Body of European Regulators
for Electronic Communications

BEREC

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International Roaming
BEREC Benchmark Data Report
April 2013 – September 2013

February 2014

Contents

Executive summary

This BEREC Benchmark Report on International Roaming (the "Report") presents the results of the twelfth 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 2013 – 30 September 2013, i.e. quarters 2 & 3 2013. 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 quarter 2nd 2007, when the Roaming Regulation was about to enter into force.

The applicable regulatory framework for this data collection is the Roaming Regulation (EU) No 531/2012 (Third Roaming Regulation) applied in the EU (European Union) and the EEA EFTA countries[1], with requirements for retail and wholesale regulated tariffs for voice, SMS and data roaming. In addition, Switzerland contributed to the data collections, although the 2007, 2009 and 2012 Roaming Regulation is not applicable there[2].

BEREC is required regularly to collect data from national regulatory authorities on the development of retail and wholesale charges for voice, SMS and data roaming services and to notify those data to the Commission under the Roaming Regulation – Article 19 paragraph 4.

BEREC believes that the information collected in existing and subsequent reports provides a sound basis for any decisions regarding future regulation. In addition, BEREC considers it important to collect and publish a wider range of information in order to give a better picture of the effect of the EU Roaming Regulation and to present the evolution of roaming services.

While the monitoring obligations are addressed to individual NRAs, BEREC considers that it can add value 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 is received from a single source and, following data processing;
- Coordinating the actions 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;
- As far as possible, providing 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.

[1] For the purposes of this Report, 'EEA EFTA' (European Economic Area, European Free Trade Association) refers to Liechtenstein, Norway and Iceland.

[2] Figures from Switzerland are excluded from both "EEA" and "EEA EFTA" averages.

Introduction

The European Regulators Group (ERG) initially worked on the long-standing issue of high prices for international roaming services. Following its creation in January 2010, the Body of European Regulators in Electronic Communications (BEREC) has taken over responsibility for this work from ERG.

The 2007 Regulation

In 2005, ERG undertook a study of 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 voice calls for the 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[3].

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,[4] 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[5,6].

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

And from July 2010 to June 2012:

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

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[3] In Norway and Iceland the 2007 Regulation was in force from the end of 2007 to quarter 2 2010

[4] http://ec.europa.eu/information_society/activities/roaming/docs/regulation/reg_en.pdf

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

[6] From quarter 3 2009 to quarter 1 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.

The 2012 Regulation

On 29 June 2010, the Commission published an interim Report[7] on the functioning of the 2009 Regulation. The Commission's Digital Agenda for Europe[8] 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[9], supplemented by its February 2011 response to the Commission's public consultation[10].

The Commission then published a full review of the functioning of the Regulation and legislative proposals for a new Regulation in July 2011[11].

On 30 May 2012 the Council of the European Union (EU) approved the International Roaming Regulation III[12], which entered into force on 1 July 2012[13].

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

- an extension of wholesale and retail price regulation for voice andSMS with yearly decreases in the levels of the caps until July 2014 with those caps to remain in force until July 2022 for wholesale services and until July 2017 for the Eurotariffs subject to a further review in July 2016;

- price regulation of data roaming services at the retail level with a yearly decrease in the level of the cap until July 2014 with the cap to remain be in force until July 2017 subject to a further review in July 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 that will enter into force on 1 July 2014.

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7 http://ec.europa.eu/information_society/activities/roaming/docs/interim_report2010.pdf
8 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0245:FIN:EN:PDF
9 http://erg.eu.int/doc/berec/bor_10_58.pdf
10 http://ec.europa.eu/information_society/activities/roaming/docs/cons11/Berec.pdf
11 http://ec.europa.eu/information_society/activities/roaming/index_en.htm
12 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:172:0010:0035:EN:PDF
13 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.

Methodology for data collection

ERG first consulted on a draft version of its data questionnaire during September 2007. Following comments received, ERG amended the data questionnaire sent to providers, with an accompanying Explanatory Memorandum, in October 2007.

In order to verify operators' compliance with the new Roaming III Regulation, BEREC updated the questionnaire. NRAs and the Commission have been informally consulted on subsequent revisions of the template.

The information gathered for this Report covers both retail and wholesale prices and volumes for voice, SMS and data roaming services. Each NRA aggregated individual provider data to provide a national aggregate to BEREC. Therefore, only national aggregated data appears in this Report.

Over 150 providers of international roaming services provided information for this Report. These include virtually all of the mobile network operators in the EU, as well as a significant number of MVNOs that provide EU roaming services. BEREC estimates that this covers around 95% of EU consumers using international roaming services today.

There is a limited number of operators that have some problems supplying reasonable quality data. 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 will be necessary to comply with the new format of the data collection, the company was asked to provide the best possible estimate currently available and to complete upgrades in time to provide high quality data in future.

The prices for the Eurotariff may exceed the price caps due to the 30 second minimum initial charging interval and in some cases non-regulated calls have been included due to problems with reporting.

Some operators had problems in making the split between EU countries and other European countries and this may affect some graphs showing the surcharge as a result of billed minutes for intra-EEA roaming voice calls.

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 price 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 is an annual price and not per quarter, and in such cases some quarters compensate for other quarters. 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 EU, 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.

With regard to wholesale roaming resale access according to Article 3 para. 4 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 para. 1. Some data also includes 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). In one case annexes to contracts signed by the MNO with its MVNO/ MVNE, which introduce (among others aspects) new maximum rates under EU regulation, were agreed between the parties and currently are in the signing process. Once the annexes have been signed, the regulated rates will be retroactively (i.e. from 01.07.2013) adjusted to the co-operation.

In the case of EEA countries, the Roaming Regulation applies in these countries as of 7 December (Norway and Liechtenstein) and 21 December (Iceland) 2012.

For the first time the Report includes data from Croatia where the Roaming Regulation applies as of 1 July 2013 as historical data are not available.

Main Findings

The information gathered by BEREC continues to show a good level of compliance with the Roaming Regulation in all EU Member States. At the retail level, all consumers have access to a Euro-Voice-, Euro-data- and a Euro-SMS-tariff. 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. The reasons for most such cases are explained in the Methodology Chapter.

NRAs are monitoring compliance with the provisions of the Regulation to gather further information on the possible reasons for higher reported prices than the caps. BEREC will keep monitoring this issue closely. During the data collection period, the applicable caps were:

Service and Price Cap - Retail level (ex VAT)	Q2 2013	Q3 2013
Eurotariff voice (making call) (€c/minute)	29	24
Eurotariff voice (receiving call) €c/minute)	8	7
Euro-SMS sent (€c/SMS)	9	8
Euro-SMS received (€c/SMS)	0	0
Data transfer (€c/MB)	70	45

Service and Price Cap - wholesale level, inbound (ex VAT)	Q 2 2013	Q3 2013
Wholesale voice (€c/minute)	14	10
Wholesale SMS (€c/SMS)	3	2
Wholesale data (€c/MB)	25	15

Evolution of prices

In general, average Eurotariff retail voice roaming rates (see Figures 1 - 3) remained fairly close to the regulated caps in most EU Member States during the data collection period. For calls made, the EU average Eurotariff was €0.262 in Q2 2013 and 0.217 in Q3 2013 compared to a cap of €0.29 and €0.24 respectively. In Q2 and Q3 2013, the EU average unregulated voice tariff for calls made (Figures 1 - 3) was lower than during the equivalent period in 2012 (€0.307 and 0.283 compared to 0.359 and 0.330 Q2/Q3 2012).

For calls received, the EU average Eurotariff rate was nearer the cap at €0.071 during Q2 2013 and €0.062 in Q3 2013, compared to a cap of €0.08 and €0.07. For calls received, unregulated prices were lower in Q2 and Q3 2013 than in Q2/Q3 2012 (€0.125 and €0.129 compared to €0.143 and €0.142 in the same periods).

As can be seen in Figure 3 and 6, the nature of the difference in the average EEA price for regulated and unregulated voice prices has changed over time. Since 2010 the tariffs for alternative tariffs have been higher than for Eurotariffs. The price for Eurotariffs has been steadily lowered, while the price of alternative tariffs has been more stable despite the changes in the roaming market.

Considering ‘Rest of World’ retail voice roaming calls (Figures 20 - 24), typical prices are significantly higher than for calls within EU countries. Comparing the same quarters of 2012 and 2013, while there is no consistent trend in average country prices for calls made or received, the average for all EU-based providers has decreased. There are no indications that operators have in general tended to raise the prices of unregulated ‘Rest of World’ roaming calls to make up for loss of revenue due to lower regulated price caps.

Regarding the effects of standardisation of billing units for Eurotariff calls (Figures 12 - 13), the 2012 Regulation (the mechanism introduced in the amended 2009 Regulation) requires per second billing for Eurotariff calls made, with the possibility of charging for an initial minimum period of up to 30 seconds to cover the costs of setting up the call. This has led to a significant drop in the EU average surcharge for calls made, from around 21% in Q2 2009 to 4.55% in Q3 2013.

The introduction of the Euro-SMS in the EU in accordance with the 2009 Regulation continued in the 2012 Regulation and has led to an EU average Euro-SMS price (Figures 25 - 26) of around €0.081 in Q2 2013 and €0.072 in Q3 2013, compared to a regulated cap of €0.09 and €0.08. The EU average price for unregulated SMS is higher at average at €0.10 in the same periods. Before the 2009 Regulation, the EU average SMS price was around €0.27 - €0.24 (Q1 – Q2 2009).

At the wholesale level, the 2012 Regulation has led to a reduction in the average EU SMS price (Figures 28-29) to €0.023 in Q2 2013 and 0.019 in Q3 2013. In comparison, the EU average price was €0.136 - €0.133 in Q1 – Q2 2009, before the 2009 Regulation came into force.

The 2012 Regulation introduced new retail price caps for data services (€0.70 in Q2 2013 and €0.45 in Q3 2013). This has led to a drop in retail prices (Figures 33 – 34). There is a significant difference between the prices for non-group retail data services in 2011 and the data Eurotariff in 2012/Q3 2013: €1,923 in Q2 2011, €1.583 in Q3 2011 comparing to €0.188

and € 0.222 in the same quarters Q2/Q3/2013 for the Eurotariff. In Q3 2013 alternative tariffs were cheaper than the Eurotariff for the first time.

At the wholesale level, an average data cap of €0.25 in Q2 2013 and €0.15 in Q3 2013 applies in the EU under the 2012 Regulation. The EU average price for non-group wholesale data (Figures 36-37) has fallen to €0.081 per MB in Q1 2013 and €0.076 per MB in Q3 2013, compared with an EU average of €1.20 in Q2 2009, just before the Regulation came into effect.

In the case of wholesale agreements based on Article 3 of the Roaming Regulation, only some operators submitted the data. BEREC's International Roaming Compliance Report[14] showed that operators negotiate roaming services at the wholesale level individually and that the provision of such services is based on commercial agreements. Some light MVNOs as well as resellers stated that these services continue to be provided on the basis of the existing contracts with national host MNOs.

Evolution of volumes

Regarding EU volumes on voice, SMS and data roaming services (Figures: 16-19, 31-32 and 39-40), one particular issue stands out which isthe significant difference between these services. While volumes for voice and SMS services remain almost at the same level (the graphs show a slight increase in volumes for SMS and calls received, whereas calls made has remained at roughly the same level since 2009), data services peak each year (up to around 103,44% in Q3 2013 compared to Q3 2012). It should be noted that the results displayed in the charts might take into account values from 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.

Evidence of market forces at work

For voice roaming services, average EEA prices are close to the regulated caps. This suggests that providers see little attraction in competing on Eurotariff rates, despite the fact that there is a significant margin between typical wholesale prices and retail caps.

BEREC notes in this benchmark exercise that the European average price paid per minute for voice calls under alternative tariffs was not, as would be expected, below the average price for the Eurotariff. These results were also reported in the previous Benchmark Reports. Moreover the gap widened, especially for incoming calls. One reason could be that for incoming calls, operators have higher billing intervals (than per second billing for the Eurotariff).

This is clearly illustrated in Figures 5-7. In almost half of the Member States, the national average price for incoming calls for alternative tariffs is significantly above the Eurotariff average price (a factor of 2 is typical for those Member States).

The Eurotariffs account for the majority of voice and SMS traffic. Nevertheless customers opt for these alternative tariffs and in the third quarter of 2013, 33% of calls made and 28% of

[14] 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

calls received were based on non Eurotariffs. For text messages sent while roaming within EEA countries, unregulated non-Euro SMS tariffs accounted for 14% of the total volume.

There is a significant difference in the case of data roaming services. Only 47% of data traffic was based on the euro-data tariff while roaming in Q3 2013[15]. The BEREC Report on Transparency and Comparability of International Roaming Tariffs[16] showed that a large number of operators offer a variety of packages of roaming data services.

[15] 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.

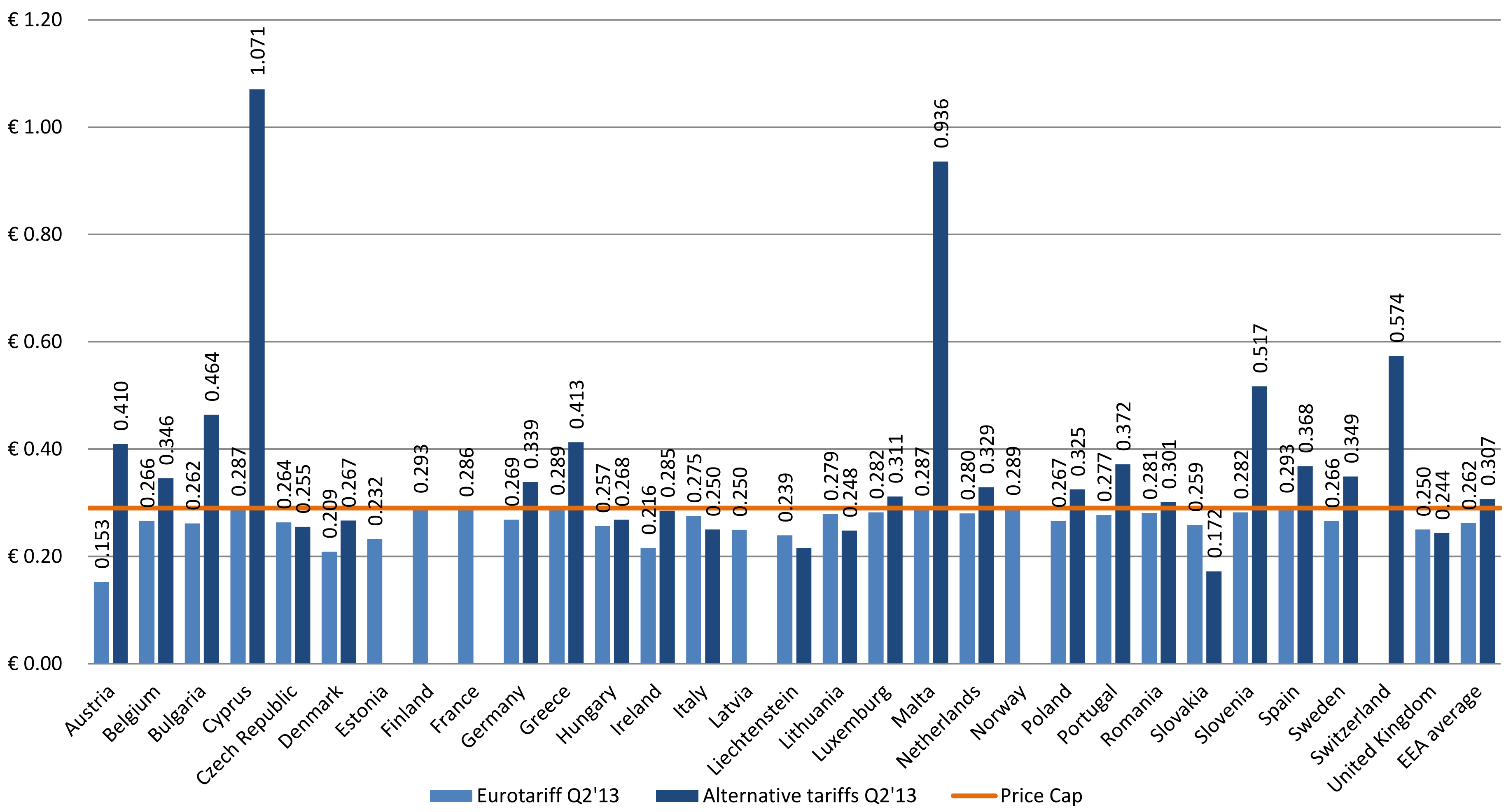
[16] http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/3903-report-on-transparency-and-comparability-of-international-roaming-tariffs

Charts

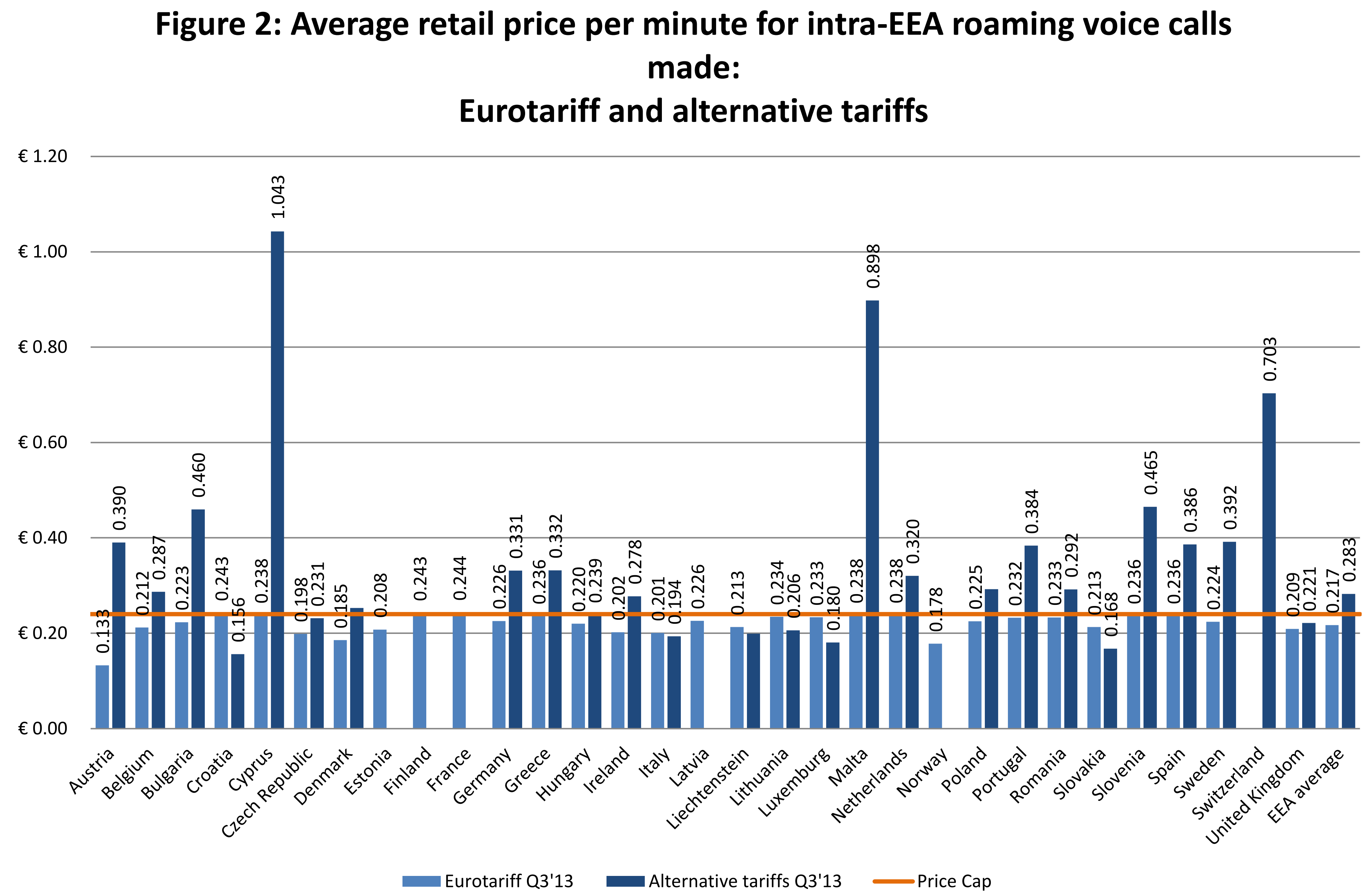
Voice roaming services

Retail prices

Figure 1: Average retail price per minute for intra-EEA roaming voice calls made: Eurotariff and alternative tariffs



Data for alternative tariffs for some countries have not been reported and for others there are no alternative tariffs.



* Data for alternative tariffs for some countries have not been reported and for others there are no alternative tariffs.

Figure 3: EEA average retail price per minute for intra-EEA roaming voice calls made : Eurotariff and alternative tariffs (EU only for Q2 2009 - Q1 2010)

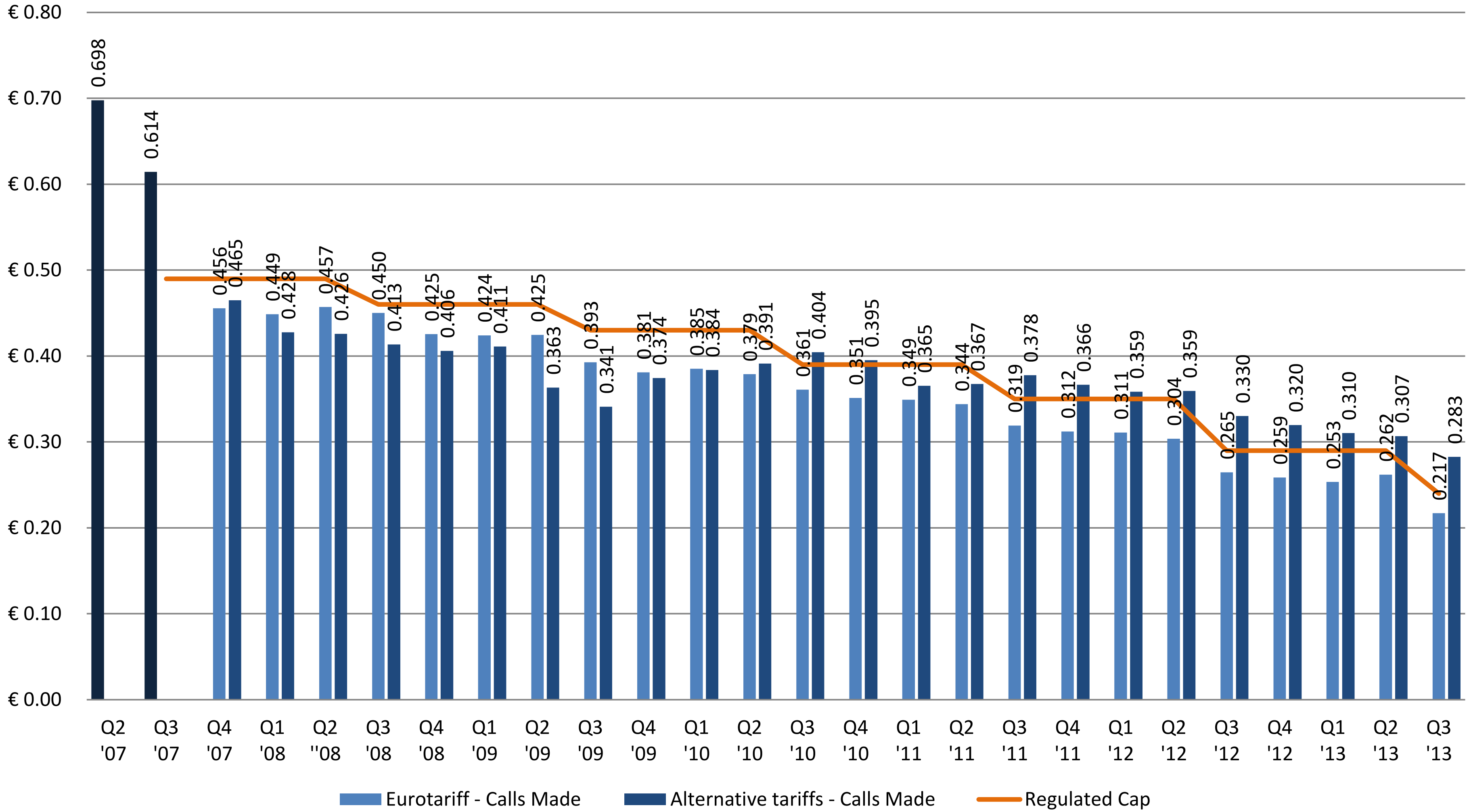
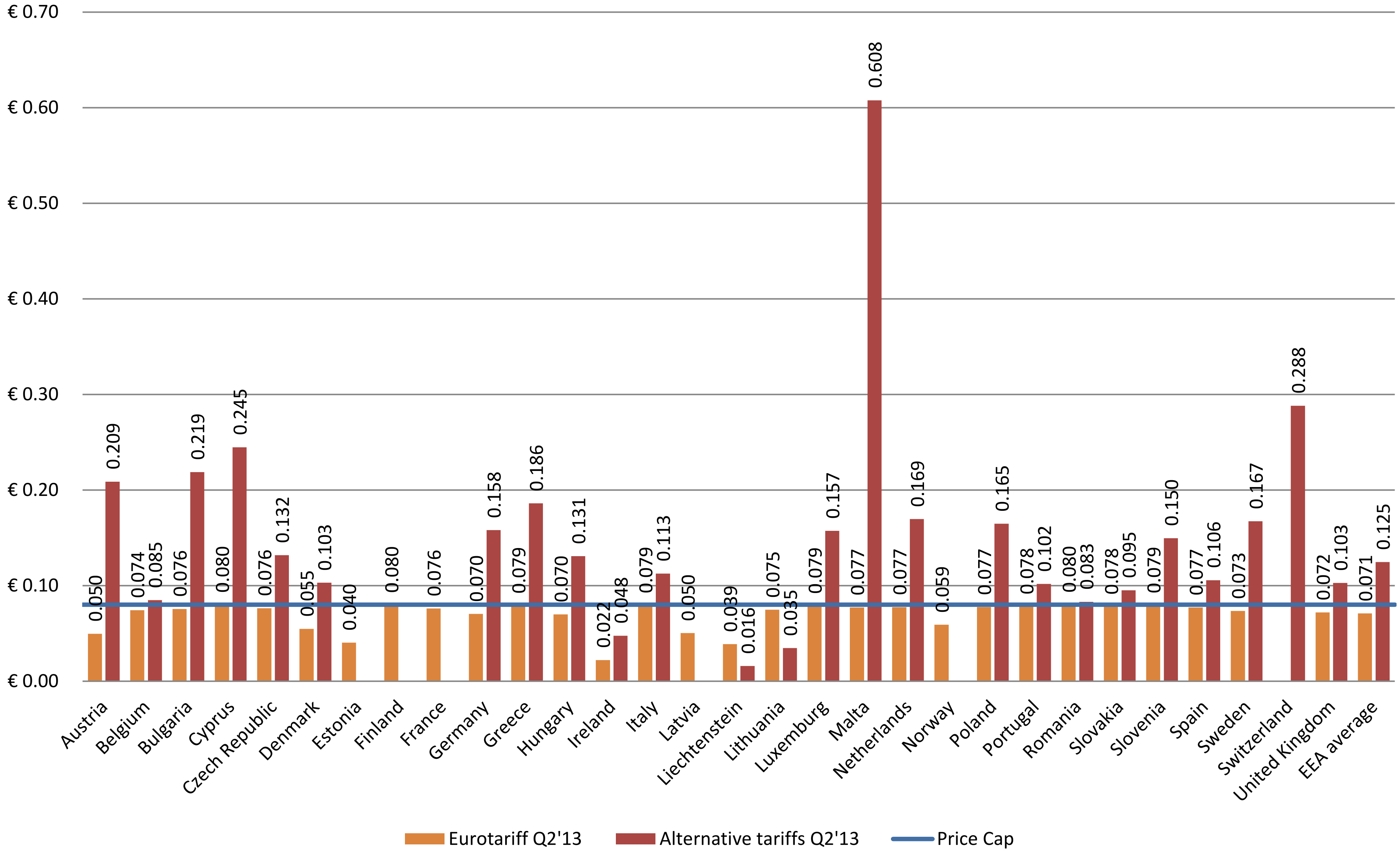
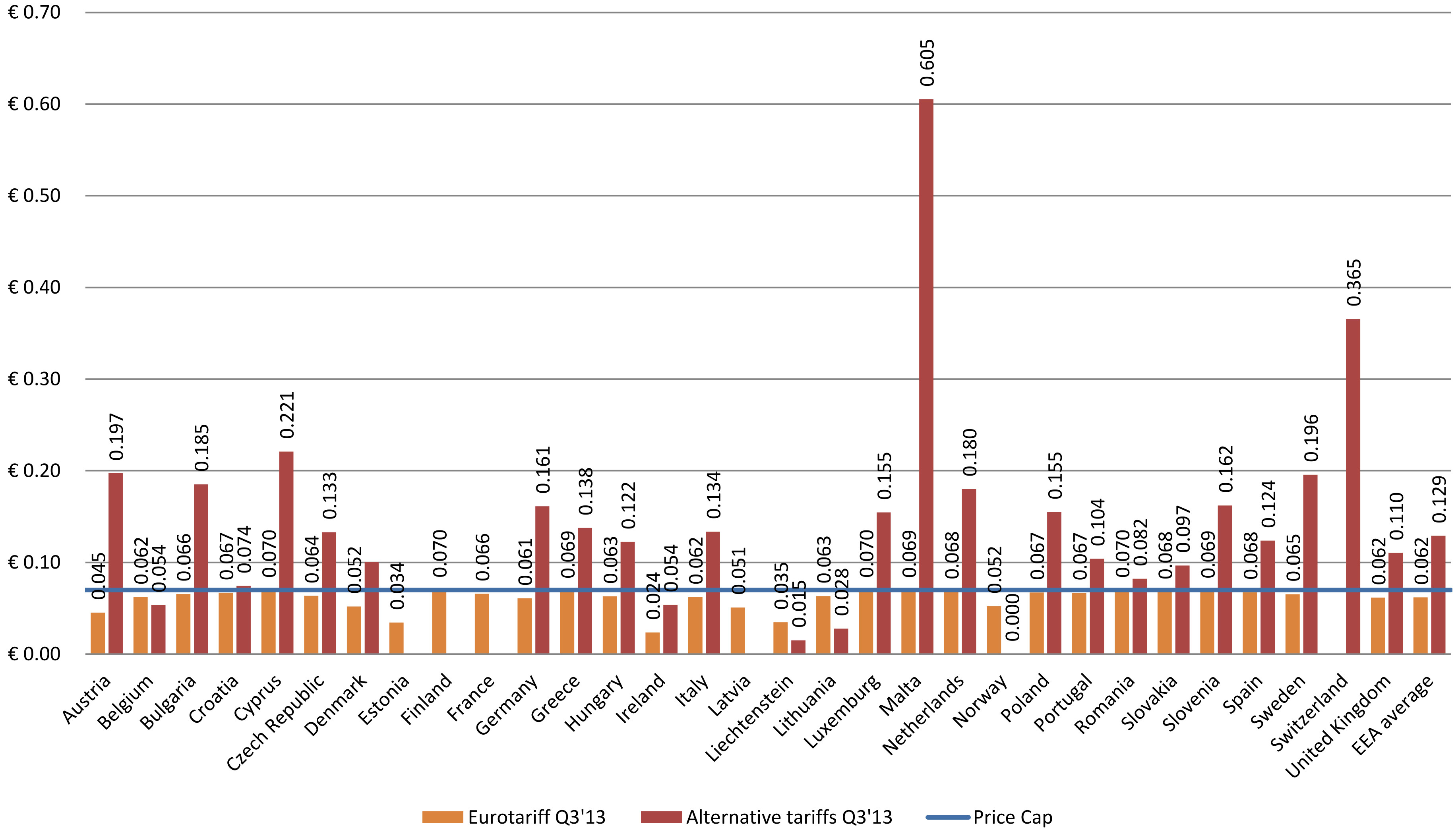


Figure 4: Average retail price per minute for intra-EEA roaming voice calls received: Eurotariff and alternative tariffs



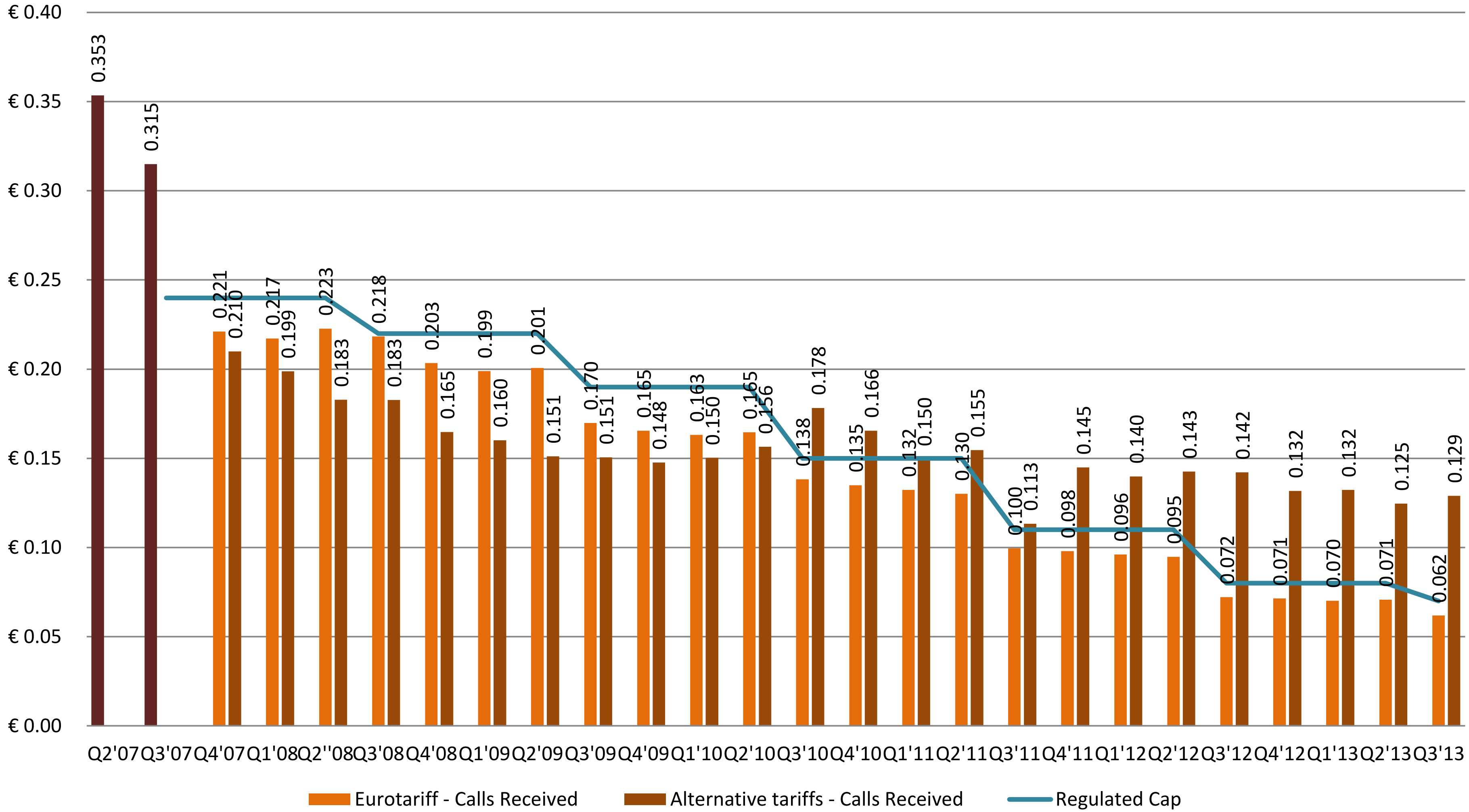
*The German average for alternative tariffs has been calculated based on actual minutes instead of billed minutes

Figure 5: Average retail price per minute for intra-EEA roaming voice calls received: Eurotariff and alternative tariffs



*Data for alternative tariffs for some countries have not been reported and for others there are no alternative tariffs.
*The German average for alternative tariffs has been calculated based on actual minutes instead of billed minutes
*Data for alternative tariffs for some countries have not been reported and for others there are no alternative tariffs.

Figure 6: EEA average retail price per minute for intra-EEA retail roaming voice calls received: Eurotariff and alternative tariffs (EU only for Q2 2009 - Q1 2010)



Surcharge for roaming voice calls made

Figure 7: Surcharge as a result of billed minutes for intra-EEA roaming voice calls made: Eurotariff

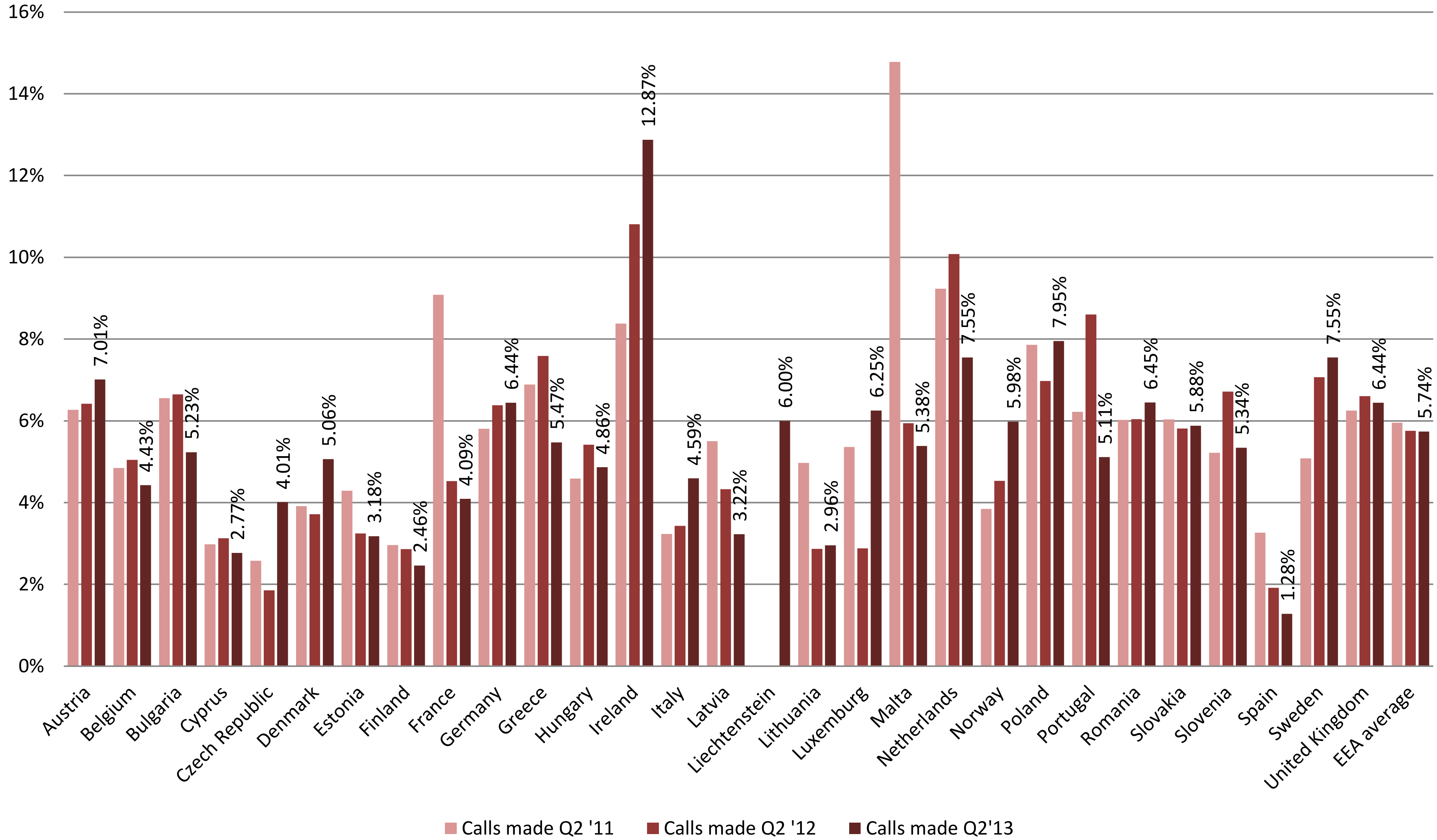
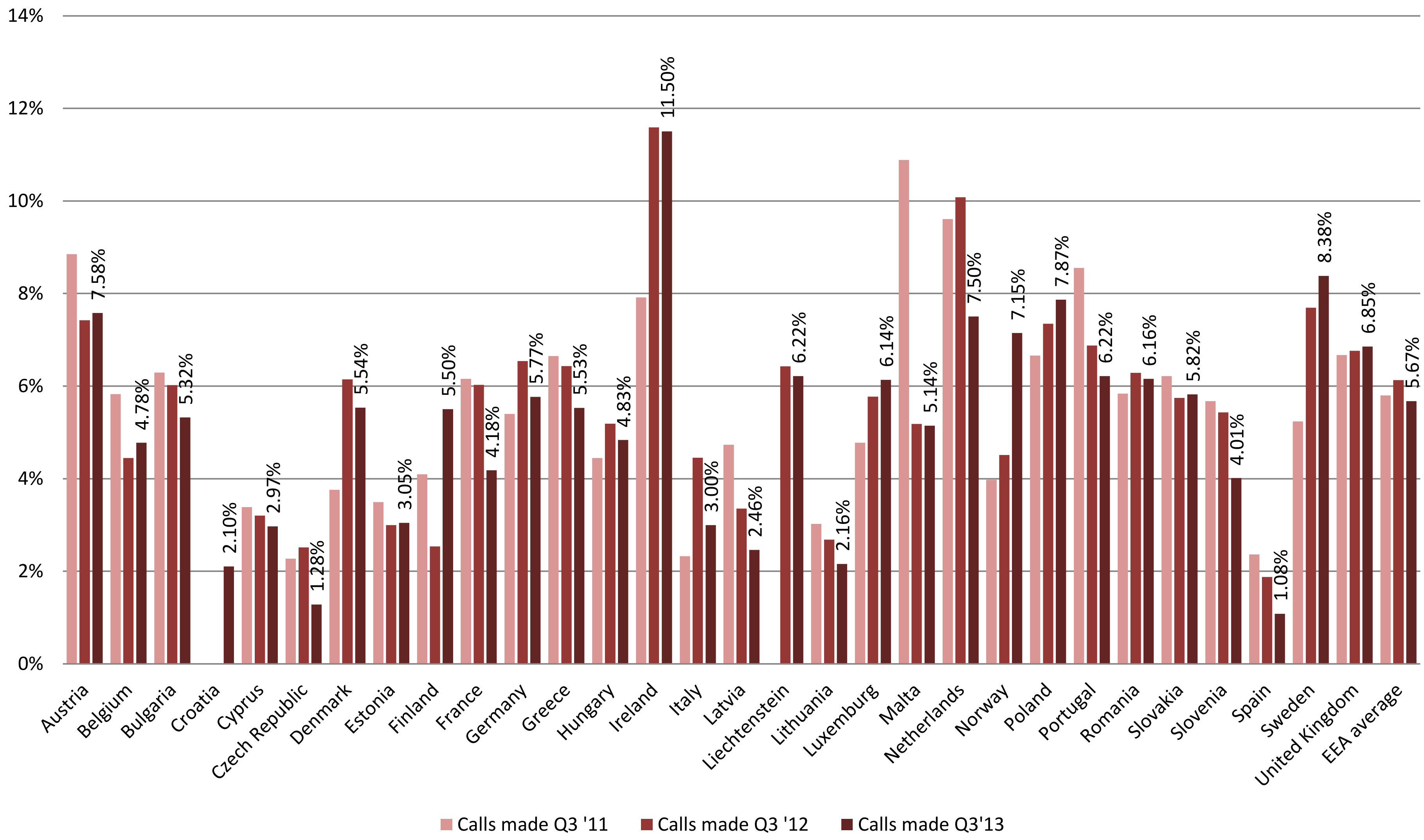


Figure 8: Surcharge as a result of billed minutes for intra-EEA roaming voice calls made : Eurotariff



Wholesale prices

Figure 9: Average wholesale price per minute for intra-EEU roaming voice calls: charges to non-group companies (wholesale roaming inbound)

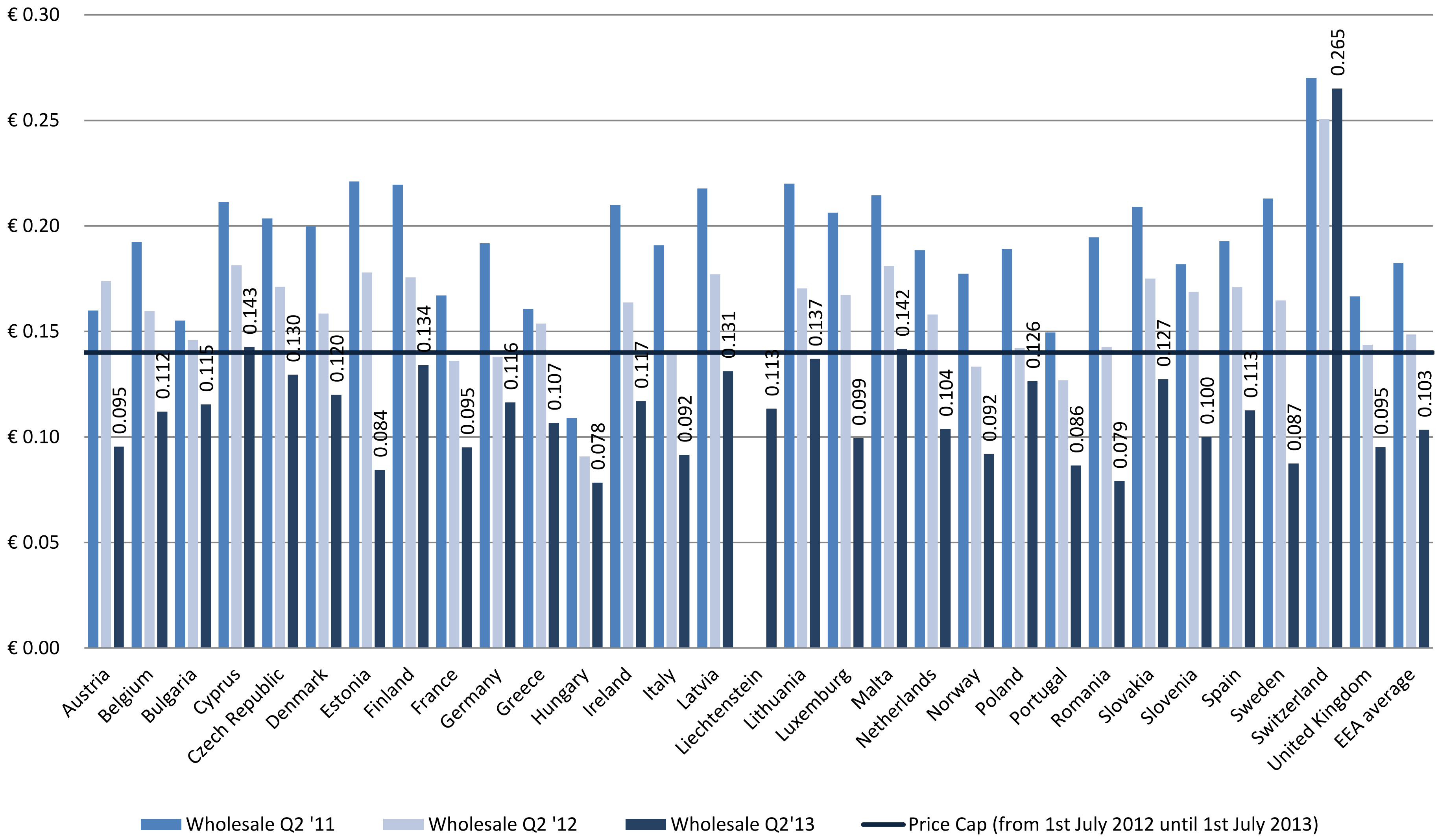


Figure 10: Average wholesale price per minute for intra-EEU roaming voice calls: charges to non-group companies

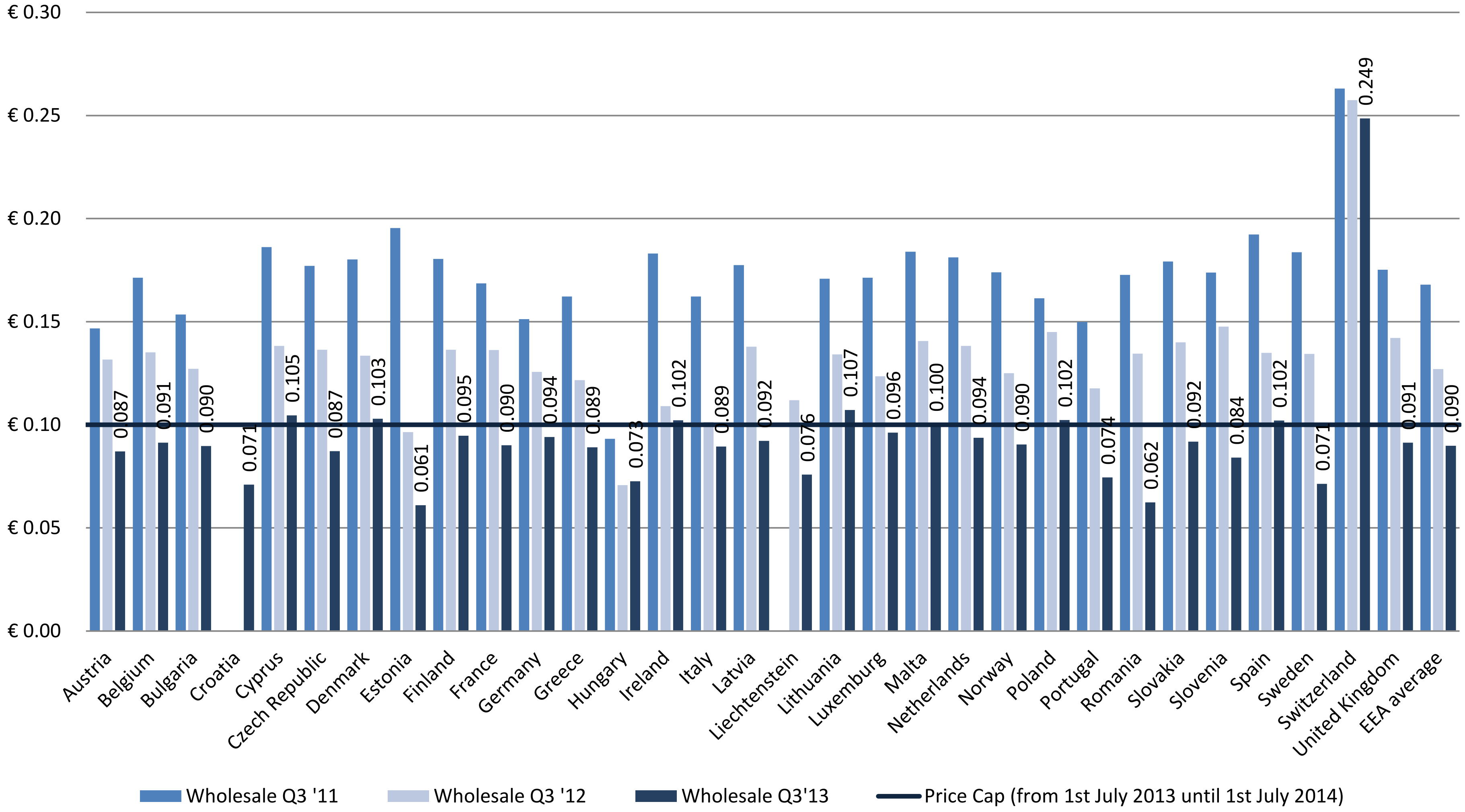
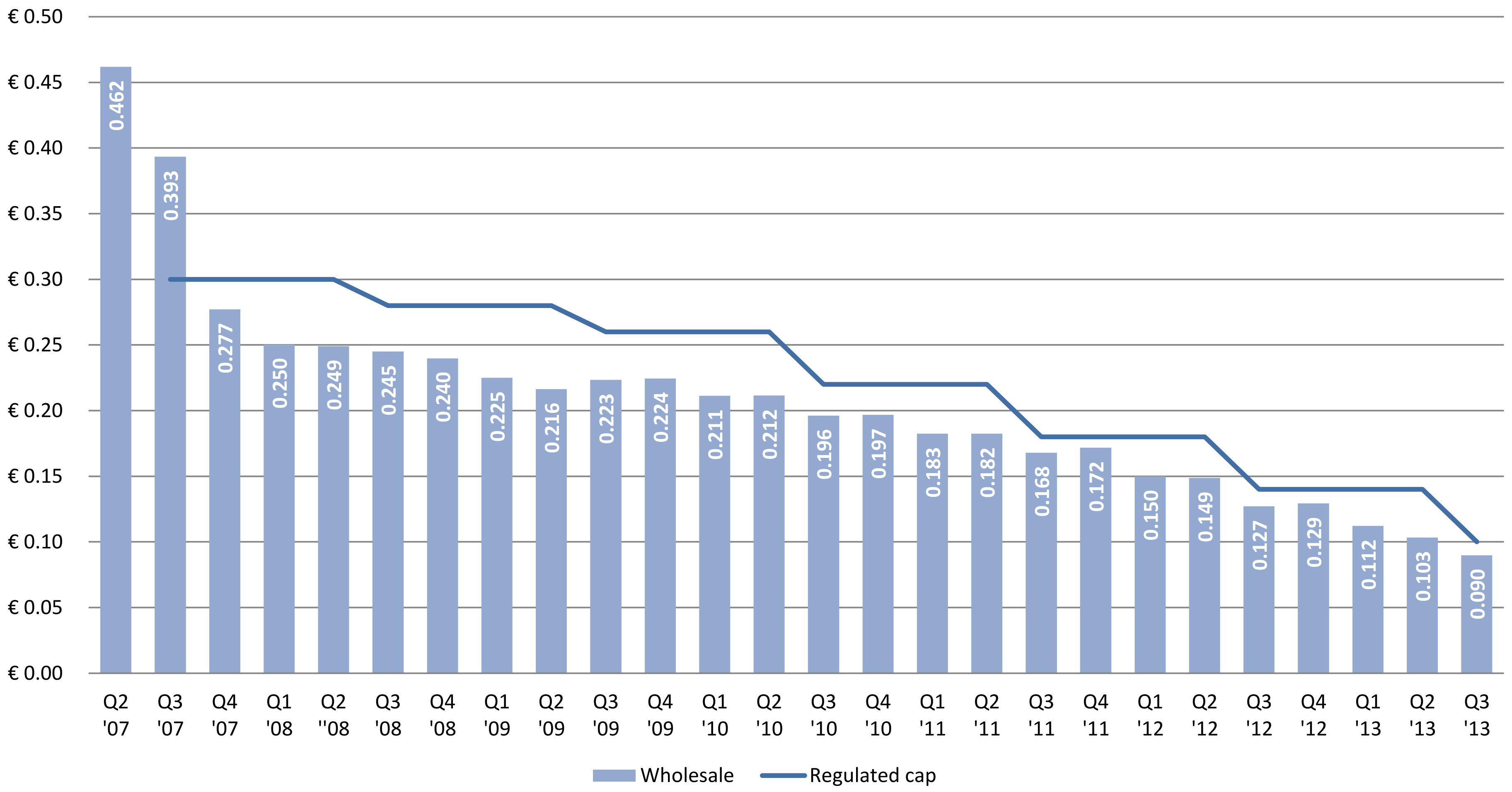
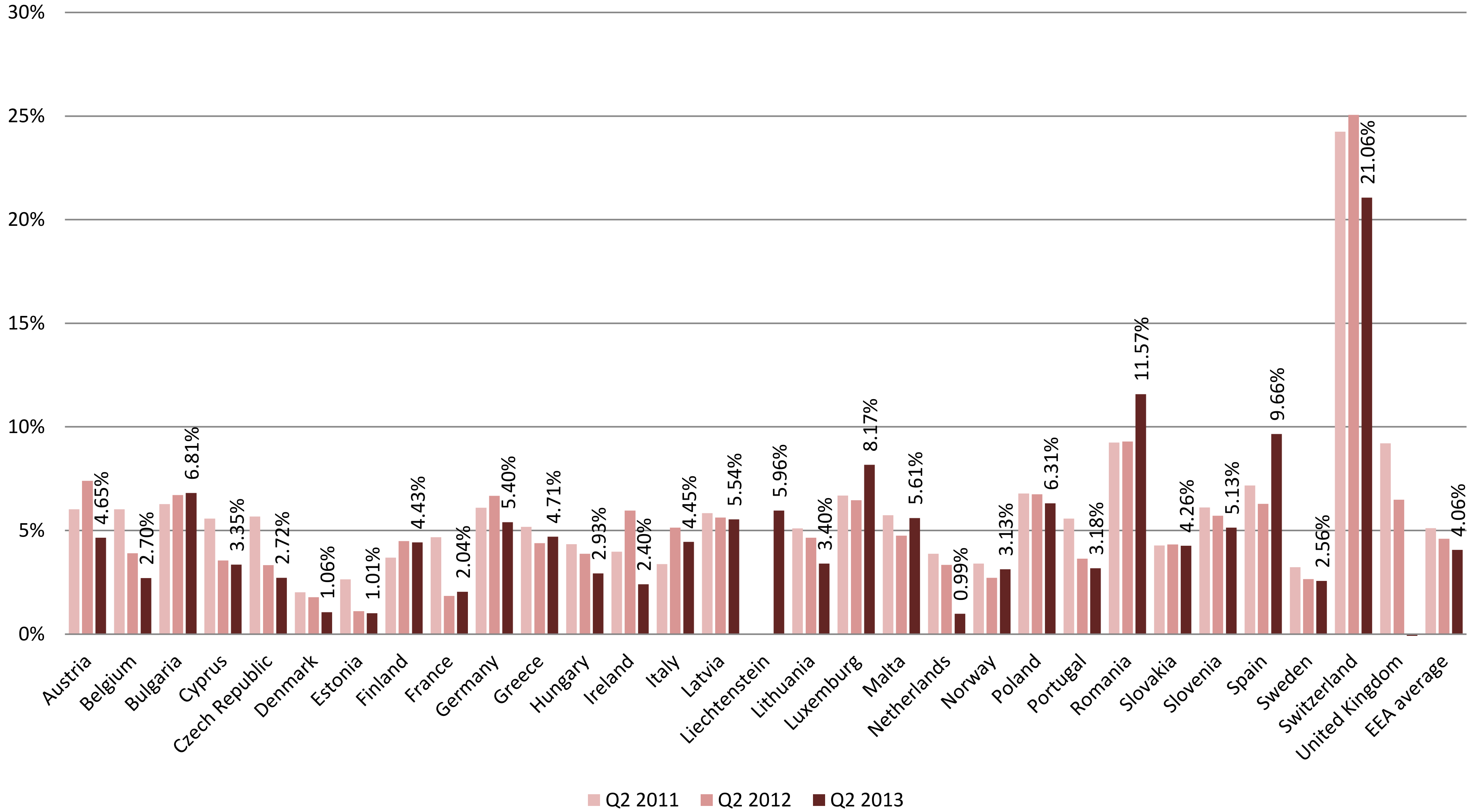


Figure 11: EEA average price per minute for wholesale non-group roaming voice calls (EU only for Q2 2009 - Q1 2010)



Surcharge for wholesale voice calls

Figure 12: Surcharge as a result of billed minutes for intra-EEA wholesale voice calls (non-group companies)



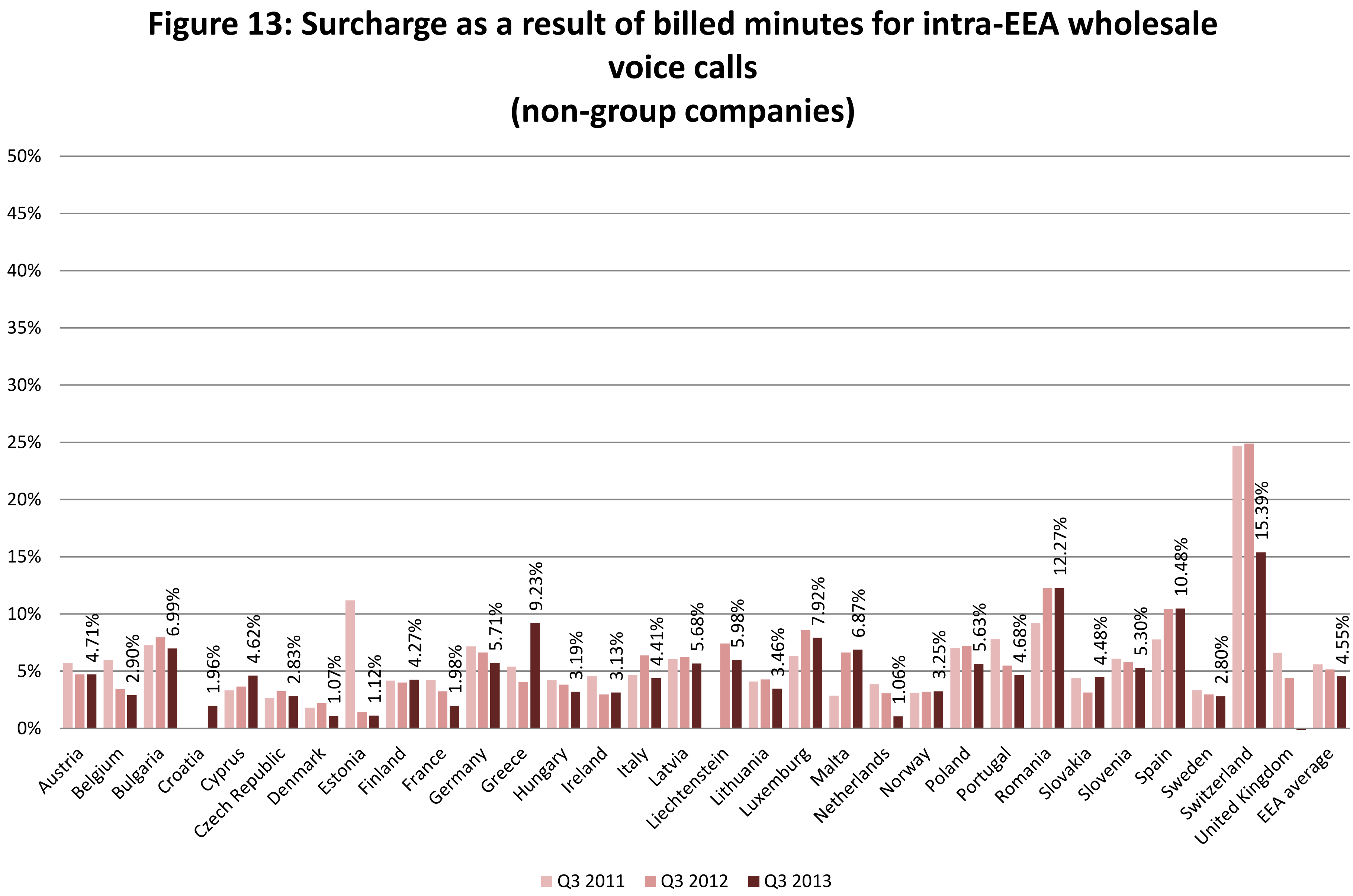


Figure 13: Surcharge as a result of billed minutes for intra-EEA wholesale voice calls
(non-group companies)
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
4.71%
2.90%
6.99%
1.96%
4.62%
2.83%
1.07%
1.12%
4.27%
1.98%
5.71%
9.23%
3.19%
3.13%
4.41%
5.68%
5.98%
3.46%
7.92%
6.87%
1.06%
3.25%
5.63%
4.68%
12.27%
4.48%
5.30%
10.48%
2.80%
15.39%
4.55%
Austria
Belgium
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Liechtenstein
Lithuania
Luxemburg
Malta
Netherlands
Norway
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
Switzerland
United Kingdom
EEA average
Q3 2011
Q3 2012
Q3 2013

Percentage of alternative tariffs on total volumes for calls made/received

Figure 14: EEA percentage of calls made: Eurotariff and alternative tariffs (millions of minutes)

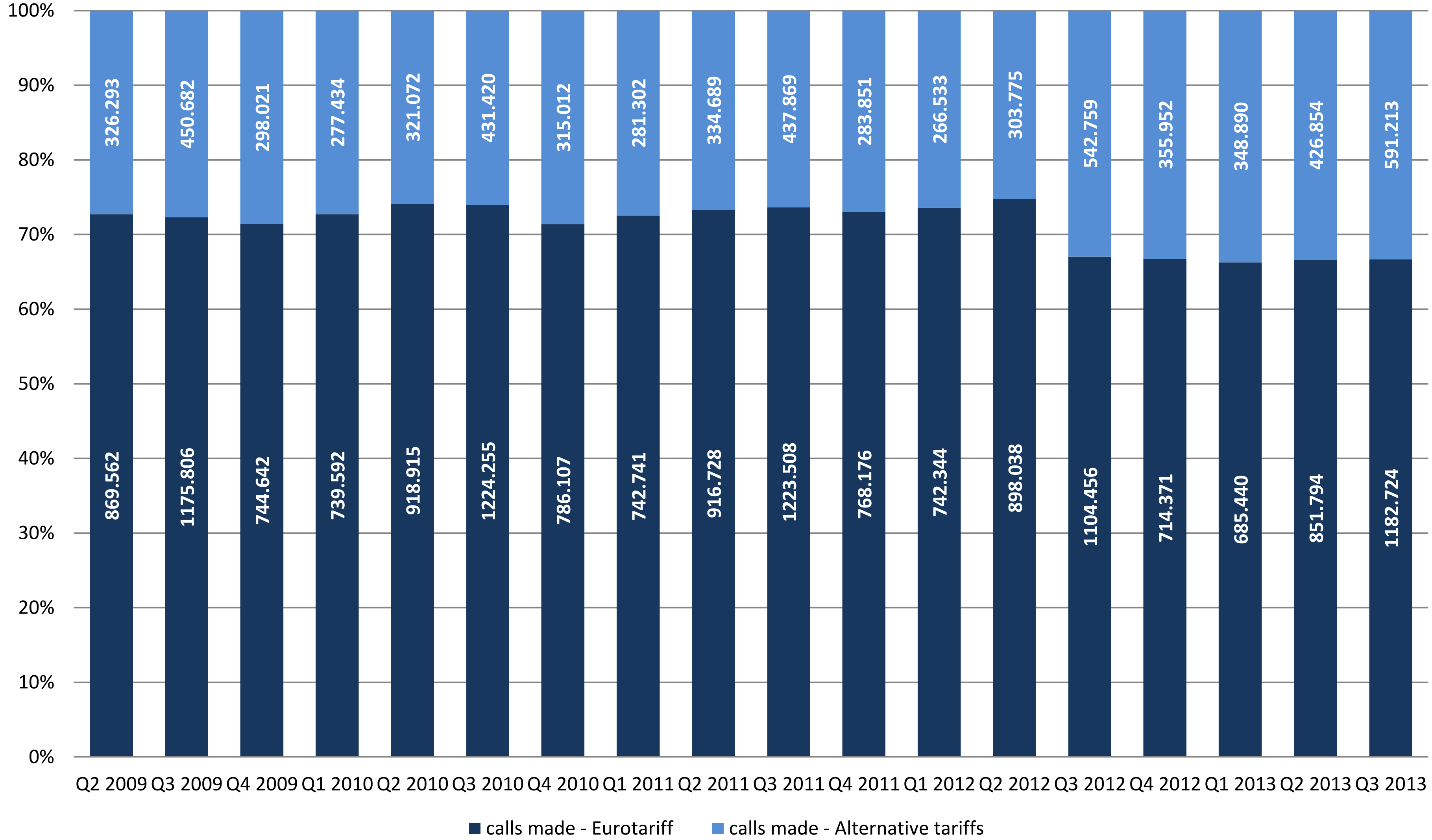
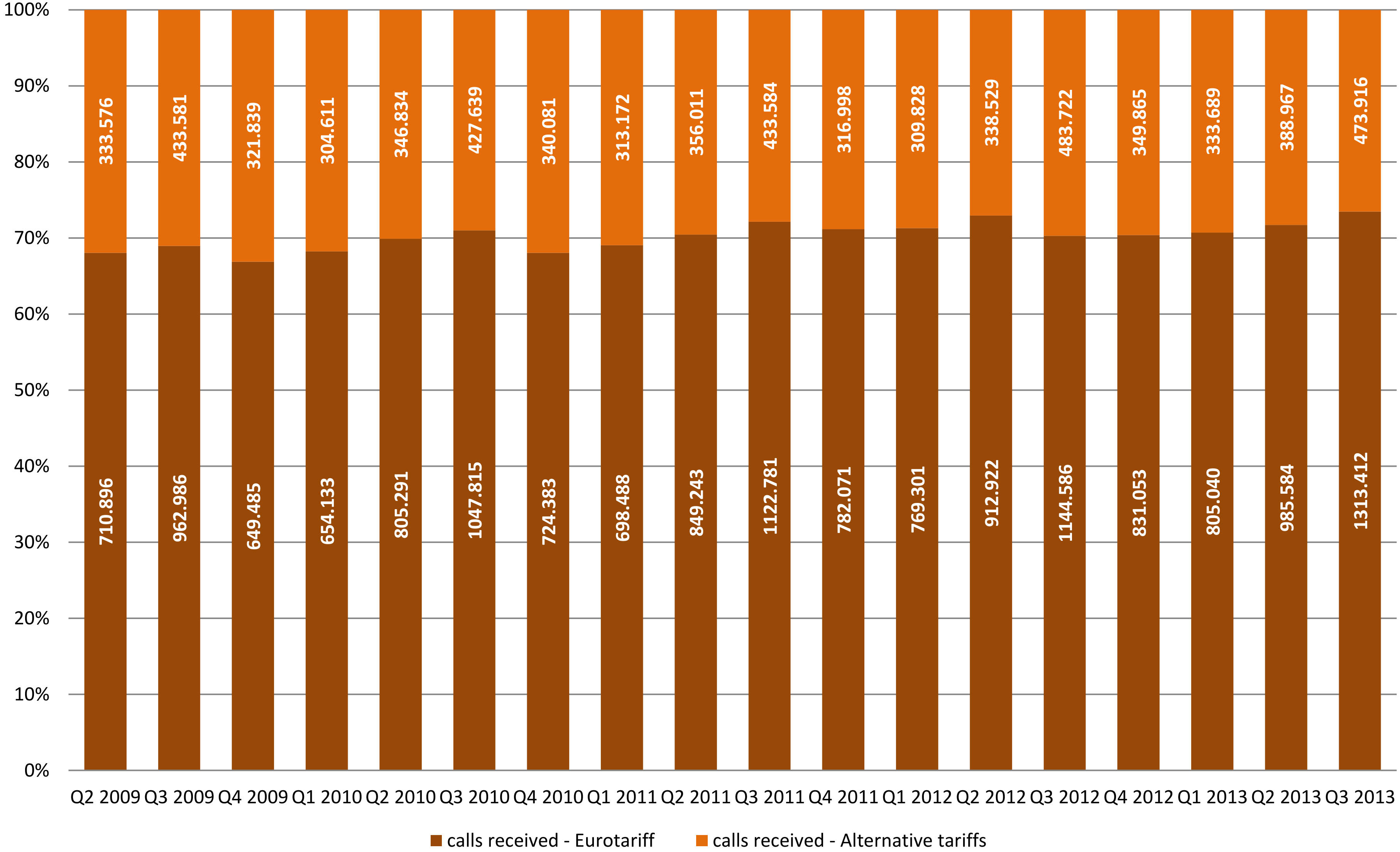
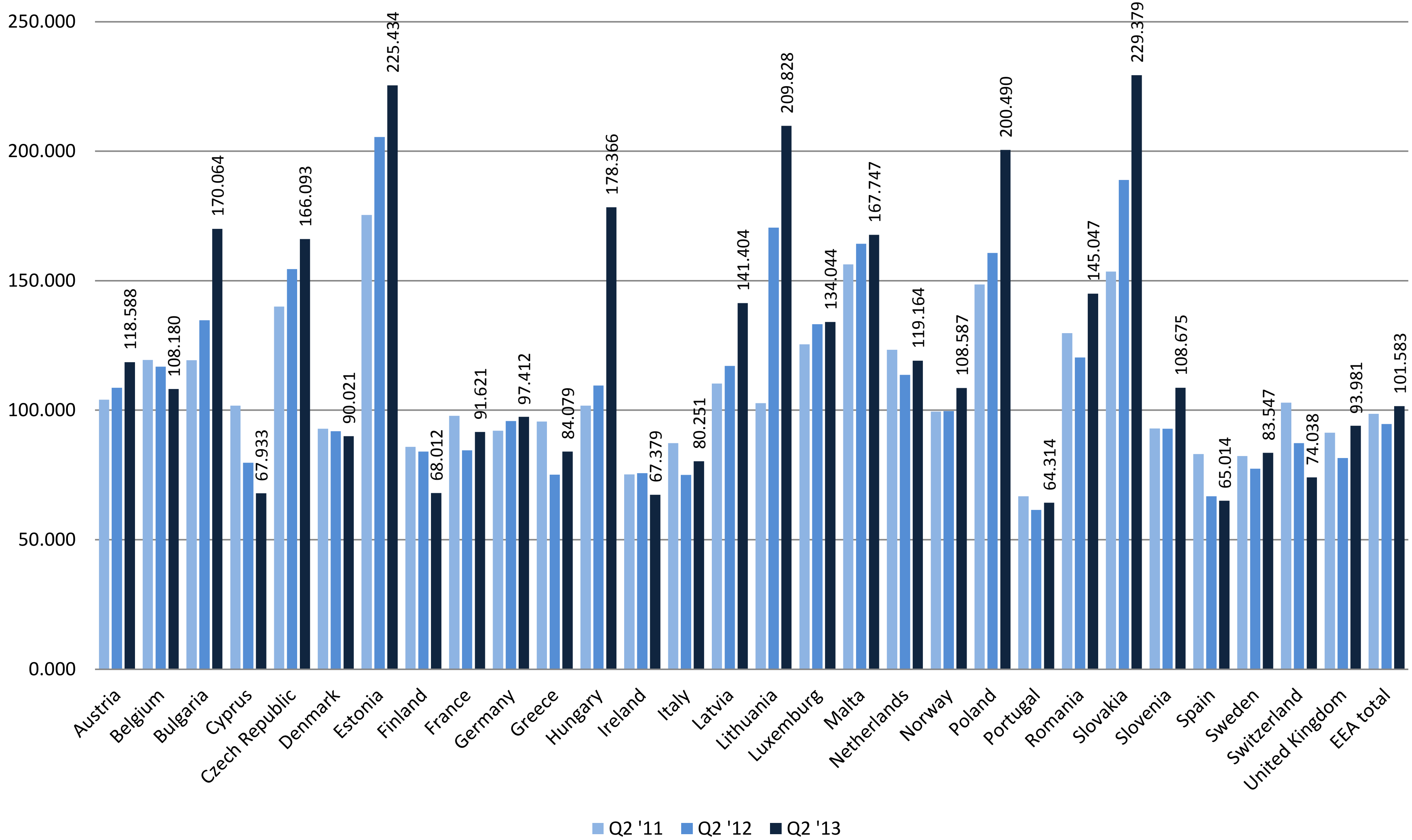


Figure 15: EEA percentage of calls received: Eurotariff and alternative tariffs (millions of minutes)



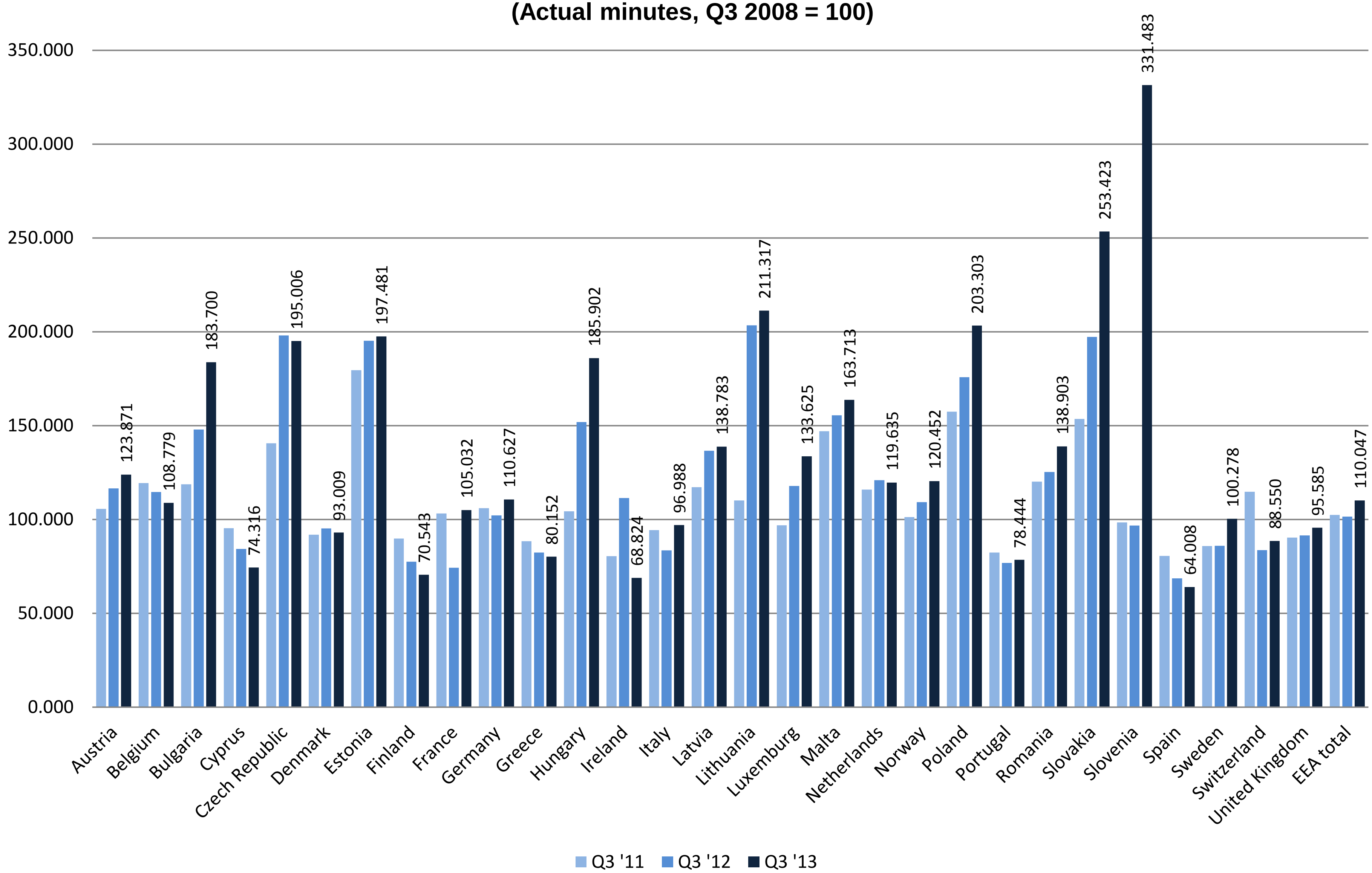
Volumes of retail roaming voice calls

Figure 16: Volumes of intra-EEA roaming calls made in Q2 2013
Index
(Actual minutes, Q2 2008 = 100)



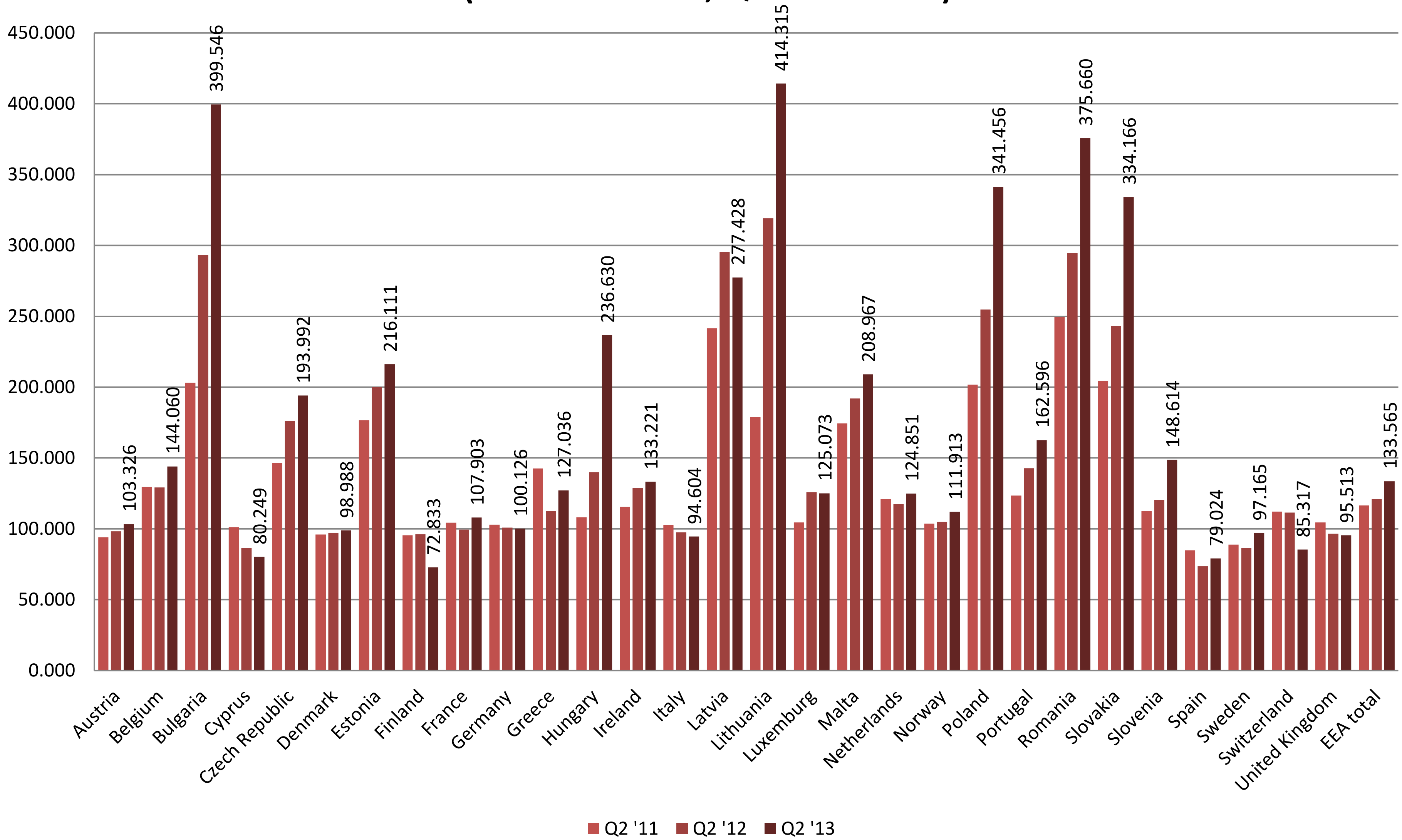
Liechtenstein: 0.226 (without based year), Switzerland (based year: Q2 2009 = 100)

Figure 17: Volumes of intra-EEA roaming calls made in Q3 2013
(Actual minutes, Q3 2008 = 100)



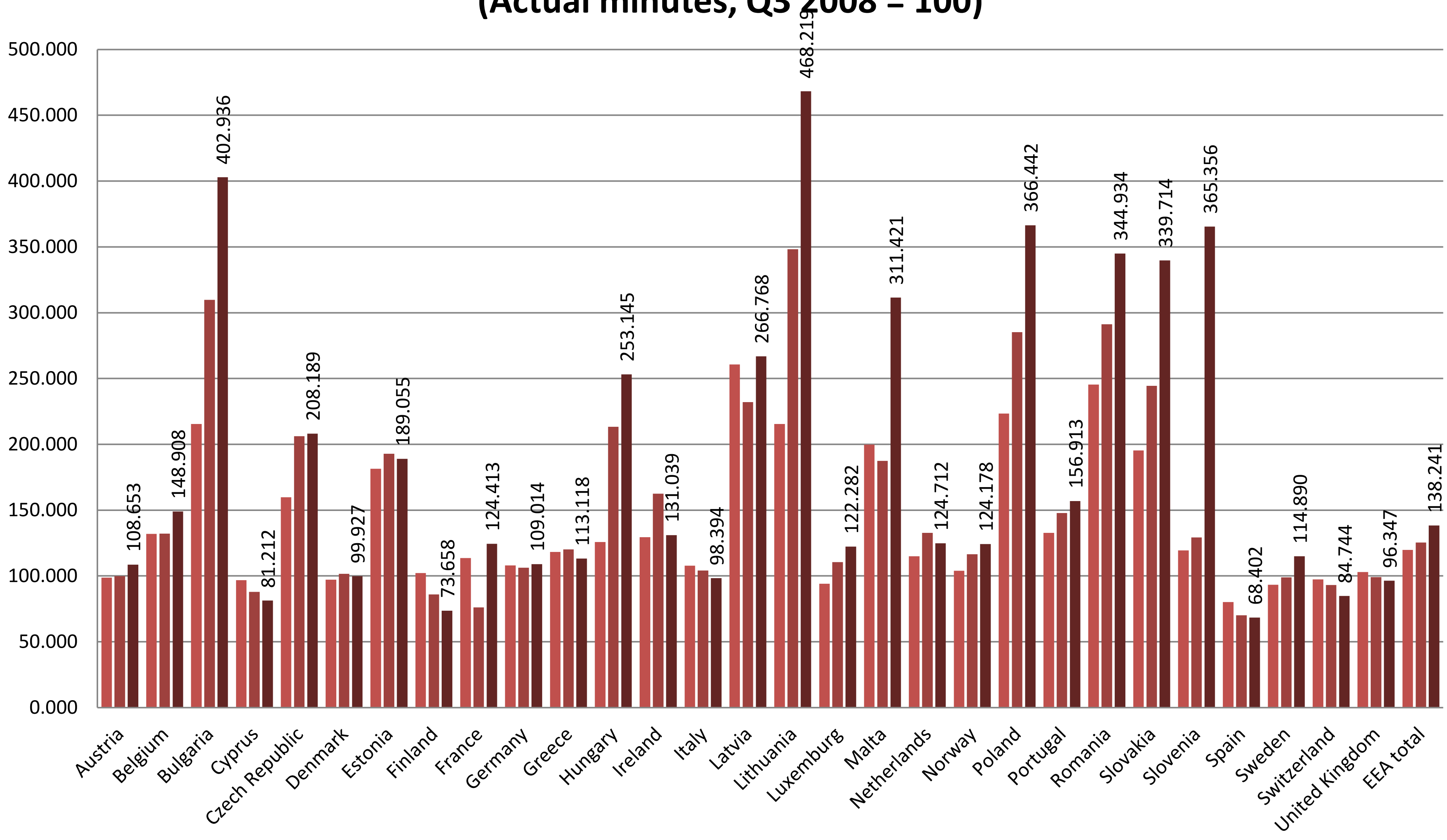
Croatia: 3.876 (without based year); Liechtenstein: 0.225 (without based year)

Figure 18: Volumes of intra-EEA roaming calls received in Q2 2013 (Actual minutes, Q2 2008 = 100)



Liechtenstein: 0.206 (without based year), Switzerland (based year: Q3 2009 = 100)

Figure 19: Volumes of intra-EEA roaming calls received in Q3 2013 (Actual minutes, Q3 2008 = 100)



Croatia: 6.552 (without based year); Liechtenstein: 0.205 (without based year)

Retail and wholesale prices - outside EEA

Figure 20: Average retail price per minute for roaming voice calls made by EEA customers outside EEA

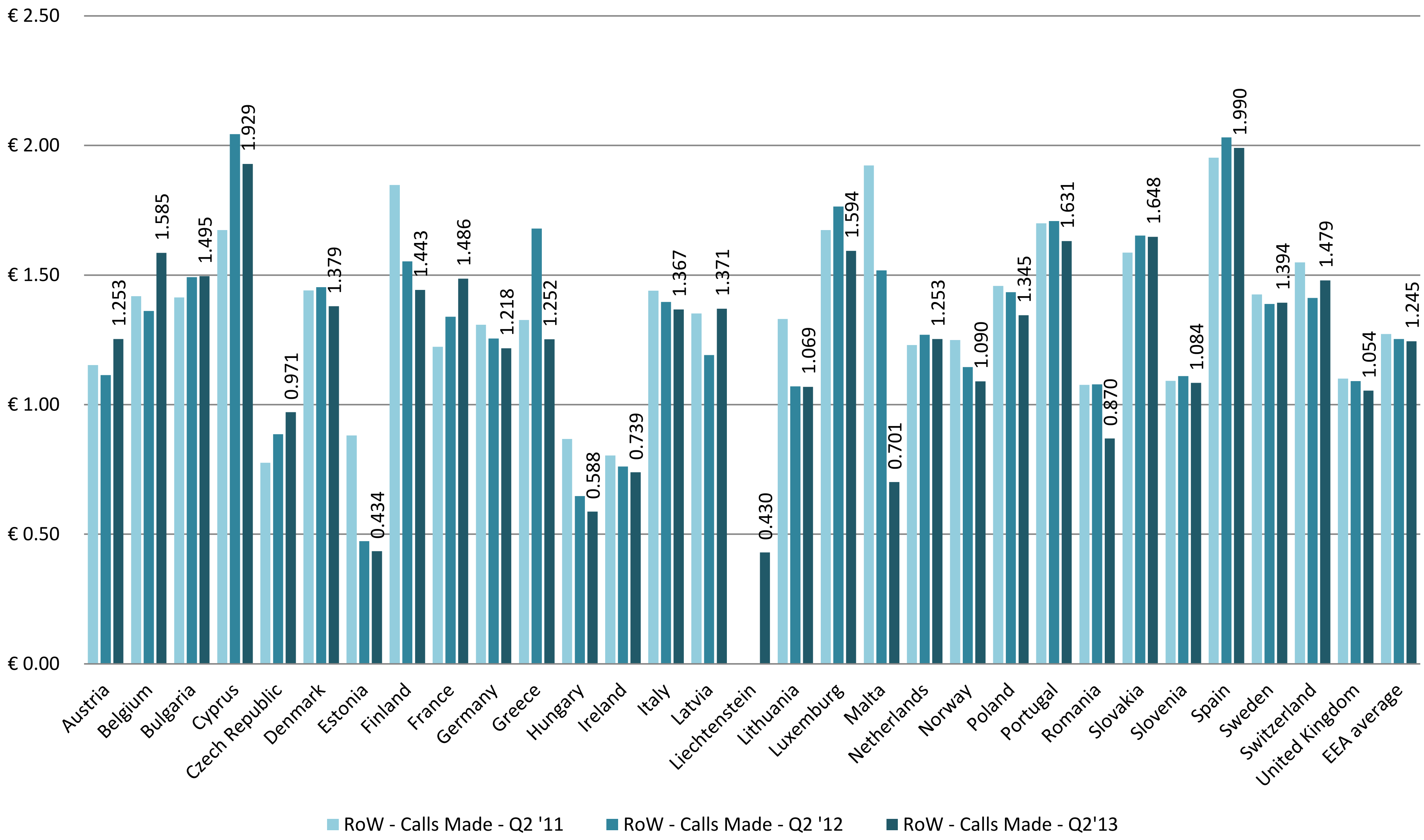


Figure 21: Average retail price per minute for roaming voice calls made by EEA customers outside EEA

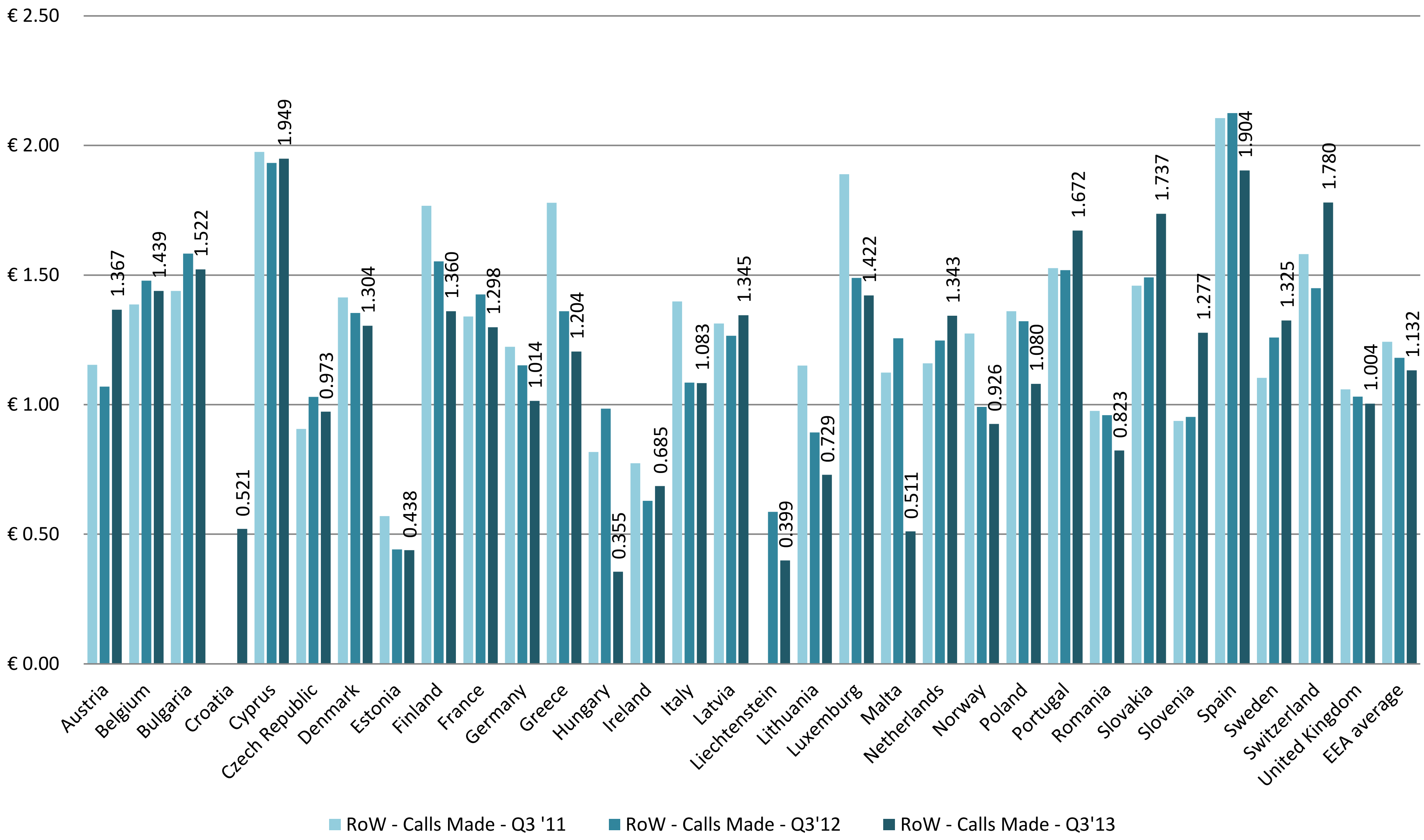


Figure 22: Average retail price per minute roaming voice calls received by EEA customers outside EEA

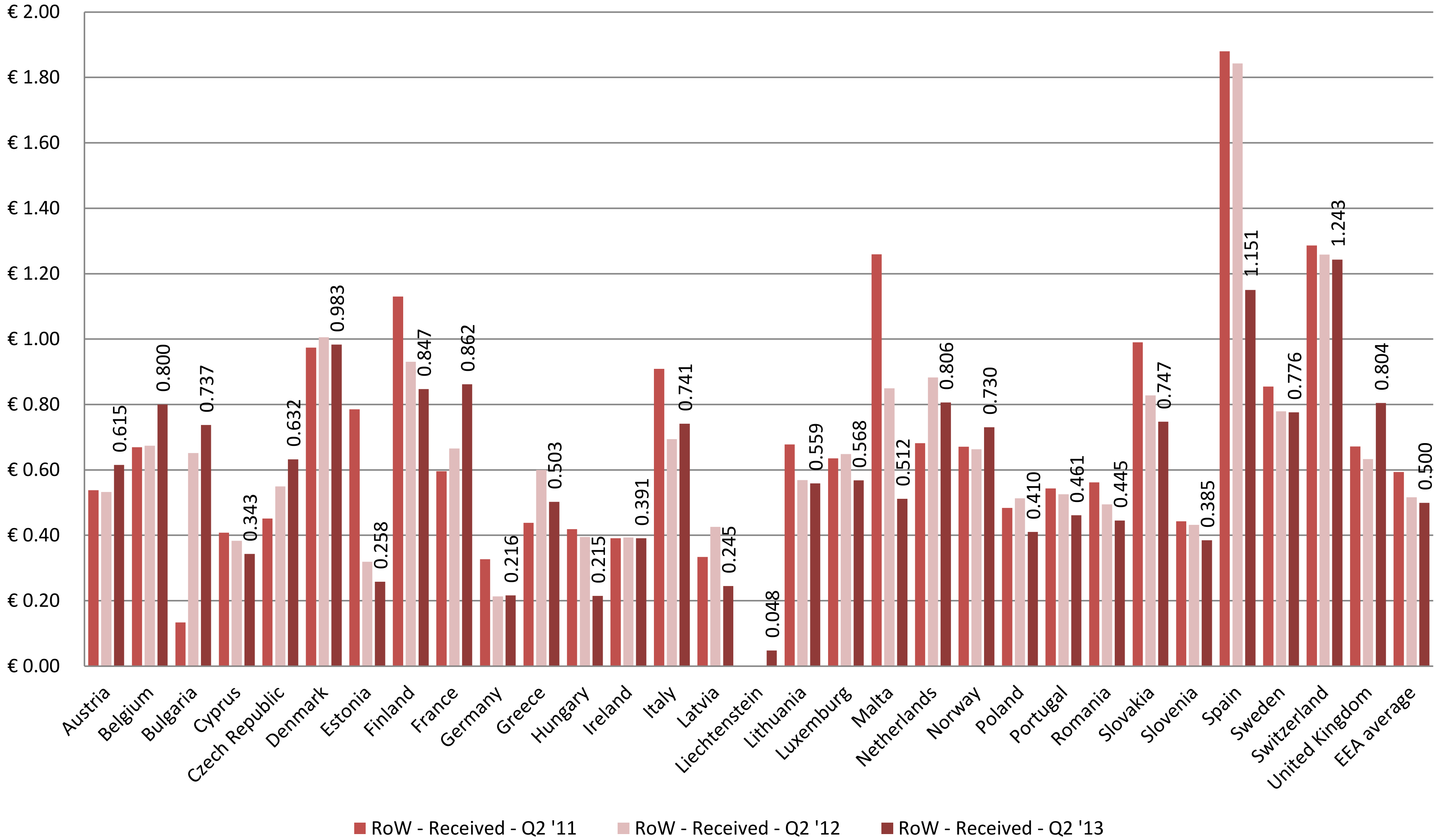


Figure 23: Average retail price per minute roaming voice calls received by EEA customers outside EEA

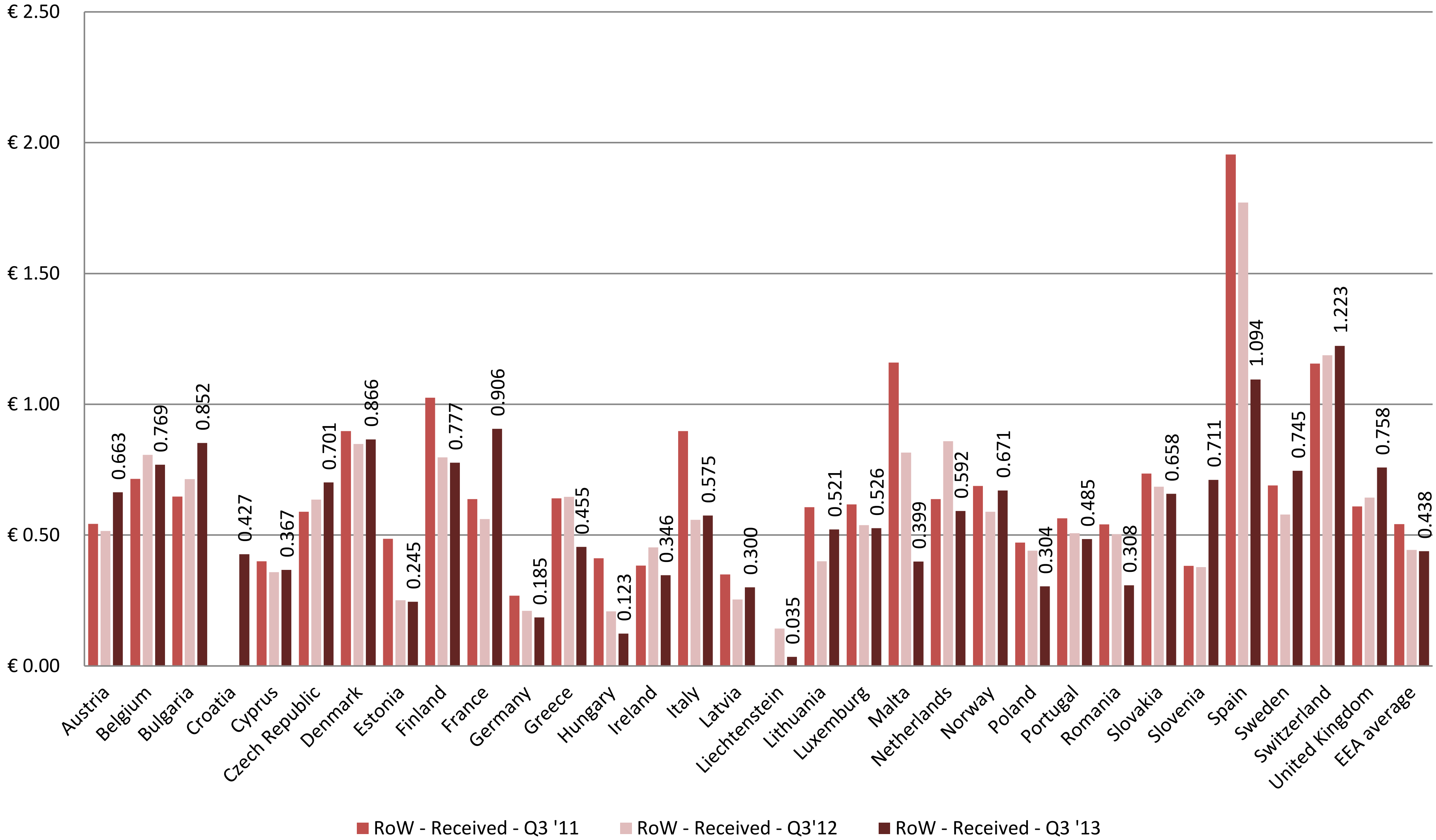
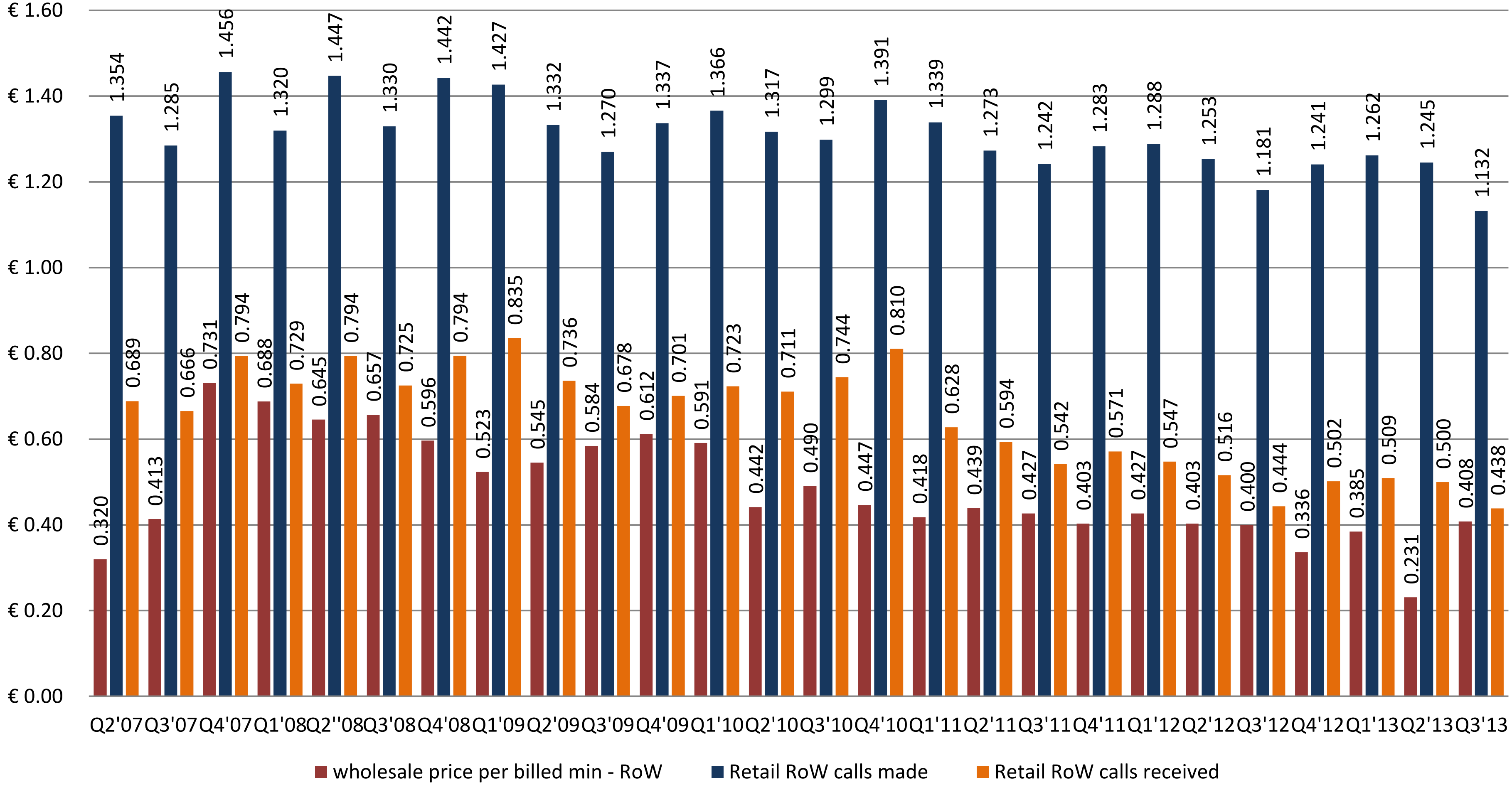


Figure 24: Average wholesale and retail prices for roaming calls made and received by EEA customers outside EEA (EU only for Q2 2009 - Q1 2010)



SMS roaming Services

Retail prices

Figure 25: Average price for Euro-SMS and Non Euro-SMS (prepaid + postpaid)

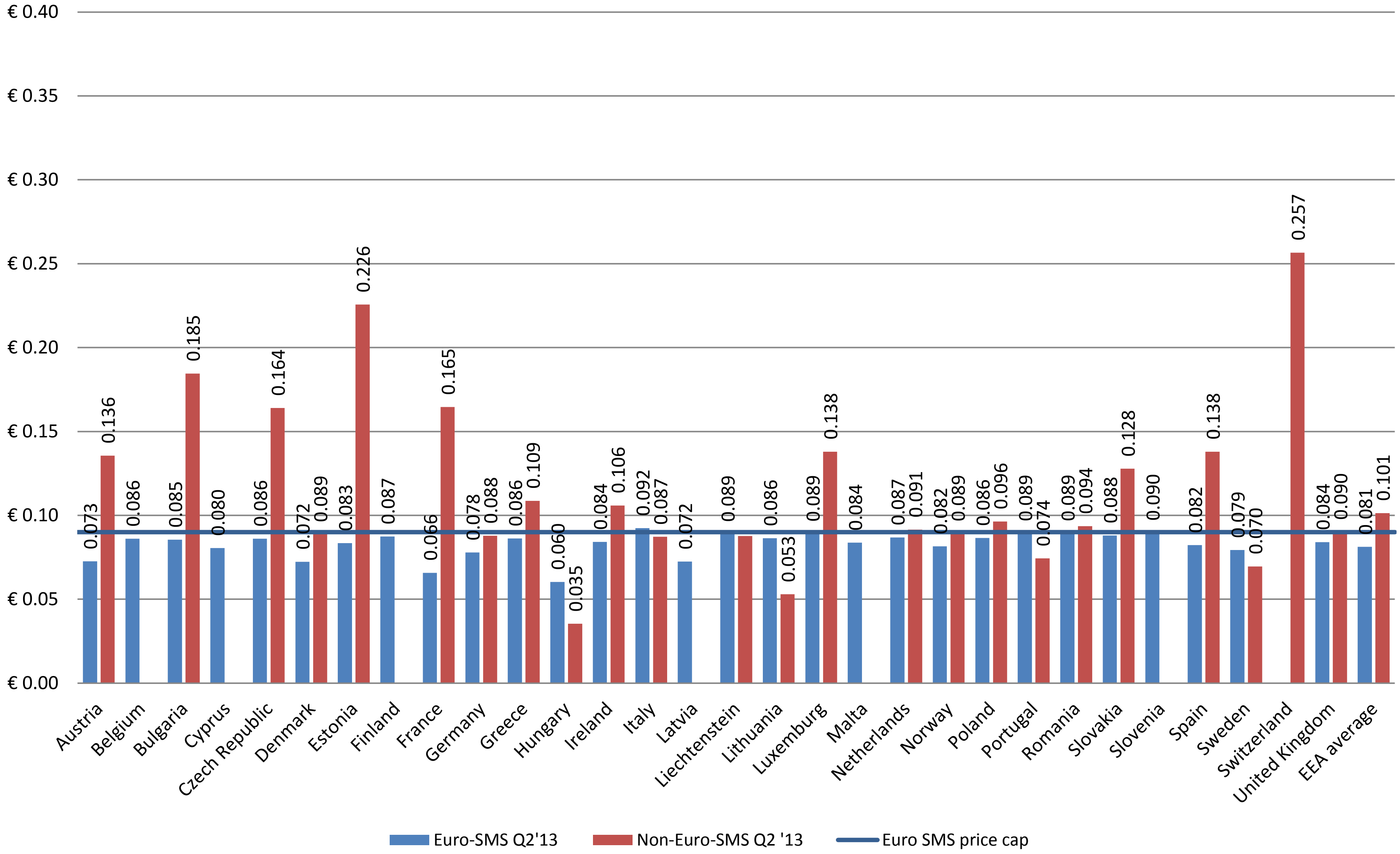


Figure 26: Average price for Euro-SMS and Non Euro-SMS (prepaid + postpaid)

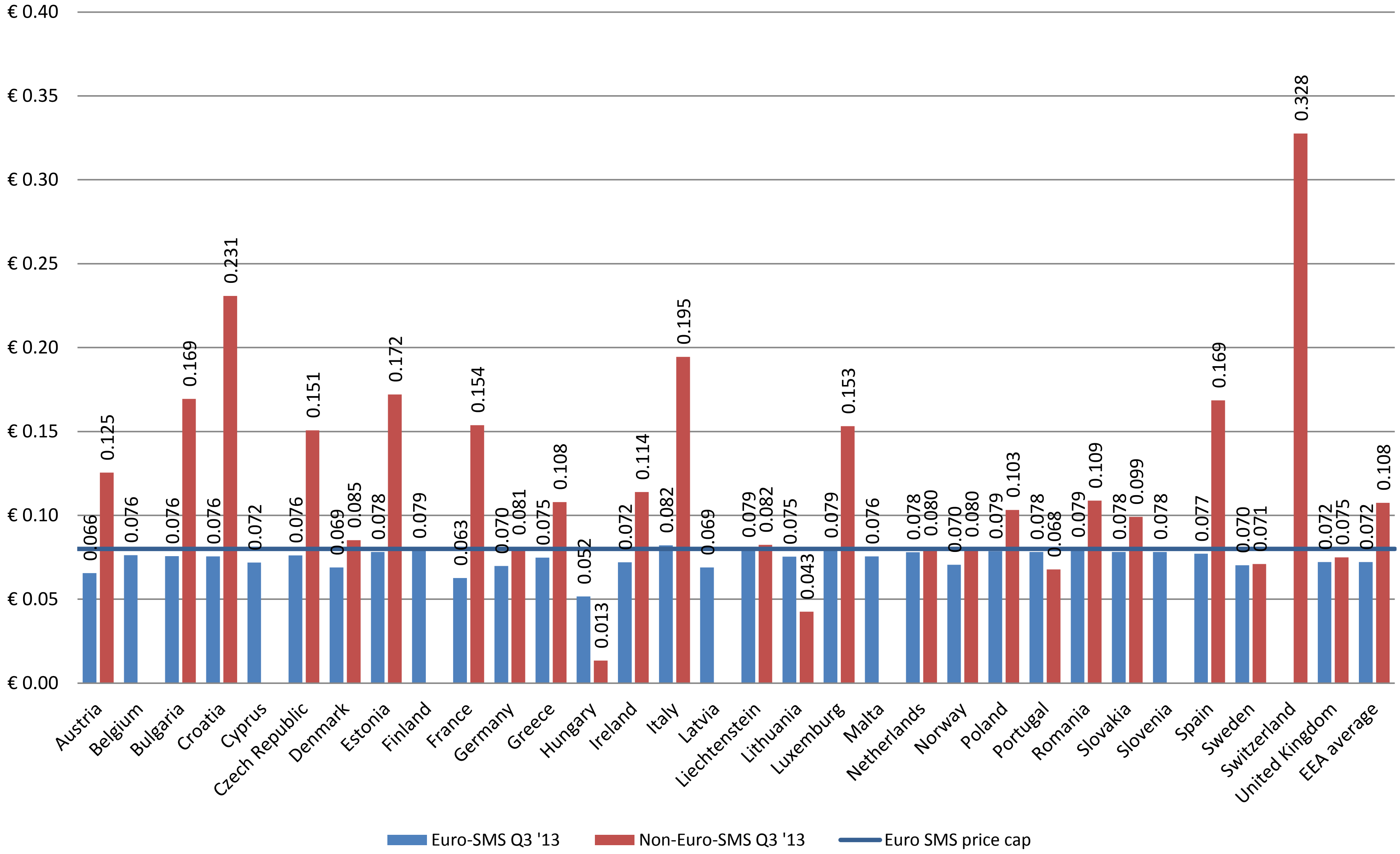
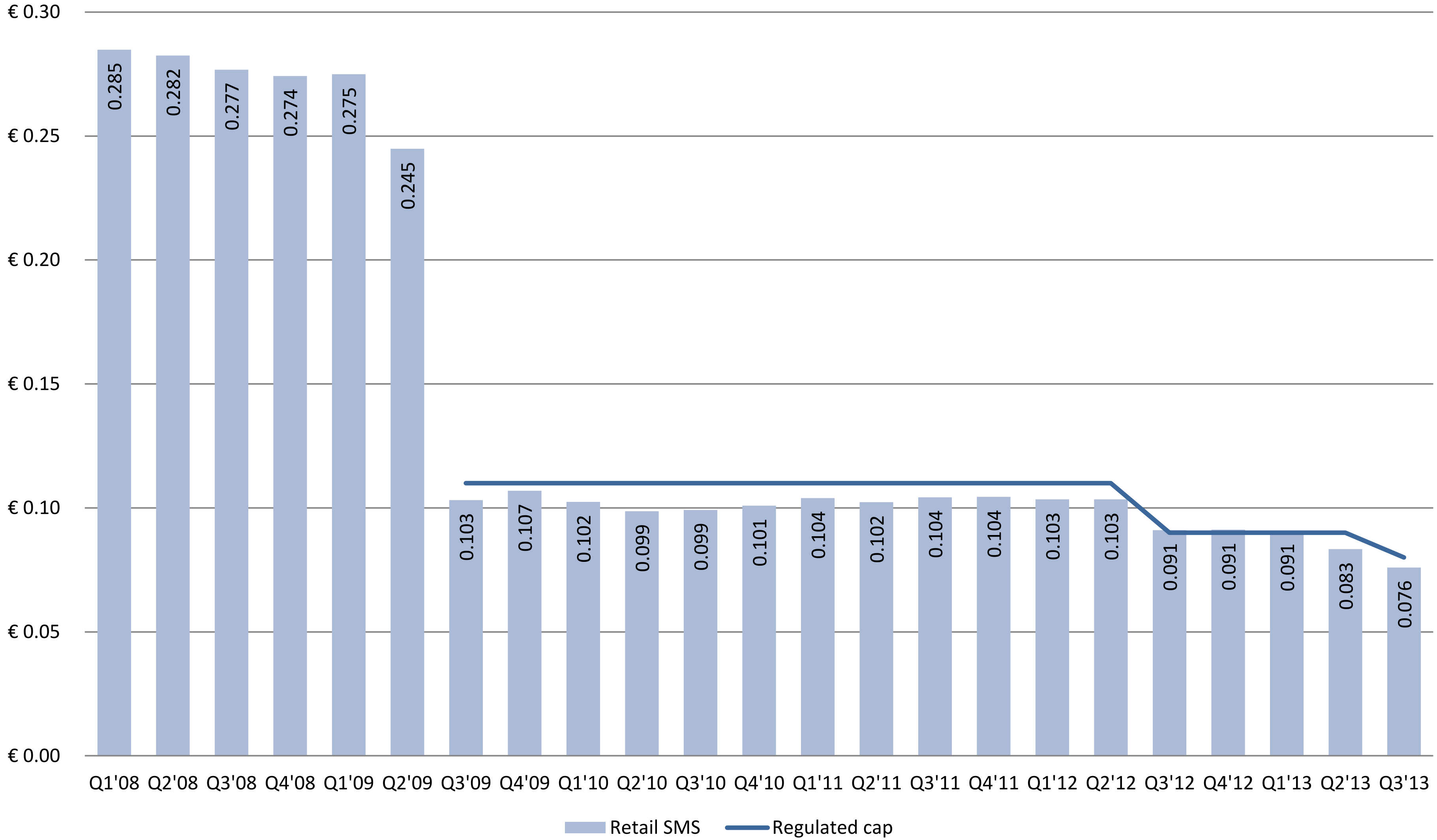


Figure 27: Average price per retail SMS (Euro + Non Euro SMS tariffs) (EU only for Q2 2009 - Q1 2010)



Wholesale prices

Figure 28: Average wholesale price per intra-EEA roaming SMS: charges to non-group companies

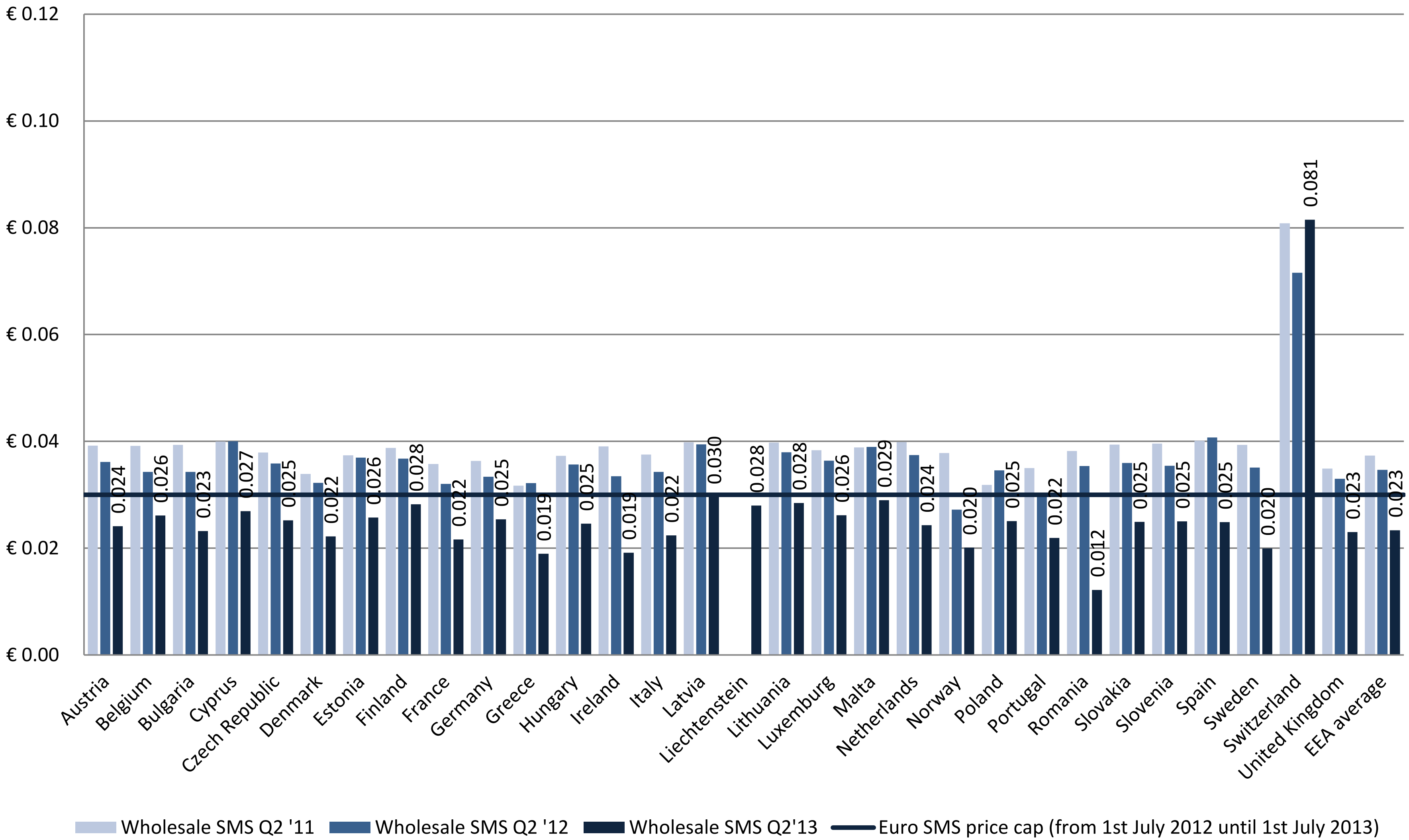
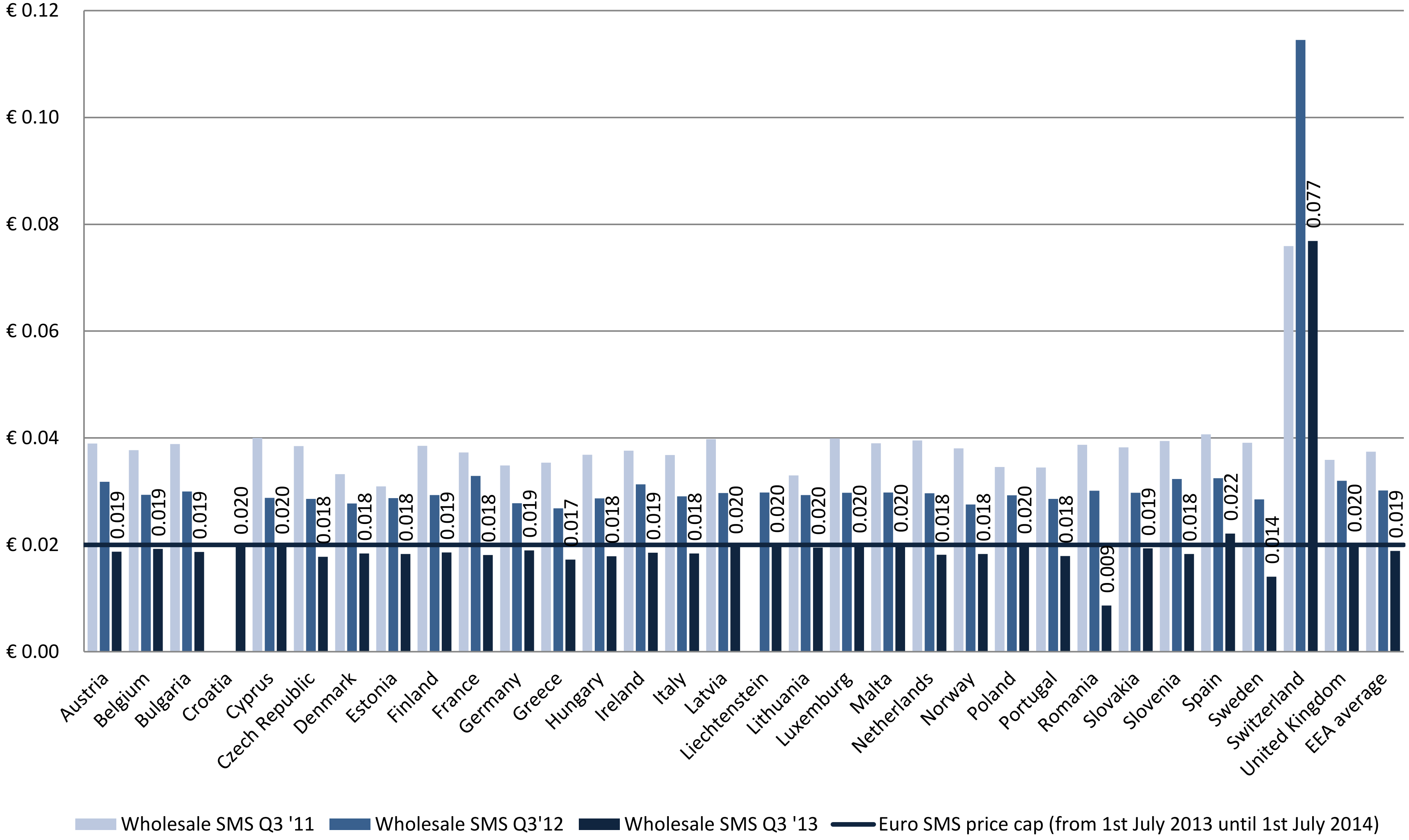
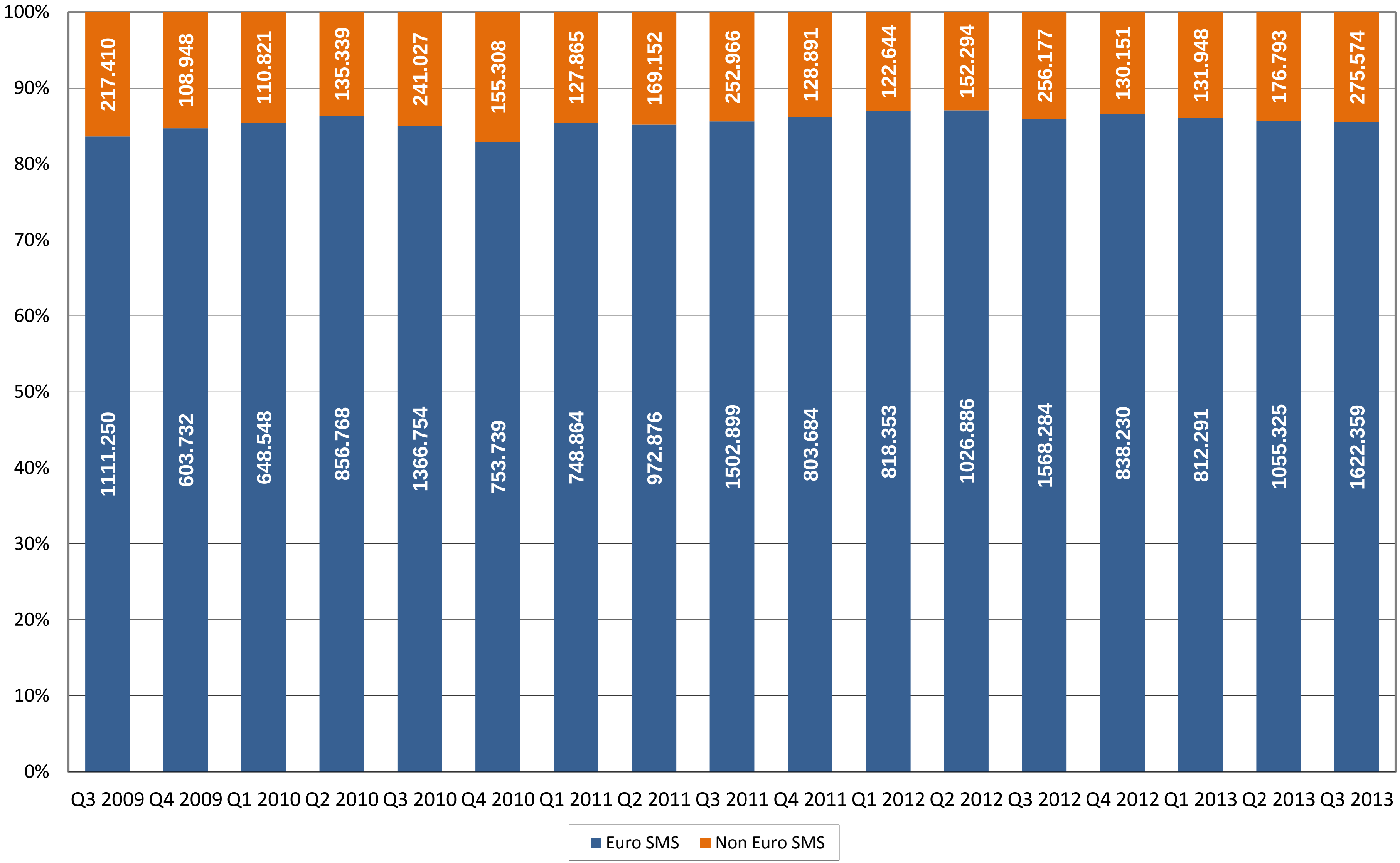


Figure 29: Average wholesale price per intra-EEA roaming SMS: charges to non-group companies



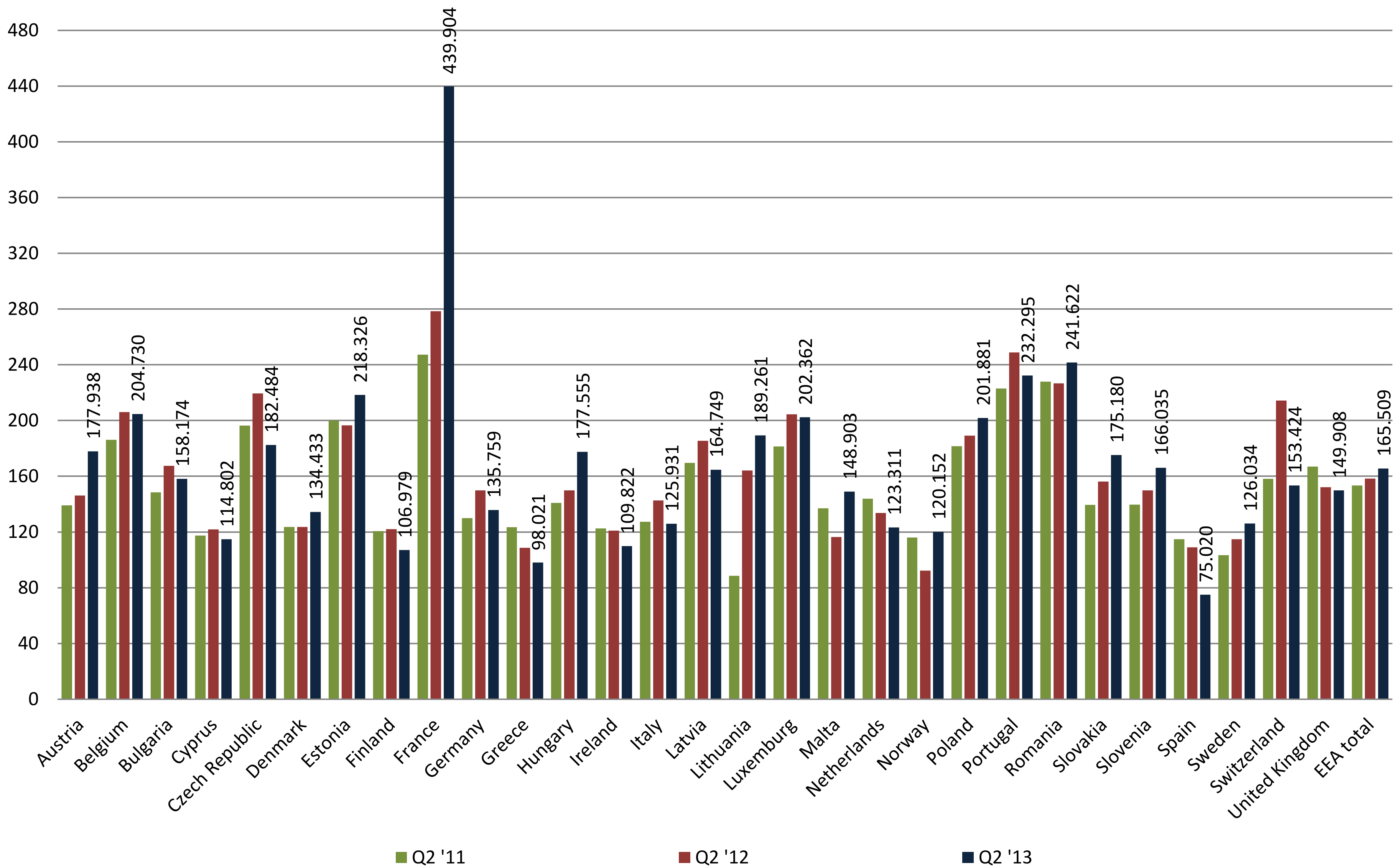
Percentage of SMS from alternative tariffs on total roaming SMS messages

Figure 30: EEA percentage of SMS messages: Euro SMS and Non Euro SMS (millions of messages)



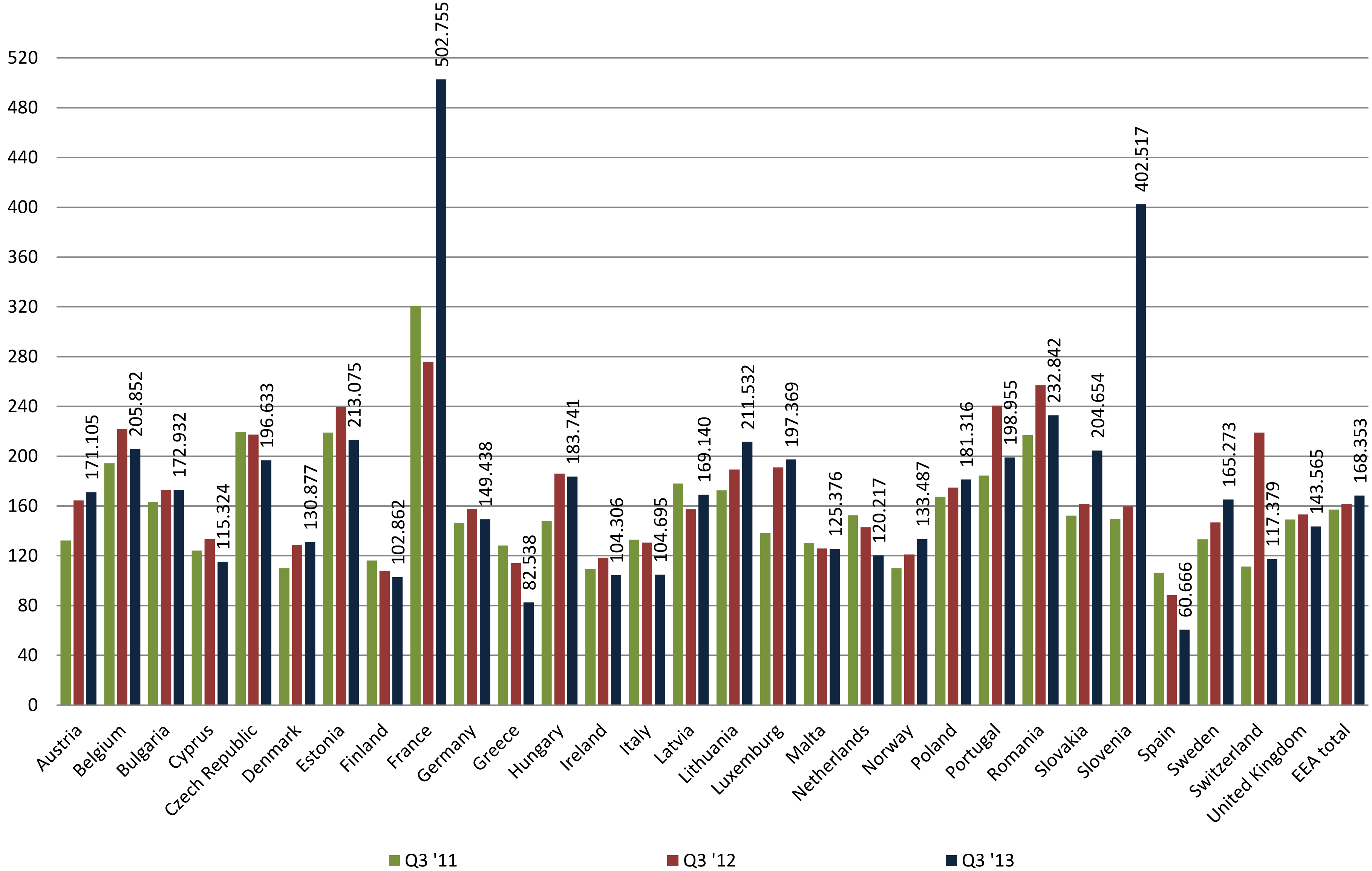
Volumes of retail roaming SMS

Figure 31: Volumes of retail intra-EEA roaming SMS sent in Q3 2012 (Q3 2008 = 100)



Liechtenstein: 0.096 (without based year); Switzerland (based year: Q2 2009 = 100)

Figure 32: Volumes of retail intra-EEA roaming SMS sent in Q4 2012 (Q4 2008 = 100)



Croatia: 7.257 (without based year); Liechtenstein: 0.098 (without based year)

DATA roaming services

Retail prices

Figure 33: Average retail data price per Mb (prepaid+postpaid)

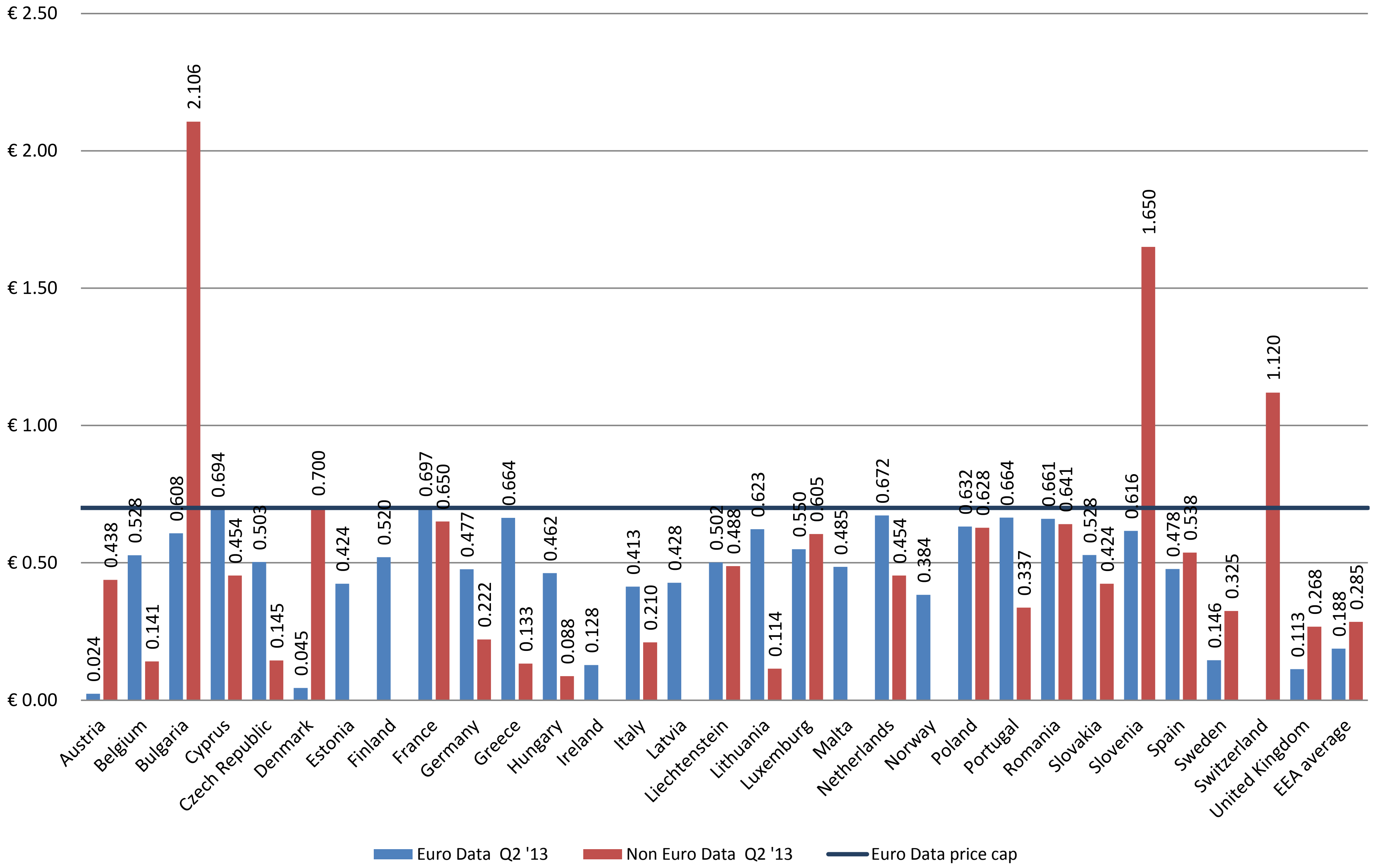


Figure 34: Average retail data price per Mb (prepaid+postpaid)

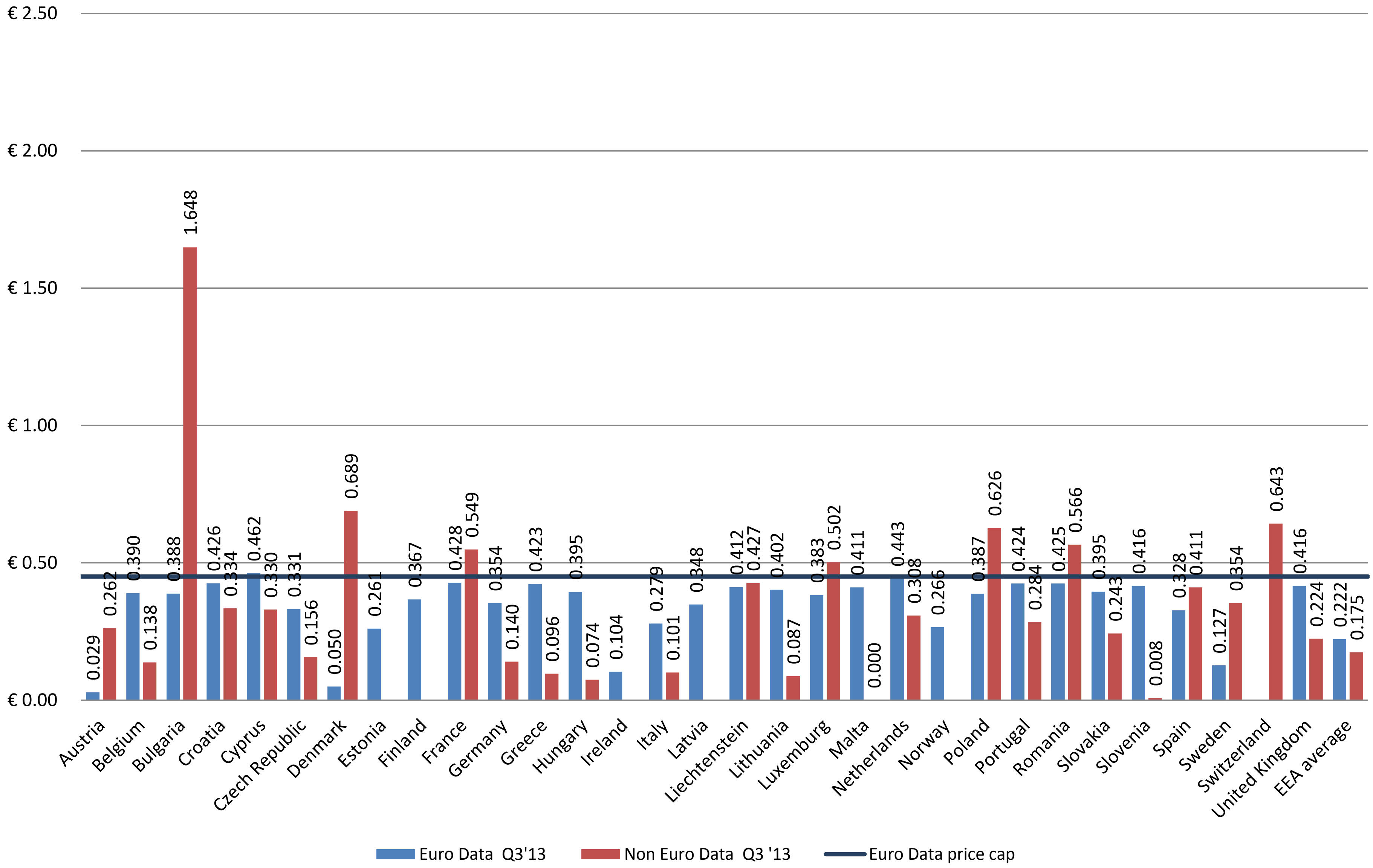
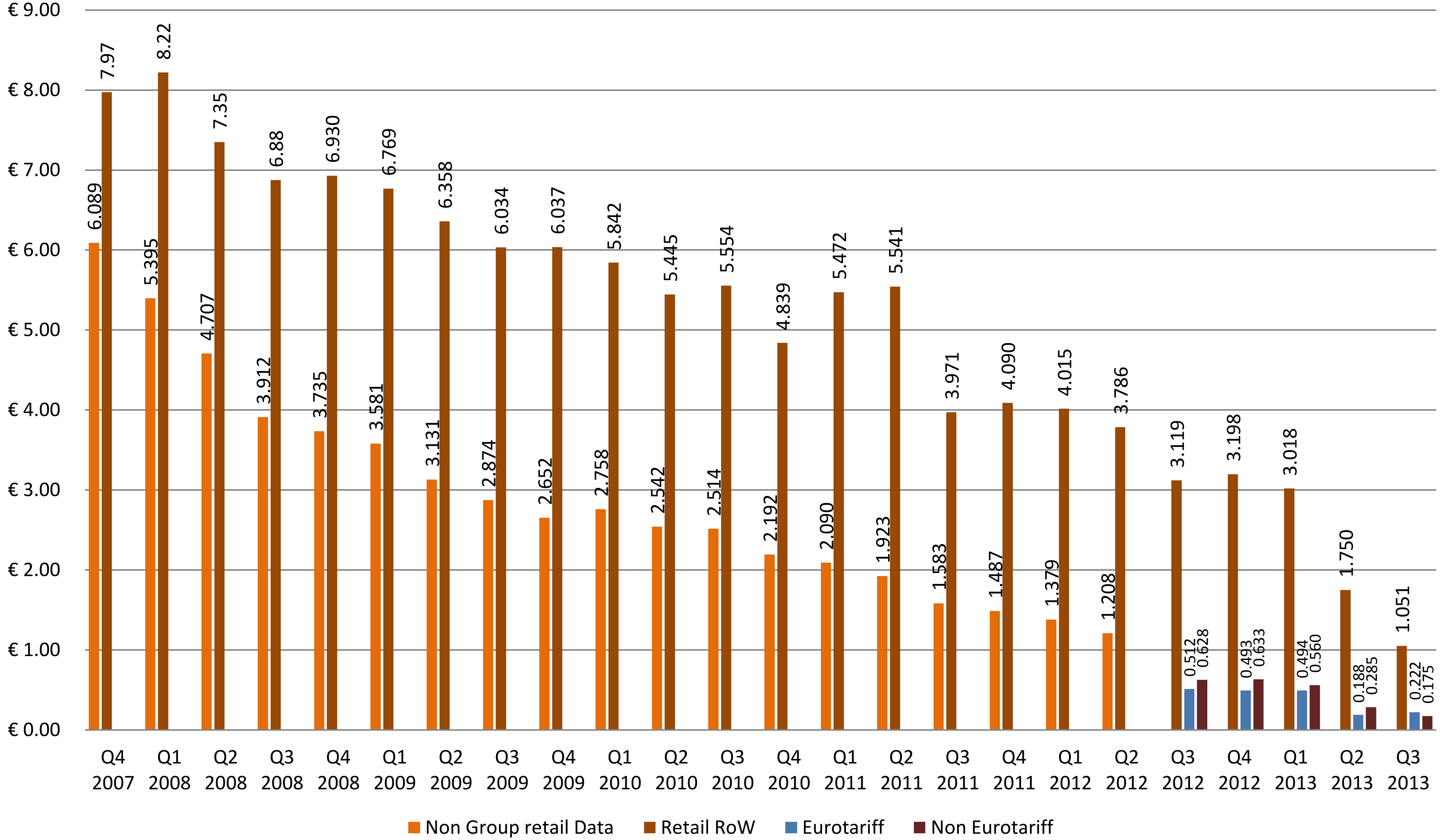


Figure 35: EEA average price per Mb for retail EU/EEA and RoW data (Eurotariff and Non Eurotariff: prepaid + postpaid)



Wholesale prices

Figure 36: Average wholesale data price per Mb for intra-EEA: wholesale roaming inbound

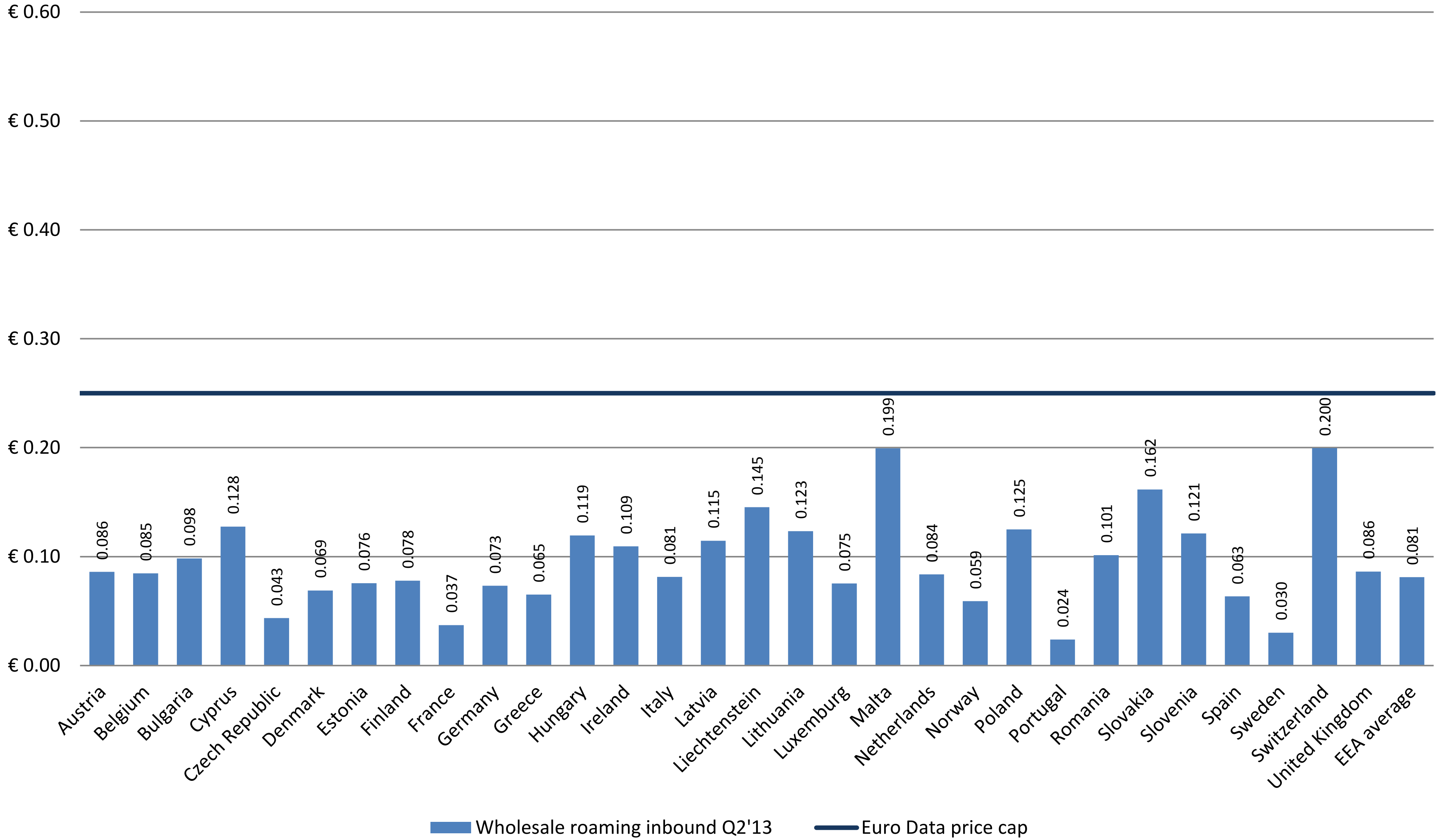
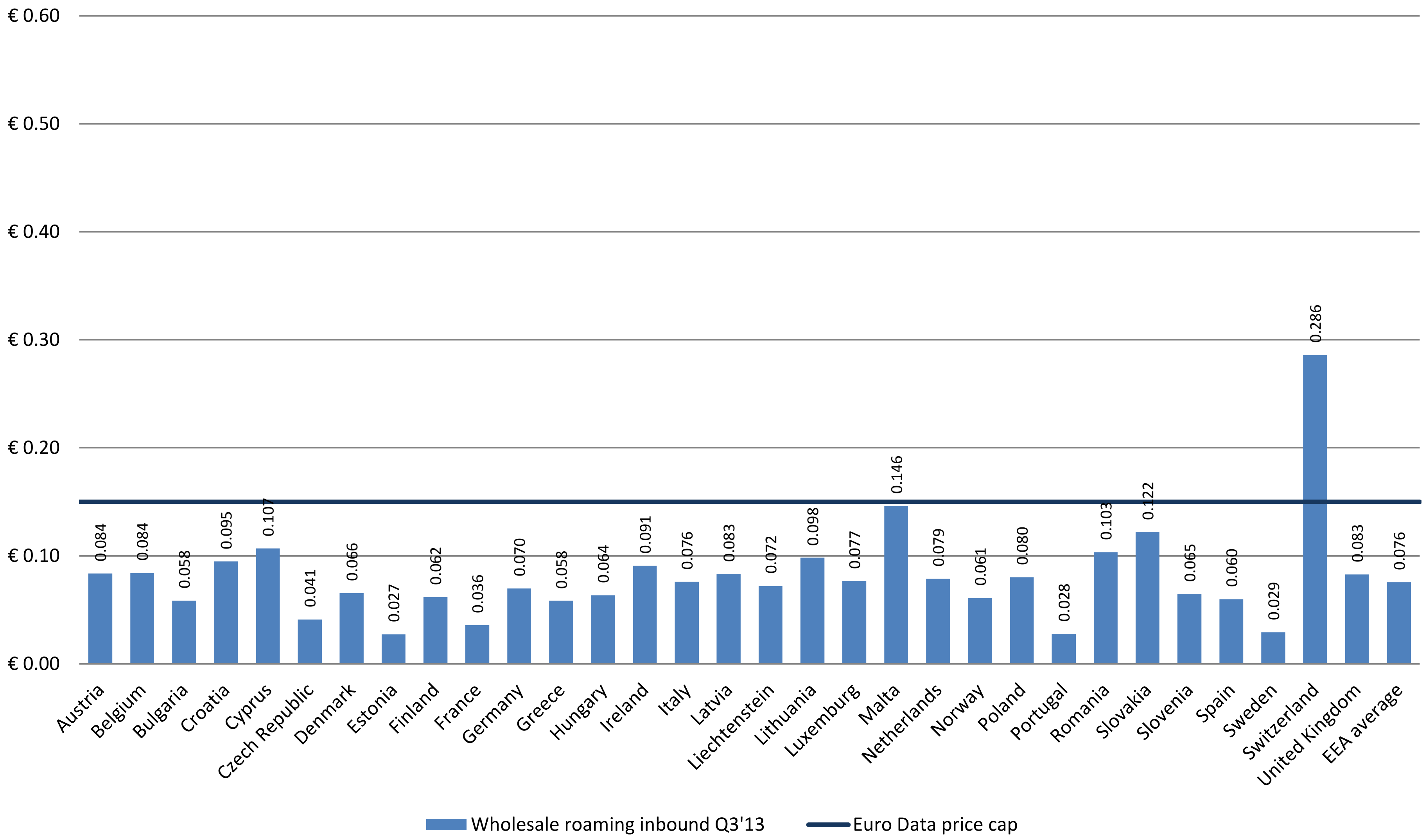
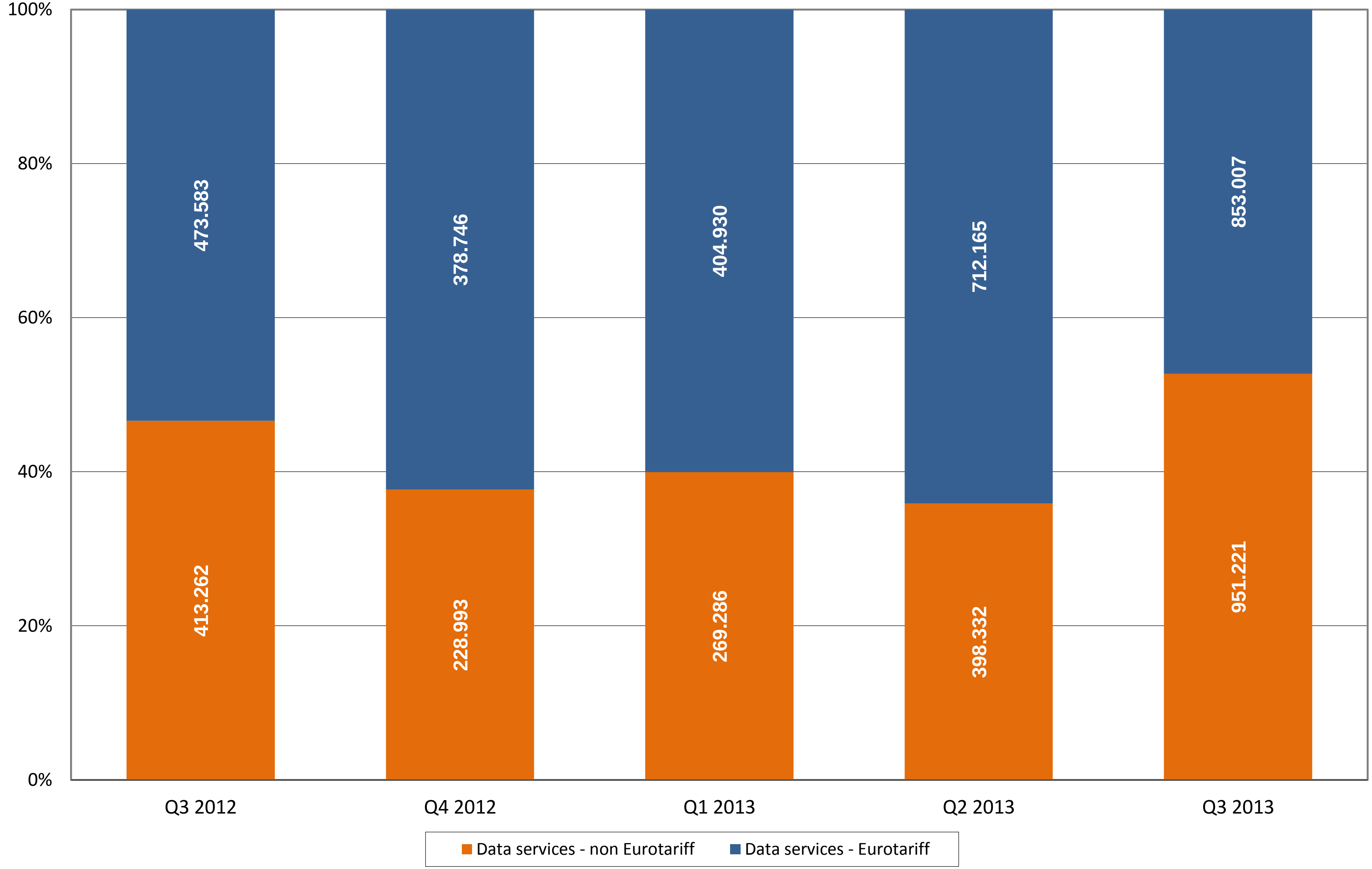


Figure 37: Average wholesale data price per Mb for intra-EEA: wholesale roaming inbound



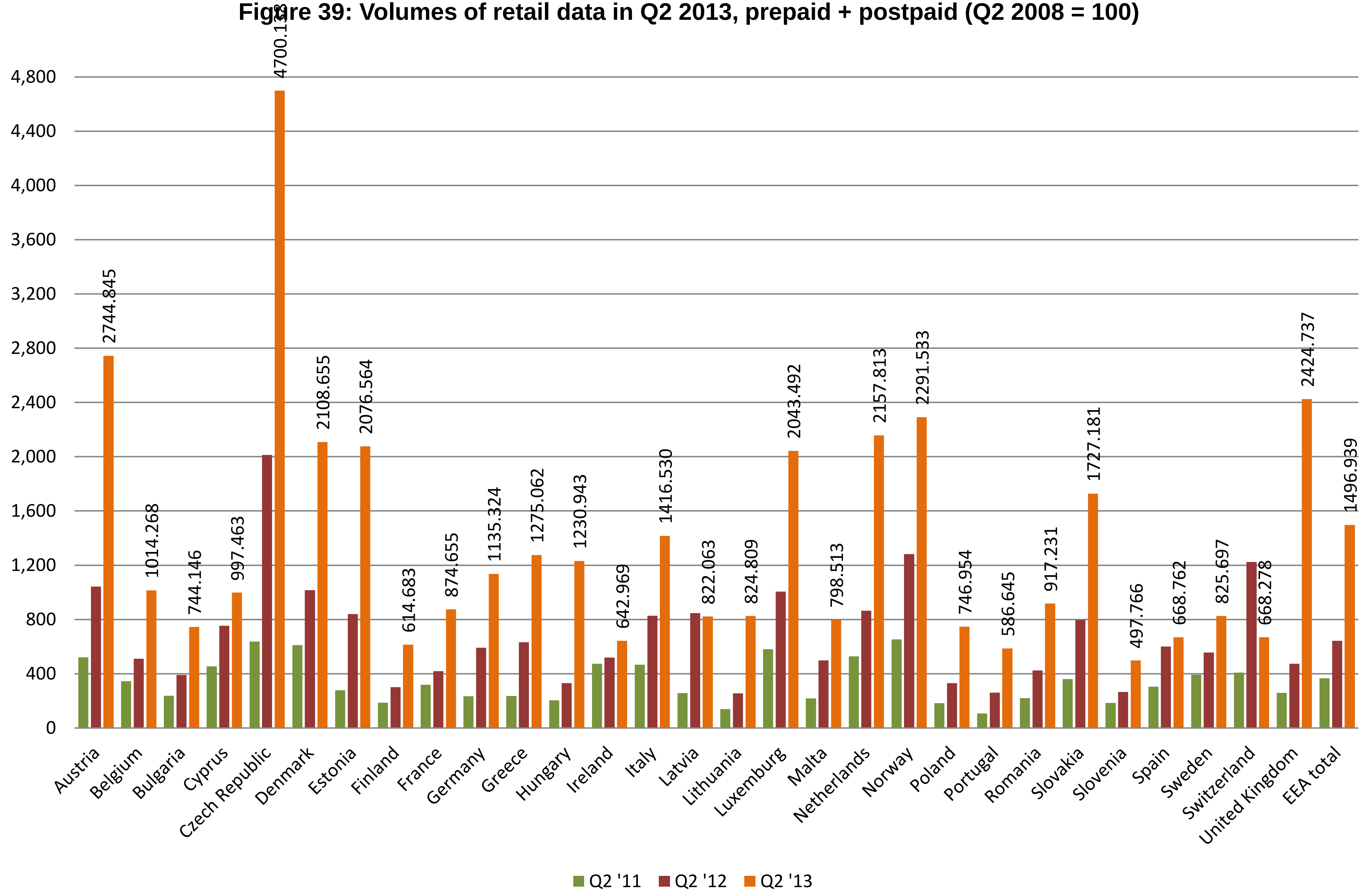
Percentage of volumes of Data from alternative tariffs on total data roaming volumes

Figure 38: EEA percentage of Data service: Eurotariff and Non Eurotariff



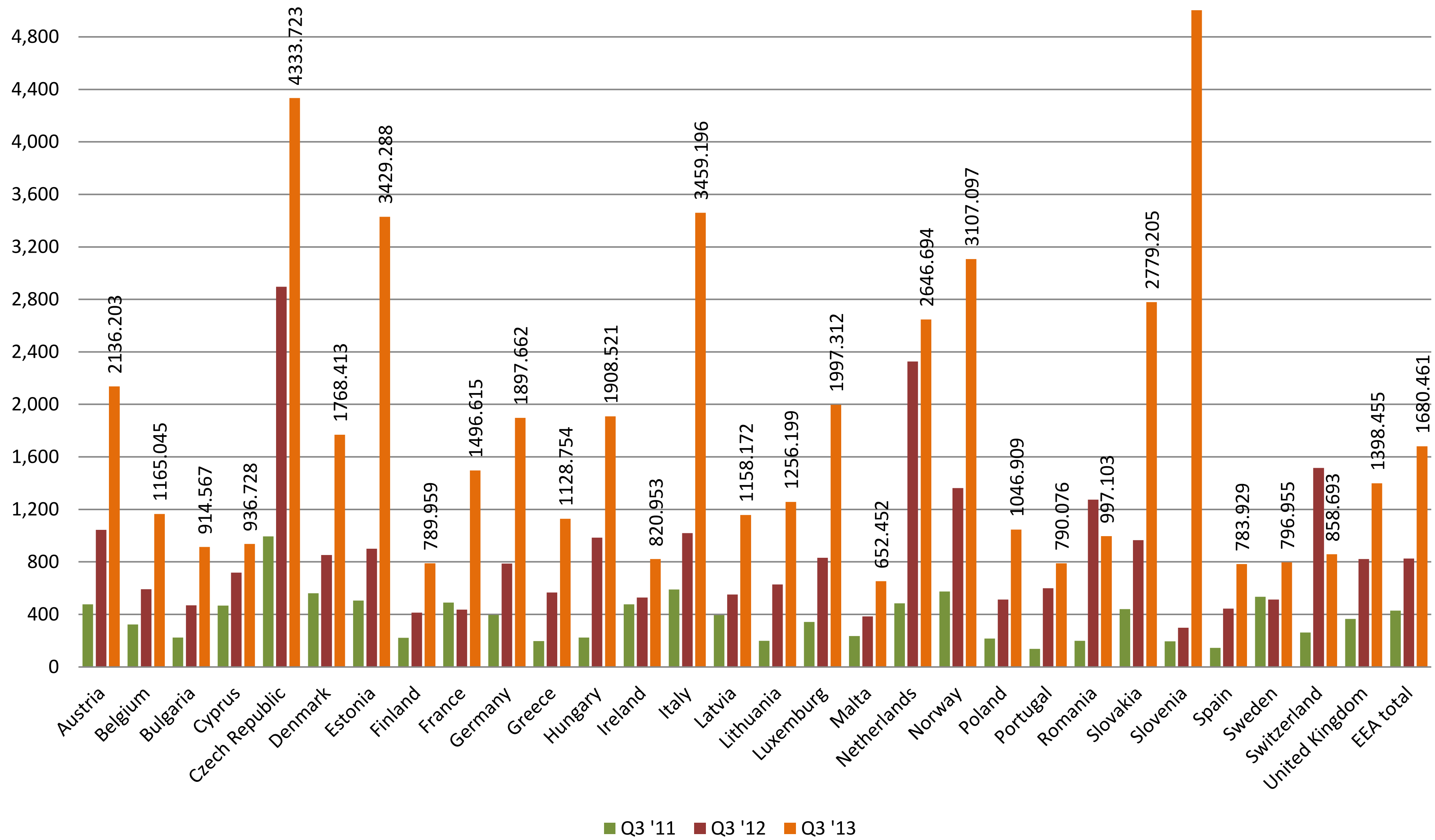
Volumes of retail Data services

Figure 39: Volumes of retail data in Q2 2013, prepaid + postpaid (Q2 2008 = 100)



Liechtenstein: 219.727 (without based year), Switzerland (based year: Q2 2009 = 100)

Figure 40: Volumes of retail data in Q3 2013, prepaid + postpaid
Index
(Q3 2008 = 100)



Croatia: 923.089 (without based year); Liechtenstein: 267.180 (without based year), Slovenia: 38158,152

Wholesale roaming (outbound): Agreements applying Article 3 of the Roaming Regulation

Figure 41: Wholesale EEA average outbound roaming: Voice, Agreements applying Article 3 Roaming Regulation

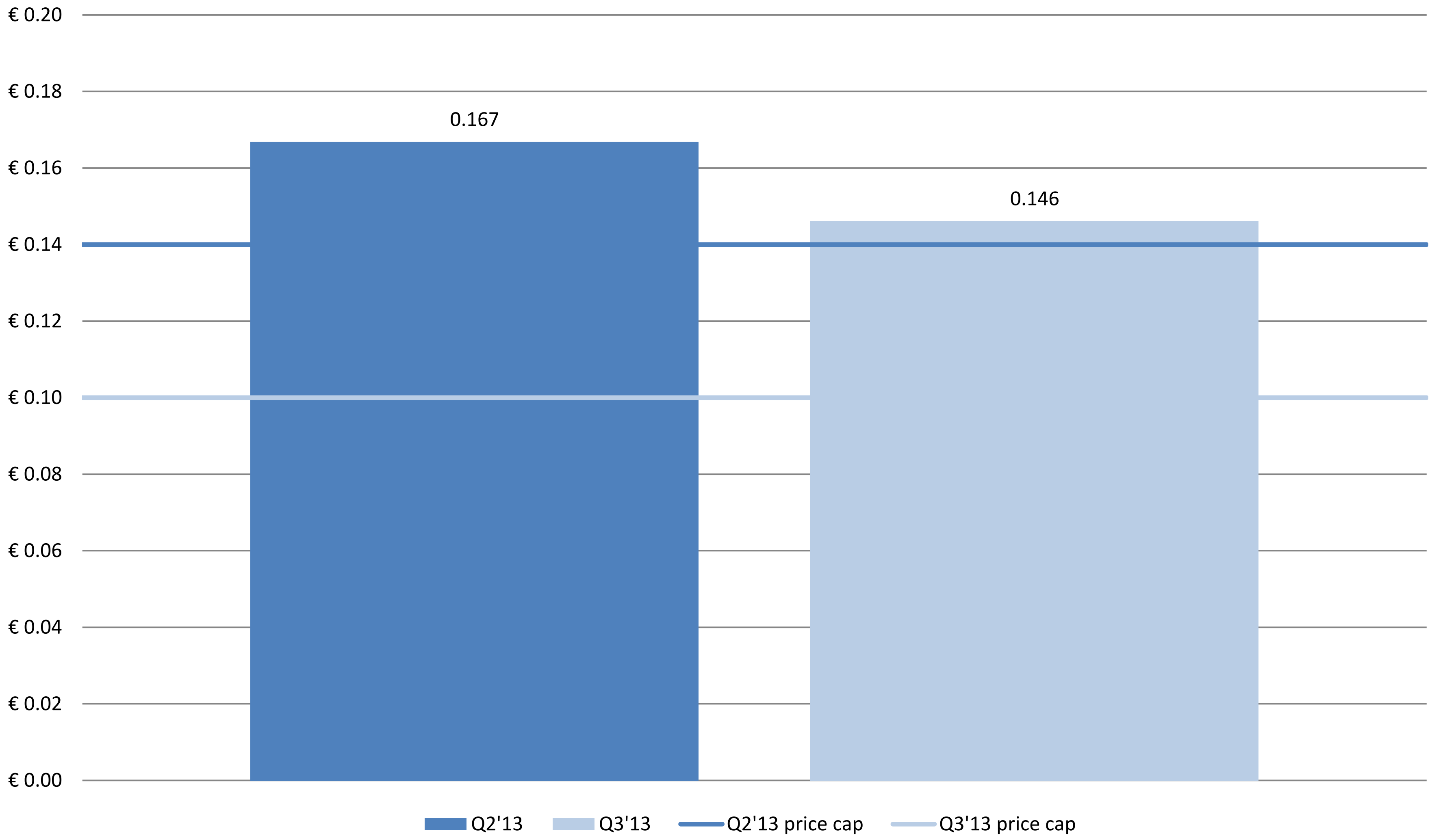


Figure 42: Wholesale EEA average outbound roaming: SMS, Agreements applying Article 3 Roaming Regulation

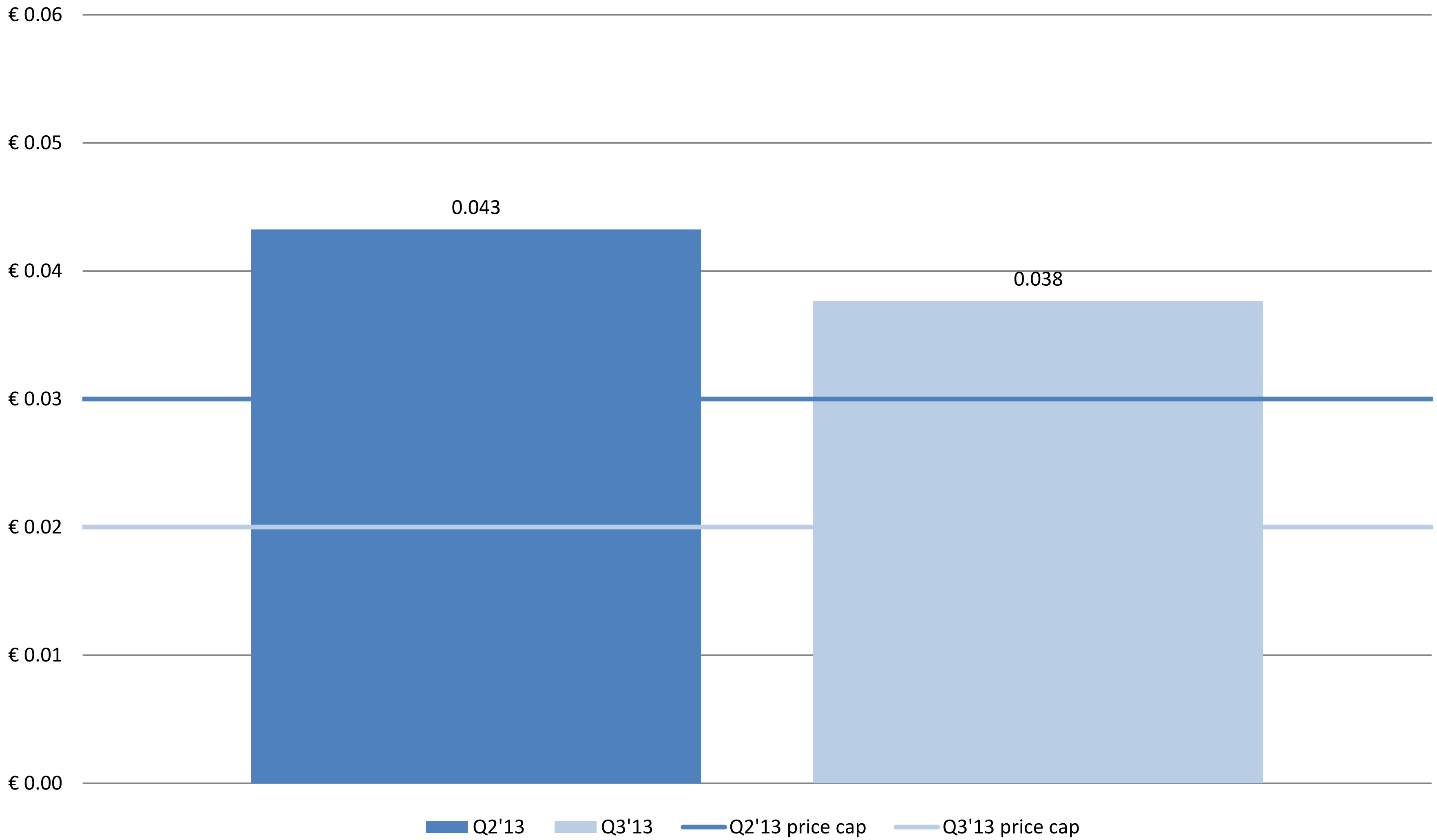
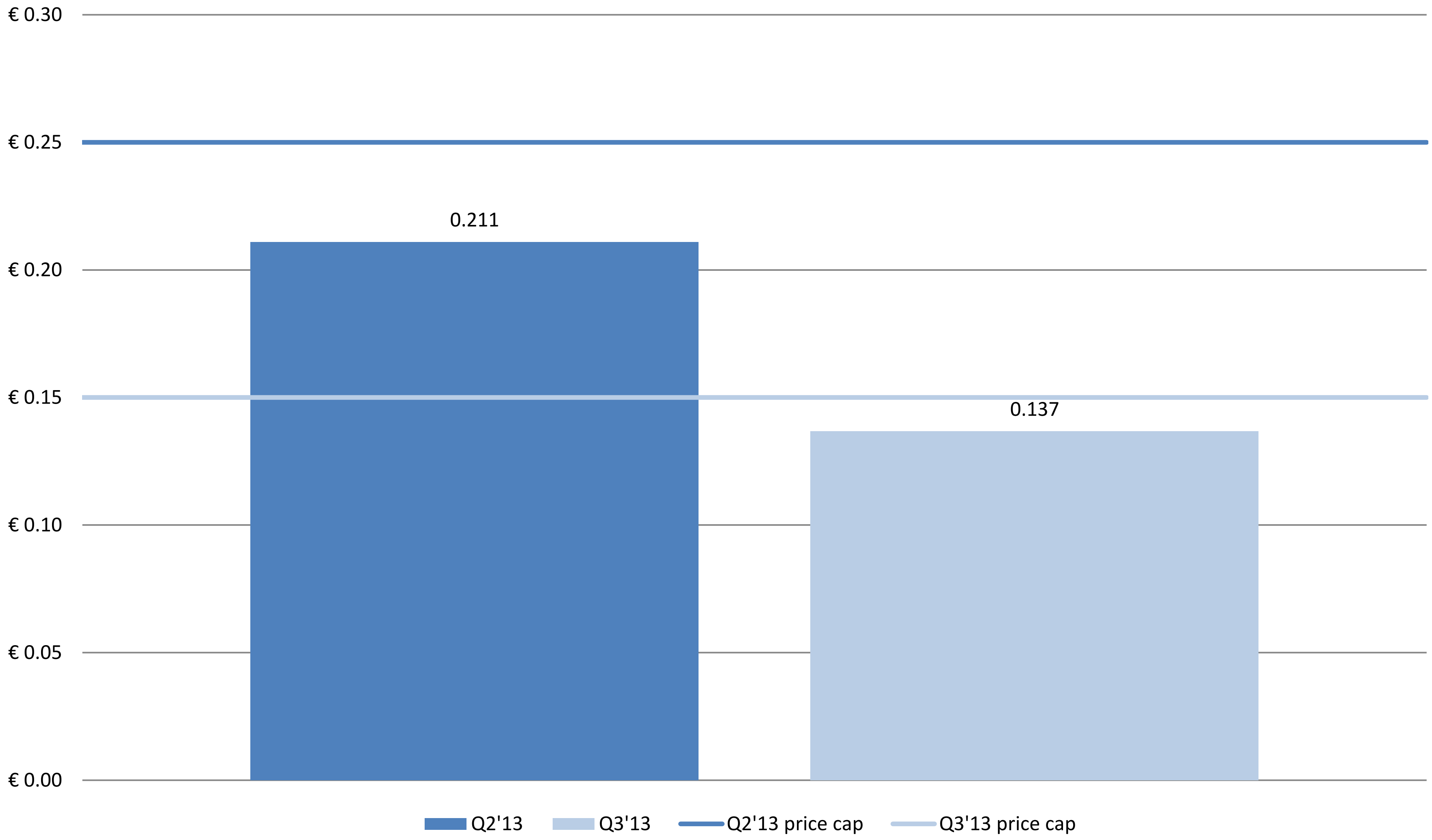


Figure 43: Wholesale EEA average outbound roaming: DATA, Agreements applying Article 3 Roaming Regulation



List of respondents

Below are the operators that provided data for the period 1 April 2013 – 30 September 2013:

Austria
A1 Telekom Austria
T-Mobile Austria
Orange Austria
Hutchison 3G Austria

Belgium
Belgacom Mobile
KPN Group Belgium (Base)
Mobistar

Bulgaria
Bulgarian Telecommunication Company (Vivacom)
Cosmo Bulgaria Mobile
Mobiltel

Croatia
Hrvatski Telekom
Vipnet
Tele2

Cyprus
Cytamobile-Vodafone
MTN Cyprus

Czech Republic
Telefónica Czech Republic
T-Mobile Czech Republic
Vodafone Czech Republic
Terms
TVNET
Ringier Axel Springer
Tesco Mobile
FAYN Telecommunications
Canistec
GTS

Denmark
Hi3G Denmark
TDC
Telenor
TeliaDanmark

Estonia
AS EMT
Elisa Eesti
OÜ Top Connect
ProGroup Holding
TELE 2 Eesti

Finland
Ålands Telekommunikation
DNA
Elisa Corporation
TeliaSonera Finland

France
SFR
Bouygues Telecom
Orange Caraïbe
Orange France
Free Mobile

Germany
E-Plus Mobilfunk
Telefónica Germany
Telekom Deutschland
Vodafone D2

Greece
COSMOTE Mobile
Vodafone Panafon
Wind HellasTelecommunications

Hungary
Telenor Magyarország
T-Mobile
Vodafone Magyarország
Tesco 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
Carrefour Italia Mobile
Coop Voce
Fastweb
H3G Italia
Noverca Italia
Poste Mobile
Telecom Italia
Tiscali Italia
Vodafone Omnitel
WindTelecomunicazioni

Latvia
Bite Latvia
LatvijasMobilaisTelefons
Tele2

Liechtenstein
Mobilkom (Liechtenstein)
Orange (Liechtenstein)
Telecom Liechtenstein

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
Telenor
TeliaSonera Norge
Network Norway
Tele2
MyCall
Ventelo
OneCall

Poland
P4
Polkomtel
T-Mobile Polska
PTK Centertel

Portugal
CTT – Correios de Portugal
OPTIMUS – Comunicações
TMN – Telecomunicações Móveis Nacionais
Vodafone Portugal – Comunicações Pessoais
ZON TV Cabo Portugal
LycaMobile Portugal
Lda
Mundio Mobile (Portugal) Limited

Romania
Cosmote RMT
Orange Romania
RCS&RDS
Vodafone Romania

Slovak Republic
TelefónicaSlovakia
Orange Slovensko
Slovak Telekom

Slovenia
Debitel
Izi mobil
Telekom Slovenije
Si.mobil
T-2
Tušmobil

Spain
Euskaltel
Orange
TelefónicaMóviles de España
Vodafone
Yoigo

Sweden
Hi3G Access
Tele2 Sverige
Telenor Sverige
TeliaSonera

Switzerland
Orange Communications
Sunrise Communications
Swisscom (Schweiz)

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