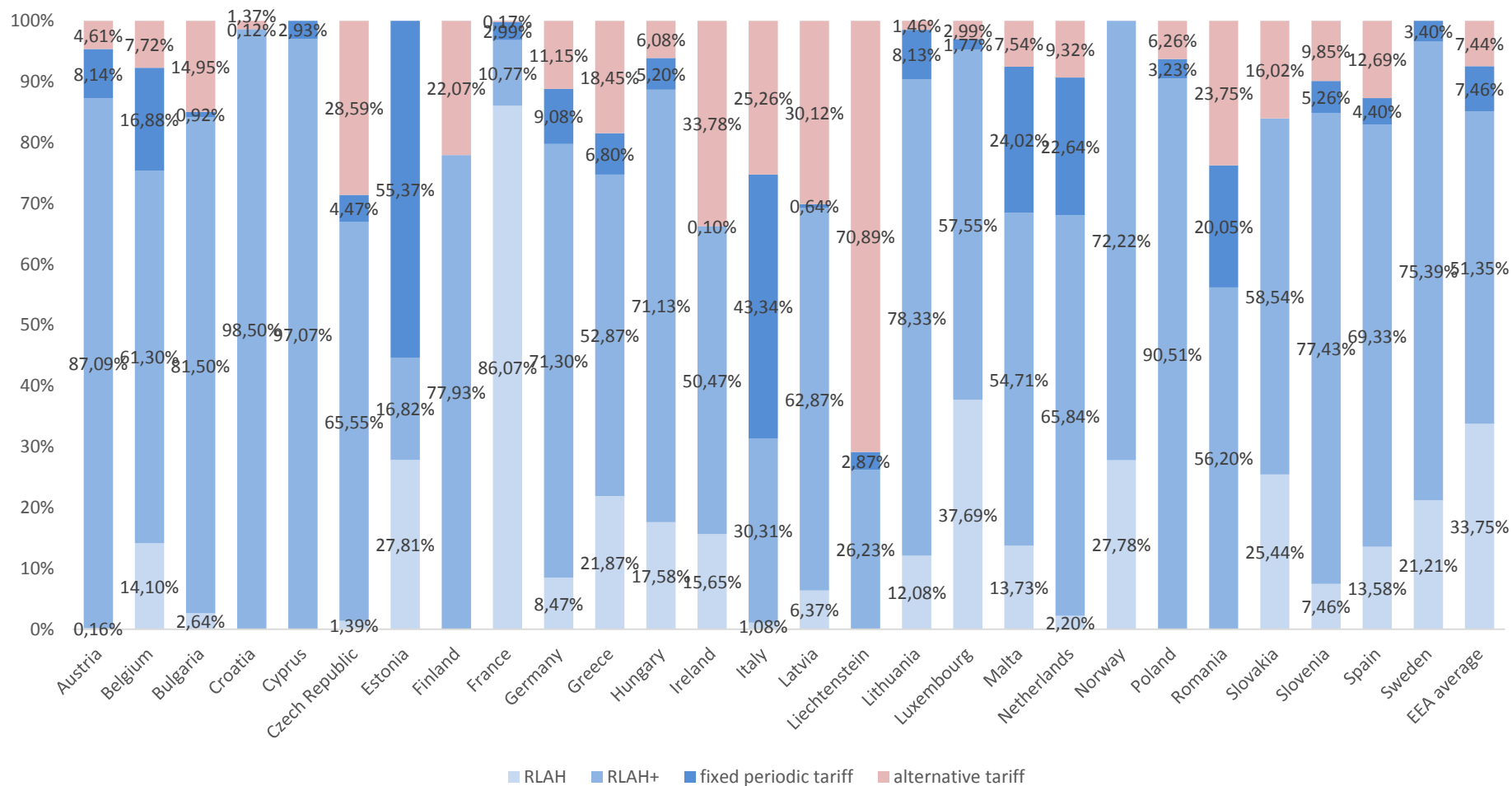
Figure 38: Percentage of EEA roaming SMS: RLAH, RLAH +, fixed periodic tariff, alternative tariff  
Q2 2016



EEA average excludes Denmark, Iceland, Portugal, UK

Finland: fixed periodic tariff data has been combined with alternative tariff data

Figure 39: Percentage of EEA roaming SMS: RLAH, RLAH +, fixed periodic tariff, alternative tariff Q3 2016



EEA average excludes Denmark, Iceland, Portugal, UK

Finland: fixed periodic tariff data has been combined with alternative tariff data

Figure 40: EEA percentage of SMS sent: RLAH, RLAH+, fixed periodic tariff, alternative tariff  
(millions of minutes)

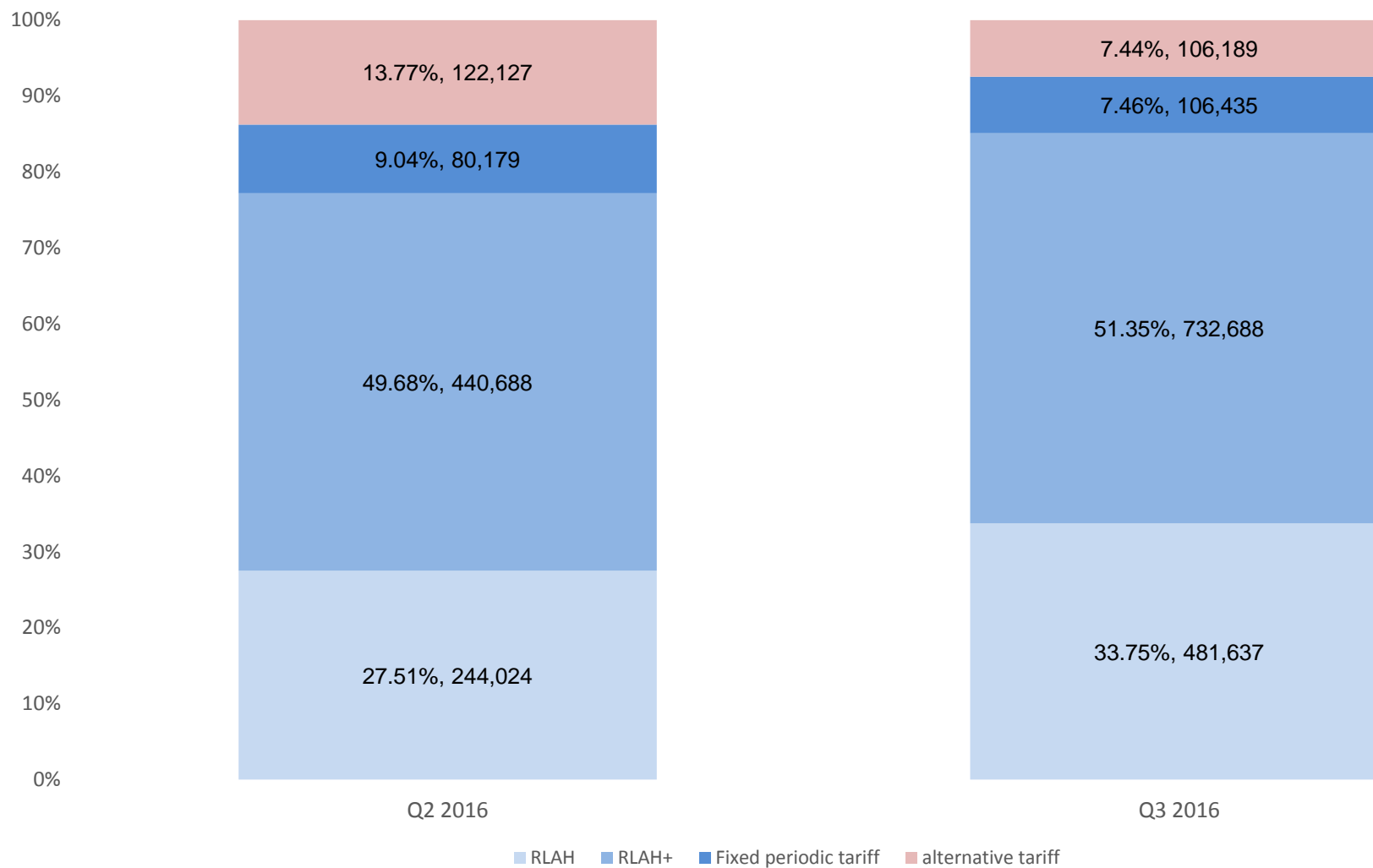
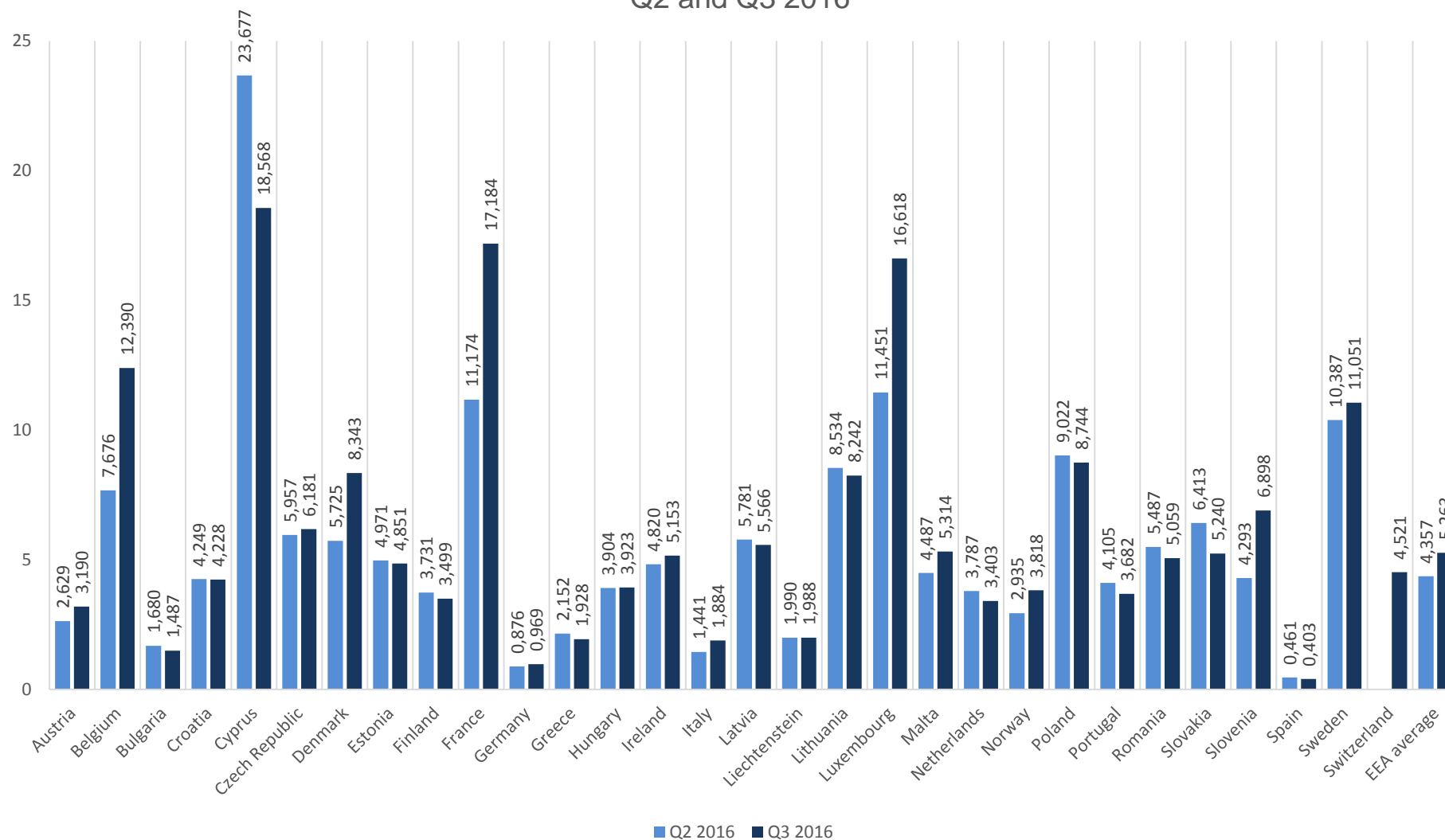


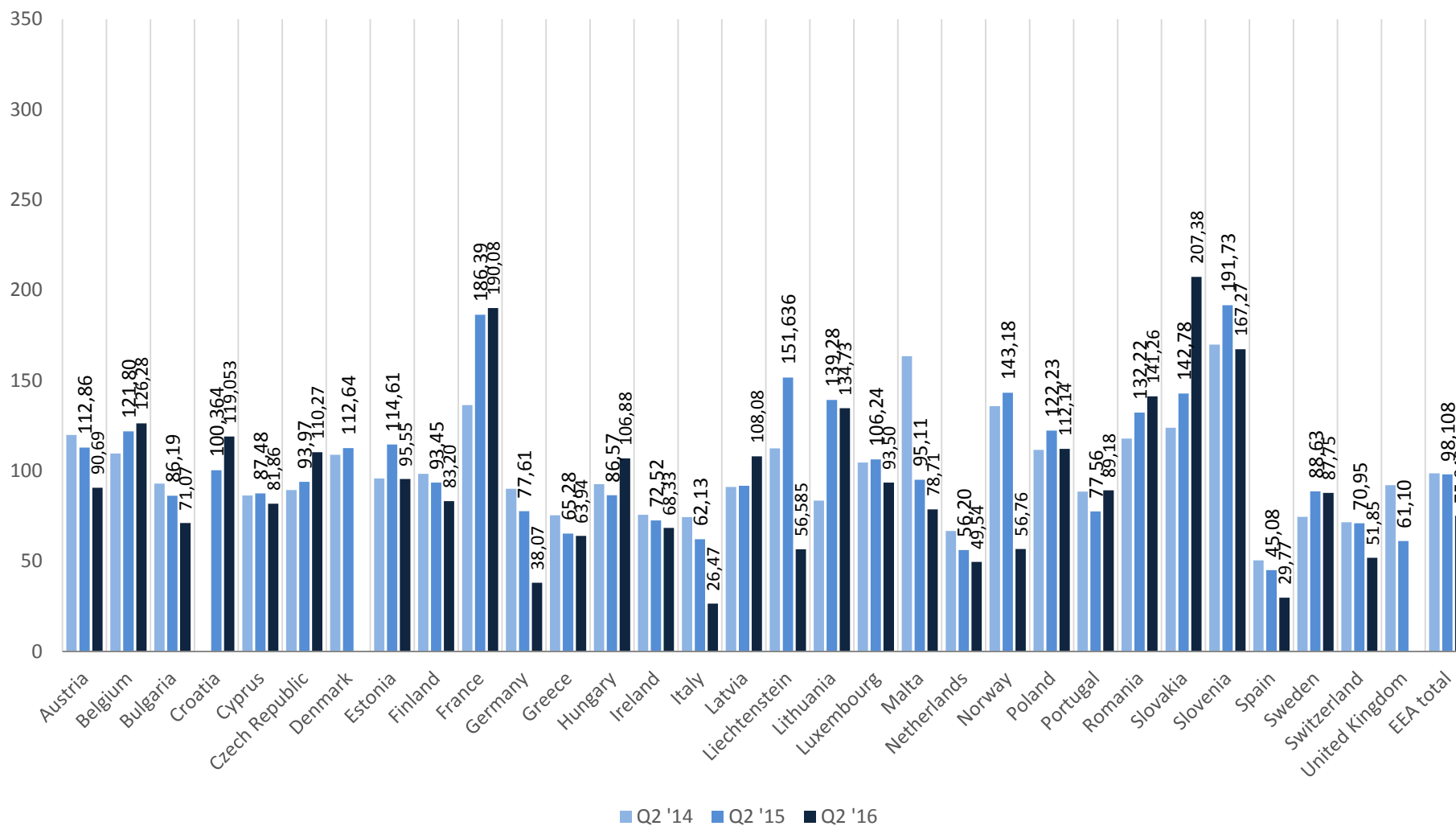
Figure 41: SMS  
Average number of SMS per month per roaming subscriber  
Q2 and Q3 2016



EEA average excludes Iceland, UK

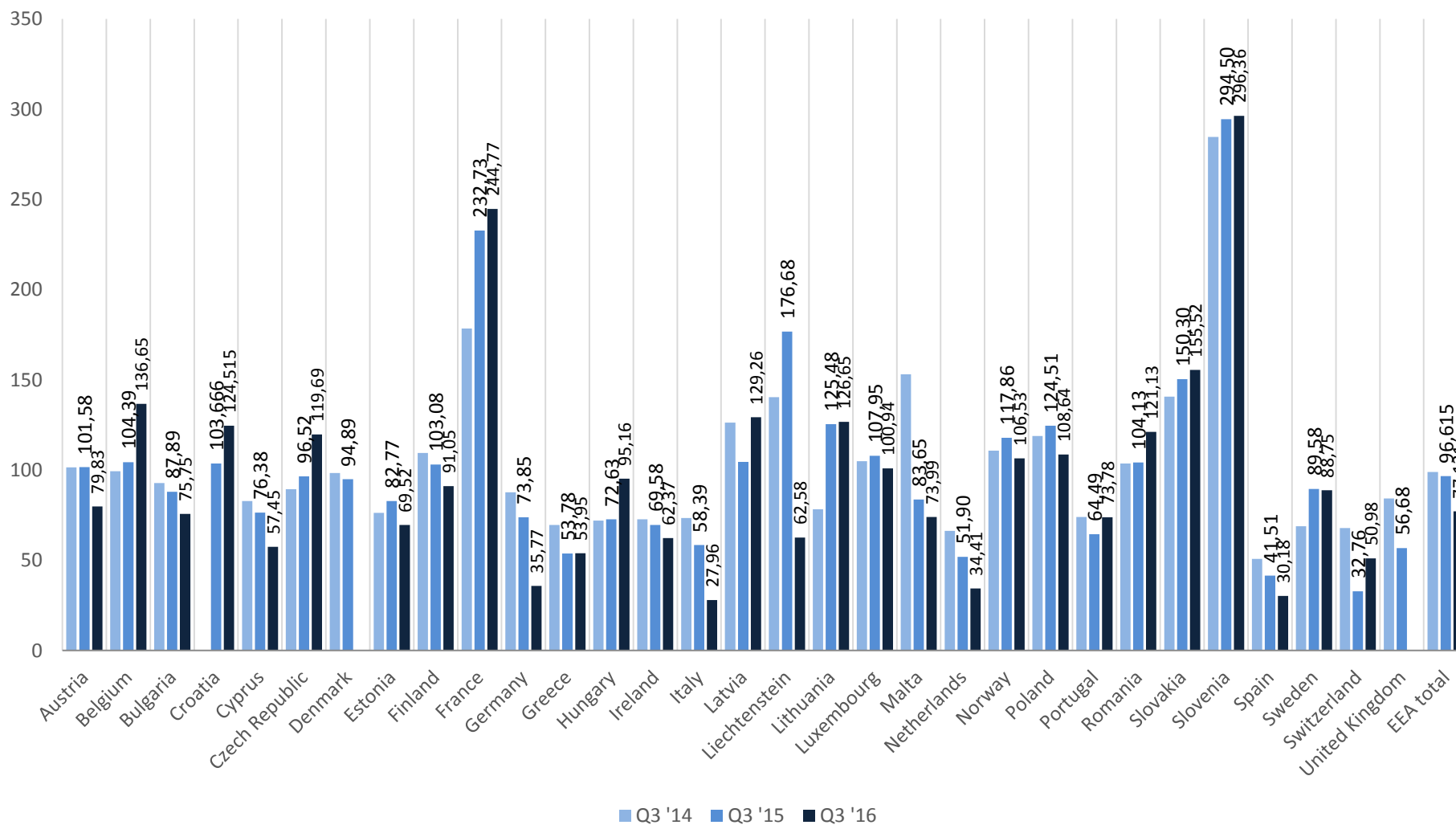
Norway: the Q2'16 value is based on data from June 2016

Figure 42: Retail SMS traffic Index,  
intra-EEA roaming calls in Q2 2016  
(Q2 2012 = 100, Croatia Q2'14 = 100, Liechtenstein: Q2'13 = 100)



EEA average excludes Denmark, Iceland, UK

Figure 43: Retail SMS traffic Index, intra-EEA roaming calls in Q3 2016 (Q3 2012 = 100, Croatia Q3'13 = 100)



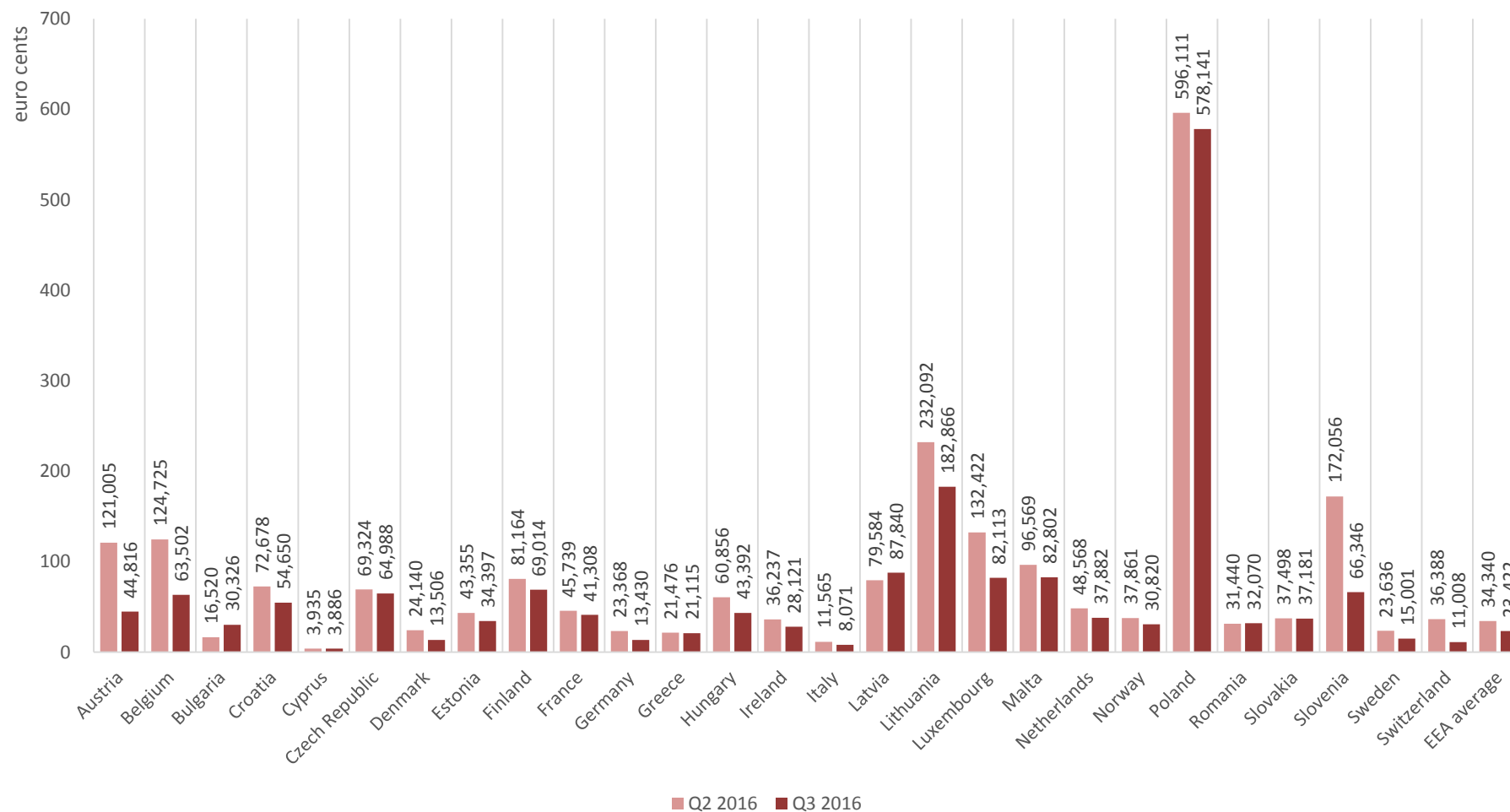
EEA average excludes Denmark, Iceland, UK



## **5.2.3. Data roaming services**

### **5.2.3.1 RoW retail prices**

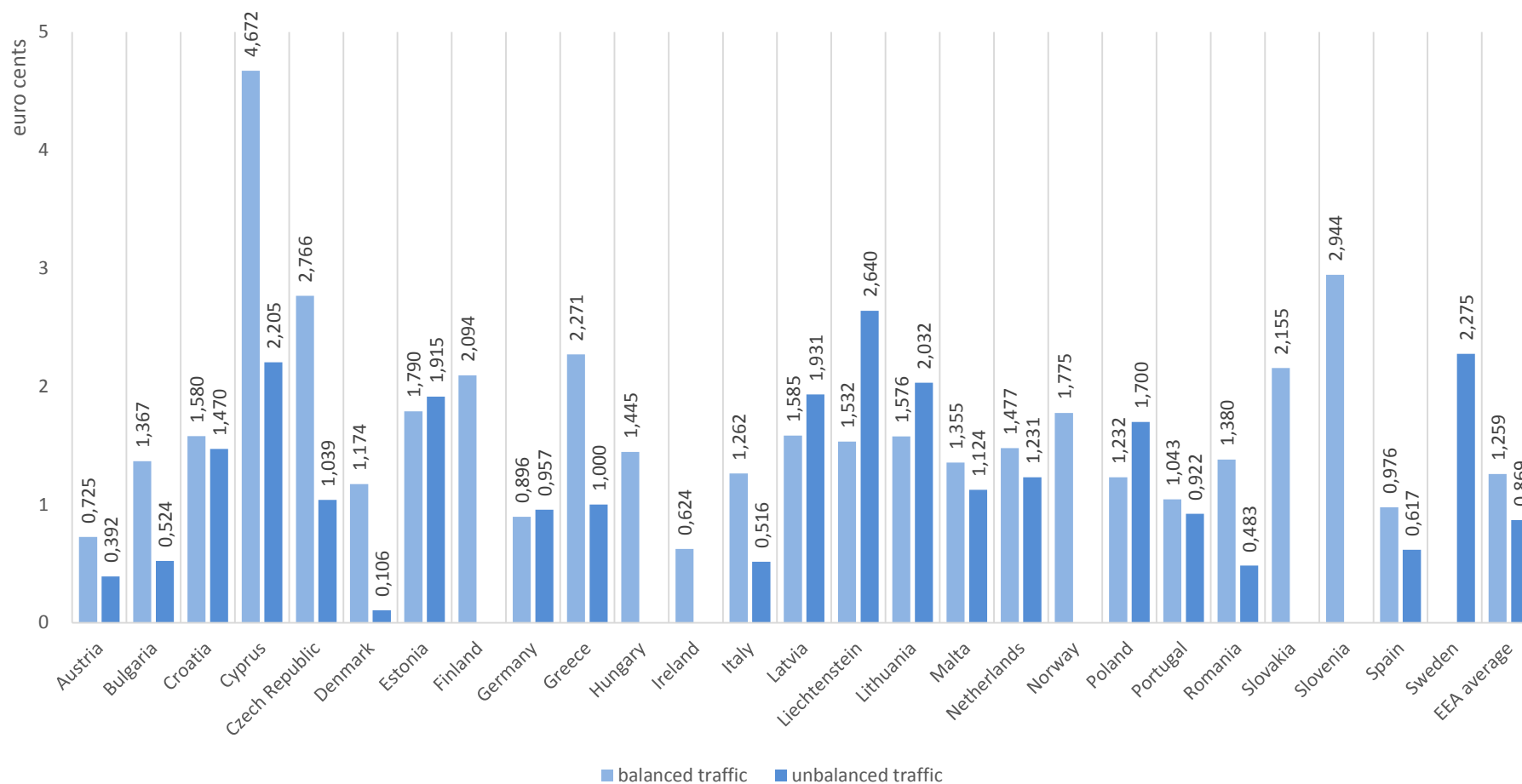
Figure 44: RoW  
Average retail data price per Mb for RoW roaming data services in Q2 and Q3 2016  
(prepaid +postpaid)



EEA average excludes Iceland, Portugal, Spain, Liechtenstein, UK

## **5.2.3.2 Wholesale prices**

Figure 45: Average wholesale data price per Mb in Q2 2016 (prepaid+postpaid) balanced traffic and unbalanced traffic



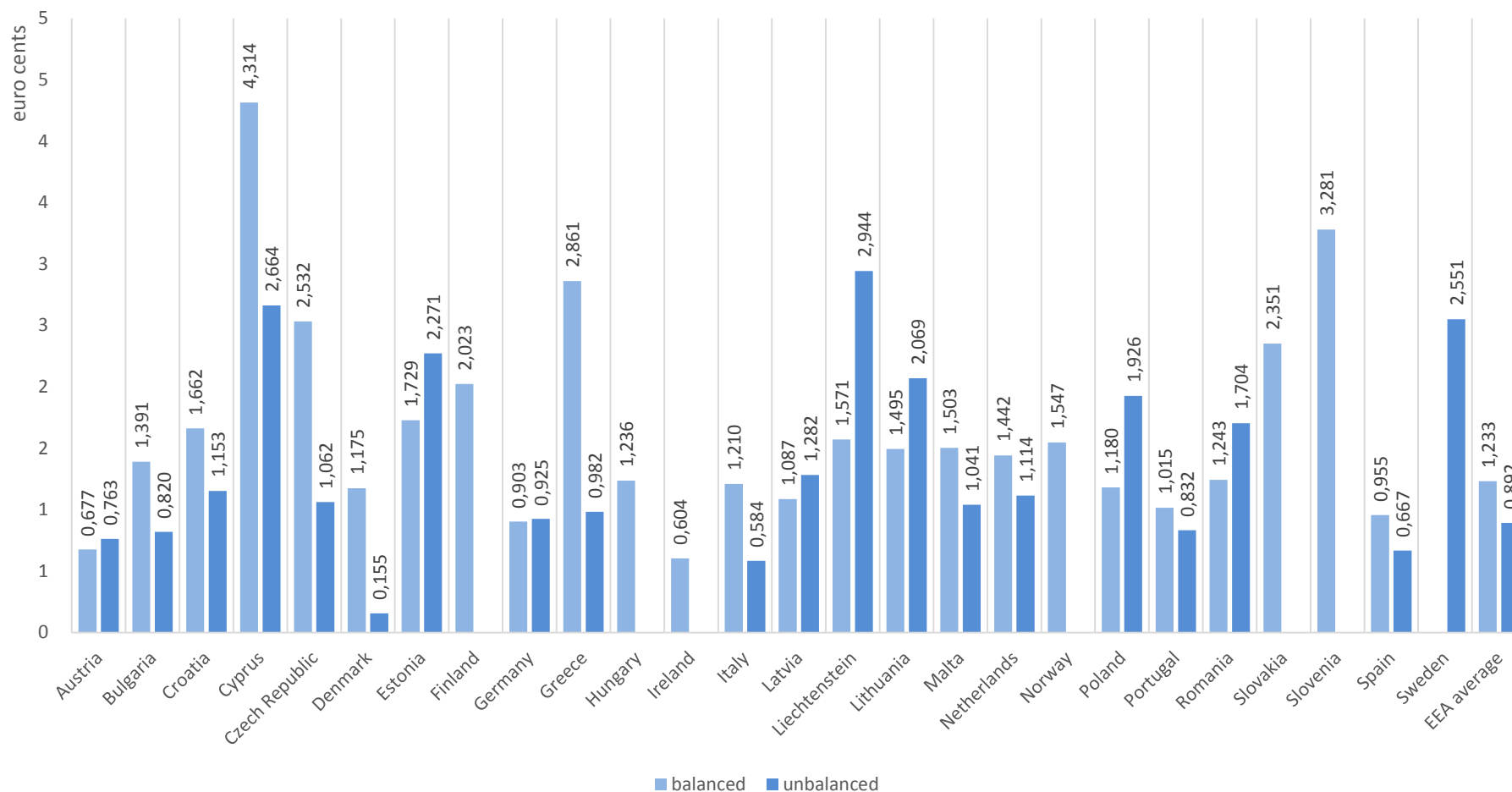
While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Norway: the Q2'16 value is based on data from June 2016, Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 47 and 48

EEA average (balanced traffic) excludes Belgium, France, Iceland, Luxembourg, Sweden, UK

EEA average (unbalanced traffic) Belgium, France, Iceland, Luxembourg, Norway, UK

Figure 46: Average wholesale data price per Mb in Q3 2016 (prepaid+postpaid) balanced and unbalanced traffic



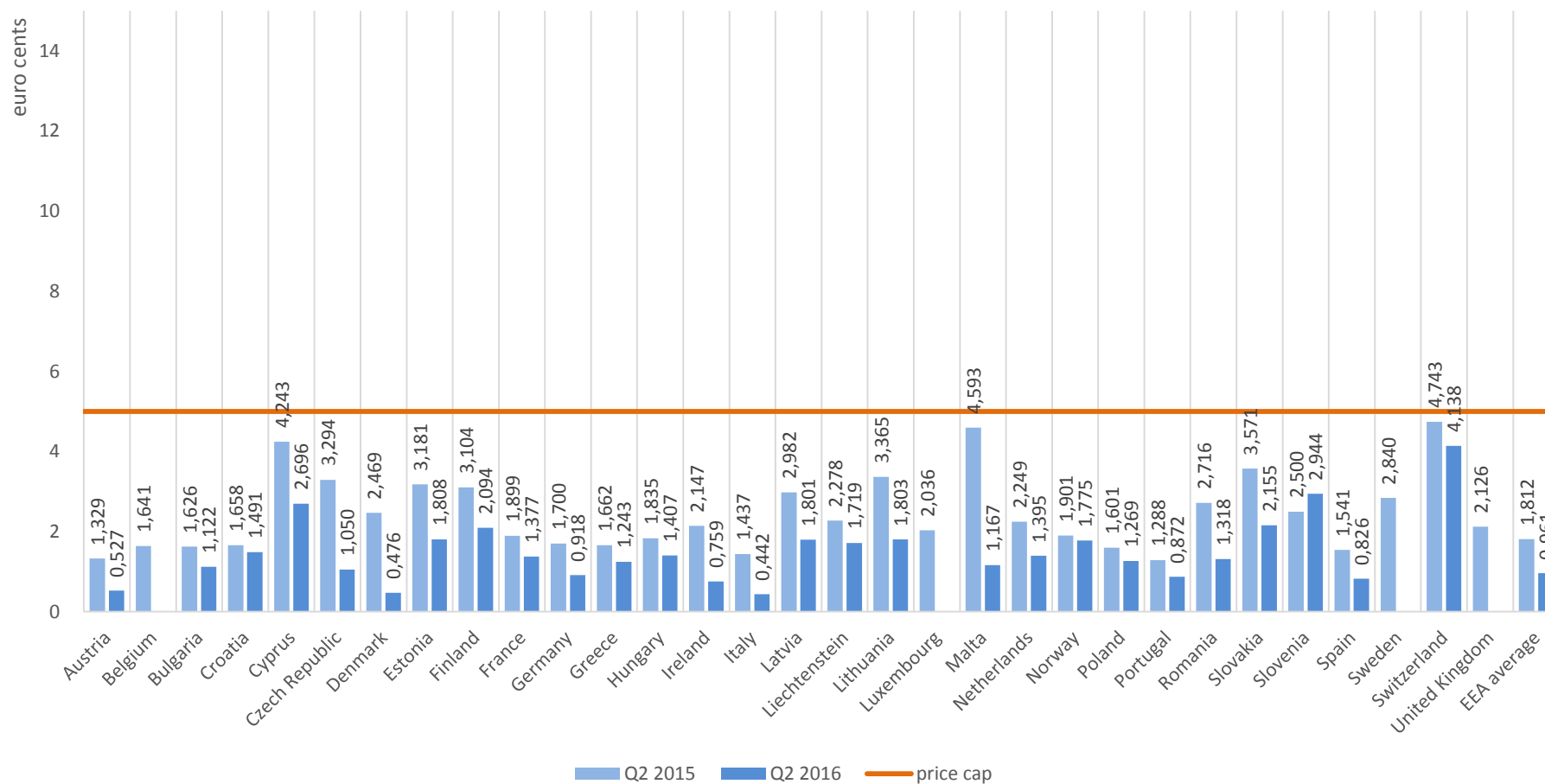
While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 47 and 48

EEA average (balanced traffic) excludes Belgium, France, Iceland, Luxembourg, Sweden, UK

EEA average (unbalanced traffic) Belgium, France, Iceland, Luxembourg, Norway, UK

Figure 47: Average wholesale data price per Mb in Q2 2016 (prepaid+postpaid)  
Total traffic



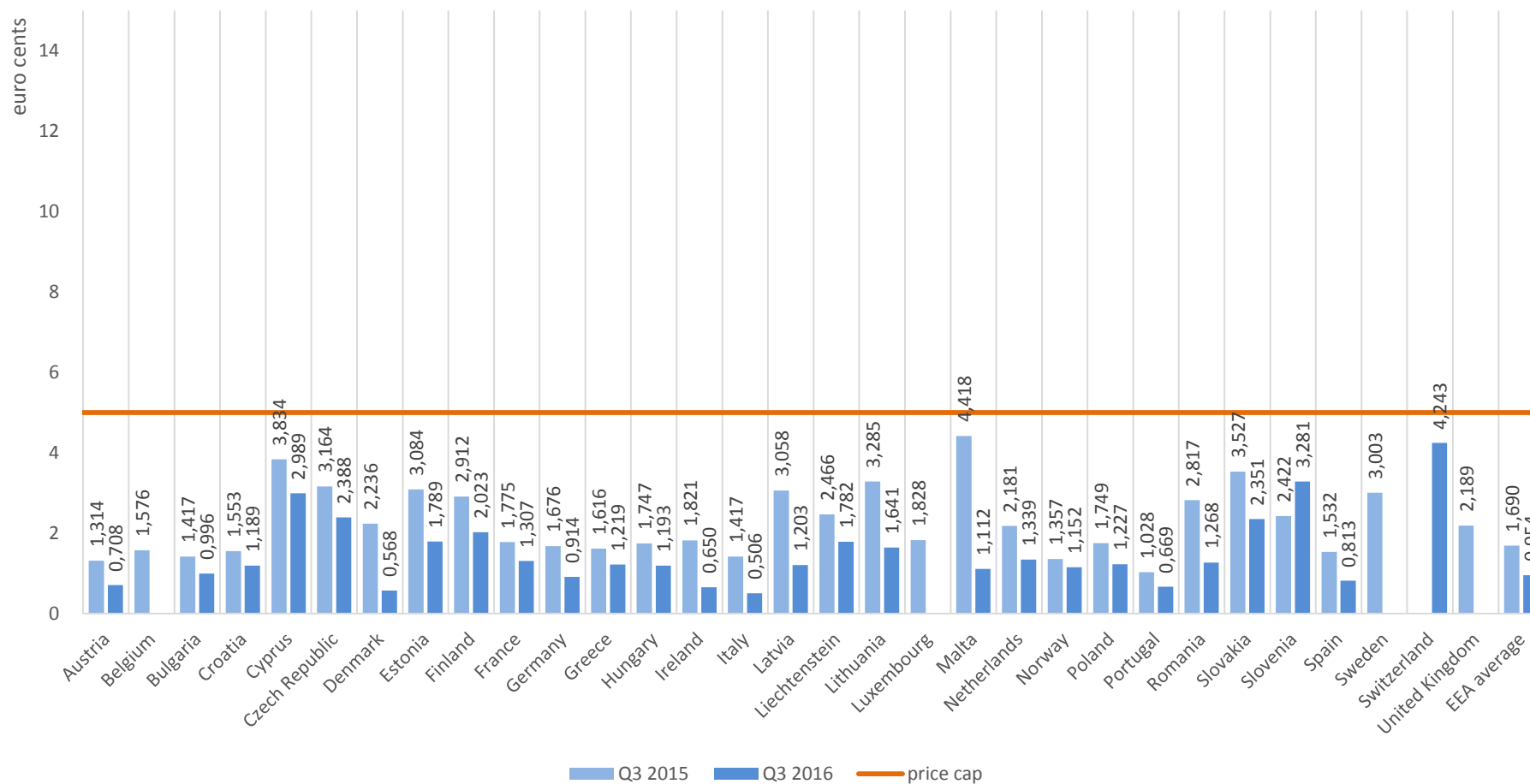
While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Norway: the Q2'16 value is based on data from June 2016,

Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 45 and 46

EEA average (Q2 2016) excludes Belgium, Iceland, Luxembourg, Sweden, UK

Figure 48: Average wholesale data price per Mb in Q3 2016 (prepaid+postpaid)  
Total traffic



While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Ireland, Italy, Portugal: estimates are based on data from different number of operators than estimates in Figure 45 and 46  
EEA average (Q2 2016) excludes Belgium, Iceland, Luxembourg, Sweden, UK

Figure 49: EEA average: average wholesale data price per Mb (prepaid+postpaid)

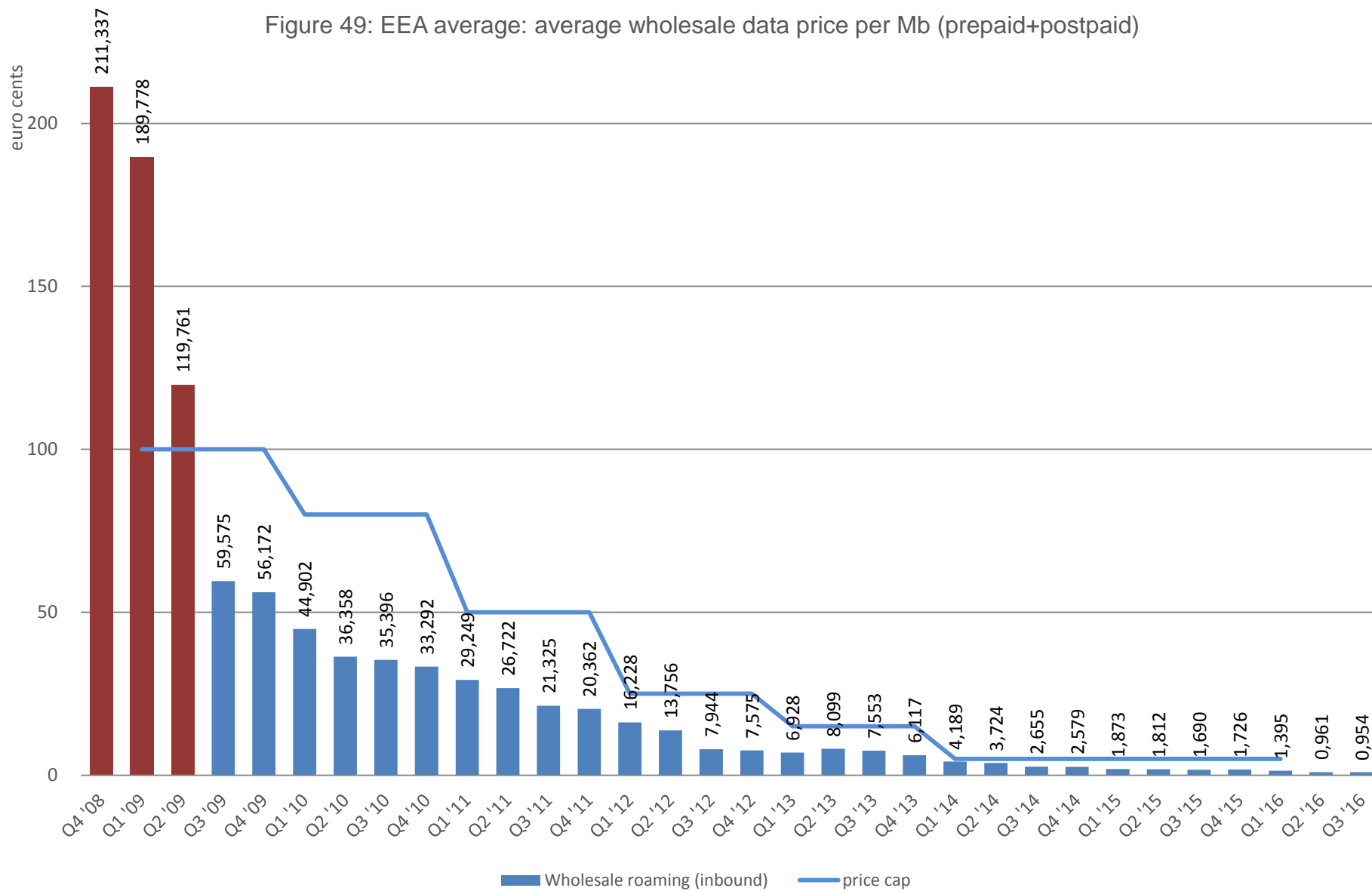




Figure 50: Average wholesale data price per Mb in Q2 and Q3 2016 (prepaid+postpaid)  
RoW traffic

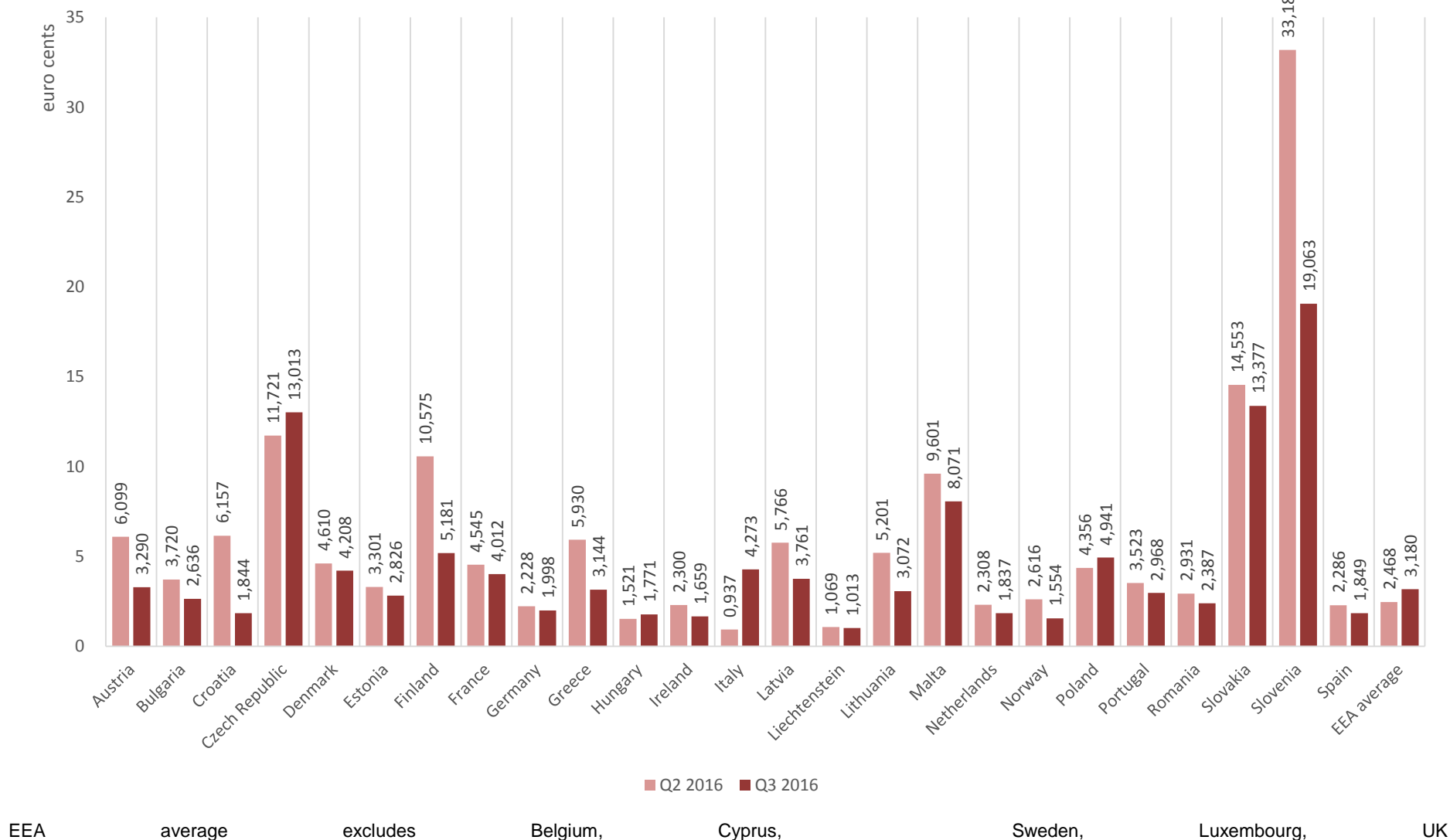


Figure 51: EEA average wholesale data price per Mb in Q2 and Q3 2016  
(prepaid+postpaid) (balanced, unbalanced, total traffic, RoW traffic)

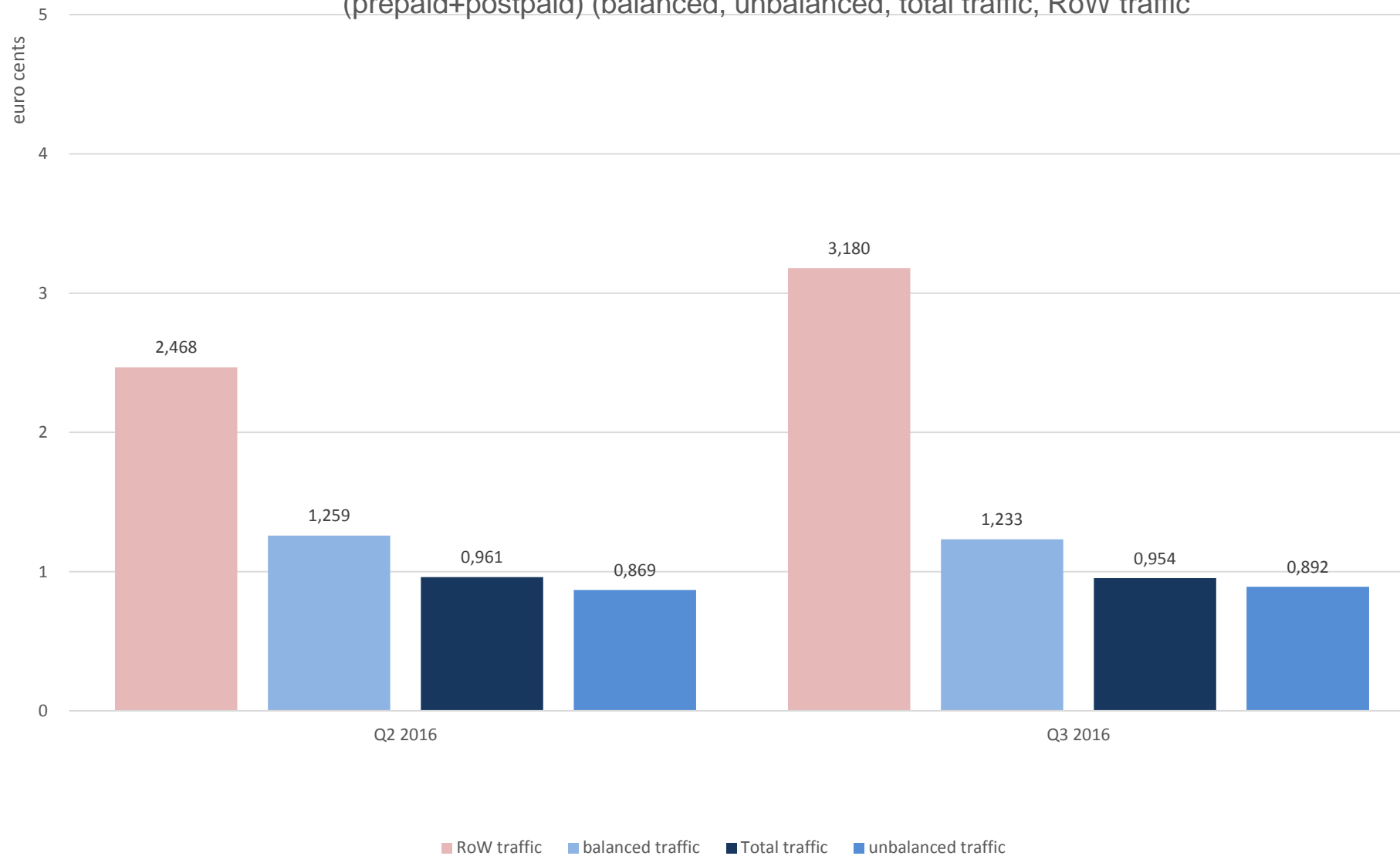
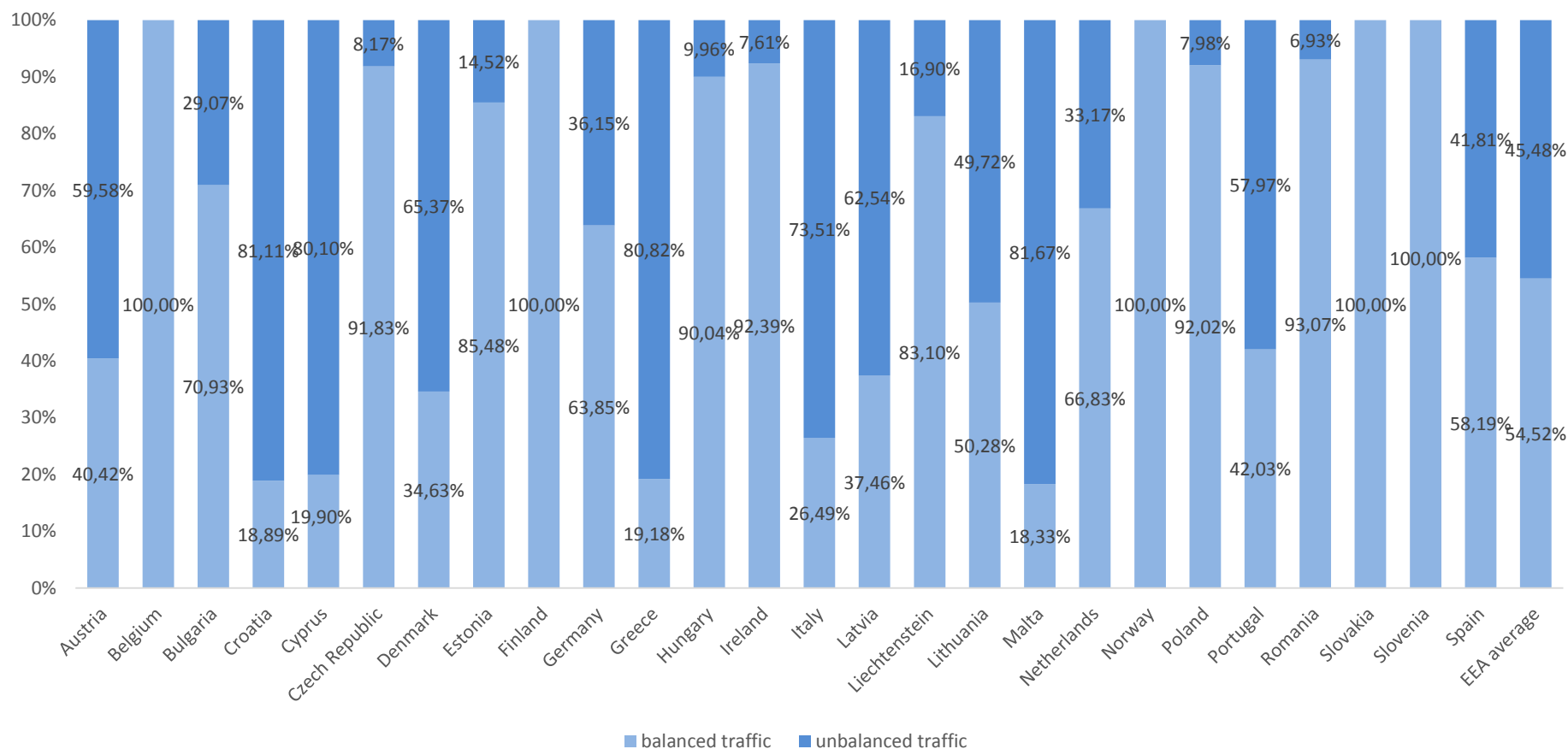


Figure 52: Proportion of balanced/unbalanced traffic within EEA countries  
Wholesale roaming inbound  
Q2 2016

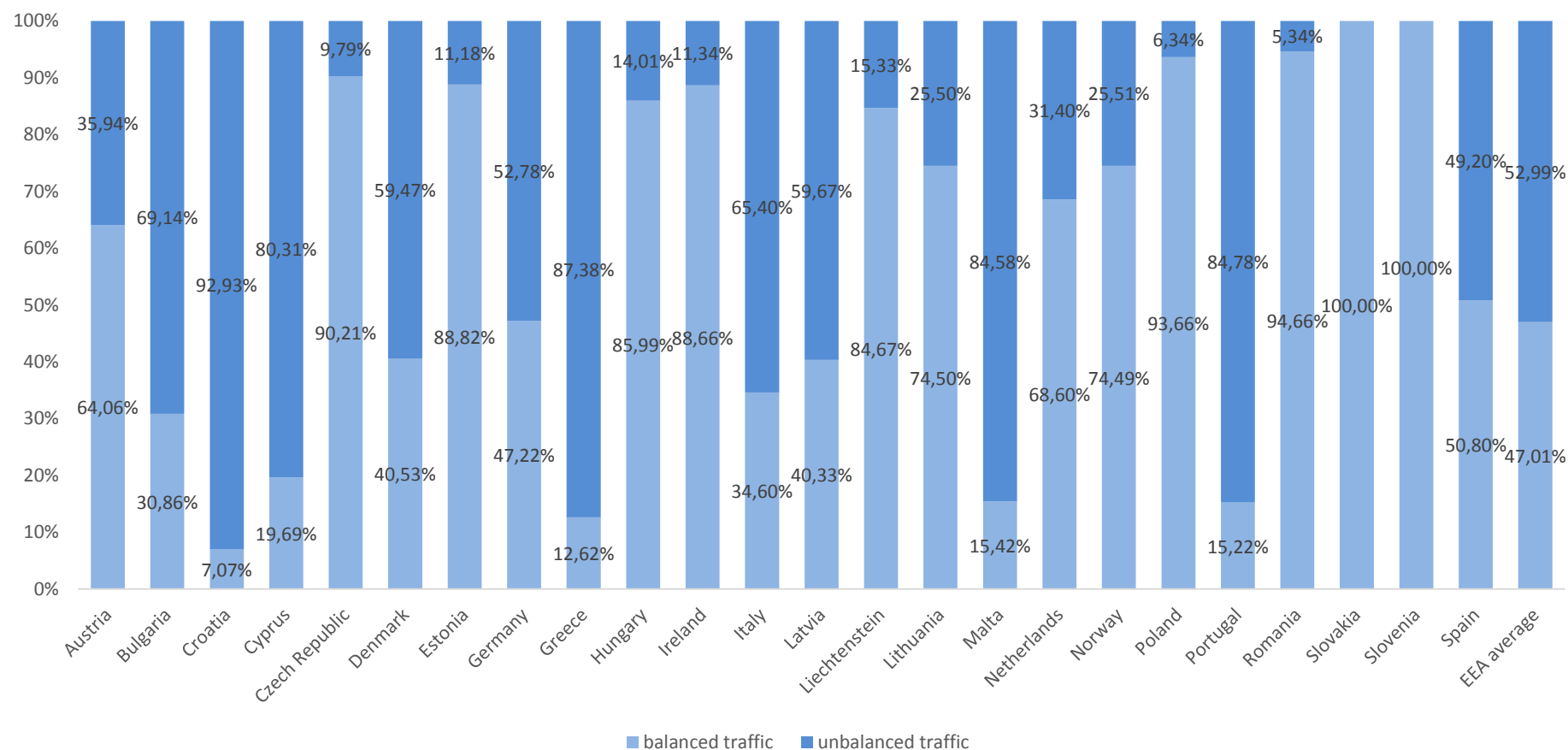


While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Italy: Operators reported that the splitting balanced/unbalanced traffic has been estimated and no accounting/certified information is available, Norway: the Q2'16 value is based on data from June 2016, Portugal: estimates are based on partial information provided by two operators

EEA average excludes Belgium, France, Luxembourg, Sweden, UK

Figure 53: Proportion of balanced/unbalanced traffic within EEA countries  
Wholesale roaming inbound  
Q3 2016



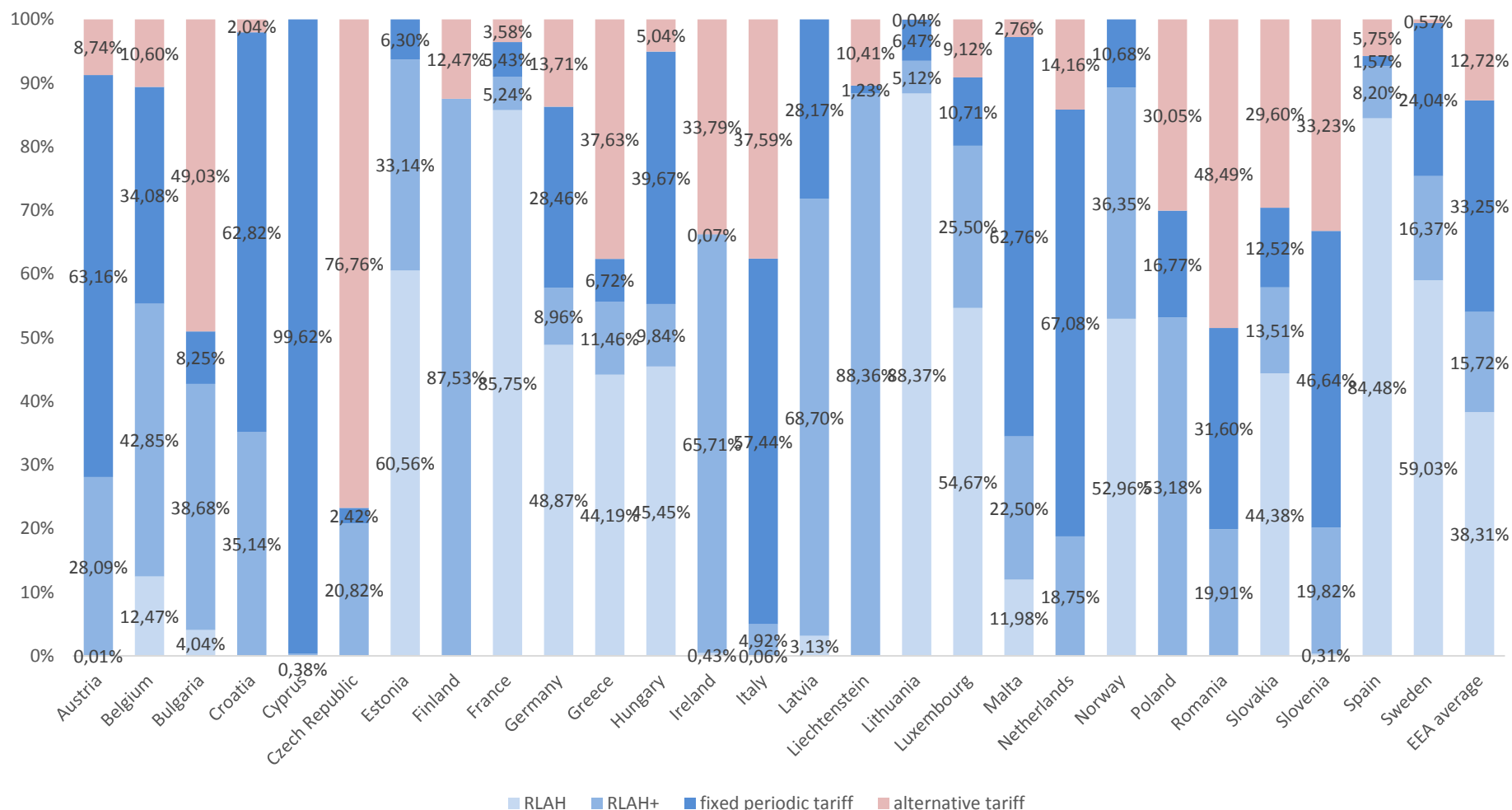
While the measure of balanced/unbalanced traffic should include volumes and revenues from all operators per country, such information is currently available for a limited number of NRAs. For some countries, even if a data set is available, not all operators are included. Please also read carefully Chapter on the methodology for the data collection on page 6.

Italy: Operators reported that the splitting balanced/unbalanced traffic has been estimated and no accounting/certified information is available, Norway: the Q2'16 value is based on data from June 2016, Portugal: estimates are based on partial information provided by two operators

EEA average excludes Belgium, Finland, France, Luxembourg, Sweden, UK

### **5.2.3.3 Consumption patterns**

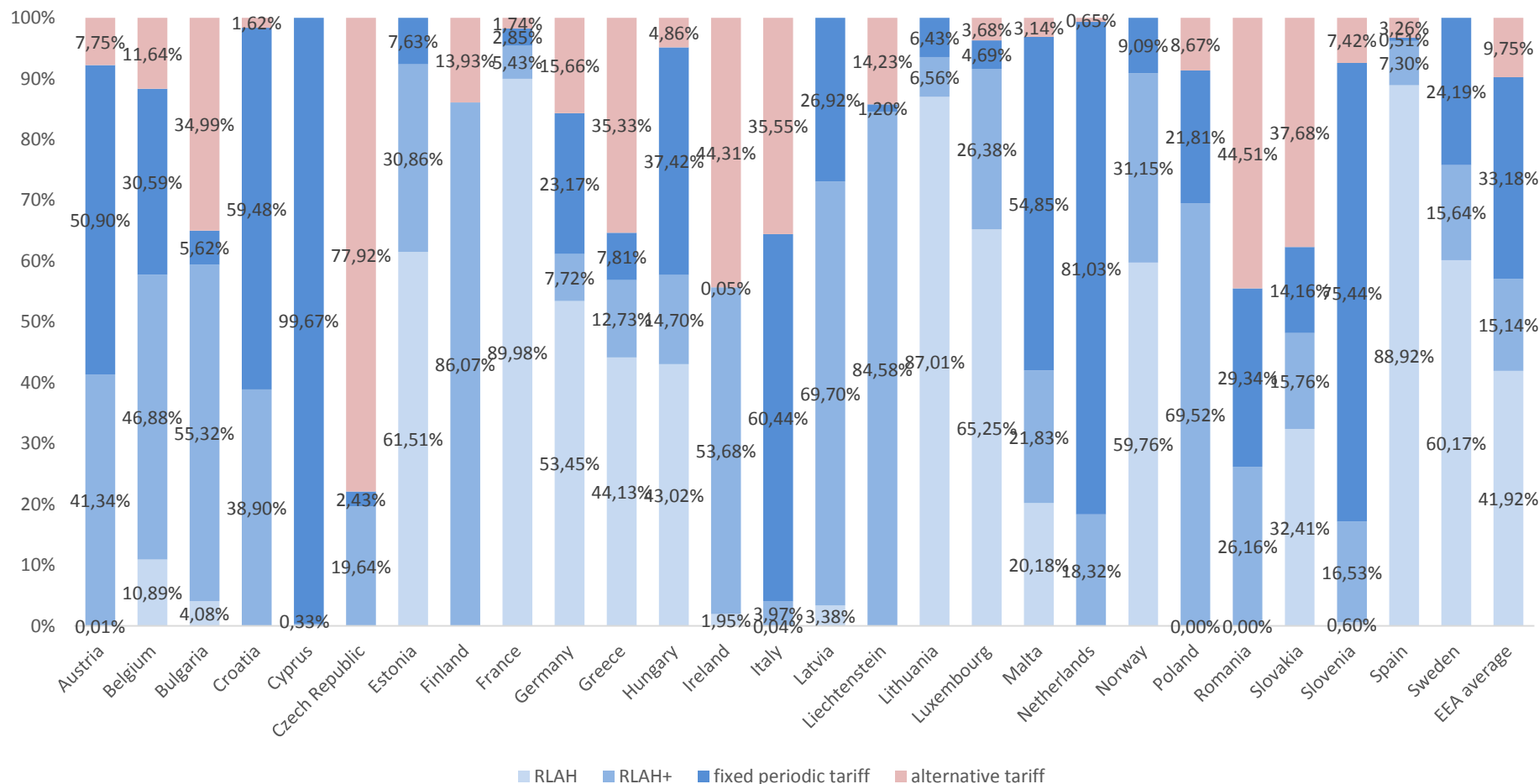
Figure 54: Percentage of retail data roaming services: RLAH, RLAH +, fixed periodic tariff, alternative tariff Q2 2016



EEA average excludes Denmark, Finland, Iceland, Spain, Portugal UK

Finland: fixed periodic tariff data has been combined with alternative tariff data, RLAH has been combined with RLAH+

Figure 55: Percentage of retail data roaming services: RLAH, RLAH +, fixed periodic tariff, alternative tariff, Q3 2016



EEA average excludes Denmark, Finland, Iceland, Spain, Portugal, UK

Finland: fixed periodic tariff data has been combined with alternative tariff data, RLAH has been combined with RLAH+

Figure 56: EEA percentage of data roaming services: RLAH, RLAH+, fixed periodic tariff, alternative tariff (in Gb)

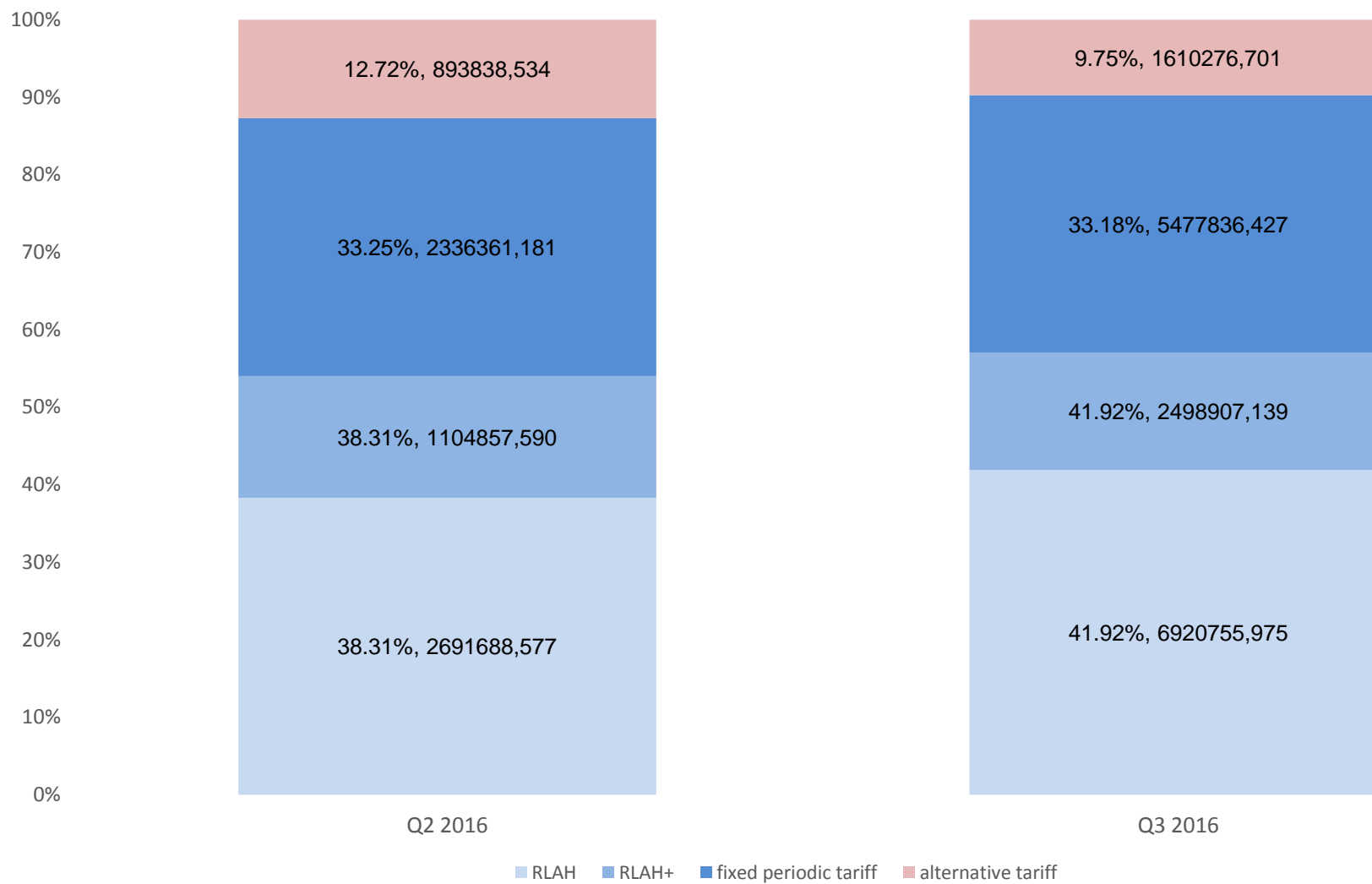
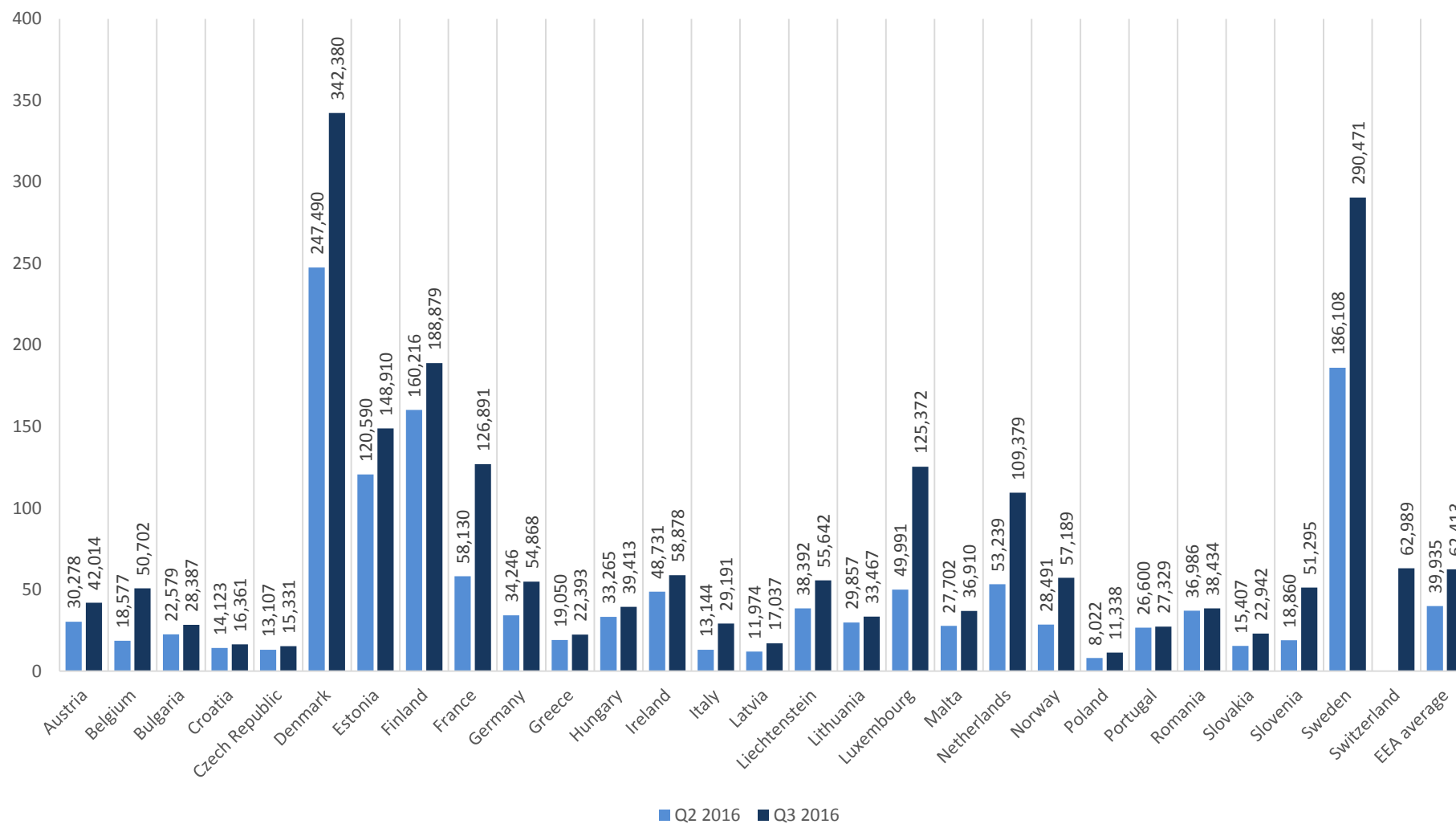




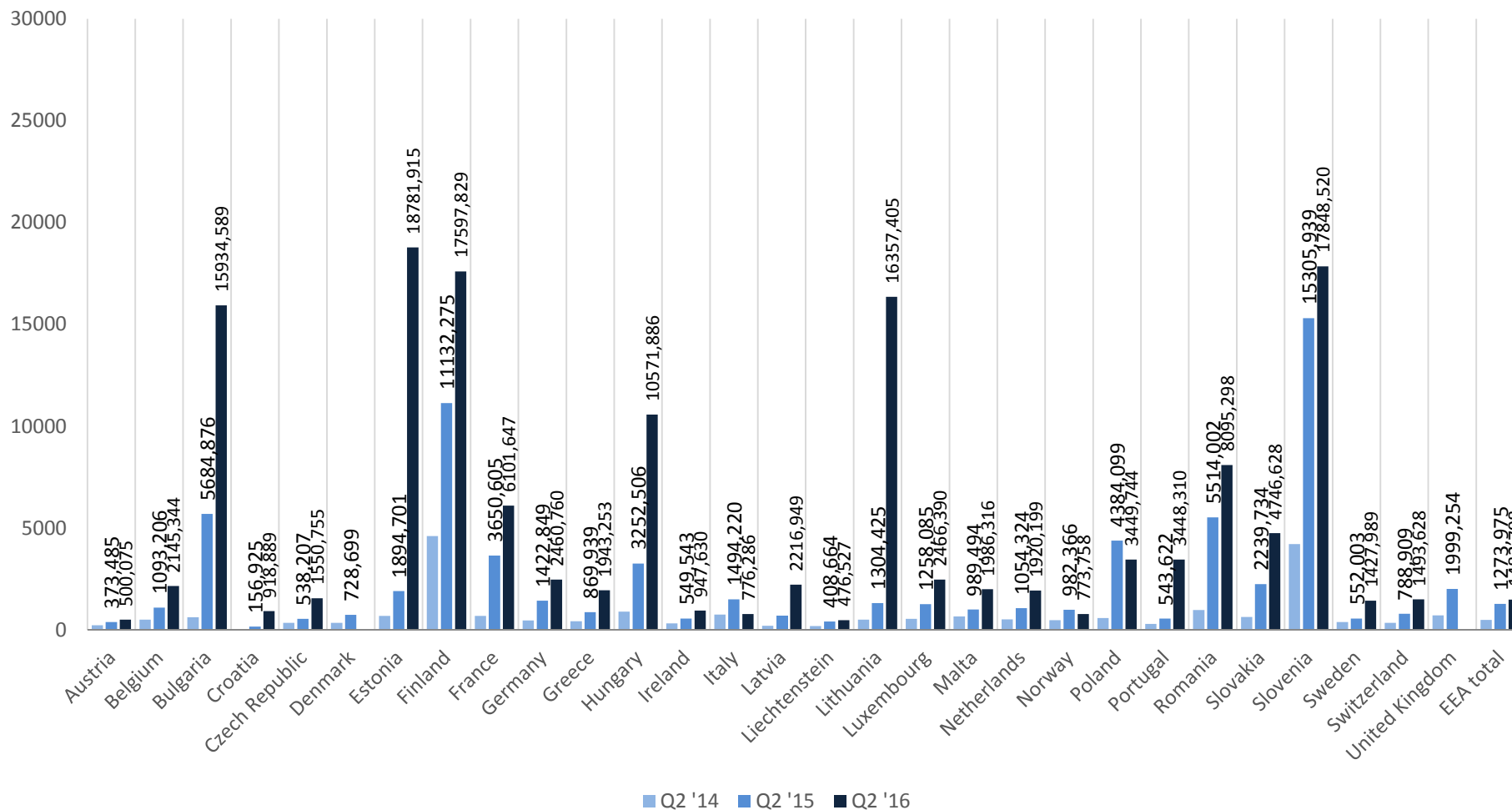
Figure 57: data services  
Average consumption per month per roaming subscriber (in MB)  
Q2 and Q3 2016



Norway: the Q2'16 value is based on data from June 2016

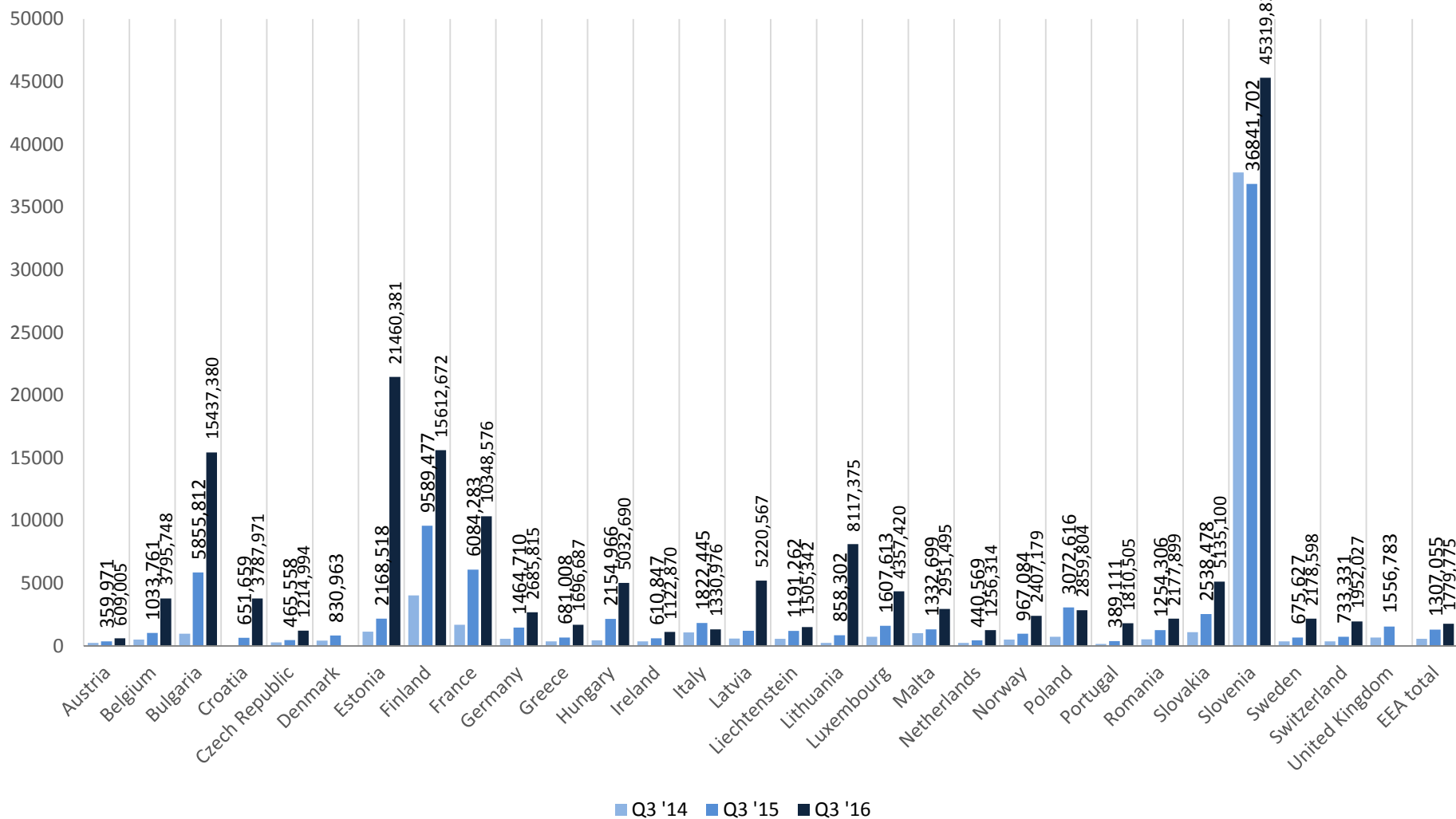
EEA average excludes Cyprus, Iceland, Spain, UK

Figure 58: Retail Data traffic Index, intra-EEA roaming calls in Q2 2016  
(Q2 2012 = 100, Croatia Q2'14 = 100, Liechtenstein Q2'14 = 100)



Norway: the Q2'16 value is based on data from June 2016  
EEA average excludes Cyprus, Denmark, Iceland, Spain, UK

Figure 59: Retail Data traffic Index,  
intra-EEA roaming calls in Q3 2016  
(Q3 2012 = 100, Croatia, Liechtenstein: Q3'13 = 100)



EEA average excludes Cyprus, Denmark, Iceland, Spain, UK

## **5.3. Wholesale roaming (outbound): Agreements applying Article 3 of the Roaming Regulation**

Figure 60: Wholesale averages outbound roaming: Voice: Agreements applying Article 3  
Roaming Regulation

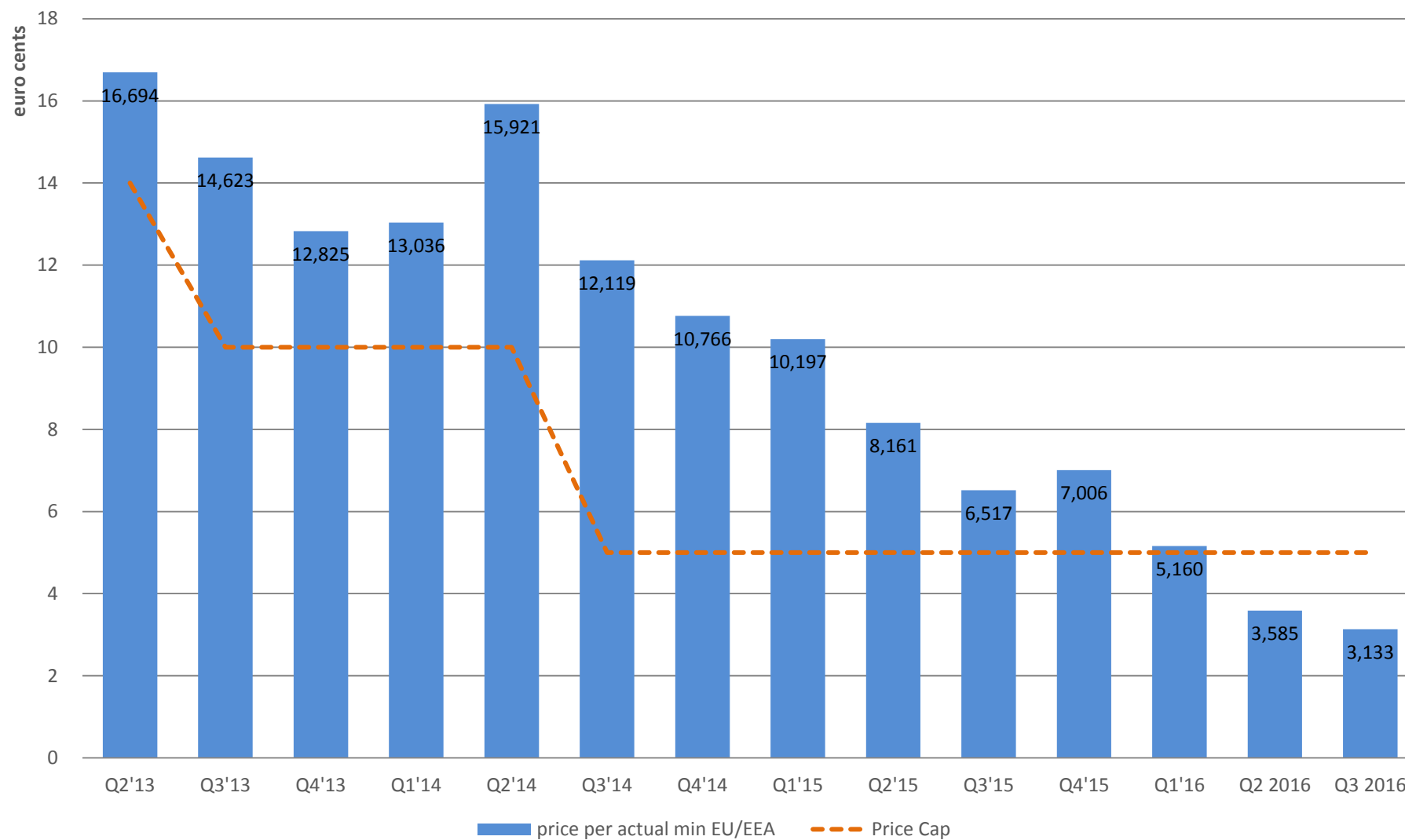


Figure 61: Wholesale averages outbound roaming: SMS Agreements applying Article 3  
Roaming Regulation

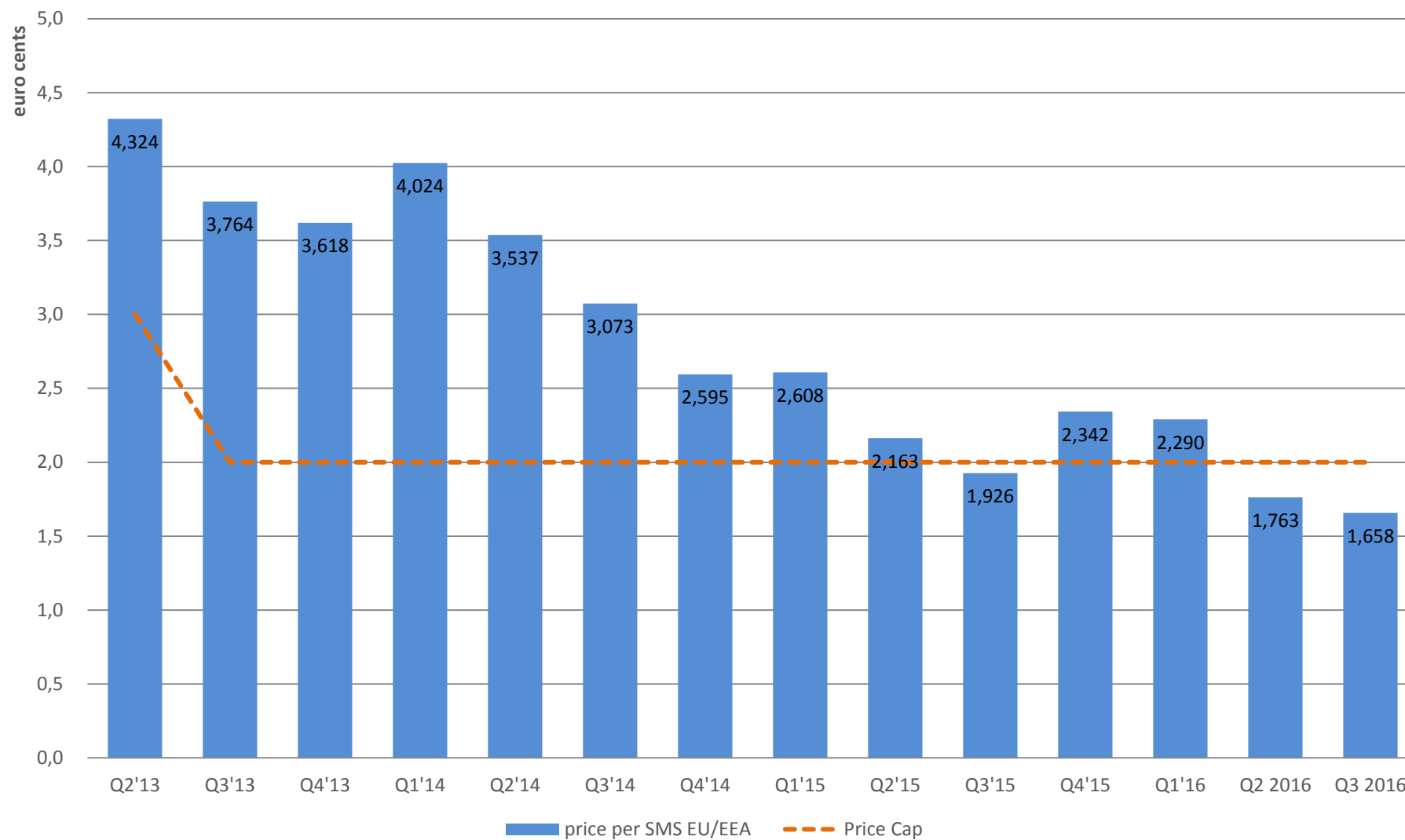
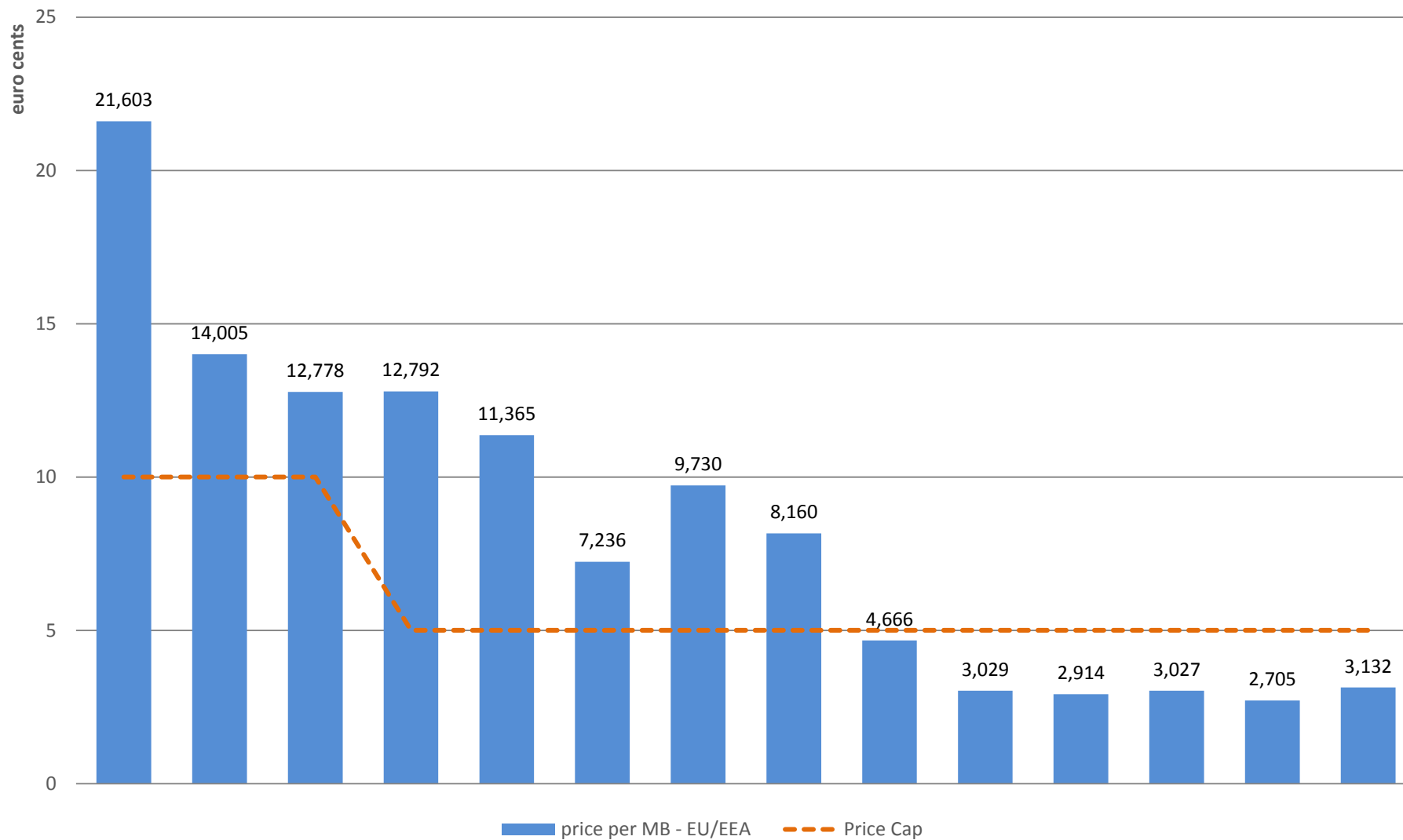


Figure 62: Wholesale EEA average outbound roaming: DATA, Agreements applying Article 3 Roaming Regulation



**List of respondents**

Operators that provided data for the period 1 April – 30 September 2016:

**Austria**

A1 Telekom Austria  
T-Mobile Austria  
Hutchison 3G Austria  
Lycamobile  
HoT Telekom  
Russmedia

**Belgium**

Belgacom Mobile  
KPN Group Belgium (Base)  
Mobistar

**Bulgaria**

Bulgarian Telecommunication Company  
(Vivacom)  
Telenor Bulgaria  
Mobiltel

**Croatia**

Hrvatski Telekom  
Vipnet  
Tele2

**Cyprus**

Cyta  
MTN Cyprus  
Primetel

**Czech Republic**

O2 Family  
Air Telecom  
ČEZ Prodej  
DH Telecom  
O2 Czech Republic  
SAZKA  
TERMS  
Tesco Mobile ČR  
T-Mobile Czech Republic  
Vodafone Czech Republic

**Denmark**

Hi3G Denmark  
TDC  
Telenor  
TeliaDanmark

**Estonia**

AS EMT  
Elisa Eesti  
OÜ Top Connect  
TELE 2 Eesti

**Finland**

Ålands Telekommunikation  
DNA  
Elisa Corporation  
TeliaSonera Finland

**France**

SFR  
Bouygues Telecom  
Orange Caraïbe  
Orange France  
Free Mobile  
EI Telecom  
Lycamobile  
SRR

**Germany**

E-Plus Mobilfunk  
Telefónica Germany  
Telekom Deutschland  
Vodafone D2

**Greece**

COSMOTE Mobile  
Vodafone Panafon  
Wind HellasTelecommunications  
CYTA HELLAS TILEPIKINONIAKI SA

**Hungary**

Telenor Magyarország  
T-Mobile  
Vodafone Magyarország



UPC Mobile

**Iceland**

Nova  
Síminn  
Vodafone Iceland

**Ireland**

Eircom Limited/E Mobile  
Hutchison 3G Ireland  
Meteor Mobile Communications  
Telefónica Ireland Limited/(O2)  
Tesco Mobile Ireland  
Vodafone Ireland

**Italy**

Coop Voce  
Digi Italy  
ERG Mobile  
Fastweb  
Green  
H3G Italia  
Lycamobile  
Poste Mobile  
Telecom Italia  
Tiscali Italia  
Vodafone  
Wind Telecomunicazioni

**Latvia**

Bite Latvia  
LatvijasMobilaisTelefons  
Tele2

**Liechtenstein**

Salt (Liechtenstein)  
Telecom Liechtenstein  
Swisscom (Schweiz)

**Lithuania**

BitėLietuva  
Eurocom  
Omnitel  
Tele2  
Teledema

**Luxembourg**

Entreprise des postes et télécommunications

Post Télécom

Tango  
Orange Communications Luxembourg  
Luxembourg Online Mobile  
Transatel Lux.

**Malta**

Melita Mobile  
Mobisle Communications (GO Mobile)  
RedtouchFone  
Vodafone Malta  
YOM

**Netherlands**

KPN  
Lebara  
Lycamobile Distribution  
Tele2 Netherlands  
T-Mobile Netherlands  
Vodafone Libertel

**Norway**

Lycamobile  
Phonero  
Telenor  
TeliaSonera Norge

**Poland**

P4  
Polkomtel  
T-Mobile Polska  
Orange Polska

**Portugal**

CTT – Correios de Portugal  
NOS Comunicações, S.A  
MEO – Serviços de Comunicações e Multimédia,S.A.  
Vodafone Portugal – Comunicações Pessoais.S.A.  
LycaMobile Portugal,Lda  
Mundio Mobile (Portugal) Limited (on the 23rd of March 2017 Mundio Mobile (Portugal) Limited changed its social designation to Vectone Mobile (Portugal) Limited)  
NOWO Communications, S.A  
ONITELECOM - Infocomunicações, S.A.

**Romania**

Telekom RMC  
Orange Romania  
RCS&RDS  
Vodafone Romania  
Telekom RC  
Lycamobile

**Slovak Republic**

O2 Slovakia  
Orange Slovensko  
Slovak Telekom  
SWAN Mobile

**Slovenia**

Telekom Slovenije  
Si.mobil  
Telemach  
T-2  
Izi mobil  
Mega M

**Spain**

Euskaltel  
Orange  
TelefónicaMóviles de España  
Vodafone  
Yoigo

**Sweden**

Hi3G Access  
Telenor Sverige  
TeliaSonera  
Tele2 Sverige

**Switzerland**

Orange Communications  
Sunrise Communications  
Swisscom (Schweiz)

**United Kingdom**

3 UK  
O2 UK  
Everything Everywhere  
Vodafone UK  
Tesco Mobile  
Virgin Mobil