Vodafone

September 2017

Response to Ofcom's Consultation: Mobile call termination market review 2018 – 21
Confidential version

Executive Summary

The UK mobile communication sector has been at the forefront of technological advances and consumer innovation for the past three decades. Mobile voice telephony which we now take for granted has transformed beyond just talk and text into a fully mobile life, with banking, shopping, socialising and business being carried out mobile and untethered wherever mobile connectivity is available.

In recent years elevated levels of investment in new services, radio spectrum and wider coverage, coupled with tougher competition and regulation such as roaming reforms and the regulation of termination rates have had a significant impact on the profitability of the UK industry, So much so, it now compares unfavorably in both international terms and against the UK's regulated fixed communications sector.

In fact, profitability levels in the UK mobile market are so poor that the four mobile networks combined are less profitable, yet have more customers than Openreach, who's almost entire business is subject to Ofcom scrutiny and regulation. This economic picture has not gone unnoticed by international investors, with two of the largest global telecoms companies, Deutsche Telekom AG and Orange S.A. pulling out of the UK mobile market (with the sale of EE). It is also public knowledge that Telefonica S.A. has been trying to sell its UK operating company O2 for some time. With investment returns in other international mobile markets significantly better, it is not hard to see why international investors might wish to look outside the United Kingdom in order to invest their capital.

It is right that Ofcom has found that mobile operators have a level of SMP in this market and proportionate regulatory controls should be put in place to remedy it. However extending regulation to cover 'just in case' scenarios is unhelpful to a sector struggling with both profitability and attracting inward investment. It sends the wrong message to the market, placing further obstacles in the path to future growth, which will need to be driven by investment, service enhancement and technological progress.

We fully support Ofcom's approach to the 2018-21 charge control model: rolling forward the existing model and assumptions. However we do not support Ofcom's proposal to capture non-EEA originating calls in the scope of regulation. Such an intrusive intervention is not warranted by market failure or economic necessity and is legally without merit. By extending domestic MCT SMP regulation to non-EEA originating calls, it puts UK consumers at risk of higher international call charges and exposes UK mobile carriers to higher wholesale rates. At a time when Brexit could lead to a whole variety of international trade deals being reviewed (not least the UK's membership of the EEA), we are surprised that Ofcom is minded to impair UK mobile operators by constraining their negotiating hand before any discussions even commence. Furthermore, whilst we remain in the EEA, Ofcom's regulation puts the UK as one of only 4 countries where non-EEA mobile termination is subject to regulatory controls and the country that is likely to have the largest adverse commercial impact due to both the size of the market and the flow of traffic. It can never have been the intention of either the EC framework or the Communications Act to constrain a member state in this way.

We urge Ofcom to rethink this aspect of its proposals, backing the UK mobile sector at this crucial time, ensuing the industry has as free a hand in future bilateral non-EEA discussions, thus helping to safeguard the interests of UK consumers.

Introduction

A recent DCMS commissioned Analysis Mason report into the UK mobile industry costs and profitability[1] identified that the costs of land and rents for cellular sites had increased over recent years compared to mobile operator's revenues and profitability, which had sharply declined, concluding that continued increases in costs were not sustainable. The chart below illustrates the extent of the problem, with operating cash flow (summed for all operators) turning negative in 2013 with little prospect of a sustainable recovery.

Figure 1: Operating cash flow to financing for all UK MNO's

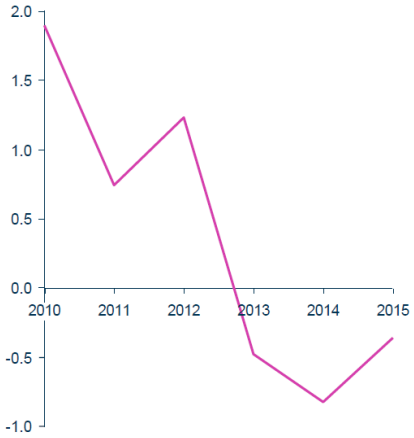


Figure 5.16: Operating cash flow to financing for all UK MNOs, 2010–2015 (GBP billion) [Source: GSMA Intelligence, Operator annual reports, Analysys Mason spectrum auction tracker]

This Ofcom consultation takes place against this fragile financial backdrop, and it is essential that Ofcom uses this Mobile Termination Rate Market Review to balance low prices available to UK consumers with a robust mobile sector. Economic headwinds, not least the uncertainties of Brexit, will challenge a sector that is expected to continue to invest and innovate and support the UK's international reputation as a leader in this field.

We therefore welcome Ofcom's objective to balance the need to protect the interests of consumers against a desire to place no further regulatory burdens on UK operators[2]. Delivering as much certainty as possible and allowing UK mobile providers to operate without hindering them commercially in comparison to their overseas counterparts is key to that outcome, not only for the financial wellbeing of the UK sector, but also to protect the interests of UK citizens and consumers.

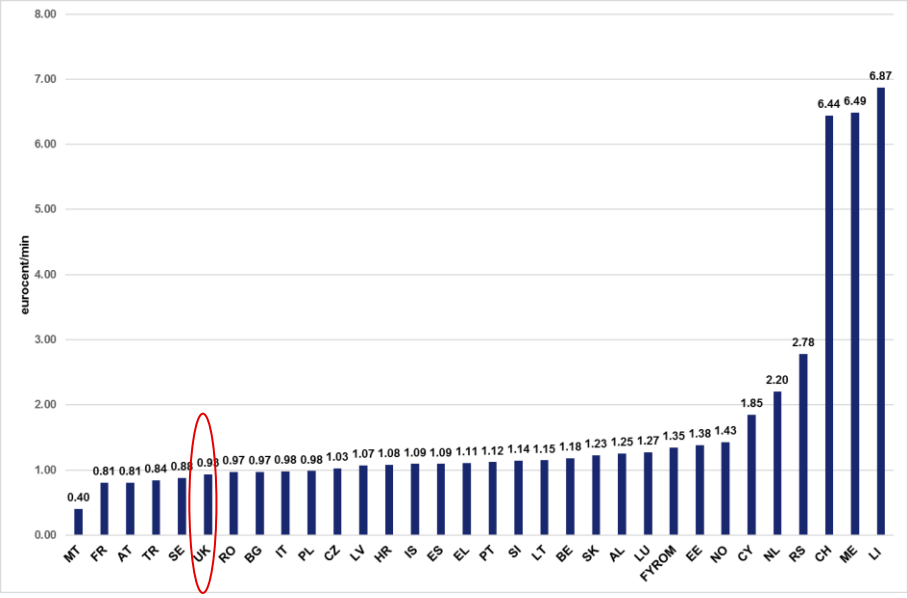
Vodafone supports Ofcom's objective of securing a light touch approach to the MTR model re-fresh, believing it to be both proportionate and able to provide an accurate reflection of the costs for domestic termination in the period from April 2018 to March 2021. To retain the integrity of the model it is key that with the exception of updating CPI values, other model variables should remain constant. Taking a piecemeal approach and selectively updating some variables

[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/523787/Analysys_Mason_-_Financial_impact_of_ECC_changes_-_Final_report__3_.pdf

[2] Embodied by the statement within the consultation that: *"... that there are opportunities in this review to simplify the approach we take, and the remedies we propose, applying a lighter touch where appropriate." See:* https://www.ofcom.org.uk/__data/assets/pdf_file/0011/103340/mobile-call-termination-consultation.pdf , paragraph 1.15

and not others would compromise the objectiveness of the original model. UK MTRs are already one of the lowest in Europe as illustrated below, and consumers will benefit from this continuity.

Figure 2: Average wholesale termination revenues per country (euro cent/min) (Source: BEREC)[3]



We are however disappointed that Ofcom has failed to give the UK mobile sector a free hand in setting termination rates for calls originating outside the European Economic Area. These calls should not be included within a domestic charge control, as they constitute an entirely separate economic market. Including them in a UK focused charge control results in the UK sector having one hand tied behind its back, unable to respond on a reciprocal basis or mediate the consequences of currency fluctuations. It represents an own goal for the UK sector providing a wealth transfer away from the UK sector and its consumers at a time when it is struggling to compete for inward investment, a task set to get harder while the uncertainties of Brexit prevail.

Ofcom has observed that the UK mobile industry generated revenues of around £15bn in 2015 with 'net MTR' revenue (excluding mobile to mobile revenue) put at £85 million, and non-EEA net outpayments (or costs) estimated at £36 million[4]. Ofcom explain that the net MTR revenue of £85 million and the non-EEA termination costs of £36 million are insignificant to the UK mobile industry. This perspective completely misses the enormity of the commercial challenges facing the UK mobile industry and downplays the true extent of industry harm that will result in EEA revenues being subject to a domestic charge control especially post Brexit.

The stark reality is that at current levels of profitability, £85 million is extremely significant and the current loss of a further £36million in termination out payments to non-EEA countries constitutes a significant loss to the UK mobile industry. In addition to this the outpayments (or costs) for terminating calls in non-EEA countries will, post Brexit in all

[3] http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/6603-termination-rates-at-european-level-july-2016
[4] *The consultation*, paragraph A11.15

likelihood increase significantly should we ourselves find ourselves outside the EEA and EEA countries begin to surcharge us for terminating calls in their countries. We estimate that post Brexit for the UK mobile industry under Ofcom's current proposals termination outpayments to EEA countries will be in excess of £50million[5], which means that total termination outpayment costs for the UK mobile industry will be approximately £100million. This represents a spectacular own goal, transferring wealth away from the UK market and its consumers. The reality is that this will ultimately be funded by UK consumers through higher international calling costs and reduced international calling bundles. We urge Ofcom to rethink this aspect of its proposals and support the UK industry and its consumers.

Ofcom needs to support UK consumers and UK industry. As a regulator, Ofcom's jurisdiction is the United Kingdom, its consumers and markets and the innovations, investments that support that market and deliver efficient pricing. In the case of non-EEA originating calls, there is no conflict between stakeholders or these objectives. UK consumers and mobile operators benefit from having a mobile sector able to set charges for non EEA countries to match market conditions and reciprocate commercial arrangements and thus not having to increase the cost of international calling for UK consumers.

In this response we comment further on Ofcom's 'light touch' modelling approach and the validation of the input assumptions that Ofcom carried out, and we explain why we believe that Ofcom have incorrectly defined the termination market. In particular we explain why Ofcom has not:

- fully understood the pricing constraints imposed by OTT VoIP services on international calls and the different consumer behaviour exhibited when deciding which originating network to place a call with from an overseas (non-EEA) market.
- considered the consumer benefits of allowing UK MCPs to price the termination rates of non-EEA originated calls flexibly,
- justified why the UK should be treated differently from every other EEA country that has significant volumes of incoming calls from outside the EEA, and
- considered the impact of Brexit, which could cause the UK to be classified as a non-EEA country, and
- carried out sufficient analysis or research to explain why they are proposing a change in their *de facto* policy of effectively allowing UK MCPs to impose a surcharge on non-EEA originating calls which terminate in the UK.

[5] [Confidential]

MCT cost model approach and design

Vodafone considers Ofcom's approach to calculating the efficient cost of MCT to be proportionate and appropriate because the 2015 MCT model with CPI inflation updated ("the 2017 MCT model") provides an accurate reflection of reality for the period from April 2018 to March 2021.

In 2015, the 2015 MCT model was considered by Ofcom to be appropriate for calculating the cost of call termination. In the absence of significant market developments, the 2015 MCT model should still reflect an appropriate basis for the calculation of call termination costs in 2017, for so long as the forecast assumptions remain in-line with actual outcomes.

We understand that, to test whether forecast assumptions in 2015 were still appropriate, Ofcom requested actual information from the industry operators.[6]

"*To inform our testing we have collected data from the four largest MCT providers using our information gathering powers under section 135 of the Act. We sent information requests to the four largest MCT providers on 16 February 2017 requesting detailed information in relation to: Technology choice, Subscription information, Network traffic volumes, and Forecasts for traffic growth.*"

Vodafone agrees with Ofcom's analysis that, taken in the round, updating the data would make very little difference to the MTR, and therefore the appropriate and proportional response is not to update the model. Nevertheless, Vodafone questions the reliability of updating selective aspects of the model (save for refreshing the CPI data) as this would compromise the model's overall integrity. We would be very concerned if Ofcom were to update selective assumptions without conducting a comprehensive full review of the charge control model. It remains our preferred approach to carry forward the existing model with CPI values refreshed, as we believe this is both proportionate and a reliable reflection of the cost of domestic call termination.

We respond to the updates of each of Ofcom's 'key inputs' below. In summary, whilst Ofcom's 2017 analysis provides comfort that an update to any of the assumptions would not make a material difference to the outcome, we do not consider that any of the 2017 analysis would be robust enough to use as an actual basis for updating the 2015 MCT model. Further we believe that the 2017 MCT model with updated CPI inflation, and with all the other assumptions left unchanged provides the most accurate reflection of the costs to mobile operators of call termination during the period of the next charge control.

Technology choice

In terms of technology choice, the largest consideration in the model seems to be the effect of VoWiFi on the LRIC of call termination costs. Ofcom appears to have carried out a sensitivity analysis instead of updating the model with more accurate data.

[6] *The consultation,* paragraph 5.8

Ofcom state:[7]

"As noted above, the information gathered from the MCT providers under our statutory powers suggests that the extent of VoWiFi is currently low, but varies between MCT providers (between 0% and 4%). The extent to which it might grow is unclear however, and we have therefore tested a range of assumptions for this."

Vodafone considers that this data supports the assumption originally used in the 2015 MCT model. However if this assumption were to be updated, Ofcom would need to consider what the most efficient technology would be available in the period of the charge control. Such a task would require detailed analysis and research, and a forecast of technologies that other operators in other European countries are likely to use.

While Ofcom's overview of the impact of VoWiFi traffic volumes on the MCT charges is interesting, it does not provide any basis for updating the model, even if it validates the input assumptions used in 2015.

Network traffic volumes

We understand that Ofcom has requested updated traffic volumes from all operators. As Ofcom shows,[8] the 2015 base case is broadly in line with the actual outturns in 2016/17 Q1. However in 2014/15 there seems to be a drop in traffic (compared to forecast) that recovers to be in line with forecast by 2016/17 Q1.

The drop in actual traffic in 2014/15 is the most significant change in traffic shown along the data series. As far as we are aware, there have not been any significant developments within the industry that would explain the drop. For this reason, we believe that the issue is most likely associated with the actual data rather what actually happened. Therefore we consider that Ofcom's 2015 base case with steady, slightly increasing volumes provides an accurate modelling input in 2017.

We also understand that Ofcom have sought to update the termination technology forecast, even though it is extremely difficult to obtain actual volume information for termination by technology. Ofcom's goal is to model the most efficient technology, and thus ascertain if the actual use of a specific technology causes higher modelled costs. However, this is not necessarily a sufficient reason to update the cost model.

If the model were to be updated, it would be necessary to carry out a full review of the way the model triggers additional 3G and 4G cell sites. This is because, as acknowledged by Ofcom, the reduction in 3G data carriage has triggered a significant increase in 3G call termination costs, which would need to be investigated and analysed. This example illustrates why carrying out a limited update of the modelling assumptions without a comprehensive review of the model is so problematic.

Equipment unit cost

Vodafone consider that the 2015 equipment unit cost assumptions provide an adequate base for projecting equipment costs in the 2017 MCT model. Vodafone expresses no opinion about the appropriateness or robustness of Ofcom's comparison to the ARCEP Analysis Mason model.

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[7] *The consultation*, paragraph A9.20
[8] *The consultation*, section 5

Cost of capital

Vodafone do not consider it appropriate to update the modelled cost of capital in isolation. As already mentioned, merely updating part of the 2015 MCT model would require Ofcom to decide on the relative importance of the modelling assumptions; this would need to be sufficiently transparent for stakeholders to review and in effect to do this, Ofcom would need to review all the modelling assumptions to demonstrate the relative importance.. Although Vodafone consider Ofcom's analysis sufficient to produce a wide range of WACC values to ensure past calculated values still fall within a reasonable range, we do not consider that Ofcom's existing analysis is robust enough to justify updating or changing the WACC assumptions in the charge control model.

Specifically Vodafone would question and want Ofcom to justify the difference between the calculated pre-tax nominal rate for mobile operators, and the WACC proposed in the WLA market for 'other UK telecom operators' of 9.4%.[9] Currently this rate falls within the 'validation' range Ofcom have calculated.

[9] *The consultation*, table A16.1

Application of the charge control to non-EEA calls

Vodafone considers that whilst Ofcom is correct to conclude that there are separate product markets for MCT for each individual mobile number. It errs when the market definition is widened to a market of all calls terminated by an individual operator, regardless of where the call originates. As we shall demonstrate, domestically originated and internationally originated MCT have different market conditions and, contrary to Ofcom's view, are not bound together by a common pricing constraint. Ofcom should define separate market remedies for each MCP in respect of both domestically originated MCT (i.e. calls originating in the UK and the EEA[10]) and non-EEA originated MCT. The market conditions in these markets are very different and require separate market reviews. There are also clear benefits to UK consumers by allowing MCPs flexibility in setting MTRs for non-EEA originated calls. Even if UK MCPs raise MTRs for calls from non-EEA countries where local MTRs are high or uncapped, the additional revenues received by UK operators will intensify competition among UK MCPs for international traffic, which is likely to manifest in lower outgoing retail international calling charges to non-EEA countries and better bundle offers.
Ofcom indicated to MCPs some time ago that it believed the wording of the domestic charge control included non-EEA MCTs. However, Ofcom stated that it would not take enforcement action against UK MCPs who levied surcharges on non-EEA originating calls. It is not clear whether Ofcom's explicit consideration of MTRs for incoming non-EEA calls signals a change in Ofcom's policy of effectively allowing surcharging; however it is clear that there is no evidence of harm to warrant ex ante intervention in the market. This unnecessary extension of regulation lacks justification and creates the opportunity for more harm to consumers if prices elsewhere increase as a result. . We consider that there are a number of gaps in Ofcom's actual analysis of non-EEA MTRs which could call into question the validity of Ofcom's proposal to include non-EEA mobile call termination within the domestic MCT charge control. These gaps include Ofcom's failure to (1) consider the impact of Brexit, (2) conduct a proper cost benefit analysis, or (3) consider the disproportionate impact on MCPs relative to Ofcom's stated objective of protecting consumers against high international calling costs.

MCPs are effectively allowed to levy a surcharge in all other EEA countries that experience significant incoming international call volumes from non-EEA countries, like the UK does. It is not clear why Ofcom believes the UK should be treated any differently from EEA countries in this category. We believe Ofcom's table[11] that summarises the position across Europe is incorrect; our market based understanding of the current situation is set out below:

[10] Insert footnote to describe that regulation means that international EEA originating calls are treated effectively as domestic on a pan EEA basis
[11] *The consultation*, table A11.1

Market definition

Ofcom propose that the market for MCT should include the termination of all mobile voice calls by an individual MCP, regardless of where such calls originate. Based on this definition, Ofcom identify a total of 80 separate markets for wholesale MCT services, corresponding to each MCP.[12] Ofcom's reasons for reaching this conclusion are that (1) all call termination on an MCP's own network constitutes a distinct market because recipients lack the incentive to choose an MCP with a lower MTR, and (2) there is a common pricing constraint, which means that MCPs' pricing and behaviour are likely to be the same because it is likely to be costly and complex for MCT providers to charge different termination rates for calls to individual mobile numbers.[13]

There is however very strong evidence that the origination of non-EEA calls to UK mobile devices constitute a separate economic market, with consumer behaviour markedly different when placing calls to international mobile destinations. While it is true that call termination in the domestic market can be regarded as a bottleneck service, this no longer holds true for international calls, where consumers behaviour reflects the choice available over the full range of both originating providers and to a growing extent, the termination options (even to the same device) that are now possible.

For international calls far more consideration time is devoted to choosing options for origination and termination on a call by call basis at the point of making a call. This is in contrast to the domestic market where the purchase decision is made when the telephony supplier is picked and a bundled contract is entered into, rather than at the time of the call. This very often means that for international calls different purchasing decisions are made around which network to route the calls through and indeed what retail package to purchase from their default provider, with specialist calling plans available for more frequent international callers. This planning around non-EEA calls extends to both the timing of the calls (often to overcome international time differences and reducing the chance of the call going unanswered) as well as around origination / termination platform choice to minimise cost.

The competition between originating platforms and the consumers' willingness to consider a much broader range of suppliers than would be the case for a domestic calls (and increasingly inter-EEA calls) provides clear evidence of the different economic boundaries that exist for this non-EEA calling market. Consumers actively consider placing the call over fixed, mobile and over the top providers such as PSTN IDD calling specialist (using Non-Geo numbers to access onward routing platforms) and new digital OTT players like WhatsApp[14], which are used by 67% of sampled Android users for 10 sessions per day . Even amongst the more traditional routing choices of fixed and mobile origination, there are various retail call packages and passes that can be purchased to either eliminate or reduce the pence per minute tariff for non-EEA destinations. The same additional purchase consideration time is evident with both frequent non-EEA IDD callers, who have researched their best calling options in advance and use them frequently, as well as with

[12] *The consultation*, paragraph 3.42.
[13] *The consultation*, paragraph 3.40.
[14] https://www.ofcom.org.uk/__data/assets/pdf_file/0024/105549/cmr-analyst-briefing-2017.pdf

the more infrequent non-EEA IDD callers who will take additional time to consider which originating platform to use on a call by call basis.

The advent of the smart phone has resulted in this consumer choice extending into termination, where a number of options now exist around how a mobile device can be reached, with OTT apps such as Facebook Messenger and WhatsApp providing call services to individual handsets. This competition around mobile call termination for international traffic has a natural constraining impact on non-EEA call termination rates, as if rates are set too high, more traffic will be delivered using OTT applications.

This difference in consumer behaviour for international calls is nothing new, albeit technology has increased the range of choices available. Historically options were limited to IDA, CPS and IDD calling platforms, which recognised this different consumer behaviour by having specialist international packages. Ofcom itself has recognised this behavioural difference when it designed services like CPS, which have always had the option of an IDD only element. The competition between IDD providers from outside the EEA means there is an eagerness to reduce termination rates and this is often done on a reciprocal basis, benefiting UK consumer making non-EEA calls in the other direction. In contrast, within the domestic market (and increasingly in the intra-EEA market for calls) consumers do not spend much time considering their dialing options, choosing to use the nearest device to hand (with their purchase decision made well before the call). The contrast between these two distinct markets is stark, with very clear market boundaries delineating them.

Note that in this consultation response, we have assumed that calls originating from the UK and from other parts of the EEA fall into the same market, even though we don't specifically address calls originating from outside the UK, but within the EEA in this document. Pursuant to the Connected Continent Regulations of 2015,[15] the EU imposed retail and wholesale price caps on mobile roaming calls in the EEA. The Regulations effectively require MNOs to treat most retail calls originating in another EEA member state in the same way as domestically originated mobile calls, although there are limited exceptions. As a result, it is fair to assume that there will be a significant degree of parity between UK- and EEA-originated calls for so long as the UK remains a member of the EU. However, if the UK exits the EU and the EEA completely (i.e. if there is a "hard" Brexit"), then it is possible that the EU and UK regulatory regimes for telecoms will diverge over time. If UK and EEA MCTs become asymmetrical as a result, then it is clear that EEA-originating calls will no longer fall within the same market as UK originating calls.

Pricing constraints imposed by OTT services using VoIP

OTT services using VoIP (such as Skype, Facetime, WhatsApp, Facebook Messenger, BT SmartTalk and others) are growing by around 50% a year, as smartphones become more prevalent.[16]

Ofcom list three requirements for OTT services to provide a competitive constraint on MCT. They are that:[17]

- Retail prices for calls to mobiles must respond to increases in the MTR;

[15] Regulation (EU) 2015/2120 of 25 November 2015.
[16] *The consultation,* paragraph 3.19.
[17] *The consultation,* paragraph 3.21.

- Customers must respond to these increases by switching to OTT services;
- This switching is sufficient to constrain MTRs.

Ofcom argue that, in general, these conditions are not meet for MCT since:

- customers increasingly buy bundles of calls and so are not aware of the cost to them of an individual call;[18]
- although pre-pay customers are more likely to be aware of the cost of an individual call, they are the least likely to use OTT services.[19]

Ofcom then go to say that, based on Jigsaw research for the Ofcom Narrowband Market Review 2017: "OTT usage is far more prevalent for making international calls, which are typically excluded from inclusive call allowances, and have relatively high retail prices".[20]

Non-EEA originated calls to UK mobiles cannot be presumed to be included within call bundles in their country of origin. Use of OTT services will undoubtedly be prevalent, as most customers are aware of the (high) price of traditional circuit-switched calls. [21]

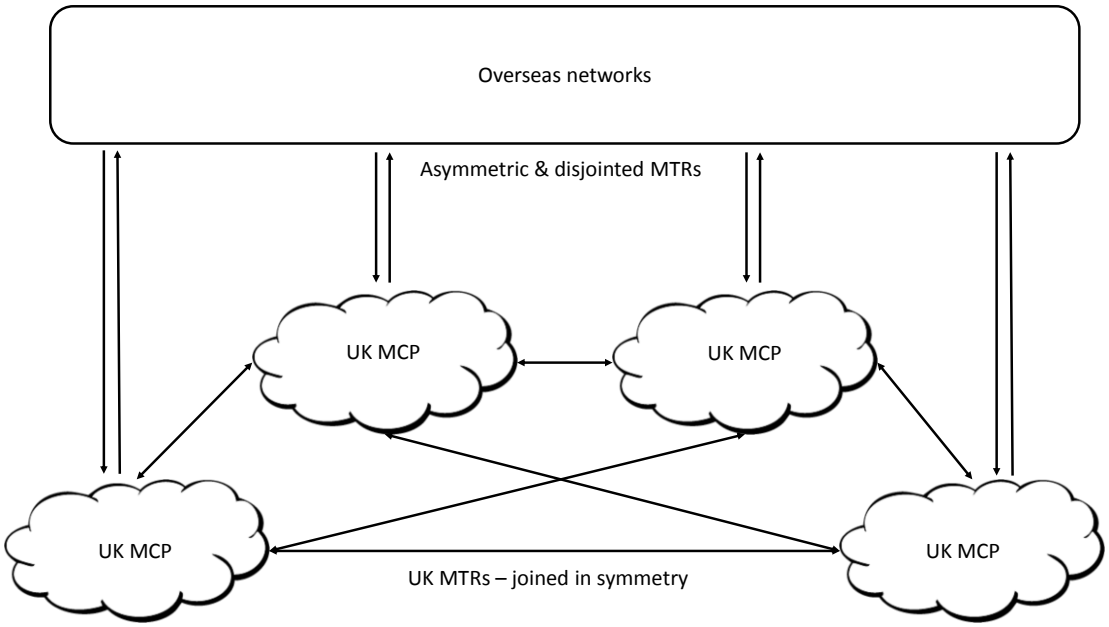
In general, UK MTRs will only constitute a small part of the cost of an international call. However, the fact that the retail price of making an international call is already high will mean that a marginal increase in the price that a foreign caller is charged will marginally increase likelihood that the caller will switch to an OTT service.[22] It is these marginal changes in demand, in response to a marginal change in price that are important for market definition. At the margin, customers will switch from conventional circuit switched calls to OTT services.[23]

Commercial payments for non-EEA originated calls

If UK MCPs are not allowed to place a surcharge on non-EEA MCTs, then current asymmetries will continue to persist between MCTs that UK MCPs are allowed to charge for terminating calls in the UK and MCTs in non-EEA countries where MCTs are uncapped and are high. Payments between UK MCPs are governed by an MTR regime that joins all networks in equal and symmetric arrangements. This is not the case for calls originating or terminating on non-EEA networks, where rates are firstly unequal, and secondly asymmetric, as there is no direct linkage of incoming and outgoing rates. This is illustrated in Figure 3 below.

[18] *The consultation,* paragraph 3.22
[19] *The consultation,* paragraph 3.24.1
[20] *The consultation*, paragraph 3.24.2
[21] This is reinforced by the fact that international calls will tend to be more significant events to the customer, and so are likely to receive a greater degree of scrutiny in respect of the calling options available.
[22] Empirical evidence suggests that callers will look for alternatives to a conventional international call once the saving breaches a threshold. For example, see Sandbach J (1996), "International telephone traffic, callback and policy implications", Telecommunications Policy, Vol. 20, No. 7, pp. 507-515, Elsevier Science Ltd.
[23] For example, as in the SSNIP test.

Figure 3: Schematic overview of differences between EEA and non-EEA termination rates



These different arrangements have material implications for the role of MTRs in respectively EEA originated and non-EEA originated MCT. To see this, we can follow through the economic implications of an increase in the MTR for each of non-EEA originated and domestically originated calls respectively:

- For non-EEA originated calls, the situation is relatively simple. Increases in the MTR will act only to increase revenues.[24] This increases the value of customers receiving international calls. As a consequence, competition amongst MCPs for these customers will intensify, with lower prices overall and better bundles with which to attract them. This is the classic waterbed effect.
- For domestically originated calls the situation is both different and more complex. MCP revenues will benefit from higher MTRs on fixed-to-mobile calls, and so there will be a degree of waterbed effect. However, fixed-to-mobile calls constitute a declining proportion of mobile calls. The impact on mobile-to-mobile calls is more important. Whilst on average the inter-operator payments may be expected to cancel each other out, they nevertheless act as a cost floor for off net mobile-to-mobile calls. As such higher MTRs push up the direct costs of mobile-to-mobile calls and so raise prices overall, which potentially more than offsets the waterbed from fixed-to-mobile calls. This is explained by Genakos and Valletti who, for this very reason, find no waterbed effect in the latest European data they analyse.[25]

[24] Unless there is a full reciprocity rule in place, and assuming a negligible demand impact which we argue below will be the case.
[25] Genakos, C. and Valletti, T. (2015). 'Evaluating a decade of mobile termination rate regulation', Economic Journal.

In short, allowing UK MCPs to increase MTRs for non-EEA originated calls will allow UK MCPs to reduce outgoing prices and offer better bundles to consumers. This will also enable UK MCPs to better compete for the additional international termination revenues in contrast to domestically originated calls.

As the impact of changes in MTRs differs between domestically and non-EEA originated calls, market conditions cannot be considered to be the same in these two call termination markets, contrary to Ofcom's provisional view that they fall into a single market.

Consumer benefits

Continuing to exclude MCT from the charge control for non-EEA originated calls will most likely result in an increase in UK MTRs for calls originating from MCPs in non-EEA countries that themselves charge higher rates for terminating incoming calls in their own countries. There is no reason or evidence to suppose that non-EEA MTRs will rise (Ofcom's fear of a "race to the top"). It is possible that the additional bargaining leverage that this gives to UK operators will result in a reduction to some of these MTRs, as shown in the example of Switzerland later.

Ultimately, we would expect equilibrium to be reached where, UK MTRs are higher for calls from certain non-EEA destinations that themselves have higher MTRs, and for non-EEA MTRs to be lower for calls to non-EEA countries have lower or regulated MTRs. In both cases the payment deficit currently suffered by UK operators would be reduced.

Ofcom[26] identify three separate consumer impacts from these changes. They relate to:

1. pass through of reduced MTRs to international call prices,
2. the waterbed effect, and
3. the negative impact from lower incoming calls to the UK where the UK MTR is higher.

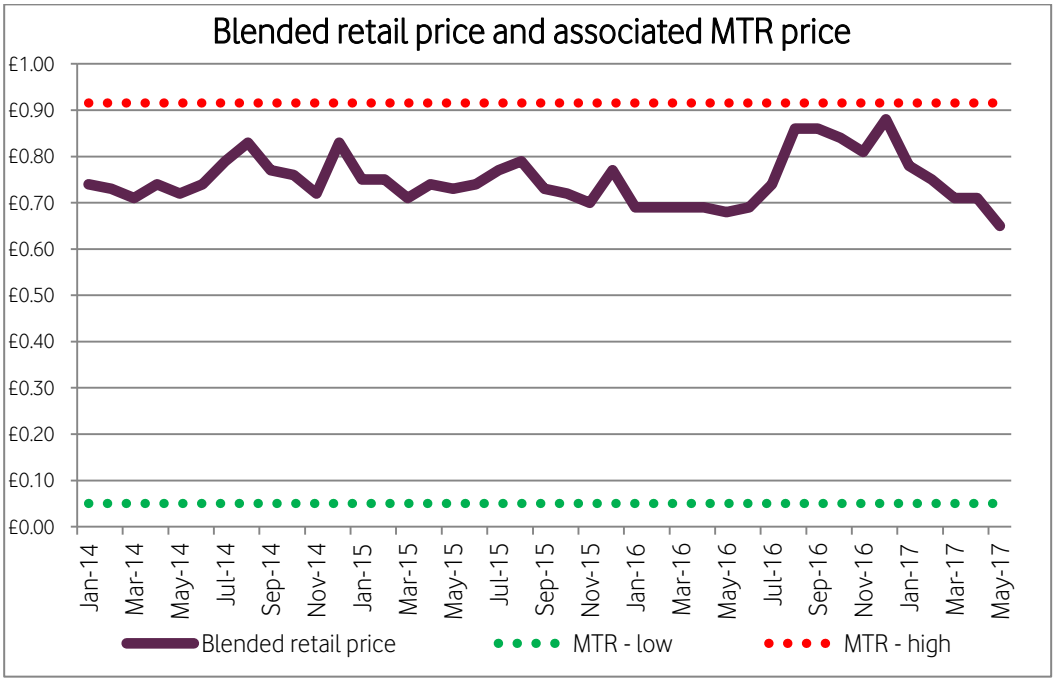
We take each of these in turn below:

(1) Pass through of reduced MTRs to international call prices

To the extent that non-EEA MTRs fall, UK MCPs will almost certainly pass-through the cost saving to consumers by reducing the retail price of outgoing international calls made from the UK. For business customers, Vodafone UK offers international calls as part of bundles. Figure 4 shows the highest and the lowest termination rates that Vodafone UK pays. This chart shows that the termination rate Vodafone pay can, in some cases, be higher than the effective international retail price (Cost of the bundle divided by volume of calls). It is important that this negative margin should not be allowed to get too large because of the risk that the bundle pricing will be exploited on particular routes. An MTR reduction would open the possibility of reducing retail prices for all countries in the bundle.

[26] *The consultation*, Annex 11

Figure 4 blended retail price and associated MTR for international calls
Source: Vodafone UK



Outside of bundles, Vodafone UK offer two fixed retail prices for consumers' international calls. One for EEA countries at £1.50/minute, and one for non-EEA countries at £2.00/minute. One of the main reasons Vodafone offer a lower retail price for EEA countries is that termination rates for EEA countries are lower than those charged non-EEA countries.

(2) Waterbed effect

The mechanism by which the tariff waterbed effect works needs to be rigorously understood. Tariffs for one service do not decrease simply because tariffs for a different service have increased.

As discussed earlier the original theoretical foundation of the waterbed phenomenon observed by Genakos and Valletti[27] was that higher MTRs provided an additional revenue stream from each subscriber that increased the intensity of competition between networks for those subscribers, thus leading to lower retail prices as networks competed with each other for this lucrative source of income. Essentially, this phenomenon relied on MTRs for fixed-to-mobile calls to bring net revenue into the mobile networks (as opposed to MTRs for mobile-to-mobile calls which, on average, have no net impact). The paper by Genakos and Valletti,[28] confirmed the existence of a waterbed effect when fixed-to-mobile calls were a significant

[27] Genakos, C. and Valletti, T. (2011). 'Testing the 'waterbed' effect in mobile telecommunications', Journal of the European Economic Association, vol. 9(6), pp. 1114-1142.
[28] Genakos, C. and Valletti, T. (2015). 'Evaluating a decade of mobile termination rate regulation', Economic Journal.

feature of the market, but found that the phenomenon had unsurprisingly dissipated as the relative volume of fixed-to-mobile calls declined.

The key issue in the context of MTRs for calls originating from non-EEA numbers is that they effectively serve the same role as fixed-to-mobile calls in the original waterbed model (irrespective of whether they originated on a fixed or mobile phone in the originating non-EEA country). They cause a revenue stream from outside of the UK mobile market, and so a waterbed effect can be expected to operate. The revenue stream that UK network operators receive from MTR revenues of calls originating outside the EEA will intensify competition in the domestic mobile market, causing a downward pressure on prices.

To be clear, Ofcom incorrectly use the Genakos and Valletti findings.[29] The dissipation of the waterbed effect observed in the latest paper relates only to MTRs applied domestically in a system where mobile-to-mobile calls between competing operators dominate. It is of no relevance to MTRs levied on incoming calls from outside the EEA.

We can conclude, therefore, that any increase in UK MTRs for non-EEA originated calls will cause a waterbed effect which will intensify competition between UK MCPs for additional termination revenues. UK MCPs will lower retail domestic prices for international calls and offer and more competitive bundles to their customers.

In fact, there is little reason to suppose that the waterbed effect would not be near perfect, as UK MCPs have every incentive to use the additional revenues from non-EEA MTRs to lower their retail prices for international calls and to offer more competitive bundle to consumers for domestic services.

(3) Negative impact from lower incoming calls to the UK in cases where the UK MTR is higher

Vodafone considers that higher MTRs for non-EEA originated calls are unlikely to significantly reduce the volume of incoming international calls to UK mobiles to any significant effect for the following reasons:

- Firstly, as already discussed, an increase in UK MTRs for traditional circuit switched calls will likely cause more callers to use OTT services. OTT services are already heavily used for international calls. While this presents a revenue loss to UK operators, consumers continue to benefit from being able to call internationally, using a different technology.
- Secondly, international calls to a fixed line could also be a substitute, thus avoiding the MTR.
- Thirdly, at a total market level (i.e. including OTT services etc.); the available evidence shows no sign of a price elasticity effect. We have already noted that international calls made by mobiles have been in decline since 2013, despite any consistent price trend (see, for example, Figure 2).

Ofcom's limited analysis and consideration of market developments

Ofcom has not specifically considered non-EEA originating calls in past MCT market reviews. In 2015, Ofcom sent a letter to MCPs, which 'clarified' that they must "*charge no more than 0.683 pence per minute for all*

[29] *The consultation*, paragraph A11.53.

calls terminated to UK mobile numbers regardless of where they are originated". At first blush, this suggests that Ofcom historically regarded the UK MCT market as including EEA and non-EEA originating calls. However, Ofcom also promised not to take enforcement action against surcharges until further notice. The implication is that surcharging is currently *de facto* permitted.

It is not clear whether Ofcom's explicit consideration of MTRs for incoming non-EEA calls signals a change in Ofcom's policy of non-enforcement to date. However, to the extent that it does, Ofcom's policy proposals appear not to be based on any analysis of the international market.

There are a number of gaps in Ofcom's analysis of non-EEA MTRs which could call into question the validity of Ofcom's proposal, these include:

- Ofcom's failure to adopt a forward-looking view of the market in the light of Brexit. This is astonishing, as Brexit is unprecedented, and could potentially weaken the UK mobile market even further.
- Ofcom's sledgehammer approach to an issue that it is of relatively minor significance to UK consumers, particularly as there is already high degree of substitution of OTT in the place of traditional circuit-switched international calling.

Procedurally Ofcom has not:

- Conducted a cost benefit analysis (CBA) of the relative advantages and disadvantages of including non-EEA mobile call termination within the domestic MCT charge control.
- Considered the disproportionate impact on MCPs relative to the objective that Ofcom is seeking to achieve (to project consumers).

(1) Impact of Brexit

Vodafone considers that it is premature for Ofcom to change the *de facto* regulatory regime for incoming non-EEA calls while Brexit is taking place. Although the outcome of the Brexit negotiations are as yet uncertain, it could potentially have a significant detrimental impact on the UK economy, and further weaken UK mobile market.

As part of any market review, Ofcom must assess the market on a forward-looking basis over the review period. Given the magnitude of the UK's exit from the EU, Vodafone is astounded that Ofcom has not factored Brexit into its MCT review.

The UK triggered Article 50 of the Treaty on European Union on 29 March 2017. Article 50 gives an existing member state a mere two years to exit the EU, which means that the UK will leave the EU by 29 March 2019. This date and any transitional period that the EU 27 may (or may not) agree to both fall squarely within the MCT review period.

Regardless of one's views on the pros and cons of Brexit, all sides of the debate agree that the UK's exit from the EU is a significant and unprecedented step, which has already generated a significant amount of

regulatory and economic uncertainty. The impact of Brexit will most certainly be felt in the domestic communications sector, where the hand of EU regulation is far-reaching.

Moreover, Brexit has already made its mark on the UK economy, as evidenced by a weakened currency and increasing inflation. The impact could be particularly acute if the UK government achieves its goal of a "hard" Brexit, which is the most radical form of separation from the EU. "Softer" alternatives such as the Norwegian model, the Swiss model or retaining membership of the EU Customs Union, would arguably have a less significant financial impact on the UK.

A 2016 briefing by PWC summed up the potential for Brexit to diminish the health of the UK telecoms sector.[30] It states:

> "*The UK's exit from the European Union creates both uncertainty and opportunity for telecommunications providers operating in the UK. As the UK negotiates its exit, telecommunications providers should plan for the potential effects of various scenarios. For example, how will regulatory and tax divergence in the UK and EU impact foreign operators? Will changes in the free movement of people drain the talent pool? Will there be opportunities for capital investment and/or deal activity for foreign investors? If the EU's Digital Single Market initiative does not apply in the UK, what impact will this have on the provision of digital content services? A good starting point to assess company-specific implications is to check for sensitivity to the four key issues from Brexit: the health of the UK economy; your exposure to the UK's legal, regulatory, and tax environment; how much you rely on selling cross-border services; and how much you depend on free movement of staff between the EU and the UK.*"

As we have discussed above the UK mobile market is already not as strong as it could be. Although the outcome of the Brexit negotiations is still uncertain, it could weaken the mobile sector even further.

Another factor that remains unclear that we have already alluded to above is the extent to which the UK regulatory regime for telecoms will diverge from that in the EEA in the future. The British government has signalled its intention to grandfather EU law into domestic law as it exists on the day that the UK exits the EU. However, regulation in the UK may diverge from that in the EU over time, particularly if there is a "hard" Brexit". If UK and EEA MCTs become asymmetrical as a result, then Ofcom will need to rethink its assumptions about the MCT market – not only in relation to non-EEA originating calls, but also in relation to EEA originating calls.

Against this backdrop, Vodafone would urge Ofcom to abandon its proposals to subject non-EEA MTRs to the domestic charge control.

(2) Failure to conduct a cost benefit analysis

[30] PWC, *Brexit update November 2016: Telecommunications*, http://www.pwc.com/us/en/brexit/assets/pwc-brexit-telecom-nov-2016-update.pdf.

Another notable feature of Ofcom's consultation document is the lack of a robust cost-benefit analysis (**CBA**) of the relative advantages and disadvantages of banning surcharges on non-EEA MTRs.

In past appeals, the Competition Appeal Tribunal has shown its willingness to overturn an Ofcom decision where it is based on an incorrect prior CBA, as happened in *Vodafone Ltd v OFCOM* [2008] CAT 22.

In that dispute, Ofcom's CBA purported to show that its modifications to the regulatory regime would have a net benefit to the industry. However, Ofcom's analysis of the costs and benefits of its proposals were not very rigorous, and included unproven assumptions and anecdotal 'evidence'. The Tribunal considered that the appropriate test for assessing the regulator's analysis was "*whether OFCOM equipped itself with a sufficiently cogent and accurate set of inputs to enable it to perform a reliable and soundly based CBA*." The Tribunal went on to find that the deficiencies in Ofcom's proposals were so vague that the industry was not able "*fully to provide intelligent and realistic responses*" to the regulator.

Although the Tribunal's decision was taken under the now defunct full merits appeal standard, the quality of the evidential material before the regulator remains a relevant consideration in a judicial review. A court or tribunal may set aside an administrative decision that is irrational. This includes the situation where a regulator's decision is so unreasonable on the material before it that no other rational person could have reached the same conclusion.

In terms of a CBA, Ofcom have noted in passing that non-EEA MTR's represent a £36 million (cost) outflow for the UK mobile industry and have inappropriately compared this to total sector revenues of £15.3 bn and EBITDA of £4bn.[1] The outflow of MTR payments to non-EEA countries represents a true bottom line profit and cash flow reduction and thus should only be compared to EBIT or free cash flow. Even using Ofcom's figures for EBIT of £1bn, £36 million represents a 4% reduction in profits, which is significant for the UK mobile industry. However this does not consider (a) the future level of out payments to non-EEA countries as rates continue to rise during the review period and (b) the increase in termination out payments to EEA countries as we, post Brexit become regarded as non-EEA.

The very real and likely risk to us, should the UK follow the path of 'Hard Brexit' and leave the EEA altogether, is that we ourselves will be in scope for the EU Surcharge from existing EEA countries. Approximately two thirds of operators in EU countries levying the surcharge currently are doing so to calls originating from countries which have MTRs in line with, or lower than, the UK's. It is therefore reasonable to assume that they will also levy their surcharge against the UK. We believe that the impact to Vodafone alone will be in the region of £15m per annum and this is based on the assumption that only those operators currently levying surcharges on low-MTR countries impose surcharges against the UK and that surcharge is £0.05 per minute. In reality, it could be many more operators and at a higher level of surcharge. We estimate that for the whole UK mobile industry this would relate to increased costs in excess of £50million per annum, taking total unbalanced termination rate payments (i.e. Costs) for non-EEA and EEA countries to near £100million.

[1] *The consultation*, A11.14

The only mitigation open to operators is being able to surcharge those EU operators who have imposed surcharges. This is exactly what operators in Switzerland have done. Switzerland, being in Europe but neither in the EU or EEA found itself in scope for EU surcharging. Swiss operators responded by applying their own surcharges against those EU operators who surcharged them. This had the effect that in nearly all cases, EU operators ceased to levy surcharges against Swiss operators. It should also be noted that during the period when this all took place, Swiss MTRs declined by about 50%. In this case surcharging played a very important role in bringing about reductions in MTR's, we expand on the Swiss example further later on in this response.

(3) Ofcom's proposal to ban surcharging is disproportionate to its stated objective

Vodafone considers that Ofcom's proposal to ban surcharging will expose UK CPs to the risk of disproportionately high losses relative to the consumer benefits that Ofcom believes that such a ban would achieve (namely to enable consumers to make and receive international calls at a more affordable rate).

s3(1) of the 2003 Communications Act states that one of Ofcom's principal duties is to protect the interests of consumers in relevant markets. The Act is not prescriptive and gives Ofcom significant leeway to decide upon the measures it takes. In this case, Ofcom is under no EU-imposed obligation to impose price caps on non-EEA MTRs or to harmonise non-EEA and domestic MTR regulation.

Significant and ever-increasing numbers of consumers are making international calls via OTT rather than circuit-switched platforms. As smartphones have become more ubiquitous, so have the range of OTT demand-side substitutes available to consumers increased. Any consumer detriment anticipated by Ofcom is therefore likely to be quite limited.

A charge control is the most drastic remedy that a NRA can impose. For the reasons below, it's simply not necessary to cap non-EEA MTRs in order to protect consumers, and as such Ofcom's proposals to do so are disproportionately harsh.

Art 6(1) of Authorisation Directive requires all general conditions to be "proportionate". The UK Supreme Court has indicated that test for determining the proportionality of a regulator's decision under EU law is two-fold:[31]

- Firstly, the measure must be suitable or appropriate to achieve the objective pursued, and
- Secondly, the measure must be necessary to achieve that objective.

There is also some debate in the law as to whether there is also a third criterion, which is that the burden imposed by the measure must not be disproportionate to the benefits secured.

[31] See: *R (on the application of Lumsden & others) v Legal Services Board* [2015] UKSC 41, para [33].

Still, regardless of whether a 2- or 3-pronged test is applied, the Supreme Court clarified that a regulator's decision must be struck down if it can be shown that "a less restrictive measure could have been adopted, provided that it would have attained the objective pursued".[32]

In this case, there are certainly less restrictive means available to protect both MCPs from extortionate profiteering by non-EEA MNOs in countries that do not regulate or cap MTRs, while also ensuring that consumers are able to make and receive international calls at an affordable rate.

In its consultation document (in A11.21 to A11.24 and onwards), Ofcom acknowledges that there are less drastic regulatory options available, which include: differential regulation for EEA and non-EEA MTRs and setting a reciprocity condition for non-EEA originated calls.

Treatment of non-EEA calls in other EEA countries

Ofcom state[33] that NRAs and operators have adopted varying approaches to the treatment of calls originating outside the EEA. Operators in most EEA countries are able to protect themselves from the outflow of money from their domestic mobile markets by adding a surcharge to their domestic MTRs for non-EEA countries . This has been done in most cases as a response to an increase in the non-EEA termination rates that originating operator charge in in their host countries outside the EEA. To our knowledge, the only EEA countries where regulators prohibit surcharging are Romania, Ireland, and Sweden. Although the NRAs in Slovakia, Spain, and Malta technically include the cost of terminating inbound non-EEA calls in their domestic charge controls, these NRAs do not take any enforcement action against local operators who surcharge, thus impliedly allowing surcharging.

We consider that the most likely reason why Romania, Ireland, and Sweden have chosen not to protect themselves from very high outbound non-EEA termination rates is that they experience very low volumes of incoming non-EEA traffic. We have included in annex 2 the profile of outbound traffic from Romania and Ireland and this shows that the volumes of calls to non-EEA countries that charge high termination rates is very small indeed. Therefore these countries do not incur high costs as a result of these high termination rates, and in addition it is very lightly that the inbound volume of traffic from these countries is also very small indeed and thus applying any sort of a surcharge would have little effect on revenues.

Figure 5 – Summary of the treatment of non-EEA termination across EEA countries

Single MTR cap for all calls	Single MTR cap for all calls –charging surcharge	Calls from outside the EEA exempted/excluded from the Charge Control	'Reciprocity'
Romania	Slovakia**	Estonia	France
Ireland	Spain*	Denmark	Germany
Sweden	Malta	Luxembourg	Netherlands

[32] See: para [104] of the *Lumsden* judgment.
[33] *The consultation*, paragraph A11.8

	Poland	Austria
	Czech Republic	
	Croatia	
	Slovenia	
	Hungary	
	Portugal	
	Italy	
	Belgium	
	Greece	
	Norway	

**Spain: Both Orange and Telefonica have been applying surcharges for some time now. Vodafone Spain is not currently. By not taking any action their regulator is implicitly allowing it.*

***Slovakia: Operators in Slovakia have historically charged much higher rates for terminating internationally originated calls, including from within the EEA which should not be allowed. In 2015, following a complaint from VF-Czech Republic, Vodafone formally raised this issue with the EU Commission. The Commission acknowledged our letter but unfortunately did not take any further action. The Slovakian operators continue with this practice ,although rates now are lower than what they used to be but are still much higher than the national MTR.*

Switzerland case study

Ofcom justify their proposal to include the termination of non-EEA calls in the domestic call termination charge control[34] by speculating that excluding non-EEA calls from the domestic charge control would increase the retail price of international calls as operators engage in a 'race to the top'. This is not supported by any evidence or data. If anything, the contrary is likely to be true, as the case study of Switzerland illustrates. In Switzerland, the NRA allowed local MCPs to impose a surcharge on EEA-originating calls (Switzerland being outside the EEA) and non-EEA calls. This helped to decrease the termination rate that Swiss operators could charge MCPs originating calls outside of Switzerland. This case study is particularly relevant because post Brexit the UK could be in a similar position to Switzerland with respect to its relationship with other EEA and non-EEA countries.

At the beginning of the period of this study (2015), Vodafone MCPs in the EEA like many other EEA mobile operators surcharged Switzerland (although Vodafone's UK operating company did not). Vodafone opcos in the EEA did this in response to the high termination rates that Swiss MCPs were charging to terminate calls originating outside of their national market. We suspect that other MCPs in the EEA were motivated by similar concerns.

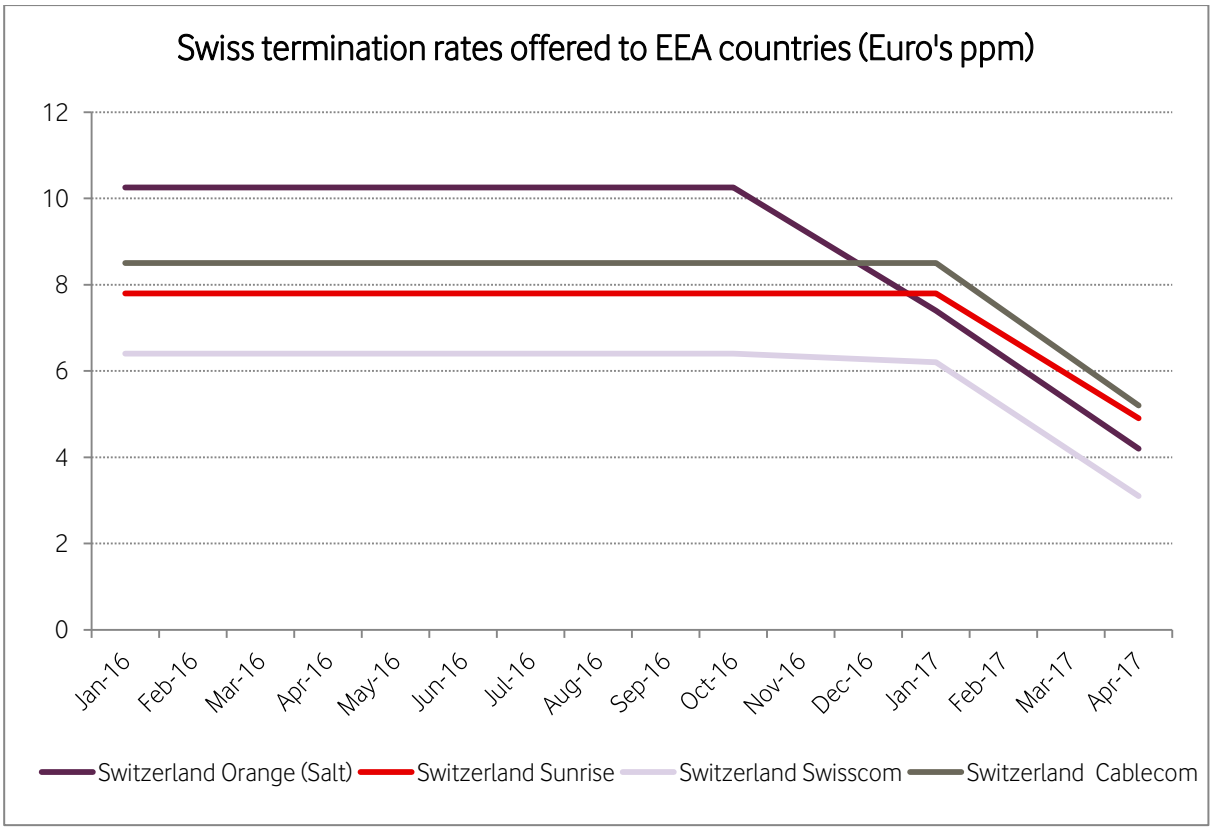
[34] *The consultation,* A11.60

In response to this, the Swiss operators wrote to EEA mobile operators, requesting them to lower their termination rates. In annex C contains a letter from Sunrise, a Swiss MCP, to Vodafone Czech Republic asking Vodafone to lower the surcharge our operating company in the Czech Republic was charging them. Sunrise and the other Swiss MCPs wrote many similar letters to other EEA mobile operators, but with no or limited results.

However in 2016 EEA countries stopped surcharging Switzerland when Swiss operators started to surcharge EEA countries that surcharged them. They were able to do this because the Swiss NRA did not ban surcharging. The Swiss operators implemented a complex model that 'goal seeked' the rate that they charged EEA countries that imposed a surcharge on them to ensure that the net outflow of payments for termination was the same as the inflow they received from them. This had the effect that no operator that implemented a surcharge on calls originating in Switzerland could ever benefit in momentary terms from the surcharge, because Swiss operators could react by their termination rate accordingly.

Over this period, the rate that Swiss operators offered to terminate calls originating in EEA countries reduced significantly as shown in the Figure 6 below. Swiss operators realised that EEA MCPs had surcharged them in response to their own high termination rates. Although the Swiss regulator enabled operators to put practices in place to protect the outflow of money from their domestic mobile market they also lowered their own termination rates.

Figure 6 – Swiss termination rates from January 2016 to April 2017



This is just one example of how surcharging for the termination of calls from other countries can have a positive effect on factors such as the flow of money into the domestic market, the domestic termination rate offered to other countries, and the termination rate charged by other countries for terminating domestically originated traffic.

Annex A - Market Definition for termination of non-EEA originated calls

Executive Summary

This Annex examines Ofcom's market definition for MCT. We focus on whether Ofcom is correct to assign both domestically and non-EEA originated MCT to the same market, and also whether Ofcom is correct to argue that there is no positive net consumer benefit to removing non-EEA originated MCT from price controls.

Ofcom propose a market definition for MCT as the termination of voice calls by an individual MCP. Based on this definition, Ofcom identify a total of 80 separate markets for wholesale MCT services, corresponding to each provider. In doing this Ofcom assume that non-EEA originated calls should be considered to be in the same market as domestically originated calls, since market conditions are similar and there is a common pricing constraint applying to both types of call.

This is wrong on a number of counts:

- Evidence shows that OTT services using VoIP (such as Skype, Facetime, WhatsApp, BT SmartTalk and others) are a growing feature of international calling, and so will have a disproportionate impact on the termination of non-EEA originated calls;
- The non-symmetrical and largely independent nature of termination payments for non-EEA originating and terminating calls results in different commercial and market outcomes, compared to domestic calls from the UK (and also from the EEA for so long as the UK remains in the EU) where the same MTRs are shared by all market participants. Essentially, for non-EEA originated calls, any increase in MTRs will be used by MCPs to reduce outgoing prices and offer better packages in an attempt to compete for the additional international termination revenues. For domestically originated calls, however, this waterbed effect is diminished by the declining proportion of fixed-to-mobile calls, and further negated by the effect of MTRs on pricing of offnet mobile-mobile calls;
- There is no common MTR price constraint between calls originating outside the EEA and domestically. In fact, most EEA countries already apply different rates.

Turning to market power, it is evident that non-EEA originated MCT is subject to significantly more pricing constraint from OTT services, compared to domestically originated MCT. For international calling, OTT has already captured a significant market share. Research by Jigsaw finds that 44% of VoIP users are more likely to call international numbers using VoIP than other services, and Telegeography estimate that around half of international calls are now made using OTT services. This should be no surprise. From the perspective of cost

to the consumer, OTT services offer limited benefit for domestic calling where many consumers will have purchased call bundles.

More importantly, in respect of changes to market shares, OTT service usage is growing by around 50% a year. There is no reason to suppose that this market growth does not include international calls to UK mobiles, and so it follows that OTT services must be gaining volume in this particular market. This is in stark contrast to the steep decline in the number of circuit switched international calls made from mobiles: volumes fell 13% between 2015 and 2016, and have been in continuous decline since 2013. It is, therefore, self-evident that there are no high barriers to entry in this market by OTT services, and so it cannot be argued that MCPs have SMP.

Finally, Ofcom has incorrectly characterised the relative magnitude of the consumer impacts of allowing flexibility in the setting of MTRs for non-EEA originated calls. In particular the waterbed effect is likely to be large (relative to any increase in MTRs that may occur), whilst the loss of incoming international calls to UK mobiles would be virtually non-existent (especially if calls switching to OTT services are included). Taken together, there would be a net positive consumer impact from allowing MTR flexibility for non-EEA originating calls.

In conclusion, whilst Ofcom is correct to conclude that there are separate product markets for MCT for each individual mobile number, it errs by then widening that market to all calls terminated by an individual operator, regardless of where the call has originated from. Domestically originated MCT and non-EEA originated MCT have different market conditions and, contrary to Ofcom's view, are not bound together by a common pricing constraint. Ofcom should define separate markets for each MCP in respect of both domestically originated and non-EEA originated MCT. Furthermore, MCPs do not have SMP is the latter market, and there will be clear benefits to UK consumers from allowing flexibility in MTRs for non-EEA originated calls. UK MCPs will most likely raise MTRs for calls from some countries, but these additional revenues will intensify competition though lower outgoing prices and better bundle offers.

Introduction

This note examines Ofcom's market definition for MCT. We focus on whether Ofcom is correct to assign both domestically and non-EEA originated MCT to the same market, and also whether Ofcom is correct to argue that there is no consumer benefit to removing non-EEA originated MCT from price controls.

The structure of this annex is all follows:

- In Section 2 we review Ofcom's market definition for MCT, and the significance to its argument of homogeneous market conditions and a common pricing constraint across both domestically originated calls and non-EEA originated calls;
- In Section 3 we test Ofcom's contention that homogeneous market conditions exist for all MCT, irrespective of whether calls are originated domestically or outside the EEA;
- In Section 4 we test Ofcom's contention that there is a common pricing constraint between domestic and non-EEA MCT;
- In Section 5 we look at the implications of the previous two sections for Ofcom's market definition for MCT;
- In Section 6 we look at the consumer benefit of allowing flexibility in charging for MCT of non-EEA originated calls;
- In Section 7 we provide conclusions.

Review of Ofcom's market definition for MCT

Ofcom's market definition for MCT is based on the following steps of argument:[35]

1. There is no sufficiently close substitute at a retail level for a call to a mobile number;[36]
2. Once the originating provider's retail subscriber has chosen to call a particular mobile number, the originating provider generally has no alternative but to purchase MCT from the MCP controlling that mobile number;[37]
3. This would imply a separate product market for MCT for each individual mobile number;[38]
4. However, according to Ofcom, it is reasonable to widen the market to all terminated calls by an individual MCP since:

[35] In this summary, we abstract from the complication caused by numbers ported between operators.
[36] *The consultation*, paragraph 3.33.
[37] *The consultation*, paragraph 3.35.
[38] *The consultation*, paragraph 3.39.

- The individual markets face homogeneous competitive conditions: all calls terminated by an individual MCP share the same feature that recipients lack incentive to choose an MCP with a lower MTR;

- There is a common pricing constraint, which means that suppliers' pricing and behaviour is likely to be the same in each market being considered: it is likely to be costly and complex for MCT providers to charge different termination rates for calls to individual mobile numbers.[39]

Ofcom, therefore, propose a market definition for MCT as the termination of voice calls by an individual MCP. Based on this definition, Ofcom identify a total of 80 separate markets for wholesale MCT services, corresponding to each provider.[40]

In the remainder of this note we essentially question step (4): whether it is reasonable to widen the market to all terminated calls. We find that non-EEA originated calls are a separate market, since market conditions are in fact different to those for domestically originated calls. In particular they are exposed to competitive and commercial effects that do not exist for domestically originated calls, and the pricing constraints claimed by Ofcom do not exist.

Heterogeneity of market conditions

In this section, we test Ofcom's contention that homogeneous market conditions exist for all MCT, whether originated domestically or outside the EEA. We focus on two aspects of the market:

- The pricing constraint imposed by OTT (over the top) services using VoIP, such as Skype, Facetime, WhatsApp, BT SmartTalk and others;

- The different commercial implications of payments for non-EEA originated MCT, compared to domestically originated MCT.

The pricing constraint imposed by OTT services using VoIP

OTT services using VoIP include Skype, Facetime, WhatsApp, Facebook Messenger, BT SmartTalk and others. These services are growing in popularity by around 50% a year, as the prevalence of smartphones negates barriers to usage.[41]

Ofcom list three requirements for OTT services to provide a competitive constraint on MCT:[42]

- Retail prices for calls to mobiles must respond to increases in the MTR;

- Customers must respond to these increases by switching to OTT services;

[39] *The consultation*, paragraph 3.40.
[40] *The consultation*, paragraph 3.42.
[41] *The consultation*, paragraph 3.19.
[42] *The consultation*, paragraph 3.21.

- This switching is sufficient to constrain MTRs.

Ofcom argue that, in general, these conditions are not meet for MCT since:

- customers increasingly buy bundles of calls and so are not aware of the cost to them of an individual call;[43]

- those pre-pay customers that are aware of the cost of an individual call are the least likely to use OTT services.[44]

However, Ofcom then go to say that, based on Jigsaw research for the Ofcom Narrowband Market Review 2017: "OTT usage is far more prevalent for making international calls, which are typically excluded from inclusive call allowances, and have relatively high retail prices".[45]

Non-EEA originated calls to UK mobiles are international calls, albeit made in other countries, and cannot be presumed to be included in call bundles. Use of OTT services will be prevalent, and customers in all likelihood will be aware of the (high) price of the call. [46]

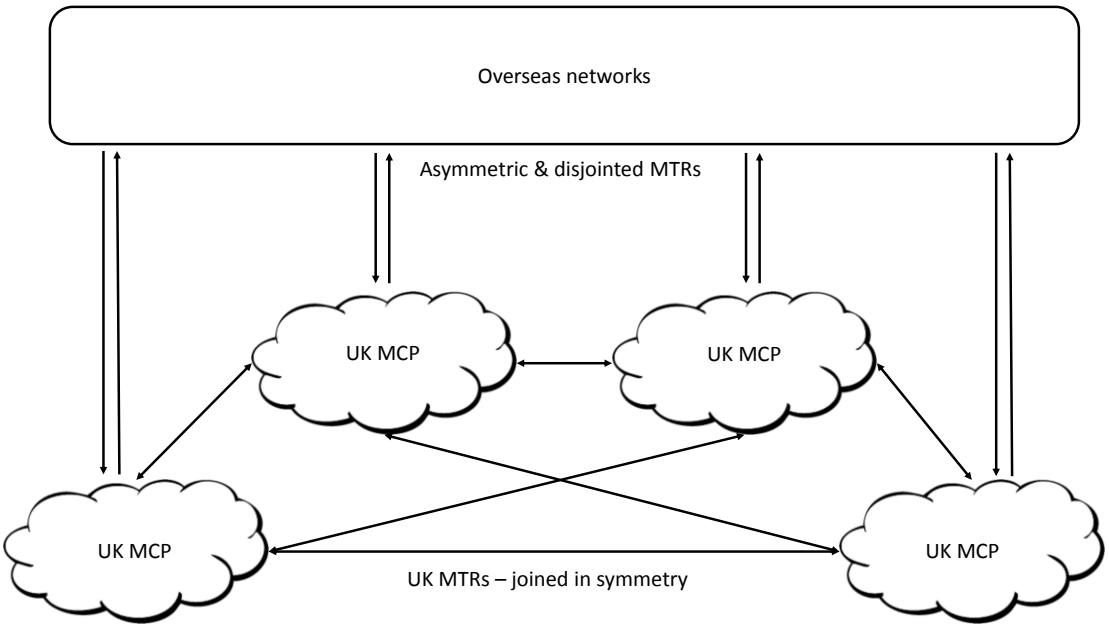
In general, the UK MTR only forms a small part of the cost of an incoming international call to the UK, but the fact that the retail price of the call placed by an international caller from outside the UK is already will mean that a marginal increase in the retail price will have a marginal impact on the likelihood of the foreign caller switching to an OTT service.[47] It is these marginal changes in demand, in response to a marginal change in price that are important for market definition. At the margin, customers will switch from conventional circuit switched calls to OTT services.[48]

Commercial implications of payments for non-EEA originated calls

In addition to prevalence of OTT services, termination of non-EEA calls is differentiated from that for domestic calls by the form of the termination payments made. The essential difference stems from the fact that payments between UK MCPs are governed by an MTR regime that joins all networks in equal and symmetric arrangements. This is not the case for calls originating or terminating on non-EEA networks, where rates will be firstly unequal, and secondly asymmetric with no direct linkage of incoming and outgoing rates. This is illustrated in Figure 7 below.

[43] *The consultation*, paragraph 3.22.
[44] *The consultation*, paragraph 3.24.1.
[45] *The consultation*, paragraph 3.24.2.
[46] This is reinforced by the fact that international calls will tend to be more significant events to the customer, and so are likely to receive a greater degree of scrutiny in respect of the calling options available.
[47] Empirical evidence suggests that callers will look for alternatives to a conventional international call once the saving breaches a threshold. For example, see Sandbach J (1996), "International telephone traffic, callback and policy implications", *Telecommunications Policy*, Vol. 20, No. 7, pp. 507-515, Elsevier Science Ltd.
[48] For example, as in the SSNIP test.

Figure 7:Schematic overview of differences between domestic and non-EEA termination rates



These different arrangements have material implications for the role of MTRs in respectively domestically originated and non-EEA originated MCT. To see this, we can follow through the economic implications of an increase in the MTR for each of non-EEA originated and domestically originated calls respectively:

- For non-EEA originated calls, the situation is relatively simple. Increases in the MTR will act only to increase revenues.[49] This increases the value of customers receiving international calls. As a consequence, competition amongst MCPs for these customers will intensify, with lower prices overall and better bundles with which to attract them. This is the classic waterbed effect;

- For domestically originated calls the situation is both different and more complex. MCP revenues will benefit from higher MTRs on fixed-to-mobile calls, and so there will be a degree of waterbed effect. However, fixed-to-mobile calls are a declining proportion of mobile calls. The impact on mobile-to-mobile calls is far more important. Whilst on average the inter-operator payments may be expected to cancel each other out, they nevertheless act as a cost floor for offnet mobile-to-mobile calls, and so higher MTRs push up the direct costs of mobile-to-mobile calls and so raise prices overall; potentially more than offsetting the waterbed from fixed-to-mobile calls. This is explained by

[49] Unless there is a full reciprocity rule in place, and assuming a negligible demand impact which we argue below will be the case.

Genakos and Valletti who find no waterbed effect in the latest European data they analyse for this very reason.[50] Equation (1) of this paper expresses the relationship as:

Bill = cost + Hotelling parameter – "rent from F2M calls" + "effect of M2M competition"

where "Bill" is the customer bill, "cost" is the network cost to the MCP, "Hotelling parameter" is essentially a profit margin, "Rent from F2M calls" is the net payments made from fixed network operators, and "effect of M2M competition" is competition effect that applies only for domestically originated calls, whereby higher MTRs set a higher competitive floor on offnet mobile-to-mobile prices. Therefore, if fixed-to-mobile calls are only a small proportion compared to mobile-to-mobile calls, a higher domestic MTR will actually increase customer charges.

In short, for non-EEA originated calls, MCPs will use any increase in MTRs to compete for additional international termination revenues by reducing outgoing retail prices and offer bettering bundles, in contrast to domestically originated calls.

This shows that the impact of changes in MTR differs between domestically and non-EEA originated calls. As such contrary to Ofcom's provisional view, market conditions cannot be considered to be the same for these two types of call termination.

Common pricing constraint between domestic and non-EEA termination

The second criterion used by Ofcom to justify extending the market for MCT to all calls was that a common pricing constraint exists, such that "it is likely to be costly and complex for MCT providers to charge different termination rates for calls to individual mobile numbers."[51]

This is patently not the case in respect to calls coming from other country codes. As Ofcom point out, network operators in most EEA countries charge different termination rates already.[52] Vodafone's experience shows that whilst there may be a small risk of CLI manipulation by unscrupulous operators, the impact is restricted to a small revenue loss to the terminating MCP. There is no identifiable loss of call quality.

Implications of market definition of MCT for non-EEA calls

The two previous sections have demonstrated, contrary to Ofcom's provisional findings, that MCT of domestically and non-EEA originated calls cannot be treated as the same market on account of either similar market conditions or a common pricing constraint. It follows that each must be treated as a separate market, and that the market power of each operator considered in each market.

Drawing on Section 3, it is evident that non-EEA originated MCT is subject to significantly more pricing constraint from OTT services than is domestically originated MCT. Non-EEA originated MCT must, therefore,

[50] Genakos, C. and Valletti, T. (2015). 'Evaluating a decade of mobile termination rate regulation', *Economic Journal*.
[51] *The consultation*, paragraph 3.40.
[52] *The consultation*, Table A11.1.

fall short of the standard of Significant Market Power (SMP). This becomes clear when we apply Ofcom's own analysis to the market for non-EEA originated MCT.

Ofcom uses the following criteria to assess SMP in MCT markets:[53]

- High current and future market shares;
- High barriers to entry;
- Absence of effective countervailing buyer power (CBP);
- Evidence of pricing above competitive levels.

For international calling, OTT has already captured a significant market share. 44% of VoIP users are more likely to call international numbers using VoIP than other services.[54] Telegeography estimate that around half of international calls now use OTT services.[55] This should be no surprise. From the perspective of cost to the consumer, OTT services offer limited benefit for domestic calling where many consumers purchase call bundles, which often contain unlimited minutes. For international calls, however, most consumers pay a per minute charge, and so make significant savings especially if they have access to a Wi-Fi network.

More importantly, in respect of changes to market shares, we have already noted OTT service usage is growing by around 50% a year. There is no reason to suppose that this market growth does not include international calls to UK mobiles, and so it follows that OTT services must be gaining volume in this particular market. This is in stark contrast to the steep decline in the number of international calls made from mobiles: volumes fell 13% between 2015 and 2016, and have been in continuous decline since 2013.[56]

It is therefore self-evident that there are no high barriers to entry in this market by OTT services (Ofcom's second criterion).

The first two of Ofcom's criteria (current and future market shares, and absence of high barriers to entry) by themselves are sufficient to demonstrate both a lower level of market power for non-EEA originated MCT (compared to domestically originated MCT), and also a lack of SMP altogether.

Consumer benefit

De-regulating MCT for non-EEA originated calls (or at least allowing reciprocity of charges) will most likely result in an increase in UK MTRs for calls originating in non-EEA countries who's MCPs themselves charge higher rates for terminating international calls in their host countries. There is no reason or evidence to

[53] *The consultation*, paragraph 3.60.
[54] *The consultation*, footnote 51.
[55] Telegeography estimate that cross-border OTT traffic reached 552 billion minutes in 2016, out of a total of 1.1 trillion minutes for combined OTT and carrier traffic. See Telegeography's "Telegeography Report", 2016, pages 2-3.
[56] Ofcom, Telecommunications Market Data, Mobile Telecoms Market Data, Table 2, shows international calls from mobile declining from 6.49 billion to 5.93 billion be between 2015 and 2016. This decline has been continuous since 2013.

suppose that non-EEA MTRs will rise (Ofcom's fear of a "race to the top"). It is possible that the additional bargaining leverage that this gives to UK operators will result in a reduction to some of these MTRs.

Ultimately, we would expect an equilibrium to be reached where:

- UK MTRs are higher for calls from certain non-EEA destinations that themselves have higher MTRs;
- Non-EEA MTRs are lower for calls to certain countries that previously had high MTRs (as was the case with Switzerland, for example).

In both cases the payment deficit currently suffered by UK operators would be reduced.

Ofcom, in Annex 11 of the Consultation, identify three separate consumer impacts from these changes:

- Pass through of reduced MTRs to international call prices;
- Waterbed effect where higher inpayments from non-EEA operators act to reduce tariffs and improve bundles offered by UK operators;
- A negative impact from a lower volume of incoming calls to the UK in cases where the UK MTR is higher.

Pass through of reduced MTRs to international call prices

To the extent that non-EEA MTRs fall, UK MCPs will pass-through the savings to domestic consumers. For business customers, Vodafone UK offers international calls as part of bundles. Figure 2 shows the highest and the lowest termination rates paid by Vodafone UK. This chart shows that the termination rate Vodafone pay can, in some cases, be higher than the effective international retail price. It is important that this negative margin is not allowed to get too large because of the risk that the bundle pricing could be exploited on particular routes. An MTR reduction would open the possibility of reducing retail prices for all countries in the bundle.

Figure 8 – Blended retail price and associated MTR for international calls (Source: Vodafone UK) [Confidential]

Outside of bundles, Vodafone UK offer two fixed retail prices for consumers' international calls - one for EEA countries at £1.50/minute, and the other for non-EEA countries at £2.00/minute. One of the main reasons Vodafone offer a lower price for EEA countries is that termination rates for EEA countries are lower compared to those for non-EEA countries.

Waterbed effect

The mechanism by which the tariff waterbed effect works needs to be rigorously understood. Tariffs for one service do not go down simply because tariffs for a different service have gone up.

The original theoretical foundation of the waterbed phenomenon observed by Genakos and Valletti[57] was that higher MTRs provided an additional revenue stream from each subscriber that would increase the

[57] Genakos, C. and Valletti, T. (2011). 'Testing the 'waterbed' effect in mobile telecommunications', *Journal of the European Economic Association*, vol. 9(6), pp. 1114-1142.

intensity of competition between networks for those subscribers, thus to lower retail prices for those subscribers as networks competed. Essentially, this phenomenon relied on MTRs for fixed-to-mobile calls to bring net revenue into the mobile networks (as opposed to MTRs for mobile-to-mobile calls which, on average, have no net impact). The latest paper by Genakos and Valletti,[58] whilst reaffirming the existence of a waterbed effect when fixed-to-mobile calls are a significant feature of the market, goes on to find that the phenomenon has unsurprisingly dissipated as the relative volume of fixed-to-mobile calls has declined.

The key issue in the context of MTRs for calls originating from non-EEA numbers is that they effectively serve the same role as fixed-to-mobile calls in the original waterbed model (irrespective of whether they originated on a fixed or mobile phone in the originating non-EEA country). They cause a revenue stream from outside of the UK mobile market, and so a waterbed effect can be expected to operate. The revenue stream that UK network operators receive from MTR revenues of calls originating outside the EEA will intensify competition in the domestic mobile market, and place downward pressure on prices.

To be clear, Ofcom incorrectly use the Genakos and Valletti findings.[59] The dissipation of the waterbed effect observed in the latest paper relates only to MTRs applied domestically in a system where mobile-to-mobile calls between competing operators dominate. It is of no relevance to MTRs levied on incoming calls originating from outside the EEA.

We can conclude, therefore, that any increase in UK MTRs for non-EEA originated calls will cause a waterbed effect in which competition between UK MCPs for customers who make and receive international calls on their UK mobiles. Competition for additional termination revenues will cause UK MCPs to lower their domestic retail prices and offer better bundles to customers.

In fact, there is little reason to suppose that the waterbed effect would not be near perfect, as UK MCPs have very incentive to intensify price competition between themselves and offer more competitive bundles to customers for domestic services.

Negative impact from lower incoming calls to the UK in cases where the UK MTR is higher

Vodafone considers that higher MTRs for non-EEA originated calls are unlikely to reduce the volume of incoming international calls to UK mobiles for the following reasons:

- Firstly, an increase in UK MTRs is primarily likely to cause calling volumes to OTT services to increase. We have already noted that OTT services are already heavily used for international calls. Whilst this represents a loss of revenue to UK operators, there is no corresponding loss of consumer benefit, since consumers will continue to make international calls using a different technology;

- Secondly, it is likely that an international call to a fixed line could also be a substitute, thus avoiding the MTR;

[58] Genakos, C. and Valletti, T. (2015). 'Evaluating a decade of mobile termination rate regulation', *Economic Journal*.
[59] *The Consultation*, paragraph A11.53.

- Thirdly, at a total market level (i.e. including OTT services etc.); the available evidence shows no sign of a price elasticity effect. We have already noted that international calls made from mobiles have been in decline since 2013, despite any consistent price trend (see, for example, Figure 2).

Conclusion on consumer impacts

Ofcom identified three separate consumer impacts from an increase in MTRs for non-EEA originated calls:

- A positive pass through of reduced MTRs to international call prices;
- A positive waterbed effect where higher inpayments from non-EEA operators act to reduce tariffs and improve bundles provided by UK operators;
- A negative impact from a lower volume of incoming calls to the UK in cases where the UK MTR is higher.

The first two are positive benefits, whilst the last is a loss to consumers. We have shown that Ofcom has incorrectly characterised the relative magnitude of these effects. In particular we have shown that the waterbed effect is likely to be large (relative to any increase in UK MTRs that may occur), whilst the loss of incoming international calls to UK mobiles would be virtually non-existent as price sensitive consumers simply will switch to OTT services which are already established within the market.

Conclusion

Whilst Ofcom is correct to conclude that there are separate product markets for MCT on each individual mobile number, it errs by then widening that market to all calls terminated by an individual operator.

Domestically originated and non-EEA originated MCT have different market conditions and, contrary to Ofcom's view, are not bound together by a common pricing constraint. Ofcom should define separate markets for each MCP in respect of each of domestically and non-EEA originated MCT. Evidence shows that MCPs have no SMP in the latter market.

Furthermore, there will be clear benefits to UK consumers from allowing flexibility in MTRs for non-domestically originated calls. UK MCPs will most likely raise MTRs for calls from some countries, but these additional revenues will intensify competition through lower outgoing prices and better bundles offered by MCPs.

Annex B – Profile of outbound calls for Romainia and Ireland[Confidential]