Mobile call termination market review 2015-18

Consultation

Publication date: 4 June 2014

Closing Date for Responses: 13 Aug 2014

About this document

This consultation document seeks stakeholders' view on our proposals for regulation of the wholesale 'mobile call termination' (MCT) market for the period 1 April 2015 – 31 March 2018.

MCT is a wholesale service provided by a mobile communications provider (MCP) to connect a call to a recipient on its network. When fixed or mobile communications providers enable their customers to call a UK mobile number, they pay the terminating MCP a wholesale charge, called a 'mobile termination rate' (MTR). MTRs are set on a per-minute basis and are currently subject to regulation.

The market review process requires us to identify any problems that might stem from market power and impose appropriate remedies. In order to do so, we identify and define relevant markets which are susceptible to regulation and assess whether any MCP has significant market power (SMP).

We then consider the appropriate form of regulation, if any, that should be imposed in the event that we find one or more MCPs has SMP in the relevant markets.

This document outlines regulatory proposals for the MCT market, including a proposed charge control on mobile termination rates which would apply from 1 April 2015. The proposals are designed to promote competition and further the interests of consumers.

This consultation closes on 13 August 2014. We plan to publish a statement by March 2015.

Contents

Further annexes are published separately.

Section 1

Summary

1.1 This consultation document seeks stakeholders' views on our proposals for regulation of the wholesale 'mobile call termination' (MCT) market for the period 1 April 2015 – 31 March 2018. The purpose of this review is to analyse the state of competition in the provision of MCT and to consider the appropriate form of ex-ante regulation, if any, that should be imposed in the relevant market. The market review process requires us to identify any problems that might stem from market power and impose appropriate remedies. In order to do so we have to identify and define relevant markets that are susceptible to ex-ante regulation and assess whether any mobile communications provider (MCP) has significant market power (SMP).

1.2 MCT is a wholesale service provided by an MCP to connect a call to a recipient on its network. When fixed or mobile communications providers enable their customers to call a UK mobile number, they pay the MCP which terminates the call to the call recipient ('the terminating MCP') a wholesale charge, namely a 'mobile termination rate' (MTR). MTRs are set on a per-minute basis and are currently subject to regulation.[1]

1.3 The last MCT market review concluded on 15 March 2011 and introduced a significant change from previous MCT charge controls in the way we assessed the cost of MCT. In particular, in choosing the cost standard to calculate the charge control for the four largest MCPs, we moved from LRIC+ to LRIC.[2] [3] Therefore, the current regulated MTR cap, set at 0.845ppm from 1 April 2014, is calculated on the basis of LRIC.

1.4 This cap on the basis of LRIC has resulted in a sharp reduction in MTRs - which have fallen by around 80% over a three year glide-path – and a consequent decrease in MCT revenues. Based on current volume trends, we estimate the total revenues in 2013-2014 from MCT in the UK to be around £450m. If we consider "net" termination, i.e. we exclude mobile to mobile off-net calls, the estimated revenue figure reduces further to around £90m. This accounts for a very small proportion of MCPs' total revenues (for example, it amounts to less than 1% of UK mobile retail telephony revenues in 2013).[4]

1.5 In addition to the regulatory changes determining the reduction of MTRs and MCT revenues, in the past three years the UK mobile sector has changed in ways that are

[1] Our latest statement "Wholesale mobile voice call termination" ('the March 2011 Statement') was published on 15 March 2011 and is available on the following link together with the current regulated MTRs - MTRs reflect the changes made following appeals of the March 2011 Statement: http://stakeholders.ofcom.org.uk/consultations/mtr/statement

[2] Long Run Incremental Cost (LRIC) measures the incremental cost to an operator of providing a service in the long-run. It includes the variable and fixed costs associated with the service increment in question, in this case MCT. LRIC+ includes a mark-up for joint and common costs, such as the cost of the spectrum used by the network. By definition, the LRIC standard, as currently used to set the charge control, does not include such a mark-up.

[3] In the March 2011 Statement, we referred to Long Run Incremental Cost as "pure LRIC" to emphasise the difference between LRIC+ and LRIC. In this consultation, we will refer to it just as LRIC.

[4] UK mobile retail telephony revenues were £15.6 billion in 2013. See Ofcom, *Telecommunications market data tables Q4 2013*, 24 April 2014, http://stakeholders.ofcom.org.uk/binaries/research/cmr/telecoms/Q4-2013.pdf

relevant to this market review. Between 2011 and 2013, the availability of spectrum to provide mobile services has increased significantly following Ofcom's work on spectrum liberalisation and the 4G auction. The four largest MCPs[5] have started deployment of their fourth generation (4G) networks based on Long Term Evolution (LTE) technology and have launched 4G services. 4G networks are currently employed for data only but are expected to be used for voice in the future when some of the UK MCPs are expected to launch Voice over LTE ('VoLTE').

1.6 Consumers increasingly use mobile networks for data connectivity: the data use per subscriber increased by more than 100% in 2012 and 43% in 2013.[6] As 4G take-up grows, we expect MCPs to deliver less traffic over 2G and 3G overall. In addition, the mix of voice and data delivered over existing technologies is also likely to change. Another continuing trend concerns the design and deployment of more efficient mobile networks with lower costs. This has been achieved, for example, by new network sharing arrangements.

1.7 We have considered all these developments and based on the analysis undertaken for this consultation, we set out our proposals to:

1.7.1 Define around 80 separate markets, each corresponding to an MCP able to set an MTR for calls to the UK mobile numbers allocated by Ofcom to that MCP.

1.7.2 Designate each undertaking holding UK mobile numbers as having significant market power (SMP) with respect to the (wholesale) market for terminating calls to such numbers. This recognises the commercial reality that control of the number range provides the mechanism by which pricing power is exercised in relation to calls to mobile numbers. Applying this approach will mean that more than 80 MCPs are designated with SMP. The list of affected MCPs is set out in Table 4 of Section 3.

1.7.3 Regulate the MTRs of all MCPs with SMP by imposing a single maximum cap on MTRs. This represents a change from the previous market review where the charge control only applied to the four largest MCPs and smaller SMPs were subject to an obligation to set MTRs at fair and reasonable terms ("F&R"). We consider that imposing a charge control on all MCPs with SMP would be more effective than the F&R approach in remedying the harm caused by MTRs set above the efficient cost benchmark. In particular, we consider that the benefits of increased regulatory certainty and the increased deterrent effect against excessive MTRs would outweigh any potential disadvantage, e.g. our loss of flexibility in determining MTRs below the regulated cap in the event of a dispute and any additional regulatory burden this imposes on smaller MCPs.

1.7.4 Impose on all MCPs an obligation to provide network access on fair and reasonable terms and an obligation of price transparency requiring all MCPs to publish their MTRs – and any proposed change to their MTRs at least 28 days in advance of those changes coming into effect.

[5] EE, H3G, Telefónica and Vodafone.
[6] Ofcom, *Infrastructure Report, 2013 Update*, 24 October 2013 (updated on 6 December 2013), http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/infrastructure-report/IRU_2013.pdf.

1.7.5 Impose an additional obligation of no undue discrimination only on the four largest MCPs in relation to the provision of network access for MCT.

1.7.6 Continue to use LRIC to set the charge control. We propose a three-year charge control, starting from 1 April 2015. MTRs are proposed to be set with reference to the forecast LRIC (as determined by our MCT cost model) in each year of the charge control. This would lead to MTRs falling from today's cap of 0.815ppm (in 2012/13 prices[7]) to 0.476ppm by 1 April 2017 (also in 2012/13 prices). The major factors behind this decline are:

- greater use of network sharing;
- decline in the cost of network equipment, as 3G technology becomes more established; and
- the deployment of more efficient technology, such as 4G and S-RAN[8] technology.

Table 1: Proposed MTRs (pence per minute 2012/13 prices)

	Current MTR (from 1 April 2014)	From 1 April 2015	From 1 April 2016	From 1 April 2017
Base case	0.815	**0.515**	**0.498**	**0.476**
Range		0.424 – 0.680	0.402 – 0.664	0.386 – 0.649

Source: 2014 MCT model.

1.8 We believe that our proposals will promote competition and further the interests of consumers, and that the risk of harm to specific groups of consumers who are vulnerable is low.[9]

1.9 This consultation closes on 13 August 2014. We are seeking the views of stakeholders on the proposals contained in this document. Annex 1 provides further details of how to respond.

1.10 Following this consultation, we plan to publish a statement by March 2015.

[7] The 0.845ppm rate referred to in paragraph 1.3 above is the nominal cap applicable from 1 April, this is 0.815ppm when adjusted for inflation to 2012/13 prices
[8] Single RAN (S-RAN) is combined Radio Access equipment providing 2G and/or 3G and/or 4G functionality.
[9] This issue is discussed further in Section 6.

Section 2

Introduction and background

Structure of the document

2.1 This consultation consists of sections 1 to 8 of the main document and all of the material set out in the annexes. The main document has eight sections.

- Section 1 presents a summary of the whole document.
- This Section 2 sets out the background to this review, in particular the relevant regulatory framework and the process we followed to gather the relevant evidence. We also explain our impact assessment and equality impact assessment and recap on the current regulation in the UK and Europe. Finally, we provide some background to our proposals on market definition by describing how mobile voice calls are delivered and the most recent mobile network developments.
- Section 3 and 4 respectively set out our proposals on market definition in relation to wholesale MCT and on determining which persons in this market(s) have significant market power (SMP).
- In Sections 5 to 8, we consider and propose which remedies to impose, given our provisional conclusions on SMP. This includes setting out our proposals to charge control MTRs using LRIC. A series of annexes support the analysis in the main body of the document and are an integral part of our reasoning. Annexes 1-4 provide guidance about our consultation process. Annex 5 sets out the regulatory framework and Annex 6 our general approach to market definition and SMP assessment, Annex 7 the draft legal instruments, Annex 8 our analysis in relation of smaller MCPs, Annex 9 our analysis of consumer prices and usage in relation to the choice of cost standard and Annex 10 our Equality Impact Assessment. Annexes 11-17 relate to the cost model used for the proposed charge control. Annex 18 contains a consumer survey undertaken by Kantar Media and Annexes 19 and 20 are the sources of evidence and glossary, respectively.

Regulatory framework

2.2 The applicable regulatory framework (known as the Common Regulatory Framework or 'CRF') has its basis in five EU Communications Directives ('the Directives') each of which has been implemented into national legislation.[10] It imposes a number of obligations on national regulatory authorities (NRA), such as Ofcom. One of these obligations is to carry out various market reviews, including of the market for voice call termination on individual mobile networks. The Communications Act 2003 ('the Act') also sets out Ofcom's duties, including our principal duty which is to further the interests of citizens in relation to communications matters and the interests of consumers in relevant markets, where appropriate by promoting competition. We set out the regulatory framework and the market review process in more detail in

[10] The harmonised EU regulatory framework for electronic communications was amended in 2009. Those amendments to the Directives were transposed into national legislation and came into effect from 26 May 2011.

Annexes 5 and 6. In this section we set out, in summary, what the market review process involves.

The market review process

2.3 A market review is carried out in three stages:

i) first we identify and define the relevant markets, appropriate to national circumstances;

ii) we then carry out analyses of these markets to determine whether they are effectively competitive, which involves assessing whether any operator has significant market power (SMP) in any of the relevant markets; and

iii) we then assess the appropriate remedies which should be imposed where there has been a finding of SMP (known as SMP obligations or conditions), based on the nature of the competition problem identified in the relevant markets.

2.4 In carrying out a market review, NRAs are required to define markets "appropriate to national circumstances, in particular relevant geographic markets within their territory, in accordance with the principles of competition law".[11] In so doing, the Framework Directive requires that NRAs shall take "utmost account" of the European Commission's Recommendation on Relevant Product and Service Markets ('2007 EC Recommendation')[12] and SMP Guidelines[13]. In deciding on remedies, we are required to take utmost account of Recommendations issued by the EC under Article 19(1) of the Framework Directive, including the 2009 Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates ('2009 EC Recommendation')[14].

The 2007 EC Recommendation and the draft revised Recommendation

2.5 The 2007 EC Recommendation sets out products and services markets which, at the European level, the EC has identified as being susceptible to *ex-ante* regulation. These markets are identified on the basis of the cumulative application of three criteria:

- the presence of high and non-transitory barriers to entry;

[11] See Article 15(3) of Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (as amended by Directive 2009/140/EC), 7 March 2002 ('the Framework Directive'), http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02002L0021-20091219&qid=1399985618659&from=EN

[12] Commission Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to *ex-ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services (2007/879/EC), 17 December 2007 ('2007 EC Recommendation'), http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:344:0065:0069:en:PDF.

[13] Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C 165/03), 11 July 2002 ('the SMP Guidelines'), http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2002:165:0006:0031:EN:PDF.

[14] Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/396/EC), 7 May 2009 ('2009 EC Recommendation'), http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:124:0067:0074:EN:PDF.

- a market structure which does not tend towards effective competition within the relevant time horizon; and

- the insufficiency of competition law alone to adequately address the market failure(s) concerned.

2.6 On 24 January 2014, the Commission published a draft of the revised EC Recommendation on the relevant product and service markets, along with a draft revised explanatory note to that Recommendation. Where relevant, we also consider in this consultation, proposed changes to the Commission's approach to the mobile call termination markets.

The SMP Guidelines and their application to this review

2.7 The SMP Guidelines include guidance on market definition, assessment of SMP and SMP designation. Where relevant, we have also had regard to the revised working paper on SMP[15] published by the European Regulators Group (now replaced by BEREC) in 2005 ('the ERG SMP Position'). In the relevant sections below we set out how we have taken the ERG SMP Position into account in making our proposals.

The 2009 EC Recommendation

2.8 In 2009, the European Commission issued a Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates[16] under Article 19(1) of the Framework Directive. This recommends that Member States (MS) adopt a common approach when setting price controls.

2.9 The 2009 EC Recommendation favours setting regulated termination rates on a bottom-up long-run incremental cost (bottom-up LRIC) methodology. The Recommendation also outlines the EC's view that all termination charges should be symmetrical.

Forward look

2.10 Rather than just looking at the current position, market reviews look at how competitive conditions might change over the period covered by the review. For this review we have taken a forward look of three years, in line with the requirement in the Directives that ordinarily a market review should be conducted within three years of the previous review.

2.11 This does not preclude us from reviewing any of the markets sooner, but in the absence of unforeseen developments, we anticipate that we would time the next market review to conclude three years after the completion of the current review. We therefore propose that the remedies we propose in this consultation will apply for a period of three years.

[15] ERG, *Revised working paper on the SMP concept for the new regulatory framework*, September 2005, http://berec.europa.eu/doc/publications/public_hearing_concept_smp/erg_03_09rev3_smp_common_concept.pdf.
[16] 2009 EC Recommendation

Evidence-gathering process for this review

2.12 We have based our analysis on evidence gathered during this review and noted throughout the document what sources we have relied upon. The evidence includes third-party research, information gathered using our statutory powers (under section 135 of the Act) and responses received from stakeholders after two workshops held in October 2013 and January 2014.

2.13 Annex 19 provides a list of the main sources of evidence used and where possible the web links where the evidence used is published online. While the annex lists the main evidence we have relied upon, the list is for convenience only and is not intended to be exhaustive.

Third-party research commissioned for this market review

2.14 We commissioned Kantar Media to carry out a consumer survey in relation to consumers' awareness and use of mobile services. The survey was conducted in January and February 2014. We have used the survey results, along with other reasoning and evidence on industry trends and developments, to inform our product market definition.

Information-gathering using statutory powers (section 135)

2.15 For this market review, we have issued notices under section 135 of the Act ('section 135 information request') requiring various MCPs to provide specified information as set out in the notices. These included:

- Notices of 8 November 2013, 14 February 2014 and 18 March 2014 sent to the four largest MCPs (EE, H3G, Telefónica and Vodafone) requesting information for the purposes of conducting our cost modelling in the event that SMP was found in the relevant markets and a charge control was considered an appropriate remedy.

- Notices sent on various dates between November 2013 and March 2014 to 93 MCPs holding mobile number ranges allocated by Ofcom. We requested information regarding the use of these numbers, whether MCT was offered on these numbers, the level of MTRs charged, and other information in relation to the businesses of these MCPs.

- Notice of 6 March 2014 sent to the 13[17] MCPs that have the largest retail customer base. We requested information in relation to on-net and off-net minutes generated and received by pre-pay and post-pay customers.

2.16 A more detailed list of information requests issued and the operators that responded to such requests is set out in full in Annex 19.

Stakeholder workshops

2.17 Ahead of publishing this consultation, we held two stakeholder workshops.[18]

[17] These are the 13 MCPs with more than 50 thousands customers each and include MCPs which use number ranges allocated to other MCPs.
[18] The presentations delivered during the workshops and responses from stakeholders are downloadable from http://stakeholders.ofcom.org.uk/consultations/mobilecallterm/workshop2015-

2.18 The workshop on 23 October 2013 explained the background leading to this review, provided an indicative timeline and invited stakeholders to input into our preliminary thinking on what we considered to be the key issues for this review.

2.19 The workshop on 23 January 2014 was specific to our cost modelling of MTRs and provided stakeholders with an early opportunity to comment on the direction of the modelling.

2.20 Five companies responded in writing after our stakeholder workshop on 23 October 2013, namely, EE, Telefónica, H3G, Virgin Media and BT. In response to the January 2014 workshop, we received comments from EE, H3G and BT. We have summarised the points made by stakeholders in their responses and addressed them in the relevant sections of this consultation.

Impact assessments

2.21 The analysis presented in this document constitutes an impact assessment as defined in section 7 of the Act.

2.22 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in section 7 of the Act, which means that generally we have to carry out impact assessments where our proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see the guidelines, “Better policy-making: Ofcom's approach to impact assessment”, which are on our website.

Equality Impact Assessment (EIA)

2.23 Annex 10 sets out our Equality Impact Assessment (EIA) for this market review. Ofcom is required by statute to assess the potential impact of all our functions, policies, projects and practices on the following equality groups: age, disability, gender, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation. EIAs also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity.

2.24 For the reasons explained in Annex 10, we do not expect any of the equality groups to be negatively affected by our proposals to a material extent. We have not seen the need to carry out separate EIAs in relation to the additional equality groups in Northern Ireland: religious belief, political opinion and dependants. This is because we anticipate that our proposals will not have a differential impact in Northern Ireland compared to consumers in general.

2018/ and http://stakeholders.ofcom.org.uk/telecoms/policy/mobile-policy/mobile-call-termination-review-2015-2018/mct-review-2015-18-january2014/.

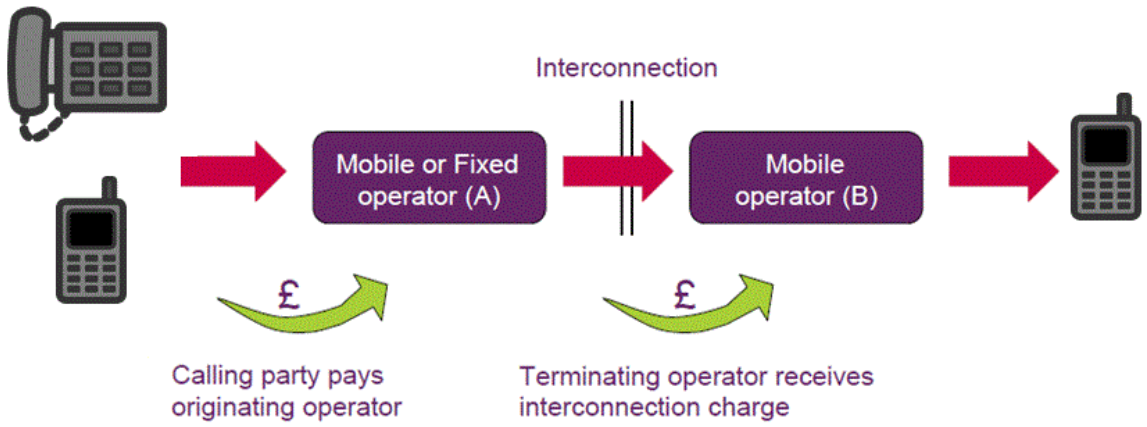
Regulation of MCT in the UK

Mobile Call Termination Rates

2.25 In order for customers of different networks to be able to call each other, telecommunications networks, including mobile networks, need to be connected to one another. One long-standing role of telecommunications regulators across the world has been to help ensure adequate interconnection of telecommunications networks.

2.26 One of the services that network operators offering voice services provide to each other is call termination – that is, the completion of a call from a customer of another network. MCT is the service provided by a mobile communications provider (MCP) necessary for an originating communication provider (CP) to connect a caller with the intended mobile call recipient on that MCP's network. Under current interconnection practices, as shown in Figure 1, the originating CP pays an amount (known as the mobile termination rate or MTR) to the MCP providing the service.

Figure 1: Mobile termination and calling network provider pays



2.27 This arrangement is often referred to as calling network provider pays (CNPP) regime and it is adopted by providers in Europe as well as in many other countries across the world. Under this arrangement, each operator is able to set a charge for connecting calls to its own customers. Historically, as part of the EC Framework, NRAs, including Ofcom, have found that each operator has SMP with respect to call termination and have regulated fixed and mobile termination rates, typically basing them on cost-related rates.

The March 2011 Statement

2.28 We last reviewed the MCT market in 2010/2011 and published our findings on 15 March 2011. In that decision (the 'March 2011 Statement'), we identified 32 separate markets, each defined as follows: *"termination services that are provided by [named mobile communications provider] (MCP) to another communications provider, for the termination of voice calls to United Kingdom mobile numbers which that MCP has been allocated by Ofcom in the area served by that MCP and for which that MCP is able to set the termination rate*". We also designated each of those 32 MCPs as having SMP with respect to the termination of calls to their respective network (i.e. within their allocated number ranges). As specified in the March 2011 Statement, in

the UK National Telephone Numbering Plan, the mobile number ranges are numbers in the format 07xxx xxx xxx and beginning 071 to 075 and 077 to 079.

2.29 We imposed the following remedies on all 32 MCPs designated with SMP: (i) to provide MCT on fair and reasonable terms (including charges) and (ii) to publish their MTRs and to give 28 days' notice of changes to their MTRs.

2.30 We also imposed the following additional regulation on the four largest MCPs[19]: (i) a charge control for the period 1 April 2011 to 31 March 2015 where the maximum permitted charge for MCT was set based on the long run incremental cost (LRIC) standard and (ii) a condition not to unduly discriminate in relation to the provision of MCT.

2.31 The MTR cap was set on a four-year glide path and aimed to limit disruptive price-setting flexibility ('flip-flopping') by setting a simple cap with a single maximum charge in each year after a two-month transition period. The MTR cap was set at 4.18ppm in 2010/11 falling to 0.69ppm by 1 April 2014 (in 2008/9 prices).

Modifications to the charge control in the March 2011 Statement

2.32 Following the publication of the March 2011 Statement, we made two sets of modifications to the charge control conditions set out in that statement.

2.33 On 25 October 2011, Ofcom published a notification to modify the charge control conditions in order to correct a computational error in the cost model underlying the charge control calculations.[20]

2.34 On 10 May 2012, following various appeals of the March 2011 Statement, we adopted certain revisions[21] to the charge control conditions, as subsequently amended, in accordance with the directions of the Competition Appeal Tribunal ('the CAT') of 8 May 2012[22], following its judgment of 3 May 2012 ('the CAT Judgment')[23]. The CAT Judgment upheld a determination of the Competition Commission ('the CC') of 9 February 2012 ('the 2012 CC Determination')[24]. The CC upheld Ofcom's

[19] EE, H3G, Telefónica, and Vodafone.
[20] Ofcom, *Modification of SMP conditions contained in Ofcom's Notification under section 48(1) and 79(4) of the Communications Act 2003 of 15th March 2011*, 25 October 2011, http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/MCT_SMP_Modification.pdf
[21] Ofcom, *Mobile call termination, Adoption of revisions to SMP Conditions in accordance with the directions of the Competition Appeal Tribunal of 8 May 2012,* 10 May 2012 http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/smp_conditions.pdf.
[22] British Telecommunications plc v Office of Communications (case 1180/3/3/11), Everything Everywhere Limited v Office of Communications (case 1181/3/3/11), Hutchison 3G UK Limited v Office of Communications (case 1182/3/3/11), Vodafone Limited v Office of Communications (case 1183/3/3/11) and Telefónica UK Limited ([2012] CAT 11) – order of the CAT of 8 May 2012 http://www.catribunal.org.uk/files/1180-83_MCT_Order_080512.pdf
[23] British Telecommunications plc v Office of Communications (case 1180/3/3/11), Everything Everywhere Limited v Office of Communications (case 1181/3/3/11), Hutchison 3G UK Limited v Office of Communications (case 1182/3/3/11), Vodafone Limited v Office of Communications (case 1183/3/3/11) and Telefónica UK Limited ([2012] CAT 11) – judgment of the CAT of 3 May 2012 http://www.catribunal.org.uk/files/1180-83_MCT_Judgment_030512.pdf
[24] *Reference under section 193 of the Communications Act 2003: British Telecommunications Plc v Office of Communications (Case 1180/3/3/11), Everything Everywhere Limited v Office of Communications (Case 1181/3/3/11), Hutchison 3G UK Limited v Office of Communications (Case 1182/3/3/11), Vodafone Limited v Office of Communications (Case 1183/3/3/11) and Telefónica UK Limited*. Competition Commission Determination, 9 February 2012 http://www.catribunal.org.uk/files/1.1180-83_MCT_Determination_Excised_090212.pdf

decision to adopt LRIC as the appropriate cost standard for MCT, but disagreed with certain aspects of Ofcom's analysis; agreed with BT that the glide path for reducing termination rates to LRIC should have been three years rather than four; and upheld H3G's appeal on the technical point related to the cost model.[25]

2.35 As a result of the above, the pence per minute LRIC of MCT in 2014/2015 was reduced from 0.69ppm (expressed in 2008/09 prices) to 0.67ppm (in 2008/2009 prices). In addition, the glide path to LRIC was determined to be steeper, in order to reach LRIC one year earlier, i.e. on 1 April 2013.

2.36 Table 2 below shows the MTR caps in real and nominal values[26] between 2010/2011 and 2014/2015 following the modifications mentioned above. "TAC" refers to the Target Average Charge.

Table 2: Regulated MTRs (pence per minute)[27]

MCP	1 April 2010 to 31 March 2011 (TAC)	1 April 2011 to 30 October 2011[28]	31 October 2011 to 31 March 2012	1 April 2012 to 10 May 2012	11 May 2012 to 31 March 2013	1 April 2013 to 31 March 2014	1 April 2014 to 31 March 2015
Vodafone / Telefónica / EE (real 08/09 prices)	4.180	2.664	2.693	1.735	1.258	0.69	0.67
H3G (real 08/09 prices)	4.480	2.664	2.693	1.735	1.258	0.69	0.67
Vodafone / Telefónica / EE (nominal prices)	4.428	2.984	3.015[29]	2.053	1.5	0.848	0.845
H3G (nominal prices)	4.750	2.984	3.015	2.053	1.5	0.848	0.845
Other designated MCPs	Set on the basis of being fair and reasonable						

[25] EE also appealed the CAT Judgment to the Court of Appeal, which dismissed that appeal in its judgment of 6 March 2013. See Everything Everywhere Limited v Competition Commission, [2013] EWCA Civ 154, 6 March 2013. http://www.catribunal.org.uk/files/1180-83_MCT_Judgment_Of_The_CofA_060313.pdf

[26] These are the MTR caps reflecting the Retail Price Index (RPI) adjustment each year. They are available at http://stakeholders.ofcom.org.uk/consultations/mtr/statement

[27] MTRs are also available at http://media.ofcom.org.uk/analysts/regulated-prices/

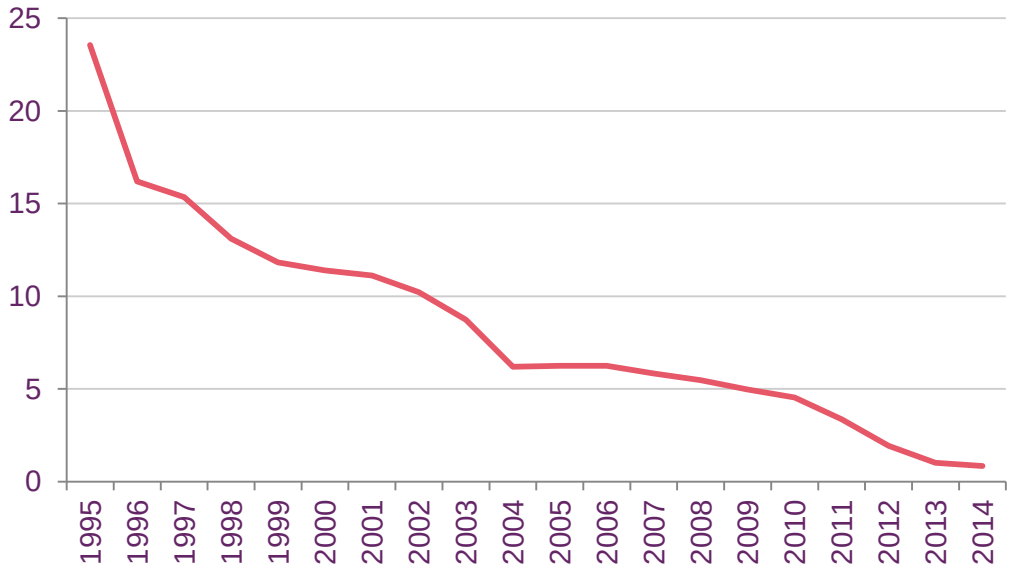
[28] Between 1 April 2011 and 31 May 2011 the rate was set on the basis of a target average charge (TAC)

[29] Price amended following the SMP modification in October 2011. See Ofcom, *Explanatory Note accompanying Ofcom's Modification of the Mobile Call Termination SMP Conditions*, 25 October 2011. http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/MCT_SMP_Modification-note.pdf.

2.37 Figure 2 below displays the average MTR in the UK between 1995 and 2014 in nominal ppm. The chart shows a declining trend in MTRs, starting from 24 ppm in 1995 to less than one ppm in 2014.

2.38 The sharpest reduction in MTRs in percentage terms (although not in pence per minute terms) occurred following the last market review, where the charge control set for the years 2011-2015, as modified following the CC's Determination, has reduced the wholesale price cap by around 80% over a three year glide-path.

Figure 2: Average MTR in the UK (nominal pence per minute, weighted by subscriber numbers)



Regulation of fixed termination rates (FTRs)

2.39 By way of background, we also note that in September 2013 we concluded our review of the fixed narrowband services markets ('2013 FNMR'), including wholesale fixed geographic call termination.[30] In the statement published in September 2013 ('the 2013 FNMR Statement'), among other remedies, we imposed a charge control on the fixed termination rates (FTRs) charged by BT and based on the LRIC cost standard. Prior to our review in 2013, regulated FTRs were set on the basis of LRIC+.

2.40 Other CPs that were also found to have SMP in their relevant fixed geographic call termination markets were not made subject to a charge control, but are subject to an obligation to provide network access on reasonable request and on fair and reasonable terms, conditions and charges.[31]

[30] Ofcom, *Review of the fixed narrowband services markets, Statement on the proposed markets, market power determinations and* remedies, statement, 26 September 2013. http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final_Statement.pdf.
[31] See paragraphs 6.125-6.135 of the 2013 FNMR Statement.

Regulation of MTRs in Europe

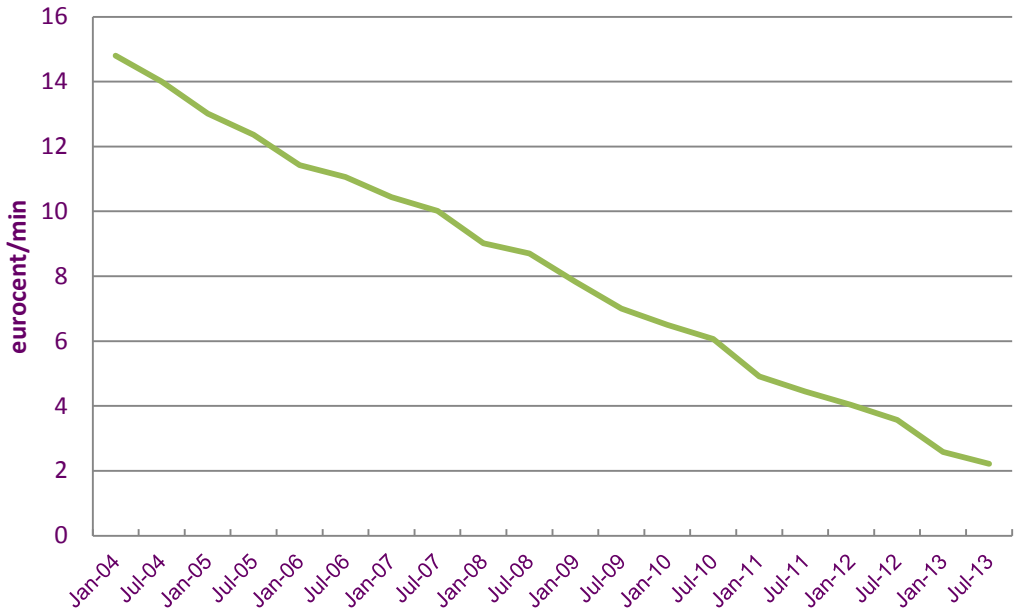
2.41 Our review concerns the market for MCT in the UK and as such is based on the specific national circumstances that characterise this market. However, since this review is conducted under our duties within the European Framework, we include here some information regarding regulation of MCT in other European countries.

2.42 According to the latest European benchmark[32], the average MTR in Europe stands at 2.22 € cents per minute (simple average), whereas the weighted average is estimated at 1.46 € cents per minute.[33]

2.43 As with the trend identified in the UK, the average MTR in Europe has declined significantly in the last ten years from about 14 € cents per minute to 2.22 € cents per minute, as shown in Figure 3 below.

2.44 We have also considered the cost standard that other European countries have planned or are planning to adopt. Among the major European NRAs that started reviews of wholesale mobile call termination after the 2009 EC Recommendation was published, almost all have adopted, or will soon adopt, LRIC-based MTRs.

Figure 3: Average MTRs in Europe - time series (32 countries)[34]



[32] BEREC, *Termination Rates Benchmark Snapshot (as of July 2013): Integrated Report on Mobile Termination Rates, and SMS Termination Rates*, November 2013. http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/3900-termination-rates-benchmark-snapshot-as-of-july-2013-integrated-report-on-mobile-termination-rates-and-sms-termination-rates.

[33] Average MTR per country have been obtained by weighting the average MTR of each MCP by its market share, measured in terms of subscribers. Two European averages have been calculated: a simple average and a weighted average, the latter weighting each country's average with the share of the country's subscribers (total subscribers per country / total European subscribers). In the case of the European weighted average, only the countries that reported the number of subscribers are taken into account.

[34] See footnote 31.

Background on current MCT market

2.45 The following paragraphs provide some further background to our review in relation to the latest developments in the MCT market. More specifically, to inform our market definition we first recap on the current technical solutions to deliver a voice call over a mobile network. We then describe the MCT market players and the most recent trends in mobile networks.

How voice calls are delivered

2.46 There are many ways to deliver voice to a mobile handset as handsets are becoming increasingly capable of making or receiving voice calls through various radio technologies. This section describes the typical architecture used to carry voice calls over mobile networks and how this differs in the case of over the top and hybrid voice services. The network architecture is described at a high level together with example voice call network paths.

2.47 Traditionally voice calls have been carried over public switched telephone networks (PSTNs)[35] using circuit switched (CS) networks. In CS networks the communication takes place over a dedicated physical circuit and as such the call quality can be fully controlled. Recently the alternative digital networking communications method of packet switched (PS) voice is beginning to be used by some MCPs. PS differs from CS in that it groups all transmitted data – regardless of content, type, or structure – into suitably sized blocks, called packets. PS voice is typically carried over Internet Protocol (IP) and is termed Voice over IP (VoIP).

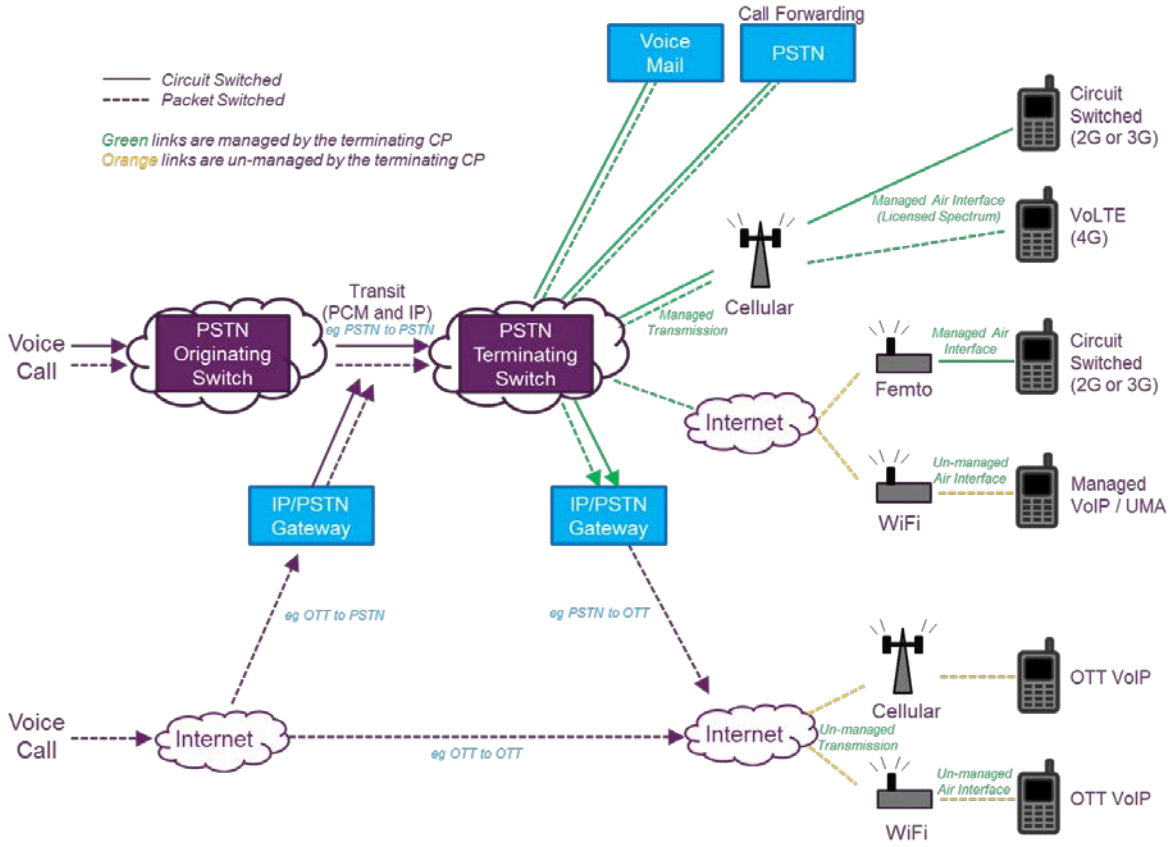
2.48 When PS voice is used by MCPs on controlled networks the quality of service (QoS) of the voice can be managed. However PS, in the form of VoIP, can also be used as an over the top (OTT) service whereby the voice packets are carried by an existing data connection. Typically the underlying data network will provide no prioritisation for the OTT voice packets relative to other data packets and so the OTT voice QoS cannot be guaranteed.

2.49 Typically 2G and 3G technologies carry voice as CS, however 4G[36] is a PS technology which does not intrinsically support CS. Currently MCPs are making use of circuit switched fall back (CSFB) to carry voice from 4G handsets over CS 3G and 2G. We expect some MCPs to carry voice over 4G using the technology of Voice over LTE[37] (VoLTE) in the future.

2.50 Figure 4 shows a simplified view of the call paths in both traditional PSTN networks and OTT services. We note that an MTR is levied when a call is routed via a PSTN terminating switch.

[35] A Public Switched Telephone Network (PSTN) refers to a telephony network used to provide telephone calls using (or emulating) circuit-switching and using telephone numbers to identify subscribers or called locations, allowing all customers connected to the network to call all other customers. A PSTN can be either a fixed or a mobile network.
[36] 4G can be used to indicate technologies such as LTE and WiMAX, however LTE is the predominant 4G technology used in the UK. As such, where 4G is referred to in this consultation document, it can typically be regarded as referring to LTE.
[37] LTE is the predominant 4G technology used in the UK.

Figure 4: Simplified PSTN and OTT Architecture



Voice Call Paths

Calls originating on a PSTN and terminating on a PSTN mobile network

2.51 Calls originating on a PSTN and terminating on a PSTN mobile network are terminated to a UK mobile number allocated by Ofcom. They are typically carried as CS calls although PS may be used. The terminating switch can terminate the call in a number of ways:

- *Over a traditional cellular network to a mobile handset with a SIM card.*

  If the destination handset is attached via a SIM card to the terminating MCP's cellular network then the voice call can be routed over the cellular network. Typically these calls will be under the full control of the CP at all times.

- *Over the internet via a femtocell[38] to a mobile handset with a SIM card.*

  In this situation the network between the terminating MCP and the femtocell may not be controlled by the terminating MCP so it may not be possible to fully control the QoS of the voice call.

- *Over the internet to a mobile handset using UMA.*

[38] A femtocell or small cell is a small low power cellular base station. Femtocells are typically used inside buildings.

Unlicensed mobile access (UMA)[39] is a mobile technology that can be used to deliver a voice call over an IP connection using WiFi unlicensed spectrum. UMA provides seamless transition between different technologies, e.g. it allows handover of calls between 2G and WiFi.

- *Over the internet to a mobile handset using an application.*

  MNOs may offer an application for smartphones and tablets which enables the application to receive a voice call if it is connected to the internet, for example over WiFi. In this situation the call is made to a mobile number and the terminating switch directs the call over the internet as an OTT service. An example is the Telefónica TU Go service.[40]

- *By forwarding to another PSTN or to a voice mail platform.*

Calls originating from the internet and terminating on a PSTN mobile network

2.52 VoIP calls originating from the internet and terminating on a PSTN mobile network are known as 'VoIP Out' services and can be terminated to a UK mobile number allocated by Ofcom. Examples of these services include Skype calls to mobile numbers, BT's SmartTalk, and various SIP[41] based applications. These calls are carried as OTT VoIP until they reach an IP/PSTN gateway from where they are carried as a PSTN managed voice call to the terminating switch. The terminating PSTN switch can terminate the call in the same ways as described above.

Calls originating from the internet and terminating via the Internet

2.53 VoIP calls originating from the internet and terminating via the internet are known as 'peer-to-peer OTT' and 'pure-OTT' VoIP services. Such calls are not terminated to a UK mobile number allocated by Ofcom. The whole voice path is OTT of IP providers and so, as with any OTT service, the call quality cannot be fully managed or guaranteed. Examples of these services include Skype over the Internet, Viber and Facetime.

Calls originating on a PSTN and terminating via the Internet

2.54 'VoIP In' refers to services which allow voice calls originating on a PSTN to be received via VoIP over the Internet. Such calls will pass to a PSTN terminating switch and from there to a PSTN/IP gateway where they are converted to OTT VoIP. They are typically routed using a fixed line (geographic) number. Examples of these services include Skype and various SIP based applications.

MCT market players

2.55 There are four MCPs with widespread national radio access networks (RAN), who have independent control of spectrum, and operate in both the wholesale and retail markets. We refer to these MCPs (EE, Vodafone, Telefónica and H3G) as the 'four largest MCPs'.

[39] UMA is a commercial name for Generic Access Network (GAN).
[40] See http://www.o2.co.uk/apps/tu-go.
[41] Service Initiation Protocol ('SIP') is a signalling protocol that is commonly used for calls over IP networks.

2.56 There are also a large number of smaller MCPs (of varying size and scope) which provide various types of mobile communications services using mobile number ranges allocated to them, but are not of the same size and scope as the four largest MCPs. Whilst some MCPs are combining infrastructure roll-out and roaming arrangements to achieve near national coverage, others have chosen to target specific geographic areas.[42]

2.57 We will refer to MCPs using OTT means to terminate calls to their mobile numbers as *asset-light* MCPs. By this we mean that these are MCPs who provide MCT without using the full technological infrastructure used by traditional MCPs, such as the four largest MCPs. Asset-light MCPs would not operate, or directly incur the costs of operating, a radio access network.

Network Trends

2.58 Mobile network technology is rapidly developing which is having the effect of enabling mobile networks to carry ever increasing volumes of data whilst reducing the cost of carrying each bit. Key network related trends are summarised below.

4G and spectrum liberalisation

2.59 Following the auction in 2013 for 4G spectrum at 800MHz and 2.6GHz, five MCPs obtained spectrum.[43] Use of 4G and the additional spectrum enables MCPs to provide more data capacity and higher data rates to 4G mobile handsets.

2.60 Spectrum liberalisation has enabled MCPs to refarm spectrum from 2G to 3G and 4G. This enables spectrum to be used for spectrally efficient technologies more suited to the growth in data demand. For example spectrum that was previously used solely for 2G at 1800MHz can now be used also for 4G.

Voice calls

2.61 Voice calls have traditionally been delivered using circuit-switched technology, which requires network infrastructure designed to open and maintain a continuous connection between the caller and the recipient during the call. However there has been a growth of new methods of delivering a call, such as VoIP, which do not use a 2G/3G circuit-switched mobile network.

2.62 As noted in paragraph 2.49, currently MCPs are making use of circuit switched fall back (CSFB) to carry voice from 4G handsets over circuit switched 3G and 2G. However, MCPs may in the future choose to carry voice over 4G using VoLTE which can be more a more efficient use of spectrum.

Radio Access Network (RAN) sharing

2.63 Radio Access Network (RAN) sharing continues to be a significant trend in the sector due to the large cost savings available (RAN is typically the largest network cost). Today there are two national RAN sharing agreements: EE and H3G share their

[42] Some MCPs are often referred to as mobile virtual network operators (MVNOs), e.g. Tesco, Virgin Media, Asda, and GiffGaff. Typically MVNOs do not operate their own RAN but rely on that of one of the four largest MCPs, but there is no generally accepted definition of MVNO. Not all MVNOs have their own allocation of UK mobile numbers and some MVNOs act as resellers of services provided by other MCPs on UK mobile numbers allocated to those other MCPs.

[43] More information regarding the outcome of the 2013 spectrum auction can be found at http://media.ofcom.org.uk/2013/02/20/ofcom-announces-winners-of-the-4g-mobile-auction/.

RANs through the joint venture company Mobile Broadband Network Limited (MBNL), and Vodafone and Telefónica share their RANs through the joint venture company Cornerstone Telecommunications Infrastructure Ltd (CTIL).

Small cells

2.64 There has been an increase in the use of 3G small cells, of which the greatest use has been of low power indoor femtocells. These have typically been deployed to provide in-building residential coverage where coverage may otherwise be poor.

Section 3

Product and geographic market definition

Introduction

3.1 This section sets out our analysis and proposals for the product and geographic market definition for MCT. This market definition forms the basis for identifying any Significant Market Power (SMP) and any appropriate remedies, as discussed in subsequent sections of this document.

3.2 The structure of this section is as follows:

- We first summarise our proposed market definition.
- We then summarise the regulatory framework, including the legal framework, our approach to market definition and findings from related Ofcom reviews.
- We summarise the responses we received from stakeholders following our October 2013 MCT workshop.
- We discuss the starting point for our product market definition.
- We set out our preliminary view of the product market definition, including:
  - an analysis of demand-side and supply-side switching at the retail level;
  - an analysis of demand-side and supply-side switching at the wholesale level;
  - a discussion of broadening the market definition on the basis of homogenous competitive conditions and common pricing constraints; and
  - clarification of the call 'types' that fall within the scope our proposed mobile voice call termination product market.
- We set out our preliminary view of geographic market definition.
- We set out our proposed conclusion and comment on its consistency with the EC Recommendation on relevant markets.
- Finally we provide the list of separate markets we have identified, each corresponding to a different MCP.

Summary of Proposed Market Definition

3.3 Our preliminary view is that the market definition adopted in our previous review remains appropriate:

> "termination services that are provided by [named mobile communications provider] ('MCP') to another communications provider, for the termination of voice calls to UK mobile numbers which that MCP has been allocated by Ofcom in the area served by that MCP and for which that MCP is able to set the termination rate."

3.4 This leads to 82 separate wholesale markets for MCT corresponding to one for each MCP which currently provides MCT or which we expect to do so during the market review period.

3.5 This definition is based on our view that currently there are no close substitutes to voice calls to mobile numbers, nor that any are likely to emerge over the period covered by this review.

3.6 We consider that an MCP faces similar competitive conditions in the supply of termination services for all individual UK mobiles numbers allocated to it and for which it is able to set the termination rate. We also consider that competitive conditions in the different areas of the UK where an MCP provides termination services are the same. Therefore, we propose to identify separate markets that comprise termination services for all UK mobile numbers allocated to a particular MCP in all regions where the MCP can supply MCT and set the termination rate.

3.7 Our proposed definition covers calls to mobile number ranges, irrespective of the technology used to convey the call, either in the core network or the radio network (e.g. 2G, 3G, 4G, WiFi). It also includes all call types for which an MCP is able to set the termination rate, namely: calls to 'ported-out' numbers, calls to voicemail, call forwarding services, national roaming, and international roaming where the call is to a UK mobile number.

Regulatory and analytical framework

3.8 This sub-section is structured as follows:

- We first summarise the relevant legal framework, including the account we must take of relevant EC Guidelines and Recommendations.
- Second, in light of the legal framework, we briefly summarise our overall approach to market definition, outlining the basic principles as well as specific issues relating to cluster markets and two-sided markets.
- Finally, we summarise the findings of two recent Ofcom market reviews concerned with the voice call termination: the March 2011 Statement and the 2013 FNMR that considered wholesale fixed voice call termination markets.

Legal framework

3.9 In summary, the legal framework for our market definition requires that we must identify the markets which, in our opinion, are appropriate in the circumstances of the UK, in accordance with competition law principles.[44] In so doing, we must take due account of the 2007 EC Recommendation and the SMP Guidelines.[45] We discuss the legal framework for market definition in more detail in Annex 5.

3.10 The 2007 EC Recommendation identifies those product and service markets in which ex-ante regulation may be warranted, including wholesale "voice call termination on individual mobile networks".[46] We discuss consistency with the 2007 EC Recommendation at paragraphs 3.138-3.140 at the end of this section.

[44] Section 79(1) of the Act; Article 15(3) of the Framework Directive
[45] Section 79(2) of the Act; Article 15(3) of the Framework Directive.
[46] Market 7, 2007 EC Recommendation

Our approach to market definition

Basic principles of market definition

3.11 Product market definition begins with consideration of the narrowest identifiable set of products. This is termed the focal product (or product group). Then it is considered whether a price rise of 5-10% above the competitive level instituted by a hypothetical monopolist of this candidate market would be profitable or not. This is often referred to as the SSNIP test, where a SSNIP refers to a "small but significant non-transitory increase in price". There are two potential sources of competitive constraint which could render such a price rise unprofitable: demand-side substitution where consumers switch to other products; or supply-side substitution where suppliers of other products begin to compete in the candidate market in response to the increased prices. If either form of substitution would render the price rise unprofitable, then market definition is expanded to include those substitute products. The test is then repeated with the substitute products under the control of the hypothetical monopolist. When the SSNIP is first found to be profitable, no further iterations are required.

3.12 In many cases, the set of products defined at the end of the SSNIP test process constitutes the relevant product market. However, in some cases it may be appropriate to aggregate several sets of products defined by the SSNIP test because they are subject to similar competitive conditions or a common pricing constraint.

3.13 The 2007 EC Recommendation identifies the starting point for the overall assessment of wholesale markets to be the definition of the relevant retail markets from a forward-looking perspective, taking into account demand-side and supply-side substitutability.[47] This is because demand for wholesale products is derived from the retail market and will be affected by the characteristics of it.

3.14 In our market definition we therefore first consider retail consumers' underlying needs for mobile services. We then consider the constraints on (wholesale) MCT. We consider "direct" constraints due to substitution at the wholesale level, but also "indirect" constraints from the retail market. Indirect constraints arise because some proportion of the wholesale price increase is likely to be passed on to the retail level, which may result in retail customers switching to goods which do not require the wholesale input. If such retail substitution would be sufficient to limit the ability of a wholesale operator to profitably raise wholesale prices (i.e. MTRs) by any significant amount then an indirect constraint exists. Such indirect constraints might lead to wholesale products being included in the same relevant market even if those products do not constrain each other directly at the wholesale level.

3.15 In addition to product dimensions to the market definition, it is also necessary to assess the geographic dimension. As with product market definition, demand and supply-side factors are considered to determine whether a local geographic market should be widened to form regional or national markets. Different areas may also be included in the same relevant market if competitive conditions are sufficiently similar or because a common pricing constraint links them.

3.16 As required by the Commission's Framework, market definition is conducted using a 'modified Greenfield approach'.[48] This requires us to conduct the market definition

[47] See Recital 4 of the 2007 EC Recommendation.
[48] See section 2.5 of Commission Staff Working Document, Explanatory note, Accompanying document to the Commission Recommendation on Relevant Product and Service Markets within the

and SMP assessment while imagining that all SMP regulation at the same level in the supply chain as the input being assessed, or further downstream from it, is absent. For MCT this means that we disregard the effects of SMP remedies that restrict the provision and pricing of MCT.[49]

3.17 The product and geographic market analysis also needs to be forward-looking. Therefore, we evaluate the expected and foreseeable technological and economic developments likely to affect mobile markets for the period to March 2018.

Cluster markets

3.18 A 'cluster market' is a term used to describe markets where there are some 'transactional complementarities' in buying products together, that is, where retail consumers realise savings from buying a set of products as a package from one provider rather than buying them separately. In cluster markets, it may not be appropriate to consider individual components in isolation since what matters for competition is demand and supply side substitution for the whole cluster of services.

3.19 The bundling of call termination (at the retail level) with other retail services suggests that we should consider the possible presence of 'cluster markets'. We assess whether the presence of a cluster market may affect our product or geographic market definition at paragraphs 3.117-3.121 below.

Two-sided markets

3.20 Another relevant and related issue is the two-sided nature of mobile services. A two-sided market is one in which a firm supplies a service to two or more distinct groups of customers and where at least one side derives some benefit from the fact the service is also supplied to the other groups. This often occurs when a supplier acts as an intermediary between two (or more) customers allowing them to interact in some way.

3.21 In the case of MCT, customers of a particular MCP either make calls or receive calls. Broadly speaking callers value a telephone network more as the number of people able to receive their call grows; call recipients value the service more if there are more people able to call them. MCPs charge their subscribers a retail price for making a call, and earn revenue from their subscribers when they receive calls by charging MTRs to other networks conveying a call to the called party.

3.22 In a two-sided market, it can be efficient to set prices in ways that mean the cost of provision is borne more heavily by one side than the other. The total volume of transactions depends on the price structure (the share of the total charge borne by each side) as well as the level of the combined price (the sum of the charge to each side).[50]

3.23 Moreover, there can be a 'waterbed effect' where a change in one set of prices leads to changes in prices in a different part of the market. For example, a reduction in

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electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications and services (Second Edition), 13 November 2007 ('Explanatory Note to the 2007 EC Recommendation') https://ec.europa.eu/digital-agenda/sites/digital-agenda/files/sec_2007_1483_2_0.pdf

[49] We further discuss the modified Greenfield approach in Section 4, paragraphs 4.9 to 4.10.

[50] Rochet, J-C and Tirole, J (2004), "Defining two-sided markets", mimeo, University of Toulouse.

MTRs may induce MCPs to raise the monthly payment associated with a mobile contract.

3.24 It is sometimes argued that the fact that the two sides of the market are linked means that in some cases they could be considered to be in the same market i.e. that there should be a single market covering both sides. We believe, however, that in the case of mobile services, although there is interaction between the two sides, the competitive conditions and constraints on the two sides of the market are often different. Although there is an interaction, it does not remove the ability to set excessive prices on one side. In particular, with no competitive constraints on MTRs, MCPs may have an incentive to set them above the competitive price level (for example, this happened when MTRs were not regulated). We return to this point in paragraphs 3.117-3.121.

2011 MCT Market Review

3.25 In our March 2011 Statement, using the conceptual framework for market definition outlined above, we concluded that the relevant market for the termination of mobile calls was:

> "termination services that are provided by [named mobile communications provider] (MCP) to another communications provider, for the termination of voice calls to United Kingdom mobile numbers which that MCP has been allocated by Ofcom in the area served by that MCP and for which that MCP is able to set the termination rate."

3.26 Based on this definition, we identified 32 separate markets, each corresponding to a different MCP providing termination services on UK mobile numbers allocated by Ofcom.

2013 Fixed Narrowband Market Review Statement

3.27 The most recent review of voice call termination services was in the 2013 FNMR Statement, which considered the markets for fixed geographic call termination services. In this market review we adopted a market definition based on fixed number ranges, similar to the one adopted for MCT in the March 2011 Statement. Specifically, we found that the relevant service markets were:

> "termination services that are provided by [named fixed communications provider] (CP) to another communications provider, for the termination of voice calls to United Kingdom geographic numbers in the area served by that CP." [51]

Responses to our stakeholder workshop

3.28 At the stakeholder workshop held in October 2013 we provided our preliminary view on market definition in light of the key developments and trends, in particular the potential growth of alternative mobile voice services, e.g. Over The Top (OTT) services. We explained that our preliminary view was that the market definition from

[51] Where wholesale fixed geographic call termination relates to the conveyance of all signals (including relevant control signals) required to terminate calls on a customer's exchange line from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by another CP.

the last review was likely to remain appropriate. We invited views from stakeholders.[52]

3.29 H3G agreed with our preliminary view that the market definition should remain unchanged from our last review. It submitted MCT has no close substitutes at the retail and wholesale level. In particular, H3G agreed that OTT services were unlikely to materially impact the market over the period covered by the review. It noted that sound quality tends to be lower and OTT services tend to be 'closed systems' that require both parties to be signed up and logged in. In H3G's view, services such as VoIP and IM were more likely to be a substitute for SMS than for mobile voice calls.

3.30 Telefónica noted our preliminary view on market definition and commented that service development and adoption tend to progress at a quick and increasing rate. It suggested that we would need to keep the potential constraints under review.

3.31 EE stated that, as with its response to our previous market review, it believes that MCT should be considered as part of a wider mobile services market (which is competitive). It argued that developments since the last review have only reinforced this view. It argued that we need to undertake further analysis to justify our preliminary view that OTT services should be excluded. It said that although many calls cannot be switched to OTT services, this does not mean switching is insufficient to make increases in MTRs unprofitable. This is because MCPs would have no way of discriminating between calls that can and those that cannot be switched. EE considered that it is highly uncertain, currently, how and over what timeframes the market will evolve in this area. However, it argued that market developments, such as increasing penetration of smartphones and increased ease of use of applications (which could be used to deliver voice services) and data, will increasingly blur the lines between different ways of delivering voice services from a customer perspective.

3.32 BT submitted that increasingly consumers want to receive their communications and entertainment over a single handset. Callers have little interest in whether the called party is mobile or fixed. It argued that by 2018, it will be increasingly difficult to determine if a call to a mobile number has been delivered over the fixed or the mobile network and noted the incentive of MCPs to use fixed infrastructure (Wi-Fi or Femtocells) where possible to terminate calls. It considered that by 2018 the market would be one in which the receiving party determines the technology used to terminate calls as well as make calls and believed this would *"create the appropriate competitive market where the consumer chooses whether to purchase cheaper or more expensive access and the facilities that come with it."*[53] It did not explicitly argue for a single termination market definition covering fixed and mobile services, but suggested that the pragmatic solution would be to set the same rate for termination regardless of the technology used, because any significant difference between FTRs and MTRs would provide arbitrage opportunities that would drive out usage of lower value fixed numbers.

3.33 Virgin Media did not comment specifically on market definition, but noted that we need to take into account the increased convergence of mobile and fixed services.

3.34 We have taken account of these views in the analysis below.

[52] Slides presented during the October 2013 stakeholder workshop and non-confidential responses are available at: http://stakeholders.acmpub.intra.ofcom.local/telecoms/policy/mobile-policy/mobile-call-termination-review-2015-2018/

[53] Page 9 of BT response to the October 2013 workshop

The starting point for our market assessment

3.35 As described above, we start the market definition process by considering the narrowest appropriate 'focal product', or set of focal products, and progressively we then widen the product market definition to include other goods or services as needed. In this section we consider what the appropriate starting point for the analysis of the retail product market and the wholesale product market should be for our MCT review.

Starting point for analysis of retail services

3.36 At the retail level, callers value calls that successfully reach the called party. In this respect, it is the end-to-end call which is important rather than individual parts of that call (such as termination).

3.37 Consumers value mobile services, in particular, because mobile services allow consumers to make calls (and be contacted) in many different locations, including while on the move. Fixed services, in contrast, are restricted to a specific location. Fixed services include calls made over corded or cordless fixed line telephones phones such as DECT[54] handsets which can be used from any point in range of its base, but no further.

3.38 We base our focal product on calls to mobile numbers. In practical terms calling parties are normally able to identify whether they are contacting the called party on their mobile phone by reference to the number range. Moreover, as we explain below, at a wholesale level it is the party controlling the number range that determines the pricing of traffic that terminates on that number range. This wholesale pricing then feeds through to the retail prices for calls to that number range faced by calling parties. Under the National Telephone Numbering Plan[55], we have designated specific number ranges for mobile services. These are those numbers beginning 071 to 075 and 077 to 079 (070 numbering is designated for personal numbering and 076 for radio paging). The plan defines a mobile service as:

> "...a service consisting in the conveyance of Signals, by means of an Electronic Communications Network, where every Signal that is conveyed thereby has been, or is to be, conveyed through the agency of Wireless Telegraphy to or from Apparatus designed or adapted to be capable of being used while in motion."

3.39 We propose to include in our set of focal products calls to all UK mobile numbers which are active, or which we expect to be active, over the period of the review.[56] We also consider that our starting market definition should capture the fact that termination of a call initiated to the called party's mobile phone can be over different technologies. This includes 2G, 3G and 4G networks or, potentially, Wi-Fi based solutions. At the retail level, when callers initiate a call to the called party's mobile phone, they (and their originating network) have no control over the technology used to terminate the call. Calling parties will very often be unaware of which technology is

[54] DECT phones are the technology typically used for wireless fixed handsets.
[55] Ofcom, *The National Telephone Numbering Plan,* 13 December 2013. http://stakeholders.ofcom.org.uk/binaries/telecoms/numbering/Numbering_Plan_Dec_2013.pdf
[56] See paragraph A8.7 of Annex 8 for more details on our proposed approach to MCPs which are not currently providing mobile services on the numbers allocated to them, but which might do so in the future.

used. Moreover, calls to a particular called party's mobile phone may terminate using different technologies during the same call (e.g. drop-back from 3G to 2G).

3.40 Information gathered from smaller MCPs (see Annex 8) suggested a number of these MCPs provided international call forwarding services using these numbers. We acknowledge that such international call forwarding services may not necessarily involve a voice call being terminated on a mobile phone. We nonetheless propose to include them in our set of focal products. This is because a termination rate is charged. Moreover, the calling party initiating a call to such numbers may be unaware of the extent of the mobility provided to the call recipient for such a service. Indeed, given the number was part of the range designated for mobile services, consumers may expect these services to be mobile, and charged as a normal mobile call. We discuss evidence on consumer awareness of calls to mobile numbers in paragraphs 3.54 to 3.59 below.

3.41 We exclude from our proposed set of focal products calls to UK mobile number ranges allocated to MCPs based in the Channel Islands and Isle of Man where their MTRs are already subject to regulation imposed by their respective national regulatory authorities. A key difference with companies based in other countries is that we allocate UK mobile numbers on behalf of the Channel Islands and Isle of Man regulators to companies based in those territories. MCPs such as JT (Jersey) Ltd (formerly known as Jersey Telecom) therefore rely on UK mobile numbers to provide mobile services in the Channel Islands and Isle of Man. Therefore, in principle, calls to UK mobile numbers allocated to these companies might be captured by our focal product definition related to UK mobile numbers. However, a key difference to other MCPs holding UK mobile numbers is that the MTRs of these providers are already subject to regulation by the national regulatory authorities. In order to provide mobile services in Jersey, Guernsey and the Isle of Man these MCPs must hold a mobile operator licence issued by the respective Channel Islands or Isle of Man authorities.[57] Such licences include charging obligations in relation to MTRs. As the purpose of our market definition is ultimately to allow us to assess market power and to determine whether ex-ante regulation is necessary,[58] we do not consider it appropriate to include calls to UK mobile numbers allocated to MCPs whose MTRs are already regulated.[59]

3.42 For the avoidance of doubt, we do not exclude from our proposed set of focal products calls to UK mobile numbers held by any other foreign-based MCPs that provides MCT services. We also propose to include calls to UK mobile numbers allocated to three companies based in the Channel Islands or Isle of Man which we understand are not licensed to provide mobile services in those territories or for which the MTRs might not be subject to local regulation.[60]

[57] See for example: Channel Islands Competition and Regulatory Authorities, 'Licensing Framework', available at: http://www.cicra.gg/telecoms/licensee_framework.aspx#Licensees

[58] Even if MCPs such as JT (Jersey) Ltd were included in our market definition we do not consider that we would be likely to find SMP or, alternatively, likely harm arising from SMP. This is because under the modified Greenfield approach our subsequent market power assessment would have to take into account regulation in the Channel Islands and Isle of Man. As those MCPs' MTRs are regulated under their licence obligations this does not suggest they would be able to price their MCT services independently of their competitors.

[59] The seven MCPs we have excluded are: Guernsey Airtel Ltd, Jersey Airtel Ltd, JT (Guernsey) Ltd, JT (Jersey) Ltd Sure (Guernsey) Ltd, Sure (Isle of Man) Ltd and Sure (Jersey) Ltd.

[60] The three companies are Globecom International Ltd, Manx Telecom Trading Ltd, and Marathon Telecom Ltd.

3.43 Our proposed set of focal products also excludes services that do not use mobile telephone numbers to establish voice calls between two users, for example, Viber and Skype. We refer to these services as 'pure-OTT' as they do not involve mobile numbers, are purely delivered over data connections and are not routed via the switch of the called parties' network. For example 'pure-OTT' applications such as those operated by Skype and Viber rely on access to a mobile handset via a data connection. As such a call does not need to be routed via the switch of the called parties' network, so it does not attract a termination rate. Moreover, consumers can distinguish these calls from calls to mobile numbers and are likely to expect to pay different rates. For the avoidance of doubt, calls which are initiated on OTT applications, such as 'Skype Out', but terminate on mobile numbers are included within our set of focal products. In addition, calls to a UK mobile number allocated to an asset-light MCP (i.e. an MCP using OTT in order to terminate calls to its mobile numbers) for which it can set a termination rate are also included in our proposed market definition.

3.44 Therefore, in summary, we consider our starting point for the analysis of the retail market should be a voice call initiated by the calling party to the called party's mobile number. A mobile number would be any number in the format 07xxx xx xxx and beginning 071 to 075 and 077 to 079. This is regardless of the technology employed to terminate the call to that mobile number. This is also irrespective of how the call may be originated (i.e. on another mobile handset, by fixed line telephony, or by an OTT app) or which company the mobile number is allocated to (excluding, however, calls to UK mobile numbers held by MCPs holding a mobile operator licence issued by the respective Channel Islands or Isle of Man authorities and whose MTRs are subject to regulation by the local regulatory authorities).

Starting point for analysis of wholesale services

3.45 We consider that the starting point for our analysis of the wholesale market should be *"wholesale mobile call termination services that are provided by each MCP, for calls to a mobile number allocated by Ofcom to that MCP and for which that MCP is able to set the termination rate."*

3.46 This proposed market definition follows our retail focal point closely because the determination of which MCP terminates a call depends upon which MCP has been allocated the number called. An MCP that is allocated numbers is uniquely positioned to control (i.e. terminate) calls to those numbers.

3.47 We note that a number range holder may not control its own access network and may choose to purchase some or all of the network elements required to physically terminate the call. In mobile markets, the relationship between a number range holder and the CP providing the underlying network elements (the 'hosting CP') may extend to enabling the hosting CP to conclude termination agreements for all of the numbers of the number range holder on its behalf. In this case, an originating CP would have no direct commercial relationship with the number range holder.

3.48 Nevertheless, the underlying control of wholesale call termination ultimately rests on control of the number range; hosted numbers may be moved between different hosting networks or, ultimately, a number range holder may move the numbers onto its own network. The intervention of a hosting CP can only occur with the authorisation of the number range holder and consequently wholesale call termination cannot occur without, directly or indirectly, the involvement of the number range holder. Therefore, we consider that the control of the number range, rather

than the hosting of the termination service, is the key element to controlling the wholesale call termination service.

3.49 In line with our starting point for the analysis of the retail market, we propose to include the termination of calls to all UK mobile numbers that are active, or we expect to be active, within the review period, including those that are used to provide call forwarding services.[61] We exclude from our proposed market definition the termination of calls to UK mobile numbers where the underlying MTRs are already captured by regulation in the Channel Islands and Isle of Man.[62] We also exclude the termination of calls made through 'pure-OTT' applications such as Skype and Viber from our set of focal products at the wholesale level.

Retail Market Assessment

Introduction

3.50 Wholesale market definition requires an understanding of the retail market. In particular, it is necessary to consider whether indirect constraints are sufficient to constrain wholesale price rises.

3.51 Under the "calling party pays" (CPP) system which operates in the UK, the calling party pays the full price of a call, and thus has the greatest incentive to react to price increases. Our retail assessment therefore focuses mostly on callers to mobile numbers, rather than call recipients. Nevertheless, although call recipients are typically not charged for receiving calls, they may care about how much it costs others to call them.

3.52 We consider that a number of conditions must be satisfied for callers to react to an increase in the price of calls to a specific mobile number. Callers must be sufficiently aware that they are calling a mobile number and that they are calling a number controlled by a specific network/call provider:

a) Callers must be sufficiently aware of the price of calling that particular network/mobile number; and

b) Callers must be sensitive to changes in the prices of calling the network they want to reach.

3.53 In our assessment of the retail market:

- We first consider issues a) and b) relating to caller awareness of a retail price rise.
- We next consider in detail the alternative services that are available to callers of mobile numbers.
- We then analyse potential reactions by call recipients to retail price increases.
- Finally, we look at the possibility of supply-side substitution.

[61] See footnote 56 above.
[62] We have therefore excluded the termination services provided by these MCPs – see footnote 59.

Reaction by callers – awareness of a price rise

3.54 For callers to react to an increase in the price of calls to a specific mobile number they must be sufficiently aware of that increase to act upon it. In particular, consumers need to be aware: they are calling a mobile number; the specific network/call provider that controls the number; and the price they would face when calling that particular network/mobile number.

3.55 We have conducted market research to test this awareness.[63] Our research shows that the majority of respondents felt they had good awareness of whether they were calling a mobile or landline. Around three quarters of callers both from a landline and from a mobile stated they always had or frequently had good awareness of whether they were calling a mobile or landline. Only 20% of callers from a landline and 13% of callers from a mobile rarely or never knew.

3.56 However, consumers' awareness of which mobile network they were calling was more limited. The majority (69%) answered that they rarely or never knew which mobile network they were calling. A much smaller proportion sometimes knew (13%), frequently knew (6%) or always knew (10%); 2% did not know.

3.57 Moreover, the research suggested that the majority of consumers have a limited knowledge of the actual price of calling a particular number. 38% of respondents stated they were aware of the cost of a call to a mobile number. However, when asked about the extent of this awareness, very few (5% of all respondents) felt they had an exact idea of the cost of making a call to a mobile. The majority (54% of all respondents) had only a rough idea or vague idea. A significant number (35% of all respondents) had no idea.

3.58 Therefore, while consumers felt they had good awareness that they were calling a mobile number, their awareness of the mobile network they were calling and the price they would face for calling a mobile number is far lower. These results are broadly in line with the research we conducted for our last review.[64]

3.59 This suggests that substitution at the retail level is unlikely to constrain increases in MTRs. This is because consumers are unlikely to be aware of any impact that an increase in MTRs might have at the retail level, even if retail price rises were significant, i.e. of the order of 5-10%.

Reaction by callers – alternative services

3.60 In addition to an awareness of prices, demand-side substitution requires that callers have suitable alternatives that they are willing to select in response to a SSNIP. The potential substitutes to a voice call to a mobile number include:

[63] Kantar Media carried out the research in February 2014 using telephone interviews for a total base of 2069 respondents. See Annex 18.

[64] For example, the Jigsaw research commissioned in the previous review showed that 87% of respondents knew when they were calling a mobile number however only 24% suggested that they knew to which network this number is allocated. Even for the numbers respondents called most often, less than half (45%) suggested that they knew which MCPs these numbers were associated with. For fewer than a third of respondents in the Jigsaw research (30%) had any idea of the price of calling other MCPs, and only 7% stated that they knew it exactly. See: Jigsaw Research, *Mobile Calling Patterns Research*, http://stakeholders.ofcom.org.uk/binaries/consultations/mobilecallterm/annexes/annex10_2.pdf.

a) calls to a fixed line as a substitute for calls to a mobile;[65]

b) on-net Mobile to Mobile (M2M) calls as a substitute for off-net calls;

c) call-back arrangements;

d) the use of 'pure-OTT' services that by-pass a call to a mobile number by delivering a voice service via an application on a mobile handset over a data connection; and

e) SMS, email, instant messaging and social networking sites.

3.61 In our previous review, we assessed whether consumer switching to these potential alternatives would provide a competitive constraint that was sufficient to justify including the service in the product market definition. Our conclusion was that they did not.

3.62 We have reconsidered this analysis using more recent data. In light of stakeholders' responses to the October 2013 workshop, we pay particular consideration to 'pure OTT' services. The following paragraphs address this and the other potential substitutes listed in paragraph 3.60 above. [66]

Calls to fixed lines as a substitute for calls to mobiles

3.63 If a caller tries to contact a mobile user and expects that user to be in reach of a known landline (e.g. at work or home) then, in principle, the caller might call the fixed line as a substitute for a call to a mobile number. However, as in our previous review, we consider that calls to fixed lines are not in general a close enough substitute for calls to mobiles to be included in the same market. This is because of differences between the two types of call:

- Calls to a fixed line require that the recipient is in a specific location at a given time. This can lead to significant delay and multiple call attempts before contact is made. Calls to mobiles offer a much greater chance of immediate contact, especially if the call is not planned between the caller and recipient. Immediacy of contact is likely to be an important factor in deciding to call someone on their mobile rather than contact them through other means.

- Substitution of a call to a mobile also requires that the caller knows, or can easily find out, an alternative fixed line number. This may be the case for close friends and family but it is unlikely to be true for all call recipients.

[65] In our previous review we also considered substitution between M2M and F2M calls in response to an MTR increase. However, we noted that the MCP controls both termination rates, so it can limit the impact of this substitution on the profitability of a SSNIP. The exception would be where the M2M call was on-net which we discuss in paragraphs 3.67-3.76.

[66] Another way in which callers may react to an MCP increasing its wholesale MTR is to move to that MCP's network, thus providing a strategic motive for increased MTRs. For example, if MCP A unilaterally raised its MTR, other MCPs (B, C and D) would need to put their retail prices up to cover the increased MTRs of MCP A. Subscribers on the networks of MCP B, C or D would potentially find MCP A more attractive due to this impact on retail call prices. As in 2011, we note that this is potentially relevant but it is difficult to predict the size of the effect. We do not, however, believe it would alter our provisional conclusions. Indeed, it reinforces our view that there is an incentive to increase MTRs absent regulation.

- In addition, for substitution to calling to a fixed line to be relevant, consumers would need to have some understanding of the price of a call to a fixed number relative to a mobile number. Our market research suggests that only around 35% of consumers consider they have awareness of the cost of a call to a UK fixed line.[67] This might suggest that even if callers faced an increase in the price of mobile calls they may not be aware of whether a call to a fixed number could be a cheaper alternative (or even the next best alternative in terms of price).

- Unlike fixed, mobile handsets are less likely to be shared with others, offering greater privacy regarding call records or voicemail services. For some calls this may be valued by the caller.

3.64 Overall we think that, although a call to a fixed number would be an alternative for some callers some of the time, it is unlikely that a significant number of callers would switch in response to a small but significant retail price increase of a call to a mobile number.

3.65 In response to our stakeholder workshop, BT noted technological developments that suggest greater fixed-mobile convergence (FMC), meaning that fixed and mobile services may become less distinct over time. Virgin Media also noted that we need to take into account the increased convergence of mobile and fixed services.

3.66 Available examples of FMC services typically make use of landline connections over WiFi or femtocells in certain fixed locations such as an office or campus in combination with national roaming arrangements to offer mobility. FMC services potentially allow the terminating operator to choose how to route a call depending on the recipient's access to different networks. In certain circumstances (e.g. when the called party is at home or in the office), the FMC service could, in effect, have a viable choice between terminating on a fixed network and a mobile network. However, if the caller makes a call to a mobile number (reflecting the value of immediate contact) the caller has no control over whether the call is terminated on a fixed or a mobile network. This is not determined by the caller, but by the location of the recipient and the FMC service the recipient has chosen. Therefore, greater use of FMC services is not likely to alter a caller's behaviour.

On-net mobile calls as a substitute for off-net calls

3.67 On-net calls may be priced at a lower level than off-net at the retail level since, among possible contributing factors, the originating operator does not incur an MTR. It is more likely that MCPs will differentiate between the price of on-net and off-net calls if MTRs are higher. Indeed, higher MTRs than currently seen have in the past coincided with more significant differences in the price of on-net and off-net calls. For example, in 2006, when regulated MTRs were around 6 ppm (in nominal terms), the average retail price was 3.5 ppm for an on-net call compared to 8.9 ppm for an off-net call.[68] In 2002, when regulated MTRs were around 10 ppm, retail prices were 5.1ppm on-net and 22.6 ppm off-net.[69] Thus increases in MTRs above the competitive level may prompt MCPs to offer on-net/off-net pricing differentials.

3.68 Substitution between off-net and on-net calls is only possible for callers who possess multiple mobile subscriptions, and so can select to make a call on the receiving

[67] Kantar Media research in February 2014, see Annex 18.
[68] Figure 4.40 in Ofcom, *The Communications Market 2007*, '4 Telecommunications', 23 August 2007. http://stakeholders.ofcom.org.uk/binaries/research/cmr/telecoms1.pdf
[69] See footnote 68

party's network. Only a small proportion of consumers use two mobile phones. According to Ofcom's Technology Tracker, in 2013, fewer than 8% of consumers used two mobile phones with different numbers at least once a month. [70] This is supported by the Kantar Media survey, conducted for Ofcom to inform this review, which suggests that fewer than 4% of consumers held multiple SIMs. In addition, where consumers have more than one SIM, in nearly half of the cases (46%), consumers' second SIMs are with the same MCP as their main mobile. Therefore, it does not necessarily follow that the holder of multiple SIMs would avoid higher termination rates by switching SIMs.

3.69 Even when MTRs were higher, and the on-net/off-net differential was larger, holding multiple SIMs was not common. In our March 2007 Statement, we noted that only 12% of individuals surveyed possessed multiple mobile SIMs, and of those only 11% stated that the main reason for this was to take advantage of lower prices from different operators.[71]

3.70 As well as requiring two mobile phones, substitution to on-net calls also requires individuals to be aware that they are calling the network of a specific operator. As already noted above (paragraph 3.56) such awareness is generally low (only 16% of respondents stated that they frequently or always knew which network they were calling).

3.71 Some callers may have calling circles, i.e. a network of friends, family or business colleagues where calls between members of this circle account for the majority of calls made by members of this circle. Indeed, there are mobile plans, such as EE's shared family plan, that could facilitate such coordination.[72] It is theoretically possible that these calling circles could attempt to coordinate their choice of network, when otherwise they would not, in response to an increase in the price of termination, and that this could make the price rise unprofitable.

3.72 However, the results of the Kantar Media survey do not suggest that a significant number of consumers coordinate their choice of mobile network based on calling circles. Only 6% of respondents mentioned (unprompted) that having friends and family on the same network was a factor in their choice of mobile operator, although this increased to 11% of respondents when presented as a (prompted) choice.

3.73 One explanation for why the majority of consumers today are not particularly concerned about being on the same network is the relatively limited incidence of direct price differentials between on-net and off-net calls.[73] However, we also reported in the March 2011 Statement, when on-net/off-net differentials were greater, that the network of close friends and family was often not a driver of a consumer's choice of network.[74]

[70] 'Table 23 from Ofcom, *Ofcom Technology Tracker Wave 2 2013*, published September 2013. http://stakeholders.ofcom.org.uk/binaries/research/statistics/2013Sept/Ofcom_Technologyw2-2013.pdf

[71] Paragraph 3.98, page 35. Ofcom, *Mobile call termination*, Statement, 27 March 2007 ('March 2007 Statement'). http://stakeholders.ofcom.org.uk/binaries/consultations/mobile_call_term/statement/statement.pdf

[72] See http://explore.ee.co.uk/shared-4gee-plans

[73] As discussed in Section 6, there is still some evidence of on-net/off-net price differentiation although this is generally 'indirect' rather than 'direct' price differentiation. For instance, many plans now offer a call allowance which does not differentiate between on-net and off-net calls (i.e. any network minutes), but may offer further inclusive on-net minutes.

[74] Annex 3, paragraph A3.203, March 2011 Statement.

3.74 Moreover, there is likely to be limited scope to co-ordinate calls in this way, given the range of people called and the fact that these people may have further contacts of their own. It may therefore not be easy to determine a single network that all members prefer. There may also be other barriers to coordination, for example members of the calling circle may be on post-pay contracts that are due for renewal at different times.

3.75 In any case, even if some consumers co-ordinated their choice of network so as to face lower retail calling prices, this would not protect those who were unable to do so from price rises above the competitive level. That is, even if the pool of consumers who would otherwise pay a termination rate was reduced, it is unlikely to be reduced to such an extent that it constrained MCPs from pricing above the competitive level for termination.

3.76 In summary, given the limited uptake of multiple SIMs and limited likely impact of calling circles, we do not think substitution to on-net calls would act as a significant constraint on the price of off-net calls.

Call-back arrangements

3.77 Call-back arrangements occur when the receiver of a call agrees to hang up and call the initiating party after contact has been established. The return call can be made using any method convenient for both parties.

3.78 Call back arrangements generally require close and on-going coordination between the two parties involved.[75] Since a reversal means that the recipient now pays for the call, they must either be willing to bear a larger proportion of the costs of calls between the two parties over time or have a sufficient expectation that the original caller will return the favour at a future date.

3.79 The evidence suggests that call-back arrangements are not widespread at present. In the Kantar Media research we asked whether respondents ever used their mobile phone to call someone back to save the caller money. 38% of respondents stated that they had done this, whereas 62% had never done so.[76] Whilst ad hoc call-back arrangements may be significant for some users, they are not widespread across all users.

3.80 Given the above market research findings and the nature of call-back arrangements, we do not think they would act as a significant constraint on the pricing of voice calls to a mobile number.

OTT services

3.81 One potential reaction to an increase in the price of a call to a mobile number is to switch to using OTT services, such as Skype or Viber. In this section, we are concerned with 'pure-OTT' services, i.e. services used to make voice calls, or potentially video calls, to mobile handsets where the call is delivered to the recipient's mobile handset as packets of data using WiFi or a mobile broadband connection; and

[75] Call back services are now commonly offered to callers by businesses to avoid individuals having to wait on hold for long periods of time. However, the initial call in this case is unlikely to be to a mobile number. Moreover, this service is unlikely to be sensitive to the price of the initial call.

[76] For those that stated they had done this, we did not ask them how frequently they called others back. However, in the March 2011 Statement, we noted that only 17% of mobile users requested a call back at least once a week and that 58% never did. See: March 2011 Statement, page 36, paragraph 3.71.

the call by-passes the mobile number associated with the end-user and does not incur an MTR.

3.82 In most cases, calls of this type can only be made between subscribers to the same OTT application provider, e.g. a Viber user can only call another Viber user using the Viber app. In this sense they are 'closed user groups' as these providers typically only allow calls between users of the same OTT-applications.

3.83 Some OTT operators also allow calls originated from their applications to terminate on mobile (and fixed) numbers (for example Skype-Out). However, these services do not meet our definition of 'pure-OTT' voice services, as they would not by-pass a mobile (or fixed) number and, if made to a mobile number, would attract an MTR. Reflecting this, Skype sets retail prices for calls to mobile numbers using the Skype-Out service.[77]

3.84 A key feature of voice calls delivered using 'pure-OTT' applications is that, at present, the caller initiating a call typically does not face a direct retail charge for that call (usually because the call does not incur an MTR). Instead, the call is delivered over the user's mobile data connection or WiFi network (if this is available). Therefore, the 'cost' of the call would be recovered through the charge for the mobile handset's data connection[78] or the use of a WiFi connection.[79]

3.85 The use of 'pure-OTT' services does not necessarily mean that it would be appropriate for us to widen the scope of the product market. That will depend on how substitutable they are for calls to a mobile number. Some key aspects of 'pure-OTT' services that could be relevant to the degree of substitutability are:

- **Compatibility between different OTT services:** This refers to whether or not there is a need for compatibility between the software application of the caller and the recipient. Many 'pure-OTT' providers tend to operate as 'closed user groups', that is, they only allow 'pure-OTT' calls between users of the same OTT-applications. As the use of 'pure-OTT' services increases, it may become more likely that the caller and call recipient will have the same OTT application on their phone, reducing issues of compatibility to some degree. However, if multiple providers of 'pure-OTT' offer services on the basis of closed user groups, compatibility issues may persist.

- **Availability on the mobile handset:** MCPs have different commercial approaches to the use of 'pure-OTT' applications on their handsets/networks. This may affect their availability. For example, H3G actively partnered with services such as Skype to include it on H3G pre-pay and post-pay tariffs.[80] However, OTT applications may not be compatible with all networks and handsets (i.e. they require a smartphone), or may be affected by the MCP's traffic management system. This would tend to limit their availability.

[77] See http://www.skype.com/en/features/#calling.
[78] For details of the data usage of VoIP calls over mobile data connections see http://voip.about.com/od/voipbandwidth/f/How-Much-Of-My-Mobile-Data-Plan-Does-Voip-Consume.htm.
[79] The WiFi connection may be the end-user's home broadband, work or a WiFi hotspot. The recipient may 'pay' in the sense that he or she faces the price of a home broadband subscription, but with large data allowances on broadband the price at the margin of these calls is effectively zero.
[80] See http://support.three.co.uk/SRVS/CGI-BIN/WEBISAPI.DLL?Command=New,Kb=Mobile,Ts=Mobile,T=Article,varset_cat=internetapps,varset_subcat=3585,Case=obj(3843).

- **Availability of the recipient:** Some applications may require users to log on to use a service. The receiver may, however, choose to log out some of the time e.g. because of implications for battery life.

- **Ease of use:** Some consumers may view OTT services as less easy to use in comparison to making calls to mobile numbers. In the past some applications needed a user ID for the person they are calling, which a caller would need to have available. On the other hand, OTT services may be able to link the user ID to the mobile number, so that users can integrate them into their contacts lists, along with details about whether a contact subscribes to the OTT-service and is available.[81]

- **Quality:** The substitutability of OTT may depend on whether the general sound quality of 'pure-OTT' services is lower than with calls to a mobile number. This may be the case if the network underpinning a service is not managed by the call provider. In addition, calls delivered through these applications may have a larger risk of cutting out when the recipient is on the move as handover between mobile cells will not be as effective as for a voice call to a mobile number. There may also be other aspects of service quality which differentiate VoIP such as perceptions of privacy/security. On the other hand, certain OTT applications, such as those offering video calling (e.g. FaceTime), may in some regards be perceived as higher quality than voice calls to mobile numbers.

3.86 In its response to the January 2014 workshop H3G stated that OTT services were unlikely to materially impact the market over the period covered by the review. It noted sound quality tends to be lower and OTT services tend to be 'closed systems' that require both parties to be signed up and logged in. It noted from responses reported in the 2013 Communications Market Report ('2013 CMR') survey that 41% of those who used IM or VoIP on their phones did not think about cost – they just used what was most convenient.[82] In H3G's view, services such as VoIP were more likely to be a substitute for SMS than for mobile voice calls. EE, in contrast, said that we need to undertake further analysis to justify our preliminary view that OTT services should be excluded. It said that although many calls cannot be switched to OTT services, this does not mean switching is insufficient to make increases in MTRs unprofitable. This was because MCPs would have no way of discriminating between calls that can and those than cannot be switched. Telefónica also noted that the market could develop quickly, and it was incumbent on Ofcom to keep it under review.

3.87 In order to understand how consumers view OTT services, we asked a number of specific questions about their use in our Kantar Media survey. The survey revealed that:

- The number of respondents that claimed to have ever used an OTT-application to make voice or video calls on their mobile handset was nearly one third (33%) of all mobile users and more than half of smartphone users (53%).[83] We also asked

[81] For example, those using Google Voice can check whether frequently contacted people in their Google email account (Gmail) are available for OTT calls using the Google Voice service.
[82] Page 73, Ofcom, *Communications Market Report 2013*, 1 August 2013. http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf.
[83] These figures are slightly higher than those contained in Ofcom's December 2013 Technology Tracker Survey, which suggested only 12% of mobile users had ever used VoIP applications for voice calls and another 12% had ever used them for video calls. However, the Kantar Media survey is likely to better represent mobile users that had ever used OTT voice or video services on their mobile phone, as it asked a more focused question on OTT use. By contrast the Technology Tracker survey

those consumers that had used OTT applications, why they had chosen them to make calls. The most common answers given were: to save money (50%); to make video calls (44%); and, it is convenient (33%). For those that had chosen not to use OTT applications, the most common reasons given included: lack of interest (47%); would not know how (11%); too much effort (8%); and it never occurred to me (8%).

- We asked respondents that had made use of OTT applications for either video or voice calls, which type of calls they made using these applications. Only 38% mentioned calls to a location in the UK. 42% used these applications for video calls, 40% for calls from the UK to overseas and 16% for calls when abroad. So consumers who have installed OTT applications do not necessarily use these services to make calls to UK mobile numbers.

- In addition, not all consumers who use these applications use them very frequently. As noted above, one third of mobile users have ever made use of OTT applications for voice or video calls. Of these users, 16% use OTT applications at least on a daily basis; 27% at least weekly; 21% at least monthly; 11% at least every three months; and 23% rarely (less than once per quarter).

- We also asked users of these applications to estimate the proportion of all calls from their mobile they make using these applications. 61% estimated that less than 10% of all calls were made using OTT-applications and 78% estimated that less than a quarter of calls were made using OTT-applications. Only 7% of respondents estimated that more than 50% of calls were made using these applications.

3.88 Similar findings were also reported in a YouGov survey commissioned by OpenCloud, a telecoms software firm, which canvassed consumers across the UK, US and continental Europe. Its headline conclusion was that mobile users show OTT indifference.[84] Over a third of the adult population covered by the survey use OTT services, with over half of these (52%) using their phone to access these applications. The survey found that adoption of OTT services is particularly high among 25-34 year olds (66%). It was also found that the majority of consumers (65%) tend to use only one OTT application on their mobile phone. The survey also revealed a number of disadvantages to using OTT services and an interest in equivalent services being provided by MCPs. For example, according to OpenCloud, when respondents asked if they felt that an operator-run service would outperform one delivered by an OTT provider, for those that actually favoured one over the other, the balance was clearly in favour of the mobile operator. This applied across a number of criteria including quality of voice (70%) reliability of connection (65%) and the ability to make calls on the move (81%).

3.89 These findings suggest that the use of OTT applications does not seem to be a close substitute for calls to a mobile number for the time being.

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asked respondents about activities, other than making and receiving calls on a mobile. It is possible that those that had not recently or frequently used OTT applications to make voice or video calls may not have mentioned them, particularly when presented alongside a number of other activities. In addition, the question was asked for activities "other than making and receiving calls", so some respondents may not have included voice calls over OTT apps as a separate activity. In any case, even based on the Kantar Media results (rather than the Technology Tracker) our proposed market definition analysis would not change.

[84] See http://www.opencloud.com/news/opencloud-survey-mobile-users-show-ott-indifference/.

3.90 Our market definition exercise needs to be forward looking. However, it is hard to predict exactly how OTT services will develop. There are reasons to consider that the constraint from 'pure-OTT' may strengthen over time. For example, the issue of compatibility may continue to reduce as smartphone penetration increases. Smartphone use is growing quickly; as of December 2013, 63% of adults report using a smartphone compared to 38% in 2011 and at present 14% of individuals without a smartphone say they are likely, very likely or certain to get a smartphone in the next 12 months.[85] There is also likely to be increasing familiarity with applications - only 33% of mobile phone users download applications as of December 2013, suggesting room for significant growth.[86] Individuals may overcome compatibility issues by installing multiple applications or, over time, a single platform may emerge as a standard. The use of VoIP or video calling applications could be increased if these services are integrated into popular social networking sites such as Facebook,[87] which recently acquired Whatsapp.[88] Apple also extended its FaceTime application last year to allow voice calls (although it appears this service may remain restricted to Apple devices).[89]

3.91 Nevertheless, it seems likely that there will be some barriers to the substitutability of OTT applications, even if they are increasingly used, as calls to a mobile number do not suffer from the same compatibility issues. Moreover, the quality of voice calls and ease of use are high.

3.92 Other sources also suggest that OTT is unlikely to substitute for traditional services in the short to medium term. For example:

- In its report for the European Commission, after considering forecasts of OTT VOIP use for Spain, Italy, Germany, France and United Kingdom between 2012 and 2020, Ecorys concludes "*that OTT cannot be expected to become a major substitute for the traditional telco services, especially not in terms of revenue*".[90]

- The European Commission in its draft revised Recommendation on Relevant Markets[91] notes that, although some NRAs have included OTT-based services in their product markets alongside more traditional electronic communications

[85] Ofcom Technology Tracker, Dec 2013. n = 2148. Base: Those without a smartphone. Ofcom, *Ofcom Technology Tracker Wave 3 2013*, published January 2014. http://stakeholders.ofcom.org.uk/binaries/research/statistics/2014Jan/Ofcom_Technology_Tracker_data_tables_for_publication_Wave_3_2013.pdf

[86] Source: Ofcom Technology Tracker, Dec 2013. n = 2148. Base: those who personally use a mobile phone.

[87] Facebook added VoIP to its Facebook messenger application in the UK in 2013. See, for example: http://www.techradar.com/news/software/applications/free-facebook-messenger-voip-calls-now-hitting-uk-android-app-report-claims-1141221 and https://play.google.com/store/apps/details?id=com.facebook.orca&hl=en_GB.

[88] We note that, since its acquisition, Whatsapp announced it is planning to launch voice services within its application this year. See http://www.reuters.com/article/2014/02/24/us-mobile-world-whatsapp-idUSBREA1N0PT20140224.

[89] See http://appleinsider.com/articles/13/06/11/ios-7-beta-facetime-audio-could-deal-blow-to-telecoms-with-free-long-distance-calling.

[90] Page 71, Ecorys, *Future electronic communications markets subject to ex-ante regulation*, September 2013. http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=3148

[91] Available at http://ec.europa.eu/digital-agenda/en/news/commission-requests-berec-opinion-draft-revised-recommendation-relevant-markets

services at the Union level, OTT services have only been found to exercise limited competitive constraints.[92]

- In a research report on mobile voice and messaging, Analysys Mason concludes that so far "*OTT services have had their greatest impact on the messaging market; voice has been left relatively unscathed*" and that although operators must not be complacent "*operator-provided mobile voice services are safer from substitution than their messaging counterparts*".[93] It also notes that a decline in mobile VoIP usage with 9% of respondents using OTT mobile VoIP in 2013, down from 11% in 2011 (based on consumers in major European countries).

- The OECD also concludes that although "*for some services, it may seem that users may move to over-the-top services that do not have traditional interconnect arrangements or do not interconnect with other services at all"* but that *"[i]n traditional telephony, however, it seems less likely that termination rates will be bypassed in the short term*."[94]

3.93 Overall, our preliminary view is that it is not appropriate to include OTT services in the retail product definition for the period covered by this review. There is uncertainty surrounding their likely future impact on voice call services and we believe that there are potentially some key barriers to them becoming a substitute for a voice call to a mobile number, including compatibility and quality issues. We believe these barriers mean that it is unlikely that substitution to 'pure-OTT' would act as a sufficient constraint on voice calls to mobile numbers for the period of this review. This is in line with views expressed by the European Commission, the OECD and other industry commentators.

Non-voice communication (SMS, email and social networking sites)

3.94 There are various forms of non-voice communications that can be delivered to a mobile handset and which could act as a substitute for a voice call. These include SMS (or text messages), email, and the use of social networking sites.

3.95 SMS remains well established (used by 80% of all adults), and the use of email and social networking sites on mobile handsets have both been growing since the last review. 78% of adults used email on a mobile in 2013 compared to 68% in 2011, and 54% used social networking sites in 2013 compared to 47% in 2011.[95] The growth of these sectors means that consumers may be becoming more reliant on non-voice communication in their day-to-day lives and could come to regard them as acceptable alternatives to a voice call.

3.96 However, as we noted in our last review there are fundamental differences in the nature of voice communication relative to these alternatives. SMS is limited in length and can be subject to delays in delivery especially during periods of high traffic. Email is potentially subject to even longer delays depending on how regularly the recipient might check and respond to email. Instant messaging services potentially offer more immediate two-way or many-to-many conversations, but such services still

[92] Page 18, draft Explanatory Note to the EC's revised Recommendation on Relevant Markets, available at: http://ec.europa.eu/digital-agenda/en/news/commission-requests-berec-opinion-draft-revised-recommendation-relevant-markets
[93] Analysys Mason, *The connected consumer survey: voice and messaging*, June 2013.
[94] Page 17, OECD, 'Developments in Mobile Termination', *OECD Digital Economy Papers,* No. 193, OECD Publishing. February 2012. http://dx.doi.org/10.1787/5k9f97dxnd9r-en
[95] See Figure 5.56 of the 2013 CMR.

operate within 'closed user groups' whereby not all users will have access to particular messaging applications. Our research in the previous review found that the main use of social networking sites is communication to groups of people (although social networking sites today also have IM components). Alternative forms of communication are also not good at the conveyance of 'paralanguage', including pitch, intonation and volume of speech. [96]

3.97 As patterns of communication change it may well be the case that alternative forms of communication will continue to expand. Indeed, over the past few years, some industry trends pointed to a decline in total outgoing voice calls from both mobile and fixed lines, although more recently mobile voice calls have remained more stable. However, it does not immediately follow that price motivated switching from voice to non-voice communication will become significant, which is what is relevant for assessing market definition and market power. We continue to believe that the characteristics of these alternative forms of communication mean they are unlikely to form close enough substitutes to be included in the same relevant market.

Reactions by call recipients

3.98 Under a CPP regime, recipients do not pay for a call and may not have a strong incentive to alter their purchasing decisions if the price paid to call them increases. However, both parties to a call will typically get some benefit from the call, so call recipients will be affected indirectly if the higher price of calls to them resulted in the call recipient receiving fewer calls and/or calls of shorter duration.

3.99 However, the discussion above suggests that a significant reaction by callers in response to a SSNIP for calls to mobiles is unlikely. It follows in turn that recipients will have a limited incentive to alter their purchasing decisions. For this to occur, mobile subscribers would need to be very sensitive to the volume of calls they receive, and so the price charged to others.

3.100 Research conducted as part of our review also suggests that the price of incoming calls was not typically a priority for subscribers when choosing their network. In the Kantar Media survey, when respondents were asked about the factors determining their choice of mobile (including network provider, mobile handset and tariff) no one mentioned unprompted the cost of others calling them as a factor. This factor was only selected by 2% of respondents when presented as a prompted choice. Also, as noted above (see paragraph 3.72), only 6% of respondents mentioned (unprompted) that friends and family on the same network was a factor in their choice of MCP (which may reflect considerations about the price paid by others to call them). When prompted, this rose to 11% having friends and family as factor influencing their choice of MCP. This is consistent with the results of the market research in the previous review.[97] These results suggest that called parties are not very sensitive to the price paid by someone to call them and how this might affect the volume / duration of mobile calls.

[96] As an aside, we note that a number of services such as SMS are increasingly provided using 'OTT-applications', whereby a user of an OTT-SMS service would avoid paying charges for messages. But our preliminary conclusion is that SMS does not provide a constraint due to the differences between voice services and these other forms of communication. This result is likely to hold, irrespective of the particular method used to deliver SMS.

[97] In the Jigsaw research, no respondent mentioned the cost to others of calling them to be an influential factor in their choice of network. Only a small proportion (7%) chose their network on the basis that friends and family were on the same network.

3.101 Therefore, we do not consider that reactions by call recipients to an increase in the price of calling them are likely to provide a material constraint on the pricing of calls to mobiles.

Retail supply-side substitution

3.102 Retail supply-side substitution would involve a firm that is not currently supplying mobile voice calls (to a specific number) or a relevant demand-side substitute to do so relatively quickly following an increase in the retail price.

3.103 Our analysis of demand-side substitution suggests that consumers do not regard alternative forms of communication, including OTT voice services that by-pass mobile numbers, as sufficiently close substitutes for voice calls to a mobile number. It follows from this that supply-side substitution would have to involve the supply of voice calls to the specific mobile number in question.

3.104 In other words, for supply-side substitution to occur calls would need to be terminated on a recipient's mobile number but without the purchase of MCT from the MCP that has been allocated the number in question. In general such by-pass is not possible since the operator that has been allocated a particular number normally has control of call routing to that number. As further discussed in Section 4 on barriers to entry (see paragraphs 4.26-4.29), we do not believe that such by-pass is likely to occur within the period of this review.

3.105 We therefore believe the possibility of supply-side substitution is unlikely to be relevant in the period of this market review.

Proposed conclusions on indirect constraints from the retail level

3.106 Our provisional conclusion is that alternative forms of communication at the retail level are unlikely to constrain the pricing of calls to mobiles.

3.107 We reach this provisional conclusion for several reasons. First, consumers are unlikely to be aware what network they are calling and the price of that call. Thus if the price of calls to a specific number were to rise by a small but significant amount, it is not likely to prompt a reaction. But even if awareness were not an issue, we do not think that, when assessed both individually and collectively, there are or will emerge sufficient substitution possibilities to constrain the pricing of calls to mobile numbers during the period of this market review. We also see no feasible opportunities for supply-side substitution.

3.108 As a result of this we do not believe there are any indirect constraints from the retail level on the wholesale market. In the following section, we consider whether any direct constraints might exist.

Wholesale market definition

Direct constraints

3.109 For direct constraints to widen the wholesale market definition, sufficient demand or supply-side substitution must occur at the wholesale level to undermine a SSNIP for MCT services to a particular mobile number.

3.110 Demand-side substitution would involve a call originator purchasing MCT or an appropriate substitute from an operator other than the one to which the mobile

number was allocated. The feasible options for substitution by firms will depend on the services that retail consumers regard as demand-side substitutes. Since we propose that there are no sufficiently close substitutes for calls to a mobile number, switching to alternative services at the wholesale level is also not possible. This means MCT services are the only appropriate wholesale input and since the MCP that has been allocated the number in question is the only one able to supply MCT to that number, there are no opportunities for wholesale demand-side substitution.

3.111 Supply-side substitution would involve an MCP other than the one that has been allocated the relevant number to begin supplying MCT services to that number in response to a SSNIP. As already noted in paragraph 3.104, this is not currently feasible in the UK.

3.112 Our preliminary assessment is that there is no prospect of effective wholesale demand-side or supply side substitution for the period of this review. We also do not currently consider that there are any likely technological developments to change this preliminary conclusion.

Wholesale product market definition

3.113 Our preliminary conclusion, based on our analysis of constraints at the retail and wholesale level and our expectation for technological developments, is that the wholesale market definition should not be expanded beyond the starting reference product: i.e. wholesale termination services that are provided by each MCP for the termination of voice calls to each UK mobile number allocated to that MCP by Ofcom for which that MCP is able to set the termination rate.

Widening and clarifying the product market definition

Widening the market on the basis of homogenous competitive conditions or common pricing constraints

3.114 The analysis of demand and supply side substitution presented above results in a separate product market for MCT being defined for each individual mobile phone number. However, from both a conceptual and pragmatic perspective it may be sensible to include in the same market the termination of calls to all mobile numbers allocated to each MCP and for which that MCP can set the MTR where: [98]

- an MCP is likely to face homogeneous competitive conditions in providing MCT to the different numbers in its number range, which implies that its conduct in supplying this service in relation to different mobile numbers is likely to be similar; and/or

- an MCP faces a common pricing constraint through its billing system which would make it difficult/costly to charge different prices for MCT to different mobile numbers even if it wanted to.

3.115 For this review we consider that, absent regulation, competitive conditions in the wholesale market for different mobile numbers are likely to be homogenous if the

[98] See, for example: Explanatory Note to the 2007 EC Recommendation, section 2.4; the SMP Guidelines, paragraph 56; ERG, *ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies),* October 2008. http://www.irg.eu/streaming/ERG%20(08)%2020%20final%20CP%20Geog%20Aspects%20081016.pdf?contentId=545387&field=ATTACHED_FILE

same MCP sets the termination rate. We consider, however, that competitive conditions may differ between mobile numbers for which different CPs set the termination rate. Therefore we consider that, on the basis of homogeneous competitive conditions, we should define 82 different markets corresponding to each MCP which currently provides MCT or which we expect to be doing so during the market review period.

3.116 We have considered whether the market should be widened beyond the separate markets on each MCP identified in the preceding paragraph. However, we do not think there is any reason to do this. This is because a different MCP sets the termination rate in each of the 82 markets that we propose to identify, and we believe that each of these MCPs would be able to set the MTR independently, absent SMP regulation. Thus there is no common pricing constraint linking the MTR set by each of these MCPs.

Cluster markets and two-sided markets

3.117 As discussed previously (see paragraphs 3.18-3.24), a market definition can, potentially, be broadened because of linkages created by the 'clustering' of products (i.e. where they are typically marketed and sold as a bundle) and two-sided relationships (i.e. where a firm supplies a service to two or more distinct groups of customers each of whom derives some benefit from the fact the service is also supplied to the other groups).

3.118 In its response to the stakeholder workshop, EE referred back to arguments it made in the last review where it noted that competition in the overall mobile market meant that MCPs were not making excessive returns. However, by defining the market as just termination, finding SMP in this narrow market, and introducing regulation, EE considers that we risk distorting the market through regulatory error. It stated that, as a consequence, it believes that MCT should be considered as part of a wider mobile services market (which is competitive). It argued that developments since the last review have only reinforced this view.

3.119 Our preliminary conclusion is that we do not think it is appropriate to widen the market definition on the basis of such cluster market arguments. We noted in paragraph 3.100 above that, due in part to the calling party pays arrangements, consumers do not consider the price of incoming calls (i.e. MTRs) to be important when choosing a subscription. This means that even though the ability to receive calls is sold as part of a mobile subscription, this aspect of the service is not charged to the subscriber and does not drive switching behaviour by subscribers. Therefore, MTRs are not likely to be constrained by the risk of subscribers switching.

3.120 EE also argued that as the mobile market as a whole, i.e. across retail and termination services, is not making excessive returns we should not intervene in the market. However, it is not clear that all excess margins in call termination will necessarily be returned to the retail market via a "waterbed" effect (see Section 5 and Annex 9). This means high termination rates could potentially lead to excess returns overall. Moreover, even if high termination rates were completely competed away in the retail market, we would still have concerns that high termination rates could lead to an inefficient structure of prices and reduced competition.

3.121 Therefore, while we recognise that the two sides of the market are connected, we do not think it is appropriate to broaden the market definition on this basis. We therefore propose that the two sides should be considered distinct, but interrelated, markets

i.e. MCT should be viewed as a separate market, albeit with close links to the retail side.

Clarification of numbers and call types falling within our proposed market definition

3.122 Above we suggested that the provision of MCT to all the mobile numbers allocated to a particular MCP should be included within the same market. Here we clarify which 'types' of termination services we propose are covered by this market definition.

3.123 We consider the market for MCT will include:

- any call conveyance technology used to deliver voice call termination to a mobile number, whether delivered by 2G, 3G, VoIP or VoLTE based technologies; and
- all mobile number ranges allocated to a particular MCP over which it is able to set the rate charged to originating (or transit) CPs.

3.124 We also propose that our market definition should include the following 'types' of voice call termination:

- *Ported-out numbers (while ported-in numbers are excluded).* Under a process known as "porting" when customers change network they can take their current mobile number with them. Ported numbers are subject to specific charging arrangements, which mean that the MTR for calls to those numbers is determined by the donor network originally allocated the number. We therefore propose to include the termination of calls to ported-out numbers as part of that operator's termination market.
- *Calls to voicemail*. When a call is diverted to voicemail, such traffic is still included in our proposed market definition. The number range holder decides whether and how to divert a call to a particular mobile number and faces the same competitive constraints in setting the termination rate as for a call that is connected to the intended recipient.
- *National roaming*. A call may be terminated by another MCP using national roaming arrangements. However, the MTR is set by the MCP that has been allocated the number and thus we propose that the termination of these calls forms part of this operator's market.
- *Call-forwarding services.* In some cases, a call initiated to a mobile number may be routed onto a fixed landline or another mobile number (including internationally). However, such routing typically sits within the control of the MCP allocated the mobile number to which the call is initially routed. In these circumstances the MCP is able to set the MTR, irrespective of the final destination of the call.
- *Other call types*. Some calls are not typically calls between end users (e.g. test calls, calls to customer services) and may not logically form part of the market definition. However, since such call volumes are a very small proportion of the total, as in our previous review, we do not think it proportionate to perform a detailed analysis of each call type. We propose to treat these calls as being within the market where the call is made to a UK mobile number and a common pricing constraint means they are charged the MCP's MTR.

3.125 In addition to the above call types, we have considered in more detail international roaming, which is subject to more complicated charging and routing arrangements.

3.126 International roaming is a service that allows mobile subscribers to use their mobile phone to make and receive calls while visiting another country. For the purposes of our market definition, we consider the following two cases: a) UK mobile subscribers (using 07xx UK mobile numbers) roaming outside the UK and b) foreign mobile subscribers (using foreign mobile numbers, e.g. +39 xxx) roaming on a UK network.

3.127 In the first case, we believe that calls made to UK mobile numbers while the call recipient is roaming abroad are part of the relevant MCT market. Calls made to UK subscribers roaming abroad are initiated by a call to the UK mobile number and are initially routed to the UK home network which effectively terminates the calls from the perspective of the paying (i.e. originating or transiting) CP. The home MCP charges a termination rate and then forwards the calls to the foreign visited networks in the relevant foreign countries where the UK subscribers are temporarily roaming.

3.128 The second case we consider is when call recipients are foreign mobile subscribers (with a foreign mobile number) roaming on a UK network. In this case, the charges the UK hosting network levies are typically different from the MTRs charged for calls terminated on UK mobile numbers. Calls to foreign mobile numbers will be subject to the roaming agreement between the UK visited network and the foreign home network. As such, the competitive conditions for the termination of these calls are different from those of calls terminated to UK mobile numbers. In particular, unlike the wholesale market for domestic termination, there is competition in the provision of wholesale roaming services in the UK for visiting (i.e. overseas) MCPs, including the voice call termination component of these roaming services,. That is, the foreign network can choose among several UK national MCPs to terminate its subscribers' calls. Therefore, because the number ranges, routing and billing arrangements, and competitive conditions differ for wholesale roaming services (including termination) provided by UK MCPs, we propose that these calls fall outside the MCT markets subject to this review.

3.129 For the avoidance of doubt, any call originated internationally (i.e. where the subscriber is not roaming in the UK) and terminated on a UK mobile number is considered to be part of the relevant MCT market.

Summary of call types included within our proposed wholesale product definition

3.130 Table 3 summarises the call types included within our proposed wholesale product definition compared to the March 2011 Statement. As can be seen from this table, we propose to include the same call types within our wholesale product market definition as in the March 2011 Statement.

Table 3: Comparison of call types included in this and the previous MCT market review

Call type	2011 Market Review	2015 Proposals
Voice calls	Terminated on a mobile number	Terminated on a mobile number
Off-net	✓	✓
On-net	×	×
Ported-in	×	×
Ported-out	✓	✓
Calls to voicemail	✓	✓
Voice calls to mobile numbers terminating on IP	✓	✓
National roaming	✓	✓
Call forwarding (including international)	✓	✓
Calls to UK mobile numbers roaming abroad	✓	✓
Calls to non-UK numbers roaming in UK	×	×

Source: Ofcom 2014

Geographic market definition

3.131 Having defined the relevant wholesale product market, we now assess the geographic scope of the relevant wholesale market.

3.132 At the wholesale level, MCT services are accessed by an originating CP at a relevant handover point on the terminating MCP's network.

3.133 According to the information provided in response to our section 135 information requests, terminating MCPs may have one or more of these handover points within the UK, which act as the gateway to various MCT services they offer. CPs seeking to interconnect directly with the terminating MCP will do so at the nearest available

handover point. However, a call originated to a UK mobile number that is handed over at one location could in principle be handed over at another location within the UK.

3.134 That is, in the hypothetical context where a monopoly supplier of calls to a particular number range attempted to impose a SSNIP above the competitive level at one point of handover, in theory this could be constrained by the originating network switching to another point of handover. Therefore, any particular handover point would in theory be a substitute for another, which in theory would suggest widening the geographic scope of the market to any part of the UK where handover is possible for the termination of calls to the UK mobile numbers in question.[99]

3.135 In practice, since the identity of the MCP providing termination to a particular number range would have to be the same, whatever the point of handover, the conventional SSNIP analysis for geographic market definition is perhaps unnecessarily abstract in this case. However, consideration of the real world circumstance for physical interconnection leads to the same conclusion on the geographic scope of the market as we would obtain from the hypothetical situation described in the previous paragraph. In other words, competitive conditions will not differ between handover points within the UK, as, regardless of the location, all termination points provide connection to all UK mobile numbers for which the terminating operator controls the MTR. This also suggests it is appropriate to define the market as the area for which the MCP can determine the MTR in relation to its allocated UK mobile numbers.

3.136 The geographic definition applies to all types of providers including MCPs that have entered (or plan to enter) the market with limited geographic coverage; those MCPs that use IP and/or circuit switched voice; and/or different radio technologies such as licensed (e.g. 2G, 3G, 4G) or unlicensed spectrum (e.g. WiFi) technologies. MCPs that have been allocated UK mobile numbers will need to have some sort of handover point within the UK. MCPs providing call termination to those numbers would have the same ability and incentive to control the MTRs as with other MCT services.

3.137 We therefore propose that the scope of the geographic market definition relates to the area (i.e. an MCPs' relevant handover points) for which the MCP can determine the MTR in relation to its allocated UK mobile numbers. This area lies within the UK.

Consistency with EC Recommendation

3.138 The 2007 EC Recommendation identifies the mobile call termination market as a market which is susceptible to *ex-ante* regulation in the following terms: "*voice call termination on individual mobile networks".*

3.139 We consider that our proposed definition is consistent with that of the EC. This is because, by definition, the mobile numbers allocated to an MCP identify those calls that are switched to, and routed by, the recipient's network. Therefore, a reference to a mobile number or number range necessarily refers to the activity of the relevant individual mobile network (as the MCP providing termination must have some form of switching and routing) (see paragraphs 3.36 - 3.49). However, given that there is

[99] In practice, originating operators are likely to face costs of building out to alternative handover points. So there could be fairly significant switching costs of establishing direct interconnection at another point of handover. However, operators with a national presence (e.g. BT) will have extensive interconnection infrastructure already in place and so the costs of switching originating traffic between handover points are likely to be quite low.

scope for confusion in the use of the term 'network' (which in some contexts might be interpreted as a reference only to a radio access network) we have not used the word "network" in the proposed market definition. Market evidence in the UK suggests that the ownership or operation of what has been traditionally understood as a mobile network (e.g. a 2G, 3G or 4G radio access network) is not essential to whether an MTR can be set to interconnecting CPs (originating or terminating traffic to the MCP in question).

3.140 We note that the draft explanatory note to the revised EC recommendation on relevant markets also recommends a technology neutral approach to market definition in the wholesale mobile call termination markets.[100] It suggests that the market for mobile termination is composed of the markets for termination offered by each MNO and full MVNO[101] that can negotiate call termination charges with other mobile operators independent of their host MCPs. It notes that, in line with a technology-neutral approach, this comprises termination on all network topologies. It also includes call termination irrespective of where the call originates. It states that the geographic scope of each market coincides with the geographic coverage of the network concerned and is usually national[102].

Ofcom's proposed market definition

3.141 Taking account of the reasoning outlined above, we propose the following market definition:

> "termination services that are provided by [named mobile communications provider] MCP to another communications provider, for the termination of voice calls to UK mobile numbers[103] allocated to that MCP by Ofcom in the area served by that MCP and for which that MCP is able to set the termination rate."

Conclusion

3.142 Based on the above definition, we have identified a total of 82 separate markets for wholesale MCT services. This comprises 78 smaller MCPs, and the four largest MCPs. In Annex 8 we set out the analysis conducted in relation to smaller MCPs and our provisional conclusions regarding their inclusion in this review. Table 4 below lists the MCPs we propose to include.

Table 4: Proposed relevant MCT markets

Mobile Communications Provider	Mobile number range/s currently allocated	Provision of mobile call termination
(AQ) Ltd	7520 7	Yes
08Direct Ltd	7406 8	Yes

[100] See the sub-section entitled "*Relevant product market*" under section 4.1.3.
[101] The draft recommendation states that full MVNOs usually possess and have control over all elements of a mobile network except for radio access.
[102] See the sub-section "*Relevant geographic market*" under section 4.1.3.
[103] These are the numbers included in the number ranges designated for "mobile services", as defined in the National Telephone Numbering Plan. In the current Numbering Plan, these are numbers in the format 07xxx xxx xxx and beginning 071 to 075 and 077 to 079.

Mobile Communications Provider	Mobile number range/s currently allocated	Provision of mobile call termination
24 Seven Communications Ltd	7406 6, 7893 1, 7911 2, 7911 8	Yes
Ace Call Ltd	7418 6	Yes
Airwave Solutions Ltd	7458 4, 7753 0	Yes
Alliance Technologies LLC	7571 8	Yes
Andrews & Arnold Ltd	7441 1	Future plans to offer MCT
Bellingham Telecommunications Ltd	7418 1	Yes
British Telecommunications Plc	7777 0-9	Yes
BT OnePhone Ltd	7520 1	Future plans to offer MCT
Callax Ltd	7874 5, 7978 0	Yes
CFL Communications Ltd	7537 7	Yes
Cheers International Sales Ltd	7406 0-2, 7822 7, 7978 4	Yes
Citrus Telecommunications Ltd	7874 4, 7893 9	Future plans to offer MCT
Cloud9 Communications Limited	7440 9, 7700 0, 7872 2, 7924 5, 7978 2, 7978 3	Yes
Compatel Ltd	7465 3	Future plans to offer MCT
Confabulate Limited	7559 5	Yes
Core Communication Services Ltd	7520 4, 7744 2-9, 7755 2-5	Yes
Core Telecom Ltd	7441 8, 7559 7	Yes
Eclipse Tel Ltd	7418 8	Yes
Edge Telecom Ltd	7892 2	Future plans to offer MCT
EE Ltd	Number in the 74, 75, 77, 78 and 79 ranges.	Yes
Esendex Ltd	7520 5	Future plans to offer MCT
Euro Thai Exchange Process Company Ltd	7589 0, 7893 3	Yes

Mobile Communications Provider	Mobile number range/s currently allocated	Provision of mobile call termination
FleXtel Ltd	7822 0, 7892 5	Future plans to offer MCT
[Fogg Mobile AB][104]	7488 0	No MCT currently
Globecom International Ltd	7559 3	Yes
Hay Systems Ltd	7892 0	Yes
Hutchison 3G UK Ltd	Numbers in the 74, 75, 77, 78, 79 ranges.	Yes
Icron Network Ltd	7822 5, 7978 5	Yes
Invomo Ltd	7520 9	Yes
IPV6 Ltd	7559 2	Yes
IV Response Ltd	7978 9	Yes
JSC Ingenium (UK) Ltd	7441 2	Future plans to offer MCT
LegendTel LLC	7559 1	Yes
[Lleidanetworks Serveis Telematics Ltd][105]	7559 6	No MCT currently
Limitless Mobile Ltd	7458 8	Future plans to offer MCT
Lycamobile UK Ltd	Numbers in the 74 range.	Yes
Magrathea Telecommunications Ltd	7893 0	Yes
Manx Telecom Trading Ltd	7624 0, 7624 1, 7418 4, 7452 0-6, 7624 3-9, 7924 0-4, 7924 6-9	Yes
Marathon Telecom Ltd	7457 2, 7458 5, 7911 0	Yes
Mars Communications Ltd	7559 0	Yes
Moonshado Inc	7589 9	Yes
Mundio Mobile Ltd	7451 0-1, 7451 3-4, 7451 8-9, 7457 0-1, 7457 3, 7457 5, 7465 0-1, 7520 2, 7589 4-7, 7892 1	Yes
Nationwide Telephone Assistance Ltd	7700 1	Yes

[104] See Annex 8, paragraphs A8.14.
[105] See Annex 8, paragraphs A8.8.

Mobile Communications Provider	Mobile number range/s currently allocated	Provision of mobile call termination
Netfuse Telecom Ltd	7465 5	Future plans to offer MCT
[Nextgen Mobile Ltd][106]	7406 9, 7417 1, 7457 8-9	No MCT currently
Nodemax Ltd	7559 8	Yes
Orca Digital Ltd	7520 8	Yes
Oxygen8 Communications UK Ltd	7589 1-3, 7822 9, 7978 6	Yes
Premium O Ltd	7451 5	Yes
Premium Routing GmbH	7458 2	Future plans to offer MCT
Proton Telecom Ltd	7417 6	Yes
QX Telecom Ltd	7978 1	Yes
Resilient Networks Plc	7559 9	Future plans to offer MCT
Rexcom Tech Ltd	7417 7	Yes
Simwood eSMS Ltd	7520 0	Future plans to offer MCT
Sky Telecom Ltd	7872 7	Yes
Sound Advertising Ltd	7441 0, 7537 6	Yes
Spacetel UK Ltd	7457 7	Future plans to offer MCT
SSE Energy Supply Limited	7458 0, 7458 1	Future plans to offer MCT
Stour Marine Ltd	7441 3, 7537 1	Yes
Subhan Universal Ltd[107]	7520 3	Future plans to offer MCT
Swiftnet Ltd	7537 3, 7822 1	Yes

[106] See Annex 8, paragraphs A8.8.

[107] According to information available from Companies House, on 1 April 2014 the Registrar of Companies gave notice that, unless cause is shown to the contrary, at the expiration of 3 months from that date, the name of Subhan Universal Ltd will be struck off the register and the company will be dissolved. For consultation purposes, we are proposing to designate this MCP as having SMP since the company has not been dissolved yet. We will check again the status of Subhan Universal Ltd before publication of the final statement.

Mobile Communications Provider	Mobile number range/s currently allocated	Provision of mobile call termination
Switch Services Ltd (Equiinet Ltd)[108]	7864 4	Yes
Synectiv Ltd	7441 5, 7441 7	Future plans to offer MCT
TalkTalk Communications Ltd	7439 0, 7439 1, 7822 2	Future plans to offer MCT
Telecom North America Mobile Inc	7418 5	Yes
Telecom2 Ltd	7406 5	Yes
Teleena UK Ltd	7418 7, 7418 9	Yes
Telefónica UK Ltd	Numbers in the 71, 74, 75, 77, 78 and 79 ranges.	Yes
Telephony Services Ltd	7822 4, 7822 6, 7893 8	Yes
Telesign Mobile Ltd	7873 0	Future plans to offer MCT
[Teleware Plc][109]	7978 7	No MCT currently
Test2date B.V	7589 8	Yes
TG Support Ltd	7406 7, 7418 2	Yes
Tismi BV	7418 3, 7441 4, 7451 2, 7520 6	Yes
Titanium Ltd	7406 4	Yes
Truphone Ltd	7408 0-2, 7408 8-9, 7417 8, 7559 4, 7978 8	Yes
UK Broadband Ltd	7451 6, 7451 7	Future plans to offer MCT
Virgin Mobile Telecoms Ltd (Virgin Media Ltd)	7458 3	Future plans to offer MCT
Vodafone Ltd	Numbers in the 74, 75, 77, 78 and 79 ranges.	Yes

[108] We understand that the mobile number ranges allocated to Switch Services Ltd, which is in administration, are currently used to provide mobile services by a company belonging to the same group as Switch Services Ltd (Equiinet Ltd). We also understand that Equiinet Ltd intends to apply for a transfer of the allocation of the mobile number ranges currently held by Switch Services Ltd.
[109] See Annex 8, paragraphs A8.8.

Mobile Communications Provider	Mobile number range/s currently allocated	Provision of mobile call termination
Voicetec Systems Ltd	7457 4	Future plans to offer MCT
Vortex Telecom Ltd	7406 3	Yes
Voxbone SA	7441 9	Yes
Wavecrest (UK) Ltd	7537 0	Future plans to offer MCT

Consultation questions

Question 3.1: Do you agree with Ofcom's view of the relevant market? If not, please explain why.

Section 4

SMP assessment

Summary

4.1 This section sets out our proposals as to whether any MCP operating in a relevant market is able to act, to an appreciable extent, independently of competitors, customers and, ultimately, consumers – that is, whether it has significant market power (SMP) in that market.

4.2 The rest of this section covers the following:

- An outline of the regulatory framework, including the legal framework, our approach to assessing SMP and findings from related Ofcom reviews.
- A summary of the stakeholder views expressed in response to our October 2013 workshop.
- Our views of the main criteria for assessing SMP in this case, namely;
  - market shares;
  - barriers to entry;
  - countervailing buyer power; and
  - evidence of pricing behaviour.
- Our proposed conclusions on the SMP assessment.

4.3 We propose to designate each MCP listed in Annex 7 with SMP in the corresponding relevant market.

Regulatory and analytical framework

Ofcom's power to make SMP determinations

4.4 Having defined the relevant markets we must assess competition in those markets in accordance with the Act and the common regulatory framework and impose regulation where competition in those markets is found to be ineffective, i.e. where one or more undertakings have SMP.

Definition of SMP

4.5 An undertaking has SMP if "…*either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say, a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers*."[110]

[110] Section 78 of the Act, Article 14(2) of the Framework Directive, and paragraph 70 of the SMP Guidelines.

Our approach to assessing SMP

4.6 Our starting point for assessing SMP is to take account of the SMP Guidelines, in accordance with section 79 of the Act. In addition, we take into account the European Regulators Group (now BEREC) working paper on SMP (the ERG SMP Position) that builds on the SMP Guidelines.[111]

4.7 The SMP Guidelines suggest market shares as being an important proxy for market power but recognise that high market shares are not, of themselves, sufficient indicators of market power, and therefore set out other criteria relevant to an assessment of SMP.[112]

4.8 In light of the SMP Guidelines, we focus our assessment on four broad areas most pertinent to the markets under consideration, namely:

- market shares;
- barriers to entry;
- countervailing buyer power (CBP); and
- pricing.[113]

4.9 When assessing whether SMP exists with respect to a particular market, we need to consider how to account for the effects of both existing and proposed regulation. This is known as the modified Greenfield approach. Without taking this step, our market analysis could fail to identify SMP where a CP's behaviour is constrained by existing regulation (or the threat of regulation). This 'modified Greenfield' approach was endorsed by the Court of Appeal when assessing CBP in the context of H3G's appeal against our 2007 MCT Market Review ('the H3G Judgment').[114]

4.10 Therefore, assessing SMP in the relevant market requires consideration of a hypothetical market assuming the absence of any regulation in the proposed market - whether current or potential - that arises or would arise from a finding of SMP; and taking into account any regulation that will continue to exist throughout the period being assessed in this market review and which is independent of an SMP finding in the market concerned.

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[111] Section 3, pp. 3 – 8 of the ERG SMP Position

[112] Paragraph 75 of the SMP Guidelines discusses market shares as an important proxy for market power. In addition to market shares, the SMP Guidelines state that the following criteria can be used to measure the ability of an undertaking to behave to an appreciable extent independently of its competitors, customers and consumers: overall size of the undertaking, control of infrastructure not easily duplicated, technological advantages or superiority, absence of or low CBP, easy or privileged access to capital markets/financial resources, product/services diversification, economies of scale or scope, vertical integration, a highly developed distribution and sales network, absence of potential competition and barriers to expansion. A dominant position can derive from a combination of these criteria which taken separately may not necessarily be determinative. See SMP Guidelines, paragraphs 75 - 79.

[113] Whilst pricing is not listed as one of the criteria in the SMP Guidelines, excessive pricing is listed in the ERG SMP Position. In particular, "*...the ability to price at a level which keeps profits persistently and significantly above the competitive level is an important indicator for market power*." The ERG SMP Position, paragraph 20.

[114] Paragraphs 53 and 64, Hutchison 3G UK Ltd v Office of Communications [2009] EWCA Civ 683, 16 July 2009. http://catribunal.org/files/CofA_Judgment_1083_H36_16.07.09.pdf

4.11 Specifically, in this review, we take into account the following relevant regulation:

- BT's end-to-end (E2E) connectivity obligation, as the most directly relevant ex-ante regulation binding on BT's negotiation of MTRs;[115]
- obligations relating to other regulated fixed voice services. For instance, the fact that BT and other Fixed Communication Providers' (FCP) fixed termination rates are themselves regulated; [116]
- BT's obligations to provide services which support interconnection, namely interconnection circuits;[117]
- wholesale call origination[118], local loop unbundling[119] and leased lines obligations;[120] and
- Ofcom's dispute resolution powers concerning the above regulation.

4.12 This approach is consistent with the approach we took in our three previous MCT market reviews.[121] It takes account of the BEREC SMP Position, relevant case law as well as the impact of relevant regulation. It also considers the commercial context in which MCT is sold and the relative strength of any CBP.

2011 MCT review

4.13 In our March 2011 Statement we found high and sustained market shares. On the basis of our market definition, we concluded that each MCP has a 100% share of the relevant market and that for each MCP, for the period in which they have operated in this market, this position has endured. This implies, in the absence of other considerations, a strong presumption that each MCP has SMP.

4.14 We then assessed whether there were other factors that might rebut this presumption:

[115] BT has a regulatory obligation to purchase (on reasonable terms) wholesale narrowband (fixed and mobile voice and narrowband data) call termination services from any provider of public electronic communications networks (PECN).
[116] Regulatory conditions imposed both on BT and on other FCPs constrain the exercise of SMP in fixed network call termination markets and prevent them from setting excessive charges in those markets. See paragraphs 6.65 to 6.74 of our 2013 FNMR Statement.
[117] See Section 10, pages 238 to 278 of our 2013 FNMR Statement
[118] In the 2013 FNMR, we imposed regulatory obligations on BT in the relevant market for wholesale call origination on a fixed narrowband network. See Section 5, pages 40 to 143 of our 2013 FNMR Statement.
[119] LLU is the process where BT makes its local access network (the cables that run from customers' premises to the telephone exchange) available to other CPs. These CPs are able to upgrade individual lines using DSL technology to offer a variety of services, including high speed broadband.
[120] Leased Lines are used by CPs as a key building block in their communications networks. MCPs use large volumes of leased lines to carry mobile voice and data traffic between their radio base stations and their switching centres. BT is obliged to sell leased lines to MCPs in compliance with a charge control. See for example: Ofcom, *Business connectivity market review – final statement,* 28 March 2013. http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/
[121] Ofcom, *Wholesale Mobile Voice Call Termination*, Statement, 1 June 2004 http://stakeholders.ofcom.org.uk/binaries/consultations/mobile_call_termination/statement/Statement_on_Wholesale_Mobi1.pdf; the March 2007 Statement (see footnote 71 for link); and the March 2011 Statement. We considered all of the other criteria listed in the SMP Guidelines and the BEREC SMP Position in our 2007 Statement (see paragraphs 4.25 - 4.63, pp. 57 – 65). However, we concluded that these other criteria had less relevance to an assessment of SMP in wholesale MCT markets.

- High barriers to market entry - the nature of MCT markets implied that there was no realistic scope for market entry into the wholesale market for MCT services for the termination of voice calls to mobile number ranges allocated to a particular MCP (both in terms of actual entry or the likely threat of future entry), which we believed resulted in a lack of competitive pressure on MCPs.

- Absence of or low CBP - while we noted that some originating CPs (such as the four largest MCPs) had sought to reduce MTRs charged by MCPs with fewer subscribers, by applying pressure as relatively large buyers of MCT, this did not appear to have constrained price-setting behaviour appreciably. We saw no convincing evidence of sufficient CBP (from purchasers of MCT services) to constrain MCPs' price-setting behaviour.

- Evidence of prices - pricing behaviour and trends with respect to MTRs, both for the four largest MCPs and for MCPs with fewer subscribers, did not provide evidence of competitive pressures. In particular, MTRs set by MCPs with fewer subscribers, which were not subject to a charge control, were usually materially above the regulated caps of the four largest MCPs.

4.15 We designated each MCP, including the four largest MCPs and also MCPs with fewer subscribers, as having SMP in the relevant market.

2013 Fixed Narrowband Market Review

4.16 In the 2013 FNMR we assessed market power for wholesale fixed geographic call termination. The reason for noting our recent review of those markets is that the market power and competition considerations that arise in fixed call termination are similar to those which arise in MCT. Moreover, fixed CPs are purchasers of MCT and mobile CPs are purchasers of fixed call termination.

4.17 We found that each CP has SMP in wholesale call termination within the relevant market applicable to that CP. In reaching this conclusion, we noted that each CP had 100% market share in its respective market and that barriers to entry were high in these markets. We also rejected 'countervailing buyer power' (CBP) as an effective constraint on the market power of CPs in their relevant fixed termination markets.[122]

Responses to our October 2013 workshop

4.18 On 23 October 2013, we held a workshop presenting our preliminary view that we should designate each MCP with SMP. We invited stakeholders to respond to this view.

4.19 Most of the MCPs that responded did not offer specific views on SMP. However, H3G agreed with our preliminary view, and EE suggested that further consideration should be made before excluding OTT services from the relevant market. EE added that if OTT services were to be included in the market, our SMP analysis could be altered.

Assessment of SMP

4.20 In the remainder of this section we assess SMP according to the four criteria mentioned above: market shares; barriers to entry; CBP; and pricing behaviour.

[122] Section 6, pages 152 to 159 of our 2013 FNMR Statement.

Market shares

4.21 Market shares are often used as a proxy for market power. Although a high market share alone is not sufficient to establish SMP, very large market shares usually are taken as an indication that SMP is present in the relevant market.[123]

4.22 Each MCP has a 100% share in the relevant market. This is because only the terminating MCP has the ability to provide MCT to the numbers allocated to that MCP. This means that each MCP is, in effect, a monopolist in the supply of MCT to its customers.

4.23 We recognise that mobile subscribers may receive calls on their handsets for which their MCP does not set the MCT charge. This includes 'pure-OTT' calls made on applications such as Skype or Viber. However, as noted in Section 3, we propose that such calls fall outside the relevant market.

4.24 In addition, as explained in Section 3, calls to numbers which are ported-in to an MCP would not fall within the relevant market, as the MCP does not have the ability to set the MTR. Conversely, calls to numbers which have been ported-out by a particular MCP would still fall within that MCP's relevant market, as it would retain the ability to set the MTR for those calls. In the timeframe of this review, we do not envisage any changes to the regulatory regime for mobile number portability which would alter this analysis.

4.25 As in the March 2011 Statement,[124] this market share analysis implies that in the absence of other considerations, each MCP has SMP in its relevant market.

Barriers to entry

4.26 In this section, we consider whether there is scope for a third-party MCP to enter the relevant market, by offering MCT on another MCP's network, and so undermining the SMP of the existing MCP, either by actual entry or the threat of entry.

4.27 In our March 2011 Statement, we noted that one way in which entry could occur is if MCPs invest in further infrastructure that enables the provision of MCT on another MCP's network. We noted that this was a theoretical possibility, given that each mobile phone is generally within the coverage area of three or four different mobile networks. We considered that this theoretical possibility had not materialised at the time and that it was not likely that it would, for two reasons. Firstly, because MCPs, each with 100% share of their own relevant market, would not have strong incentives to cooperate to forgo the monopoly profit that can be earned from MCT. Secondly, because no infrastructure mechanisms were expected to be available to allow this possibility to occur.[125] We believe that there have been no significant changes to incentives or infrastructure since 2011 that would make such entry any more likely.

4.28 An alternative means of accessing a caller is through the use of OTT applications. As discussed in Section 3, we propose that 'pure-OTT' services fall outside the scope of our market definition, and thus use of such services cannot be seen as entering the market. In some cases, an OTT application may have been assigned a mobile

[123] See paragraphs 75 – 77 of the SMP Guidelines.
[124] See paragraphs 4.25 – 4.35 of the March 2011 Statement.
[125] Another CP which does not control a specific mobile number cannot terminate calls to such number because current mobile technology protocols associate a mobile number with a unique subscriber identity on a specific mobile network.

number, and this may provide an alternative number by which to contact the intended recipient using a number from the mobile range (i.e. starting 071-075 or 077-079) rather than a 'pure-OTT' service (which does not rely on number ranges for the provision of call termination). However, we are not aware that the use of such services is material;[126] nor have we seen evidence of it constraining the access or pricing behaviour of the terminating MCP. Unless called parties had multiple numbers on which to call them and calling parties selected between them on the basis of price, it seems unlikely that entry into the provision of voice calls via OTT applications would constrain the market power of the MCP setting MTRs for a given number range as explained in Section 3.

4.29 We therefore continue to believe that, given current technology and looking ahead to the period covered by this market review, OTT services will not undermine the SMP of an existing MCP. Overall, we continue to consider that the nature of MCT implies that these markets have significant barriers to entry, and there do not appear to be any developments now which would counter our finding of SMP over the review period.

Countervailing buyer power (CBP)

4.30 CBP is the degree of restraint that a purchaser is able to place on the seller by imposing an effective counter on any attempt by the seller to set its prices above the competitive level. To rebut the strong presumption of SMP arising from the very high market shares and barriers to entry seen in MCT markets, it is not sufficient for a buyer to have some CBP. The buyer must be able to exert sufficient CBP that a seller is unable to act to an appreciable extent independently of its competitors, customers and ultimately consumers.

4.31 The extent of any CBP that each FCP or MCP will have when negotiating with individual MCPs will vary to some extent, but a detailed analysis of every single bilateral negotiation would be difficult in practice. We therefore consider CBP by looking first at BT's CBP. As the CAT recognised, it is logical to take BT as the starting point for an assessment of CBP. [127] We then consider the impact that the MTR charged to BT has on the rate paid by others. In line with the H3G Judgment, our analysis considers whether CBP is sufficient to constrain any SMP that a terminating CP may have.

4.32 BT is the largest transit provider and the largest overall purchaser of MCT. It purchases MCT from the MCPs in every one of the relevant markets identified in Section 3, and its E2E connectivity obligation means that it is interconnected, either directly or indirectly, to each MCP. BT's negotiations over MTRs with MCPs, therefore creates an important reference point in influencing the behaviour of other originating/transiting CPs and terminating MCPs. We believe, however, that it is unlikely that BT has sufficient CBP to prevent an MCP from being able to act independently of its competitors to an appreciable extent. This is because BT (like other FCPs) is constrained in its ability to use its own termination rates (or provision

[126] Calls to OTT with mobile numbers are themselves only a subset of all OTT calls, which even in totality, are not very commonly used to contact UK mobile holders. See Section 3, paragraph 3.87.
[127] See paragraph 48, Hutchison 3G UK Limited V Ofcom [2008] CAT 11, 20 May 2008 at: http://www.catribunal.org.uk/files/Jdg_CAT11_1083_H3G_200508.pdf

of interconnection circuits or other regulated products) as a bargaining chip, since these are constrained by regulation.[128]

4.33 The MTR BT agrees with each MCP can act, to some extent, as a 'ceiling' on MTRs for individual bilateral negotiations between originating CPs and terminating MCPs. This is because if a terminating MCP asked for a rate much higher than the rate it had agreed with BT, then other originating CPs have the option of indirect interconnection (i.e. through BT). The cost of indirect interconnection would entail paying BT to transit its network to reach the terminating MCP. So the 'ceiling' to MTRs in direct bilateral negotiations between an originating CP and terminating MCP, should be no higher than the cost of indirect interconnection (i.e. the BT agreed MTR plus any transit charge set by BT).

4.34 The MTR charged to BT may also set a 'floor' to MTRs. If an originating CP sought a lower MTR than the terminating MCP had agreed with BT, the terminating MCP could refuse this lower rate, knowing that the only alternative for the originating CP is to transit via BT and face the already agreed MTR with BT (plus any transit charge levied by BT).

4.35 Moreover, it may not be cost effective for originating CPs to negotiate direct interconnection with small MCPs with limited traffic. Hence, where they wish to interconnect with smaller MCPs, originating CPs can direct their traffic through BT and pay the high MTRs already agreed between BT and the terminating MCP. In these instances, originating CPs effectively have little or no CBP with respect to smaller MCPs.

4.36 There might be cases where the four largest MCPs could seek to reduce the MTRs they pay to certain smaller MCPs by threatening to block small MCPs' number ranges. However, we consider that commercial incentives for the four largest MCPs to allow their own customers to interconnect universally may weaken attempts to negotiate lower MTRs by threatening to block interconnection with smaller MCPs. Furthermore, the extent to which a blocking tactic can be regarded as legitimate CBP for the larger MCPs is unclear as the parties' expectation of Ofcom's potential intervention in these cases (in terms of our current and future views on whether current regulatory and industry practices are sufficient to ensure end-to-end connectivity) plays a role in assessing the credible threat of any such practice. It appears more common for MCPs to respond by placing numbers from these subscribers outside the retail call bundle. However, this appears ineffective as a mechanism to reduce MTRs - the evidence regarding pricing behaviour (see paragraphs 4.41- 4.49 below) suggests that market entry can be, and is, achieved by smaller MCPs that set MTRs substantially above the charged controlled MTRs of the four largest MCPs. Instead, excluding numbers from the bundle tends to pass the higher MTR costs on to the end customer calling that network, and may cause confusion and consumer harm (see Section 5).

4.37 However, even if it were possible for certain of the four largest MCPs to exercise a degree of CBP, the MTRs charged by smaller MCPs to BT and other originating CPs would still remain high, as there does not seem to be a mechanism by which lower MTRs paid by a large MCP to smaller MCPs would 'spill over' to lower the MTRs charged by the smaller MCPs to other originating CPs.

[128] As noted above, network access and charging conditions imposed both on BT and on other FCPs constrain the exercise of SMP in fixed network call termination markets and prevent them from setting excessive charges in those markets.

4.38 We consider, therefore, that *some* of the four largest MCPs might have at most a degree of CBP vis-à-vis smaller MCPs, but this would not be sufficient to force the MTRs charged by those smaller MCPs to the competitive level for many other originating CPs (including BT and possibly a number of MCPs) which represent the majority of voice traffic.

4.39 Finally, there appears to be little constraint on the MTRs charged by the four largest MCPs themselves. It does not seem feasible for another MCP, particularly for smaller MCPs, to threaten to block such a significant player or to remove calls to their number range from retail bundles. In addition, BT's ability to threaten such action is constrained by its E2E connectivity obligation.

4.40 We therefore propose that CBP is not a sufficient constraint on the strong position of the MCPs in the relevant markets.

Evidence of pricing behaviour

4.41 In our previous review, we looked at historic prices charged for MCT by the four largest MCPs and also by the smaller MCPs.[129]

Pricing behaviour by the four largest MCPs

4.42 Since 2002, the four largest MCPs have been subject to charge controls for MCT (with H3G being subject to a charge control since 2007). Hence, we cannot observe the MTRs which would now be set by these MCPs in the absence of regulation. Nevertheless, we do observe that these MCPs have charged the maximum allowed amount for their MCT service, which suggests that their pricing is likely to have been constrained by regulation. While this behaviour alone does not conclusively imply SMP, it does not contradict the presumption of SMP given market shares or considering other economic factors such as the absence of, or limits to, CBP by originating CPs.

Pricing behaviour of MCPs with fewer subscribers

4.43 Prior to 2011, smaller MCPs (i.e. those other than the four largest MCPs) were not subject to SMP regulation. Thus, pricing behaviour prior to 2011 may be indicative of pricing in the absence of SMP regulation (although it is possible that it was constrained by the threat of regulation). As we discussed in our March 2011 Statement,[130] we considered that the pricing behaviour of smaller MCPs was consistent with SMP. In particular, we referred to two disputes in which we had assessed new entrant MCP pricing that was well above the cost estimates we used for those disputes (i.e. LRIC+ benchmark rates consistent with those set in the March 2007 Statement).[131] Our March 2011 Statement also considered pricing data corresponding to that time which indicated that there was a wide variation in the

[129] See paragraphs 4.52 to 4.61, Ofcom, *Wholesale mobile voice call termination, Market Review, Volume 2 – Main consultation*, consultation, 1 April 2010 ('the April 2010 Consultation'). http://stakeholders.ofcom.org.uk/binaries/consultations/wmctr/summary/wmvct_consultation.pdf

[130] See paragraphs 4.48 to 4.54 of the March 2011 Statement,

[131] Ofcom, *Dispute between Mapesbury Communications and T-Mobile about mobile termination rates*, determination and statement, 20 March 2009. http://www.ofcom.org.uk/consult/condocs/mapesbury_tmobile/statement/mcom_deter.pdf and Ofcom, *Dispute between Cable & Wireless and T-Mobile about mobile termination rates*, final determination and statement, 20 May 2009. http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01004/cwdispute.pdf

MTRs set by MCPs not subject to SMP regulation, including relatively high MTRs compared with the charge control applied on the four largest MCPs at the time.[132]

4.44 In response to our October 2013 stakeholder workshop, Telefónica and EE said that, despite the fair and reasonable (F&R) charging obligation,[133] some smaller MCPs were charging MTRs significantly above the benchmark rate, i.e. the regulated level of MTRs for the four largest MCPs subject to the charge control imposed in the March 2011 Statement. In Table 5 we summarise the position regarding smaller MCPs' charges based on information from BT's carrier price list (BT's CPL) and MCPs' responses to our formal information requests in February 2014.[134]

Table 5: Number of smaller MCPs charging above the benchmark MTR

SMP Condition	March 2011	April 2014
Smaller MCPs providing voice MCT	28	78 (24)
Smaller MCPs charging above benchmark	21	24[135] (5)[136]
Smaller MCPs charging 10ppm or more	8	13 (5)

Figures in brackets show MCPs that were found to have SMP in the March 2011 Statement

Source: March 2011 Statement; BT CPL (April 2014) and MCPs' responses to section 135 information requests, Nov 2013–Feb 2014

4.45 The data above shows that as of April 2014, more than one third of smaller MCPs (24) were charging above the benchmark rate based on the estimated cost of 0.848 pence per minute for a hypothetically efficient provider.[137] Indeed, more than half of those charging above the benchmark had MTRs in excess of 10ppm. The data in Table 5 also shows that among the MCPs charging above the benchmark rate are some MCPs designated as having SMP in the last review (and subject to a requirement to set fair and reasonable charges).

4.46 Table 6 below shows all of the MTRs above the benchmark rate set out in the BT CPL and the associated number range(s). Where an MCP uses a provider of transit and/or hosting services, we have replaced the name of the MCP listed in the BT CPL with the MCP which has been allocated the relevant number range(s).

4.47 The data in Table 6 also indicates that despite the F&R charging obligation (or the potential threat of regulation for those MCPs not currently subject to SMP regulation) there is still a significant number of smaller MCPs charging above the benchmark.

[132] See Table 4.1 in the March 2011 Statement.
[133] In the March 2011 Statement, we imposed an SMP obligation to set charges on a F&R basis on relevant smaller MCPs. A further description of the F&R charging obligation is set out in Section 5.
[134] BT Carrier Price List (https://www.btwholesale.com/pages/static/Library/Pricing_and_Contractual_Information/carrier_price_list/cpl_sectionb1telephony.htm); Section B1 Telephony part no. 102 'Operator Services (BT to OLO)' https://www.btwholesale.com/shared/document/CPL/SectionB1_Telephony/B102_10.zip and Section B1 Telephony part no. 106 'Non Geographic Call Services' https://www.btwholesale.com/shared/document/CPL/SectionB1_Telephony/b1_06.xls
[135] In Table 6 the number of smaller MCPs charging above the benchmark is 27. This includes three MCPs that interconnect with BT but, according to their responses to our formal information requests, do not currently have active customers for those number ranges.
[136] [✂]
[137] In 2013/14 prices.

Table 6: Mobile termination rates for smaller MCPs charging above the benchmark rate, April 2014[138]

Mobile Communications Provider	Number Ranges	MTR (ppm)			Average charge (i)	Charge relative regulated MTR (ii)	Date MTR was effective from (iii)
		Day	Eve	Wknd			
(AQ) Ltd	75207	1.5	1.5	1.5	1.5	176%	11/05/2012
Andrews & Arnold Ltd	74411	1.5	1.5	1.5	1.5	176%	11/05/2012
Bellingham Telecommunications Ltd	74181	10.0	10.0	10.0	10.0	1176%	01/02/2011
CFL Communications Ltd	75377	12.0	8.0	4.0	9.0	1061%	13/11/2008
Citrus Telecommunications Ltd	78744, 78939	3.0	3.0	3.0	3.0	351%	01/08/2011
Cloud9 Communications Ltd	77000	15.6	10.8	2.5	11.2	1322%	11/08/2006
Cloud9 Communications Ltd	77000	30.0	30.0	30.0	30.0	3529%	11/08/2006
Cloud9 Communications Ltd	78722, 79245, 79782-3	11.0	8.7	3.1	8.5	1005%	27/11/2009
Confabulate Ltd	75595	10.0	10.0	10.0	10.0	1176%	03/11/2010
Core Communication Services Ltd	75204, 77442-9, 775520, 775522, 775530, 775532-5, 775539-50, 775555	9.1	8.2	2.5	7.3	863%	01/07/2007
Core Telecom Ltd	75597	10.0	10.0	10.0	10.0	1176%	01/02/2011
Euro Thai Exchange Process Company Ltd	75890, 78933	10.0	10.0	10.0	10.0	1176%	13/11/2009
Globecom International Limited	75593	3.0	3.0	3.0	3.0	351%	05/10/2011
Icron Network Ltd	78225, 79785	3.0	3.0	3.0	3.0	355%	01/04/2012
Interact Solutions Ltd	74179	10.0	10.0	10.0	10.0	1176%	01/04/2011
Invomo Limited	75209	1.5	1.5	1.5	1.5	176%	11/05/2012
IPv6Ltd	075592	1.5	1.5	1.5	1.5	177%	01/08/2012
LegendTel LLC	75591	6.0	6.2	6.4	6.2	728%	18/03/2011
Mars Communications Ltd	75590	12.0	8.0	4.0	9.0	1061%	03/08/2010
Moonshado Inc	75899	10.0	10.0	10.0	10.0	1176%	06/07/2010
Orca Digital Ltd	75208	1.5	1.5	1.5	1.5	176%	11/05/2012
Oxygen8 Communications UK Ltd	75891	6.0	6.2	6.4	6.2	728%	05/11/2009
Oxygen8 Communications UK Ltd	75893	10.0	10.0	10.0	10.0	1176%	05/11/2009
Oxygen8 Communications UK Ltd	75892, 78229, 79786	12.0	8.0	4.0	9.0	1061%	05/11/2009
Premium O	074515	3.0	3.0	3.0	3.0	352%	28/10/2011
Sky Telecom Ltd	78727	10.0	10.0	10.0	10.0	1176%	02/03/2011
Sound Advertising	074410	3.0	3.0	3.0	3.0	352%	28/10/2011
Sound Advertising	075376	1.5	1.5	1.5	1.5	177%	01/08/2012
Subhan Universal Ltd	75203	3.0	3.0	3.0	3.0	351%	01/12/2011
Swiftnet Ltd	78221	10.0	10.0	10.0	10.0	1176%	04/12/2008
Telecom2 Ltd	74065	10.0	10.0	10.0	10.0	1176%	19/07/2010
Test2Date B.V.	075898	3.0	3.0	3.0	3.0	352%	28/10/2011

Source: Ofcom analysis March 2014 based wholesale charges by number range on the BT carrier price list (as at 16 April 2014) and Ofcom data on mobile number allocations. [139] Notes: (i) Comparison is against current MTR charge control ceiling of 0.848 ppm (nominal). (ii) In some cases the same MTRs are applied by a MCP across different number ranges (iii) Where there are different

[138] We note that Interact Solutions Ltd listed in Table 6 went into liquidation in April 2014.
[139] See footnote 134.

effective dates for number ranges for which the same MTR applies, we selected the most recent effective date.

4.48 Based on the BT CPL, there are some 27[140] smaller MCPs that have a weighted average MTR above the benchmark rate for at least some of their mobile number ranges. Furthermore, 13 of these MCPs have MTRs more than ten times the benchmark.

4.49 Therefore, past pricing evidence in the March 2011 Statement (discussed in paragraph 4.41) and the data we obtained via formal information requests under section 135 of the Act and from the BT CPL suggests that the pricing behaviour of smaller MCPs is consistent with SMP.

Provisional conclusion on SMP

4.50 On the basis of the four criteria that we consider to be most relevant to assessing the existence of SMP in the relevant markets - market shares, barriers to entry, absence of CBP and pricing behaviour - we propose to find that, for each of the relevant markets identified in Table 4, the respective MCP operating in that market has SMP.

[140] In Table 4.1 the number of smaller MCPs charging above the benchmark is 24. This is because in Table 4.1 we exclude three MCPs that interconnect with BT but, according to their responses to our formal information requests, do not currently have active customers for those number ranges.

Section 5

Remedies

Introduction

5.1 In Section 3 we have identified 82 Relevant Markets and in Section 4 we have set out our reasons for proposing to designate a particular MCP with SMP in each of those markets.

5.2 In this section we propose remedies to address the harm arising from SMP.

5.3 The structure of this section is as follows: we first summarise the relevant regulatory history of remedies imposed to address harm from SMP. We then set out our assessment of the harm that would arise in MCT markets in 2015-18 due to a lack of competition in the absence of regulation. Following that, we discuss the legal background to the imposition of remedies before considering in detail the remedies we are minded to impose.

Summary

5.4 Based on our assessment, we propose the remedies listed in Table 7 on the MCPs with SMP identified in Section 4. In particular, we propose two different sets of remedies, with one set applicable to the four largest MCPs and the other for smaller MCPs.

Table 7: Summary of proposed remedies for MCT

SMP Condition	Description	Applied to
M1	Network access obligation (on reasonable request on fair and reasonable terms & conditions)	All MCPs
M2	No undue discrimination obligation	Four largest MCPs
M3	Charge control (set using LRIC cost-standard)	All MCPs
M4	Price transparency obligation	All MCPs

Background

Regulatory remedies imposed as part of the 2011 MCT market review

5.5 We imposed the following remedies on MCPs with SMP in the March 2011 Statement.

Table 8: Remedies imposed in MCT markets in March 2011

SMP Condition	Description	Applied to
M1	Network access obligation (on reasonable request on fair and reasonable terms & conditions including charges)	All MCPs
M2	No undue discrimination obligation	Four largest MCPs
M3	Charge control (set using LRIC cost-standard)	Four largest MCPs
M4	Price transparency obligation	All MCPs

5.6 Having considered various options, we decided that it was appropriate to impose the following SMP conditions on all the MCPs we designated as having SMP:

- an obligation to provide network access on reasonable request and on fair and reasonable terms and conditions, including charges; and
- an obligation of transparency requiring MCPs to publish their charges and give advance notice of amendments to their charges.

5.7 We also concluded that it was appropriate to impose the following additional remedies on the four largest MCPs (EE, H3G, Telefónica and Vodafone):

- a charge control; and
- an obligation not to unduly discriminate.

5.8 We considered that a prohibition on undue discrimination was required to prevent the four largest MCPs from using their position of SMP to distort or reduce competition in the retail mobile market, in particular in respect of the potential for discrimination in relation to smaller or new entrant MCPs.[141] We also concluded that MCT supplied by the four largest MCPs should be subject to a charge control because we did not consider it likely that the other three SMP conditions would be sufficient to adequately constrain their SMP in MCT.[142] By contrast, we considered it appropriate and proportionate to regulate smaller MCPs by imposing only a price transparency obligation and a requirement to provide network access on fair and reasonable ('F&R') terms and conditions including charges, supplemented with guidance on our interpretation of "fair and reasonable" in relation to MTRs[143] ('2011 F&R guidance').

Assessment of harm arising from a lack of effective competition

5.9 In the previous section of this consultation, we provisionally concluded that each MCP listed in Table 4 has SMP in its relevant market and therefore that these MCT markets are not effectively competitive. We need to assess the nature and scale of the problems arising from SMP in these markets in order to decide if competition law

[141] Paragraphs 6.79-6.81 of the March 2011 Statement.
[142] Paragraphs 6.87-6.91 of the March 2011 Statement.
[143] Ofcom, *Wholesale mobile call termination: Guidance on dispute resolution in relation to fair and reasonable charges*, statement, 5 April 2011. http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/guidance.pdf.

remedies are sufficient to address the problem and, if not, to impose appropriate ex-ante remedies.

5.10 Our primary concern is that, without regulation, MCPs will have the incentive and the ability to engage in the following kinds of behaviour:

- refuse to supply MCT;
- charge excessively high MTRs;
- supply MCT on discriminatory terms or in discriminatory ways (including price and non-price elements); and
- not provide clarity or certainty in relation to MTRs.

5.11 In the absence of regulation any of the above-mentioned behaviours could manifest itself, in isolation or in combination with others. We explain below in turn how these behaviours lead to harm. The extent of each of the harms discussed is likely to be in proportion to the size of the relevant MCP's customer base. Nevertheless, we consider that harm would also arise from smaller MCPs engaging in these behaviours. Also, as discussed in paragraphs 5.21 and 5.111, further harm can arise if the ability to engage in such behaviours is asymmetric because the larger MCPs are more tightly regulated than the smaller MCPs.

Refusal to supply MCT

5.12 In the absence of a requirement to provide network access to other CPs on fair and reasonable terms, MCPs could refuse access to their network or provide access subject to unreasonable terms.

5.13 An originating CP whose interconnection request is rejected by an MCP, or accepted only on unreasonable terms, would not be able to connect its customers to customers of that MCP on fair and reasonable terms; this would harm the originating CP's customers. This could also reduce competition and thus, by extension, further harm end-customers.

5.14 An originating CP whose interconnection request is rejected or granted on unreasonable terms may rely instead on transit providers. This would reduce the harm from such refusal to some extent, but the CP may have preferred to connect directly with the MCP withholding access – for example, because it would be cheaper for it to interconnect directly. Also, the MCP may refuse to provide access on fair and reasonable terms to one or more transit providers.

Charging of excessively high MTRs

5.15 As we noted during our previous market review,[144] while some academic literature suggests that, in the absence of regulation, MTRs could be set at or even below marginal costs – especially for mobile-to-mobile calls, these papers are generally inconclusive and heavily dependent on various, and sometimes quite different, assumptions for their conclusions.[145]

[144] See paragraphs 5.15 to 5.30 of our April 2010 Consultation.
[145] The results depend on whether MCPs set their MCT charges cooperatively or unilaterally, the nature of retail competition, and the presence or absence of call externalities. For an overview of this

5.16 We have also noted in the previous section (paragraphs 4.41-4.49) the market evidence which supports our view that MTRs are likely to be set at excessively high levels absent regulation.

5.17 If MCPs set excessive MTRs they may be able to earn economic profits for that service (i.e. returns in excess of their cost of capital). These profits from MCT could be 'returned' to consumers through competition at the retail level in the form of incentives to buy mobile services – such as lower retail call prices and/or handset subsidies. This competing away of excess profits is known as the 'waterbed effect'.

5.18 We consider that even if the waterbed effect led to a full 'recycling' of higher MTRs (which we do not believe to be the case) excessive MTRs could still harm consumers' interests by distorting competition in downstream retail markets. Unregulated MTR levels also affect economic efficiency and have distributional impacts.

5.19 These arguments are summarised below and set out in more detail in Section 6. While the discussion in Section 6 is framed in terms of MTRs based on a LRIC cost standard compared to a LRIC+ cost standard, the argument in relation to LRIC+ would also generally apply to 'high' MTRs such as those likely to prevail absent SMP regulation or the threat thereof.

Competition concerns caused by high MTRs

5.20 The power to set high MTRs in the absence of regulation will generate profits which affect competition in retail mobile markets. In our March 2011 Statement,[146] we noted that if all MCPs have similar market shares the distortion of existing competition in retail mobile markets would be limited. But if there are MCPs who want to enter the market or smaller MCPs looking to expand then, without regulation, high MTRs would create barriers to entry or expansion for such players. The mechanisms by which unregulated MTRs would affect new entrants (termed retail effects, market-wide effects and customer segments effects in the March 2011 Statement) are described in Section 6.

5.21 Competition concerns arising from high MTRs are not limited to the conduct of the four largest MCPs. Competitive harm may also arise if smaller MCPs set higher (asymmetric) MTRs with the intention of discounting their retail offers and thereby gaining a competitive advantage. The competition harm from asymmetric MTRs is one of the important factors cited in the Explanatory Note to the 2009 EC Recommendation on the regulatory treatment of fixed and mobile termination rates.[147] While smaller MCPs remain small this potential competitive distortion would be limited, but insofar as asymmetric MTRs allow smaller MCPs to grow their subscriber bases more than they otherwise would there remains a risk of a material competitive distortion.

5.22 If MCPs were to set excessive MTRs while FCPs were able only to charge regulated (cost-oriented) FTRs, this would result in a transfer of funds from FCPs to MCPs. In a

literature, see Armstrong, M & Wright, J (2009) "*Mobile Call Termination*", Economic Journal, Royal Economic Society, vol. 119(538), pages F270-F307, 06. Armstrong and Wright explain why arbitrage would force MCPs to set high MTRs for both FCPs and MCPs.

[146] See paragraph 5.11 of our March 2011 Statement.

[147] See paragraph 3.1.3, Commission Staff Working Document accompanying the Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU, Explanatory note, 7 May 2009 ('Explanatory Note to the 2009 EC Recommendation') http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/sec_2009_0600_en.pdf

situation where FCPs and MCPs compete with one another to some degree this would also distort competition. We discuss this in detail in Section 6.

Economic inefficiency caused by high MTRs

5.23 We said in our April 2010 Consultation that, even if excessive profits from MCT were fully competed away, the resulting structure of prices in retail and wholesale markets was likely to be *inefficient*, distorting consumer choice and harming consumers' interests.[148] Some services would be consumed more than would be efficient and others consumed less than would be efficient (compared to the situation of prices reflecting actual resource costs). We remain of this view today.

5.24 Examples of this include:

- The price of calls to mobiles from fixed lines would be relatively high, and other charges for mobile services (such as monthly access fees) relatively low. This inefficient structure of prices would lead to over-consumption of mobile retail services and under-consumption of other retail services that use MCT, such as fixed-to-mobile calls.

- Even with respect to mobile-to-mobile calls, excessive MTRs would create distortions. Because MTRs establish a floor for the price of mobile-to-mobile calls between CPs (i.e. off-net calls), high MTRs could lead to higher prices for off-net calls than for on-net calls, thereby distorting consumer choice between the two call types.

Distributional impact of high MTRs

5.25 As we discuss in more detail in Section 6 (paragraphs 6.81-6.95), higher MTRs may impact different groups of mobile users differently depending on whether they are net makers or net receivers of calls. The analysis in Section 6 and Annex 9 is couched in terms of the difference between LRIC+ and LRIC charge-controlled MTRs, but the effects that arise when comparing LRIC+ to LRIC also apply to higher, unregulated, MTRs. With unregulated MTRs the retail effects are likely to be even more pronounced.

Discriminatory supply of MCT

5.26 A discriminatory supply of MCT could take both price and non-price forms. Incumbent MCPs could exert their SMP to exclusionary effect in the absence of regulation through discriminatory treatment of smaller CPs. For example, they could charge higher MTRs and/or provide an inferior quality-of-service to new entrant CPs or smaller CPs in order to create barriers to entry or expansion for such players.

Lack of clarity or certainty in relation to MTRs

5.27 A lack of reasonable clarity or certainty with respect to MTRs could mean that CPs who need to purchase MCT lack clarity and/or certainty on the costs they would incur as a result of terminating calls to mobile numbers originated by their subscribers. This increase in risk – caused by uncertainty over forward-looking MCT rates – could lead to consumer harm if CPs who need to purchase MCT mitigate that financial risk by increasing retail prices.

[148] See paragraphs 5.11 to 5.14 and 5.31 to 5.35 of our April 2010 consultation.

5.28 Originating CPs may also react to such financial risk by excluding from their call allowances/bundles calls made to mobile numbers which incur unclear or uncertain MTRs. This could then result in undesirable consumer outcomes, such as tariff complexity and/or, potentially, bill shock.

5.29 Lack of clarity over MTRs may also deter potential new entrants, thus potentially harming competition and, by effect, end-customers.

Provisional conclusion on harm arising from SMP absent regulation

5.30 With regard to the period considered in this market review, we provisionally conclude that – in the absence of regulation – MCPs have the ability and incentive to set excessive MTRs as well as act in other ways that would harm competition and result in consumer detriment. Absent regulation, such conduct would result in a structure and level of prices, in retail and wholesale markets, that would be less efficient, distort customer choice, restrict or distort competition and may generate adverse distributional impacts. In the following sub-section we consider if ex-post competition law would be sufficient to address the problems we have identified.

Question 5.1: Do you agree with our assessment of the harm that would result from a lack of effective competition in MCT markets?

Sufficiency of ex-post competition law

5.31 Before considering ex-ante regulation (i.e. SMP conditions) to remedy the problems arising from SMP in MCT markets, we must determine if competition law remedies would be sufficient to address these problems. This is because ex-ante regulation should only be imposed where competition law remedies are insufficient to address the competition problem(s) identified.[149]

5.32 Generally, the case for ex-ante regulation in communications markets is based on the existence of market failures which, by themselves or in combination, mean that competition might not be able to become established if the regulator relied solely on its ex-post competition law powers. Therefore, in the presence of market failures, it is typically appropriate for ex-ante regulation to be used to address these market failures and any barriers to entry that might otherwise prevent effective competition from becoming established within the relevant markets we have defined. By imposing ex-ante regulation that promotes competition it may be possible to reduce such regulation over time, as markets become more competitive, allowing greater reliance on ex-post competition law.

5.33 In MCT markets the nature of the problem is one of persistent market power. Each company operates in a distinct product market where there are considerable barriers to entry. The scale of the problem which would arise in the absence of any regulation justifies ex-ante intervention. The Draft Explanatory Note to the EC's Draft Revised Recommendation on Relevant Markets (revised 24 March 2014)[150] says that, given the crucial importance of guaranteeing effective and timely interconnection, ex-post competition law alone is not able to address bottlenecks in termination markets;

[149] Recital 27 of the Framework Directive.
[150] Available at http://ec.europa.eu/digital-agenda/en/news/commission-requests-berec-opinion-draft-revised-recommendation-relevant-markets.

consequently, the use of ex-ante regulation "appears indispensable, at least for the time being".[151] We agree with this proposition.

5.34 Imposing obligations on an ex-ante basis allows consistent and timely intervention. Moreover, some problems can only be remedied effectively by means of ex-ante SMP conditions and, in our view, cannot be remedied adequately under ex-post competition law. This particularly applies where fair and reasonable access to the infrastructure of competing firms is important to the competitive process and/or where competition in related markets has come about because of prior ex-ante regulation and where technology and/or demand conditions are unlikely to support commercially viable alternatives.

5.35 It follows from the above that ex-post competition law is unlikely by itself to bring about or promote effective competition as it focuses on past abuses of dominance. In contrast, ex-ante regulation is normally aimed at actively promoting the development of effective competition going forward through attempting to reduce the level of market power or dominance in the identified relevant markets.

5.36 Imposing obligations on an ex-ante basis also provides stakeholders with greater legal and regulatory certainty which we consider appropriate in the particular context of the widespread impact of the potential detriments stemming from market power discussed above. This certainty is linked to the fact that the SMP conditions we propose (set out later) would enable us to intervene quickly if required. Also, a period of stable regulation, as a result of greater regulatory certainty, would support competition as it would facilitate investment by competing CPs to advance their business propositions.

5.37 It is also not necessarily the case that deregulation and reliance on ex-post competition powers would reduce the regulatory burden on stakeholders. The absence of ex-ante regulation may, for example, increase the risk of commercial negotiations failing.

5.38 In conclusion, we provisionally find that ex-post competition law, under Article 102 of the EU Treaty and Chapter II of the Competition Act 1998, would be insufficient to address the lack of effective competition in the markets defined in Section 3 and prevent the problems we have identified above. Therefore, we consider that ex-ante regulation is required.

Question 5.2: Do you agree with our assessment that ex-post competition law would not be sufficient to address the competition problems we have identified, and that therefore deregulation is not a regulatory option?

Legal background to the imposition of remedies

5.39 In assessing options for regulating MCT there are a number of legal tests we need to consider when imposing remedies on MCPs designated as having SMP.

5.40 Section 87(1) of the Act provides that, where Ofcom has made a determination that a person has SMP in a particular market, it must set such SMP services conditions as it considers appropriate and as are authorised under the Act. Section 87(1) implements Article 8 of the Access Directive and Article 16(4) of the Framework Directive.

[151] Page 30 of the aforementioned Draft Explanatory Note.

5.41 Paragraphs 21 and 114 of the SMP Guidelines state that NRAs must impose one or more SMP services conditions on an undertaking having SMP, and that it would be inconsistent with the objectives of the Framework Directive not to impose any SMP services conditions on an undertaking which has SMP.

5.42 Sections 45-49 and 87-91[152] of the Act set out the obligations that Ofcom can impose if it finds that any undertaking has SMP (SMP services conditions). They comprise obligations of access to and use of specific network elements, transparency, non-discrimination, accounting separation, price control and cost accounting.

5.43 SMP services conditions must be appropriate (section 87(1) of the Act) and must satisfy the tests set out in section 47(2) of the Act. These are that each condition must be: (a) objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates; (b) not such as to discriminate unduly against particular persons or against a particular description of persons; (c) proportionate to what the condition or modification is intended to achieve; and (d) in relation to what it is intended to achieve, transparent.

5.44 We must also act consistently with our general duties under section 3 of the Act, including our primary duty to further the interests of citizens and to further the interests of consumers where appropriate by promoting competition (see further Annex 5, paragraphs 5.26 to 5.30).

5.45 Section 4 of the Act sets out the six Community requirements on Ofcom which flow from Article 8 of the Framework Directive (see further Annex 5, paragraphs 5.31 to 5.33). We consider that the first five of these requirements are of particular relevance to this market review and that no conflict arises in this regard with those specific objectives in section 3 of the Act that we consider are relevant.

5.46 In considering what remedies may be appropriate, we have considered these duties. In particular, we have considered the requirement to promote competition in relation to the provision of electronic communications networks and electronic communications services.

5.47 In carrying out its functions under this review, Ofcom is required by section 4A of the Act to take due account of applicable recommendations issued by the EC under Article 19(1) of the Framework Directive. Where we decide not to follow such a recommendation, we must notify the EC of that decision and the reasons for it. Pursuant to Article 3(3) of the BEREC Regulation[153], Ofcom must take utmost account of any relevant opinion, recommendation, guidelines, advice or regulatory practice adopted by BEREC. Insofar as it is relevant to the remedies under consideration, we have therefore taken due account of the applicable EC recommendations, including the 2009 EC Recommendation, and utmost account of the applicable opinions, recommendations, guidelines, advice and regulatory best practices adopted by BEREC relevant to the matters under consideration.

5.48 Specific legal requirements may also need to be satisfied, depending on the SMP condition in question. For example, in determining whether a dominant MCP should be obliged to provide network access, we must take into account factors including the

[152] Sections 87-91 implement Articles 9 to 13b of the Access Directive and Article 17 of the Universal Services Directive.
[153] Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009 establishing the Body of European Regulators for Electronic Communications (BEREC) and the Office, 25 November 2009. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0001:0010:EN:PDF.

feasibility of the provision of the proposed network access, the investment of the MCP initially providing or making available the relevant network and the need to secure effective competition in the long term.[154]

5.49 We can only impose a price control where it appears to us from our market analysis carried out for the purpose of setting the condition that there is a relevant risk of adverse effects arising from price distortion, and that the setting of the condition is appropriate for the purposes of:

- promoting efficiency;
- promoting sustainable competition; and
- conferring the greatest possible benefits on the end-users of public electronic communications services.[155]

5.50 For these purposes, there is a relevant risk of adverse effects arising from price distortion and lack of effective competition if the dominant MCP might fix and maintain prices at an excessively high level, or impose a price squeeze, with adverse consequences for end-users.

5.51 In setting a charge control, we must also take account of the extent of the investment in the matters to which the conditions relates, by the MCP to whom it is to apply.[156]

Remedies available for ex-ante intervention

5.52 Table 9 below sets out the problems we aim to address through intervention and in broad terms the remedies available to us under the Act (Sections 87–92).

Table 9: Remedies available to address competition problems arising from SMP

			Relevant remedies (SMP conditions)			
			Network access obligation	Price transparency obligation	No undue discrimination obligation	Charge control
Competition problem (arising from SMP)	*Price*	Excessively high MTRs	✓	✓		✓
		Lack of price certainty		✓		✓
		Discrimination (price)		✓	✓	
	Non-price	Discrimination (non-price)	✓		✓	
		Refusal to supply MCT	✓			

5.53 In the following sub-sections we consider in sequence the remedies required to address the problems resulting from SMP identified above.

[154] Section 87(4) of the Act and Article 12(2) of the Access Directive.
[155] Section 88 of the Act and Article 13 of the Access Directive.
[156] Section 88(2) of the Act and Article 13(1) of the Access Directive.

5.54 While considering each remedy we discuss if it should apply to all MCPs or only to the four largest MCPs. This is because the retail position of the four largest MCPs is substantively different from that of smaller MCPs and so is their ability to exert SMP.

Network access obligation

Rationale

5.55 As explained earlier in paragraphs 5.12-5.14, in the absence of a requirement to provide network access to other CPs on fair and reasonable terms, MCPs would have the ability and possibly the incentive not to grant access to their network or to grant access subject to unreasonable terms. Such behaviour would lead to consumer harm if a CP finds it difficult or impossible to connect its customers to the customers of an MCP withholding access on reasonable terms, and there might also be effects on competition.

5.56 Therefore, we consider that a general network access obligation is necessary to protect end-to-end connectivity and should apply to all MCPs with SMP.

Current design of SMP condition

5.57 Following our March 2011 Statement, all MCPs with SMP have been required to provide network access on reasonable request (condition M1.1) on fair and reasonable terms and conditions, including charges (condition M1.2).[157] Those MCPs who were made subject to a charge control were also required to comply with that condition (condition M1.3). All MCPs with SMP have been required to comply with any direction made by Ofcom under condition M1 (condition M1.4).

5.58 In 2011 we considered that the obligation to provide network access on fair and reasonable terms and conditions, including charges, and our proposed guidance (with the possibility of dispute resolution) would provide sufficient controls on the levels of MTRs charged by smaller MCPs.[158]

Proposed change

5.59 We propose to retain an SMP condition that requires all MCPs with SMP to provide network access on reasonable request on fair and reasonable terms and conditions.

5.60 If we were to give effect to the proposal to impose a charge control on all MCPs found to have SMP (set out in paragraphs 5.108-5.122), then this condition – the network access obligation – would be modified such that the reference to charges, within the clause referring to fair and reasonable terms and conditions, would be removed because all notified MCPs would be required to be compliant with the charge control condition. Preserving the reference to charges could create regulatory uncertainty for CPs in the situation where a charge control applies to all MCPs found to have SMP. The proposed charge control prohibits MTRs above the cap, therefore it would render redundant the need for the fair and reasonable clause to function as an upper limit on MTRs.

5.61 Part 2 of Schedule 2 in Annex 6 sets out our proposed network access obligation (Condition M1).

[157] Annex 1 of the March 2011 Statement.
[158] Paragraphs 6.22 and 6.88 of the March 2011 Statement.

Legal tests

5.62 Section 87(3) of the Act authorises the setting of SMP services conditions requiring the dominant provider to provide network access, as Ofcom may from time to time direct. These conditions may, pursuant to section 87(5), include provision for securing fairness and reasonableness in the way in which requests for network access are made and responded to, and for ensuring that the obligations in the conditions are complied with within the periods and at times required under the conditions. When considering the imposition of such conditions in a particular case, Ofcom must have regard to the six factors set out in section 87(4) of the Act. In imposing this condition we have taken into account all of these factors (in particular the technical and economic viability of installing other competing facilities and the feasibility of the proposed network access and the need to secure effective competition in the long term).

5.63 We do not consider it to be technically or economically feasible to install competing facilities for the purpose of providing call termination services to a particular MCP's end users in the period considered by this review. However, given that MCPs are currently providing network access of the type envisaged by the proposed condition (that is, terminating voice calls to numbers within the relevant market), Ofcom considers that provision of network access is feasible. We also consider that the condition will help to secure effective competition in the long term as it will ensure that purchasers of MCT are not disadvantaged in the retail market by the imposition of unreasonable terms and conditions by terminating MCPs.

5.64 We consider that the proposed condition meets the criteria set out in section 47(2) of the Act because it is:

i) objectively justifiable, in that it has the aim of ensuring that call termination services are provided by all MCPs, such that competition develops to the benefit of consumers;

ii) not unduly discriminatory, in that it applies equally to MCPs which, in our view, hold a position of SMP;

iii) proportionate, because it is the least restrictive means of ensuring that MCPs are unable to refuse to provide network access to their wholesale call termination services to other CPs in that it does not require MCPs to provide access if the request is unreasonable; and

iv) transparent, in that the condition is transparent in its operation and has been accompanied (in this document) by an explanation of its intended operation and effect.

5.65 We have considered our duties under section 3 of the Act. We consider that the proposed condition furthers the interests of consumers in relevant markets by the promotion of competition because it prevents dominant MCPs from (i) denying network access with the intention of deterring entry or reducing competition and (ii) providing network access subject to unreasonable terms with the intention of reducing competition.

5.66 We consider that the proposed condition meets the Community requirements set out in section 4 of the Act (in particular the requirements to promote competition in the provision of electronic communication networks and electronic communication

services, to encourage network access for the purpose of securing efficient and sustainable competition and the maximum benefit for retail consumers).

5.67 We discuss below our views on whether the relevant legal tests are satisfied if we were to retain the obligation to provide network access on fair and reasonable terms and conditions, including charges.

5.68 In addition to the tests set out in section 47(2) of the Act, in the case that the network access condition places controls on network access pricing, insofar as charges are required to be fair and reasonable, Ofcom is also required to ensure that the condition satisfies the tests set out in section 88 of the Act.

5.69 Section 88(1)(a) of the Act requires that Ofcom must not impose price control conditions unless it appears to them from the market analysis carried out for the purpose of setting that condition that there is a relevant risk of adverse effects arising from price distortion. We have discussed above that we consider that, in the absence of price controls, smaller MCPs may price excessively, and conclude that there is a risk of adverse effects from this.

5.70 Section 88(1)(b) of the Act requires that the charge control condition should be appropriate for the purposes of: i) promoting efficiency; ii) promoting sustainable competition; and iii) conferring the greatest possible benefits on the end users of public electronic communications services.

5.71 We are also required, under Section 88(2) of the Act, to consider the extent of CPs' investment in the matters to which the condition relates (in this case, the network assets associated with wholesale call termination).

5.72 If, rather than extending a charge control to the smaller MCPs, we were to maintain the obligation on smaller MCPs to ensure that charges for MTRs were fair and reasonable, we consider that the condition could support the aim of improved efficiency by preventing MCPs from passing on any inefficiently incurred costs to other CPs through excessively high prices and could promote sustainable competition by ensuring that other CPs can effectively compete at the retail level. We consider this could be an appropriate approach for the purposes of conferring the greatest benefits on end-users of the services. The condition could also permit us to take into account the costs and reasonable rates of return on investments required by MCPs in providing wholesale MCT services, as required under section 88(2) of the Act. We consider also that fair and reasonable charges could provide other CPs with the ability and incentive to invest.

5.73 However, for the reasons explained in paragraphs 5.100-5.122 below, our preferred option would be to extend a charge control to the smaller MCPs because, on balance, we consider that imposing a single charge control on all MCPs would be more effective at preventing the harm caused by excessive MTRs.

Question 5.3: Do you agree with our proposal to impose an obligation to provide network access on reasonable request on all MCPs with SMP? If not, please explain why.

Price transparency obligation

Rationale

5.74 As discussed earlier, in the absence of reasonable clarity and certainty with respect to MTRs the purchasers of MCT (such as originating CPs and transit providers) would not have forward-looking certainty concerning the costs of purchasing MCT. This would harm competition and consumers' interests at the retail level.

5.75 Also, if MCPs were not to publish their MTRs or not notify changes in their MTRs then there would be a decrease in industry-wide transparency with respect to MTRs. This development would impair the ability of both Ofcom and CPs to monitor the compliance of dominant providers with SMP conditions related to MTRs. Imposing a requirement to publish MTRs and to notify changes in MTRs would have the reverse effect: increased transparency and easier monitoring of compliance, which we consider desirable. Increased transparency of MTRs would also assist with enforcement – if such intervention by Ofcom were required.

5.76 The cost of complying with a price transparency obligation is relatively low. All MCPs found to have SMP have been required to publish MTRs and to notify changes in their MTRs since March 2011; the four largest MCPs have had such an obligation for many years.

5.77 Therefore, we consider that it is appropriate to impose a price transparency obligation on all MCPs with SMP.

Current design of SMP condition

5.78 Following our March 2011 Statement, all MCPs designated with SMP have been required to publish their MTRs (M4.1, M4.2) and to publish proposed changes to their MTRs at least 28 days in advance of those changes coming into effect (M4.3). We also said that such publication would be required to be effected by (i) sending MTR information to any person who may reasonably request it and (ii) by placing "such information on any relevant website operated or controlled by the dominant provider" (M4.4). And we set out the minimum information that any such notification of a change in MTRs must include (M4.5).

No proposed change

5.79 We propose to retain the SMP condition that requires all MCPs with SMP to publish their MTRs and to notify changes in their MTRs.

5.80 We are also of the view that the current design of this SMP condition remains appropriate. Therefore, we do not propose to make any changes to this condition.

5.81 Part 2 of Schedule 2 in Annex 6 sets out our proposed price transparency obligation (Condition M4).

Legal tests

5.82 Section 87(6)(b) of the Act authorises the setting of SMP conditions which require a dominant provider to publish, in such manner as Ofcom may from time to time direct, all such information as Ofcom may direct for the purpose of securing transparency.

5.83 We consider that the proposed condition meets the criteria set out in section 47(2) of the Act because it is:

i) objectively justifiable, in that it ensures that MTRs are published, and this will increase transparency to stakeholders and thus facilitate the monitoring of compliance with relevant SMP conditions;

ii) not unduly discriminatory, in that it applies equally to all designated MCPs;

iii) proportionate, in that it is the least onerous obligation to address the concerns described above and to facilitate compliance with regulatory obligations without raising issues of commercial confidentiality; and

iv) transparent, in that the condition is transparent in its operation and has been accompanied (in this document) by an explanation of its intended operation and effect.

5.84 We have considered our duties under section 3 of the Act. We consider that the proposed condition furthers the interests of consumers in relevant markets by the promotion of competition because it provides price certainty to CPs and facilitates compliance monitoring. It thus complements the other proposed SMP conditions, such as the obligation to provide network access on fair and reasonable terms and the charge control. Therefore, we consider that the transparency obligation ultimately promotes competition and benefits consumers.

5.85 We consider that the proposed condition meets the Community requirements set out in section 4 of the Act (in particular the requirements to promote competition in the provision of electronic communications services and electronic communications services, and to encourage network access for the purpose of securing efficient and sustainable competition and the maximum benefit for customers of CPs).

Question 5.4: Do you agree with our proposal to impose a price transparency obligation on all MCPs with SMP? If not, please explain why.

No undue discrimination obligation

Rationale

5.86 The two remedies discussed above do not, in our view, by themselves provide sufficient protection against dominant providers exploiting their SMP to distort competition in other ways that would ultimately harm consumers. In particular, there may still be scope for discrimination. As discussed earlier in paragraph 5.26, dominant MCT providers may charge different purchasers of MCT very different MTRs with the intention and/or the effect of reducing competition and/or deterring entry. Discrimination may also take a non-price form if, for example, dominant providers supply particular competitors with a poorer quality-of-service, e.g. inferior voice quality or a greater ratio of dropped calls.

5.87 We consider that the potential for discrimination, especially that which may adversely affect smaller and new entrant MCPs, exists in the supply of MCT by larger MCPs. We have previously, for these reasons, imposed a no undue discrimination obligation on the four largest MCPs, and we consider that it is appropriate to maintain this remedy for the four largest MCPs in order to protect competition.

5.88 We have also considered whether an obligation of no undue discrimination should apply to smaller MCPs. We consider that the competitive position of the smaller MCPs and their relatively smaller customer base means that any potential discriminatory conduct of smaller MCPs would not pose a significant risk to effective competition. Conversely, we consider that there is a risk that competition could be distorted if smaller MCPs are subject to discriminatory behaviour of the four largest MCPs. In addition, although smaller MCPs have not previously been subject to a no undue discrimination obligation, no complaints suggesting discriminatory conduct by them in relation to network access have been submitted to us and we are not aware of other evidence to suggest there has been discriminatory conduct by them. We therefore consider that, on balance, there is no need to extend this obligation to the smaller MCPs and that imposing a charge control (see paragraphs 5.100-5.122 below) without an obligation of no undue discrimination would be a proportionate measure.

Current design of SMP condition

5.89 As set out above, the four largest MCPs have been required in the latest set of SMP conditions to not unduly discriminate in relation to matters connected with network access (M2.1).

No proposed change

5.90 We propose to retain an SMP condition that requires the four largest MCPs to not unduly discriminate with respect to network access.

5.91 We do not propose any change to the design of this condition. Specifically, we do not propose to impose this condition on all MCPs with SMP.

5.92 Part 2 of Schedule 2 in Annex 6 sets out our proposed price transparency obligation (Condition M2).

Legal tests

5.93 Section 87(6)(a) of the Act authorises the setting of an SMP services condition requiring the dominant provider not to unduly discriminate against particular persons, or against a particular description of persons, in relation to matters connected with the provision of network access.

5.94 We consider that the proposed condition meets the criteria set out in section 47(2) of the Act because it is:

i) objectively justifiable, in that it provides safeguards to ensure that competing CPs, and ultimately consumers (who would gain from more effective competition), are not disadvantaged by one of the four largest MCPs unduly discriminating among them;

ii) not unduly discriminatory, in that it does not discriminate unduly against any MCP and it is proportionate to what it is intended to achieve. As discussed above in paragraph 5.87, we consider it appropriate that this condition be imposed on the four largest MCPs only. The competitive position of the four largest MCPs is such that we are concerned about the resultant impact of any discriminatory conduct by them on the retail market. While other designated MCPs could also engage in discriminatory practices, their weaker competitive position means that we have

fewer grounds for concern in this respect as they are in a different position to the four largest MCPs;

iii) proportionate, in that it safeguards against price and non-price discrimination with potential exclusionary effects, but is the least burdensome means of doing so; and

iv) transparent, in that it has been drafted so as to secure maximum transparency, which is aided by the explanation as to the intended operation and effect of the conditions, as set out in this document.

5.95 We have considered our duties under section 3 of the Act. We consider that the proposed condition furthers the interests of consumers in relevant markets by the promotion of competition because it ensures that other CPs (including smaller MCPs) are not disadvantaged in the provision of access to MCT by the four largest MCPs. By ensuring that competing CPs are not discriminated against so as to materially affect their ability to compete, the requirement helps to secure effective and sustainable competition and furthers the interests of consumers.

5.96 We consider that the proposed condition meets the Community requirements set out in section 4 of the Act (in particular, the requirement to promote competition in the provision of ECS and ECN, and to encourage network access for the purpose of securing efficient and sustainable competition and the maximum benefit for customers of CPs).

Question 5.5: Do you agree with our proposal to impose a non-discrimination obligation on the four largest MCPs, but not on smaller MCPs? If not, please explain why.

Charge control obligation

5.97 We have set out earlier in this section the competitive and consumer harm that we would expect to result if MCPs were free to set unregulated MTRs. We explain below why we consider that some form of price control is required to prevent excessively high MTRs.

Rationale for the four largest MCPs

5.98 We do not consider that the three remedies we have proposed above would be sufficient cumulatively to constrain the MTRs of the four largest MCPs. In other words, we consider that, in the absence of an MTR charge control, the four largest MCPs would have the incentive and the ability to charge excessive MTRs – even if they were subject to the three remedies we have proposed earlier.

5.99 As in 2011, we consider that setting an MTR cap which reflects the costs of a hypothetical efficient mobile operator is the best approach to realising the charge control needed to prevent excessive MTRs. The economic analysis of the appropriate cost standard to adopt for the calculation of the proposed MTR cap and the design of an appropriate charge control are the subject of the following two sections of this consultation, and that analysis and reasoning are not duplicated below. However, that analysis and reasoning form part of our overall assessment on the appropriateness of a charge control remedy. Therefore, the assessment of the proposed charge control condition, in the light of the legal tests for remedies, is presented at the end of Section 8 rather than here.

Rationale for smaller MCPs

5.100 As noted earlier, after our 2011 market review we did not impose a charge control on smaller MCPs. We considered that a price transparency obligation and a requirement to provide network access on fair and reasonable terms and conditions including charges (supplemented with guidance on our interpretation of "fair and reasonable" in relation to MTRs) were likely to be sufficient to limit the MTRs of newer and smaller MCPs. We considered that this approach was proportionate to the market size of smaller MCPs.

5.101 The 2011 F&R guidance we provided in April 2011, on how we would resolve disputes over MTRs, said that the starting point for setting F&R MTRs should be the MTR cap applied to the four largest MCPs by Ofcom by means of the formal charge control condition (the 'benchmark MTR'). We said that MTRs above the benchmark MTR were only likely to be F&R in "exceptional" cases where the MCP could demonstrate that three conditions were satisfied:

- charging an MTR equal to the benchmark MTR would deny it recovery of its actual costs of providing MCT,
- its actual costs of providing MCT were efficiently incurred, and
- charging a higher MTR than the benchmark MTR would be offset by consumer benefits, which might include lower overall end-to-end costs (not just in particular cases but in general for calls to the terminating MCP's network) or other benefits to calling parties, related, for example, to the quality of the service provided.

5.102 In the 2011 F&R guidance we discussed the position of smaller MCPs who use UK mobile numbers to terminate 100% of their inbound traffic using "over the top" (OTT) means.[159] In our 2011 F&R guidance we referred to these smaller MCPs as "100% OTT MCPs". This terminology may now create confusion because in Section 3 we have discussed 'pure-OTT' services in our market definition of MCT services (by this we mean services provided by MCPs without the use of mobile numbers). Therefore, we now refer to MCPs using OTT means to terminate calls to their mobile numbers as *asset-light MCPs*. By this we mean that these are MCPs who provide MCT without operating the full technological infrastructure employed by traditional MCPs, such as the four largest MCPs. Asset-light MCPs would not operate, or directly incur the costs of operating, a radio access network. In relation to those asset-light MCPs, in our 2011 F&R guidance we said we would take the cap applied to fixed call termination provided by BT (the "benchmark FTR') as an appropriate starting point for establishing F&R MTRs because we considered that their costs were likely to be more comparable to the costs of switching a fixed call.

5.103 When we decided against imposing a charge control on smaller MCPs we considered that the obligation to provide network access on fair and reasonable terms and conditions, including charges, and our proposed guidance (with the possibility of dispute resolution) would provide sufficient controls on the levels of MTRs charged by smaller MCPs.[160] Our intention was to achieve the benefits of a de facto symmetry in the MTRs of all MCPs without subjecting smaller MCPs to a charge control condition. Our expectation was that, as a result of the imposition of the F&R condition and the publication of the 2011 F&R guidance, the vast majority of

[159] This means an MCP that provides MCT exclusively without operating a radio access network itself or otherwise indirectly incurring radio access network (RAN)-related costs.
[160] Paragraphs 6.22 and 6.88 of the March 2011 Statement.

MCPs would charge MTRs no higher than the benchmark MTR. But evidence gathered by us recently shows that many smaller MCPs have been charging MTRs that are above – in a number of cases, far above – the benchmark MTR.

5.104 Ofcom opened an own-initiative enforcement programme in October 2013 to determine if those MCPs who were notified as having SMP in 2011 were acting in accordance with our 2011 F&R guidance.[161] The evidence gathered for the enforcement programme suggested that about half of the smaller MCPs who were designated in 2011 as having SMP have been charging above the benchmark MTR, with about 30% charging 10ppm or more.[162]

5.105 We have also gathered evidence in relation to the MCPs who began offering MCT after the March 2011 Statement. This evidence suggests that a significant number of them charge above the benchmark MTR (with about half of those charging 10ppm or more – see Section 4 for more details).

5.106 Smaller MCPs accounted for about 5% of total voice MCT minutes in 2012/13. Based on information received from MCPs during Q3/Q4 of 2013/14, in response to formal information requests from Ofcom, we estimate that smaller MCPs' total MCT revenues accounted for 5.1% of total MCT revenues, and MTRs set above the benchmark represented about 4.5% of total MCT revenues, or about £19.8m in 2013/14.

5.107 Our findings above suggest that the F&R condition and F&R guidance have not been effective in themselves in encouraging all MCPs designated with SMP in March 2011 to charge symmetric MTRs. Similarly, they have not been effective in encouraging new entrant MCPs providing MCT after March 2011 to charge symmetric MTRs.

Regulatory options for smaller MCPs

5.108 In determining how we can best address the harm caused by smaller MCPs' exertion of SMP in their own MCT markets, which we discussed earlier in this section, we have analysed two options for the period 2015 to 2018:

- **Option A**: We impose a charge control on all MCPs found to have SMP; and
- **Option B**: As now, we regulate smaller MCPs' MTRs by requiring them to be F&R while imposing a charge control on the four largest MCPs only.

5.109 In the following paragraphs we assess these options against the following: degree of regulatory certainty, deterrent effect against high MTRs, consumer harm, compliance costs for MCPs, ease of enforcement with respect to non-compliance, and the flexibility for us to allow MTRs above the efficient-cost benchmark or enforce them below the benchmark rate.

Regulatory certainty and deterrent effect

5.110 A charge control would present both buyers and providers of MCT with greater clarity and regulatory certainty about permissible MTRs than an obligation to charge fair and reasonable MTRs (supplemented with guidance) in that there would be no flexibility to charge above the cap. We consider that, from this, it follows that Option A is likely

[161] Further details at http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/open-cases/all-open-cases/cw_01115/.
[162] [✂]

to have a greater deterrent effect against charging MTRs above the cap set by Ofcom and thus, all else being equal, bring about greater compliance.

Consumer harm

5.111 If smaller MCPs were to charge MTRs higher than their efficiently incurred costs then a situation of asymmetric MTRs is more likely to arise. Indeed, in a number of cases in the recent past, smaller MCPs have charged higher MTRs than the four largest MCPs and originating CPs have typically responded by (i) excluding calls which incur higher MTRs from call bundles and (ii) charging consumers higher retail prices. Originating CPs' prices for calls to numbers operated by such smaller MCPs have varied, but have typically been higher than the prices for other calls by a margin greater than the additional cost of above-benchmark MTRs. This means that the consumer impact could be several times more than the cumulative revenue earned from higher MTRs. This may lead to consumer harm, in particular:

- **Bill shock:** In many cases consumers will be unaware of the higher prices of calling such excluded numbers. Recent Ofcom research found that a small percentage of mobile monthly contract consumers have experienced bill shock due to calls to numbers not included in their allowances.[163] This was the fourth-most complained about type of bill shock among mobile consumers.

- **Reduced calls to these numbers:** In some cases consumers are aware of the higher prices of calling such numbers – perhaps because they receive a pre-call announcement to that effect on dialling such a number or due to a past experience of bill shock caused by calling an excluded number. However, this may then lead to consumers being deterred from calling these numbers or rationing their calls to such numbers, leading to economic inefficiency (similar to that described in paragraphs 5.23-5.24).

- **Uneven playing field:** Finally, smaller MCPs charging such higher prices may use this revenue to fund their retail business, giving them an unfair advantage over other MCPs, thus distorting competition.

Compliance costs and ease of enforcement

5.112 In the event of apparent non-compliance, enforcement action by us would be needed under either option. However, it is comparatively easier and swifter for us to enforce compliance with a specific charge, such as one set by a charge control, than with a concept such as F&R. We consider that this also aids regulatory certainty for CPs.

5.113 We recognise that a charge control is more intrusive than the F&R approach. However, in terms of compliance costs, a simple charge control of the type we envisage (i.e. a charge control that sets a flat rate cap but does not impose additional obligations such as periodic compliance calculation and reporting) would not necessarily be more burdensome to comply with.

[163] In 2013 17% of the 3% of survey respondents who said they experienced unexpectedly high bills said this was due to mobile numbers not included in their call allowances. See slide 30 of Ofcom, *'Bill Shock' in the contract mobile phone market*, online research report, November 2013. http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/bill-shock/Ofcom-Billshock-2013.pdf.

Flexibility to reflect costs above or below the benchmark rate

5.114 Unlike the F&R approach, a charge control would not allow MCPs to charge above the flat rate cap. They would therefore not benefit from the flexibility provided by the 2011 F&R guidance to demonstrate that MTRs above the benchmark are F&R, subject to satisfaction of the criteria set out in the 2011 F&R guidance,[164] namely that:

- charging a MTR equal to the benchmark MTR would deny it recovery of its actual costs of providing MCT;
- its actual costs of providing MCT are efficiently incurred; and
- charging a higher MTR than the benchmark MTR would be offset by consumer benefits, which might include lower overall end-to-end costs (not just in particular cases but in general for calls to the terminating MCP's network) or other benefits to calling parties related, for example, to the quality of the service provided.

5.115 Prior to our March 2011 Statement, we determined two disputes concerning smaller MCPs' MTRs and in both cases we said that MTRs should be at the benchmark rate (see MCom vs. T-Mobile[165] and Stour Marine vs. O2[166]). Since our 2011 F&R guidance was introduced, Ofcom has not determined any dispute in relation to the MTRs set by smaller MCPs.

5.116 Our current judgement is that there is not likely to be much, if any, consumer gain from the flexibility to set MTRs above the benchmark MTR as we consider that the number of instances where the criteria set out in our 2011 F&R guidance would be satisfied is likely to be very low, if any. In particular, it seems very likely that the level of efficiently incurred cost is *at most* the level of cost incurred by the four largest MCPs (see Section 7). The likelihood of offsetting consumer benefits, particularly for calling parties, also appears very unlikely.

5.117 Even if there were cases where some of the criteria were satisfied, the potential consumer benefit, if any, arising in such circumstances is, in our view, likely to be small compared to the consumer harm resulting from the levels, and the number of cases, of MTRs above the benchmark that we have observed under the current regulatory rules.

5.118 A charge control approach would also limit our ability to enforce charges below the benchmark rate where MCPs, such as asset-light MCPs, have efficiently incurred costs lower than this level. Allowing MTRs above cost can potentially result in economic inefficiency, in particular, allocative inefficiency. However, we consider the scale of such economic inefficiency is very limited, particularly compared to the consumer harm resulting from the levels, and the number of cases of excessive MTRs we have observed in MCT markets. The reduced F&R MTR of asset-light MCPs would fall somewhere between the benchmark MTR (currently 0.845ppm) and the benchmark FTR (currently 0.033ppm)[167], which would suggest a maximum possible reduction in MTR of 0.812ppm. By contrast, as noted in Section 4, at

[164] Paragraph A1.22 of the 2011 F&R guidance.
[165] See footnote 131.
[166] Ofcom, Determination to resolve a dispute between Stour Marine Ltd and O2 about termination rates, final determination, 11 June 2010.
http://stakeholders.ofcom.org.uk/consultations/draft_deter_stour_marine_o2/final_determination/
[167] Table 1.1, page 4 of our 2013 FNMR Statement.

present a significant proportion of MCPs charge above the benchmark MTR, with some charging 10ppm or more. Imposing a single charge control on all MCPs would require them to reduce their MTRs to the benchmark MTR. In absolute terms, the reductions in MTRs that would be achieved would be much greater than 0.812ppm in most cases.

5.119 We also believe that the FTR benchmark may not be appropriate in many instances and that it would be difficult for us to determine whether or not a particular MCP should be treated as an asset-light MCP. Firstly, smaller MCPs operate a variety of different business models, using different network technologies and structures, which will result in a variety of costs. For example, MCPs can use VoIP applications over WiFi, VoIP applications over a 2G/3G data connection of another MCP or they can forward their inbound calls to customers' other numbers, thus terminating calls over a fixed network or an international fixed/mobile network. In addition, the business model and/or network technology used may change over time and what could be initially considered an asset-light provider may start offering mobile voice calls by more traditional means, e.g. by means of an MVNO contract or by deploying its own radio access network. We also note that calls to mobile numbers allocated to asset-light MCPs represent a very small proportion of total mobile calls.[168] For this market review period, we consider it would be unduly resource-intensive and disproportionate to the likely benefits for consumers to examine the efficient costs of all asset-light MCPs.

Overall assessment for smaller MCPs

5.120 We note that, in their responses to our workshop with industry in October 2013,[169] a few stakeholders commented on our approach to remedies in MCT markets.[170] Specifically, EE and Telefónica argued that the F&R approach was not working well due to a number of smaller MCPs continuing to charge above the benchmark MTR, and they called on Ofcom to impose a charge control on all MCPs found to have SMP following the current review. H3G also advised us that it would welcome a charge control being imposed in relation to all mobile number ranges, regardless of the size of the terminating MCP.[171]

5.121 We recognise that there are advantages and disadvantages from both options, as discussed above. However, on balance, on the basis of the evidence and the reasoning presented above, our preferred option is Option A because we consider that imposing a charge control on all MCPs who have SMP would be more effective than the F&R approach in remedying the harm caused by excessive MTRs. In particular, we consider that imposing a charge control on all MCPs with SMP would be more effective than the F&R approach in remedying the harm caused by MTRs set above the efficient cost benchmark. In particular, we consider that the benefits of increased regulatory certainty and the increased deterrent effect against excessive MTRs would outweigh any potential disadvantage outlined above.

[168] Smaller MCPs account for 5% of the total MCT volume; the MCT traffic generated by asset-light MCPs would be lower than that.
[169] Ofcom's slides are available here: http://stakeholders.ofcom.org.uk/consultations/mobilecallterm/workshop2015-2018/.
[170] Available at http://stakeholders.ofcom.org.uk/telecoms/policy/mobile-policy/mobile-call-termination-review-2015-2018/responses/
[171] Email from Mark Falcon (H3G) to Brian Potterill (Ofcom), 11 February 2014, 17.22.

5.122 We note also that our proposal to impose a charge control on all MCPs with SMP would be closer to the EC's preference for mandated symmetric reciprocal termination rates.[172]

Current design of SMP condition

5.123 The design of the charge control imposed by our March 2011 Statement is discussed in detail in Section 8.

Alternative forms of MTR regulation

5.124 As part of the consultation process in the previous MCT market review, we also considered alternatives to a "traditional" charge control, including de-regulation (i.e. whether regulation of MTRs was necessary at all), capacity-based charges (CBC), mandated fixed-mobile termination rate reciprocity and mandated "bill and keep" (B&K).[173] We explained why we did not consider these to be appropriate.[174]

5.125 Specifically, with respect to CBC – an approach under which MTRs would be charged for based on a measure of the capacity required for terminating traffic – we said that this approach to a charge control would be difficult to implement and complex and contentious for CPs. For example, it would be difficult to choose an industry-wide capacity measure (in particular, whether the capacity increments were likely to favour larger CPs over smaller CPs). Also, the adoption of a CBC approach would not remove the need for MTRs to be set at some measure of cost. Therefore, we concluded that the difficulties associated with this approach were likely to outweigh the benefits.[175]

5.126 With respect to mandated FTR-MTR reciprocity – an approach under which termination rates would be set at the same rate for all terminating traffic (whether fixed or mobile) – we noted that a single termination rate for both fixed- and mobile-terminated calls would provide industry with a simple and clear regulatory regime, leading to a decrease in the regulatory burden. But we also said that identifying a single 'efficient' benchmark would be very challenging. We noted that a significant problem with this approach was that the underlying costs of fixed and mobile termination remained different. Therefore, mandating reciprocal termination rates (at the FTR level) would be likely to result in MTRs below cost.[176]

5.127 With respect to mandated B&K – an approach which would effectively set termination rates to zero, we noted that such a regime would offer simplicity and transparency. In its response to our October 2013 stakeholder workshop, H3G noted that, while it supported the use of LRIC for the 2015-18 MTR charge control, it may be appropriate for Ofcom to consider if alternative approaches, namely B&K and Called Party Pays, might be appropriate for the future regulation of MTRs.[177] In its submission to Ofcom, BT cited BEREC's June 2010 report "Next Generation Networks Future Charging mechanisms / Long-term termination issues" and BEREC's 2012 report "An assessment of IP interconnection in the context of Net Neutrality" to note that BEREC

[172] See, for example, the Explanatory Note to the 2009 EC Recommendation, in particular section 3.
[173] Section 6 of Ofcom, *Wholesale mobile voice call termination, Preliminary consultation on future* regulation, consultation, 20 May 2009. http://stakeholders.ofcom.org.uk/binaries/consultations/mobilecallterm/summary/mobile_call_term.pdf
[174] Section 7 of the April 2010 Consultation.
[175] Paragraphs 7.19-7.26 of the April 2010 Consultation.
[176] Paragraphs 7.33-7.39 of the April 2010 Consultation.
[177] Available at http://stakeholders.ofcom.org.uk/telecoms/policy/mobile-policy/mobile-call-termination-review-2015-2018/responses/.

found that “B&K is intrinsically better at internalising call and network externalities” and “B&K leads to better consumption patterns from incentivising flat-rate offers driving higher usage”.

5.128 However, mandated B&K is unlikely to set prices at an efficient level, unless there are material un-internalised call externalities. As noted in the April 2010 Consultation, we are not aware of any empirical work systematically assessing the size of call externalities or the degree of possible internalisation. Without sound evidence on the strength of uninternalised call externalities, or evidence of material transactions costs, against low incremental costs of termination, it is difficult to make a compelling case for mandated B&K. In the April 2010 Consultation, we also noted that mandated B&K may not be compatible with the EC framework relevant to the regulation of termination rates as it could require MCPs to provide a service below cost. Therefore, we rejected mandated B&K as an option for regulating MCT in the previous review.[178]

5.129 In summary, and for the same reasons set out above, we remain of the view set out in the March 2011 Statement that adopting an alternative form of charge control, including mandated B&K, would be neither feasible nor appropriate as an approach to MTR regulation.

5.130 In the next section we therefore restrict our assessment to two alternative costs standards (LRIC and LRIC+) for a charge control which takes the traditional form of a cost-based cap on allowed MTRs.

Legal tests

5.131 The satisfaction of the legal tests by our proposed charge control condition is discussed in Section 8 in paragraphs 8.84-8.96 after we have presented the design of our proposed charge control condition. (The proposed charge control condition is set out in Part 2 of Schedule 2 in Annex 6 (Condition M3)).

Question 5.6: Do you agree that our proposal to impose a charge control on the four largest MCPs is appropriate? If not, please explain why.

Question 5.7: Do you agree that our proposal to impose a charge control on all other MCPs with SMP is also appropriate? If not, please explain why.

Conclusion on proposed remedies

5.132 In conclusion, our proposed approach with respect to the remedying of the problems that we have identified in the MCT markets is as follows:

[178] Paragraphs 7.40-7.57 of the April 2010 Consultation.

Table 10: Proposed remedies for MCT markets (April 2015-March 2018) – under Option A for the charge control

SMP Condition	Description	Applied to
M1	Network access obligation (on reasonable request on fair and reasonable terms & conditions)	All MCPs
M2	No undue discrimination obligation	Four largest MCPs
M3	Charge control (set using LRIC cost-standard)	All MCPs
M4	Price transparency obligation	All MCPs

5.133 For completeness we note that although an MCP that begins providing MCT after our statement is published would not be subject to SMP conditions, if an interconnecting CP were unable to agree terms of access with such an MCP then it could refer a dispute to us for resolution under section 185 of the Act. While we would consider each case on its facts, as under the current 2011 F&R guidance, in general we are likely to consider that the regulated cap under the proposed charge control is the appropriate starting point for MTRs charged by new entrant MCPs.

Section 6

Cost standard for the proposed MTR charge controls

Introduction

6.1 In Section 5, we set out our proposal that we should regulate MTRs by imposing a charge control obligation on all MCPs designated as having SMP. We also proposed, in Section 5, that potential alternatives to a charge control based on the LRIC cost standard should be restricted to a charge control based on LRIC+, as we did in the March 2011 Statement. An MTR cap set at LRIC allows only the recovery of the variable and fixed costs incremental to the provision of the wholesale call termination service to third-parties, whereas LRIC+ also allows the recovery of some costs which are common to other services, such as call origination, data services and SMS.

6.2 In this section, we assess these two options (LRIC and LRIC+). Together with the relevant annexes, this section represents our impact assessment on the appropriate cost standard for MTRs.

6.3 This section is structured as follows:

- We first summarise our proposed view.
- We summarise the regulatory framework, including the legal framework and previous regulatory decisions which are relevant to the choice of the cost standard.
- We summarise stakeholder comments received in response to our October 2013 workshop.
- We introduce the analytical framework used for assessing the two cost standards, which consists of the following four criteria:
  - economic efficiency – both static (allocative) and dynamic efficiency;
  - competitive effects;
  - distributional effects on “vulnerable” consumers; and
  - commercial and regulatory consequences.
- Finally, we assess the two options (LRIC and LRIC+) using the above framework taking account of recent evidence including market developments since 2011.

Summary of proposals for the cost standard

6.4 Our provisional conclusion is that LRIC remains the most appropriate cost standard.

6.5 A key factor in reaching this conclusion is that we believe an MTR cap at LRIC is more likely to encourage effective competition, which, all else equal, will result in

improved economic efficiency. It does not appear to us that consideration of the other criteria provide any significant counter-arguments for a move to LRIC+. In particular:

- considering the impact of LRIC and LRIC+ on economic efficiency, over and above the effect on competition, does not provide any additional arguments in favour of LRIC or LRIC+;
- while there are some theoretical grounds to suggest that LRIC+ could have a preferential effect on certain "vulnerable" consumers, the evidence does not suggest this is at all significant; and
- we do not consider that regulatory or commercial impact considerations are particularly decisive in this case, but we note that continuing with LRIC will involve less regulatory and commercial change for industry.

6.6 We also note that this is in line with the 2009 EC Recommendation in favour of LRIC and consistent with our recent decision to cap FTRs at LRIC (over the period 2014 to 2016).

Regulatory Framework

6.7 As noted above, the 2009 EC Recommendation recommends that NRAs adopt a LRIC standard for the regulation of termination rates (as opposed to an approach based on LRIC+).

6.8 In 2011, after extensive analysis and consultation, we decided to move from a LRIC+ to a LRIC cost standard in our regulation of MCT. That decision, which was subsequently upheld on appeal to the Competition Appeal Tribunal (CAT) and Court of Appeal, had the effect of lowering, on a glide path, the price ceiling from 4.180ppm (for Vodafone/Telefónica/EE, 4.480 ppm for H3G) in 2010/11 to 0.670ppm in 2014/15[179], leading therefore to a reduction of over 80% in that period.

6.9 A LRIC cost standard is also consistent with the approach that we have recently taken in relation to Fixed Termination Rates (FTRs) in our 2013 FNMR Statement.

6.10 Among the main European NRAs which started reviews of wholesale MCT after the 2009 EC Recommendation was published, almost all have adopted, or will soon adopt, LRIC-based MTRs.[180]

[179] This was the rate set on appeal by the CC in its 2012 Determination (replacing the rate of 0.690ppm initially imposed by Ofcom in the March 2011 Statement). The CC also reduced the length of the glide path imposed by Ofcom in the March 2011 Statement from 4 years to 3 years, with LRIC levels to be fully implemented by 1 April 2013 (instead of 1 April 2014 as initially imposed by Ofcom).

[180] The main exceptions are Germany (BNetzA has decided not to implement pure LRIC. Since Dec. 1, 2012 MTRs are based on a new Bottom Up - LRIC model, which is largely based on the Commission recommendation, but not on pure LRIC.), Ireland (undecided) and The Netherlands (The Dutch trade and industry appeals tribunal annulled on August 27, 2013 the pure LRIC FTRs and MTRs adopted. The tribunal replaced them with rates based on LRIC+, into force from September 1, 2013.). See Cullen International, *Mobile termination rates - Moving towards pure LRIC?*, 27 February 2014. http://www.cullen-international.com/product/documents/CTTEEU20140049

Stakeholder responses

Responses to the October 2013 and January 2014 workshops

6.11 At the stakeholder workshop held in October 2013 we explained our preliminary view that we should maintain the same framework used to assess LRIC as we used in 2011 and that, under this framework, LRIC was still likely to be the most appropriate cost standard. We invited views from stakeholders on this.

6.12 H3G agreed that LRIC continues to be the relevant cost standard for the 2015-2018 charge control.[181] It argued that the effect on competition between CPs (in particular barriers to entry and expansion by smaller CPs) is the most important factor in the choice of the cost standard. H3G said that LRIC+ MTRs have the potential to create competitive distortions between MCPs with asymmetric market shares and traffic flows, to the disadvantage of smaller networks. In particular, it argued, LRIC+ raises the marginal and average cost of termination (with a greater impact on smaller networks which have a higher proportion of off-net outbound calls) and dampens retail price competition. H3G concluded that given the above, the recent CC and CAT decisions (following the appeals to the March 2011 Statement), as well as the 2009 EC Recommendation, LRIC remains the relevant cost standard.

6.13 Telefónica said that the starting point for the choice of cost standard should be the adoption of the analytical framework that came through the 2012 CC Determination. Telefónica added that the appropriate cost standard should be determined by reference to the application of that framework to relevant empirical data (e.g. the extent to which the retail price of fixed to mobile calls have, in fact, fallen following the reduction in MTRs).

6.14 Telefónica also said that the choice of cost standard should be based on UK market conditions and that it was not obvious that the cost standard used in other Member States is particularly relevant. It noted that, in any event, MTRs in the UK are substantially lower than the average European rate.[182]

6.15 EE submitted that it has consistently set out its views (for example in the previous MCT review and the associated appeals, as well in responding to the 2013 FNMR) that the appropriate cost benchmark from legal, commercial and economic perspectives remains LRIC+.[183] EE also considers that there is value in regulatory consistency both between different telecoms sectors and over time and that Ofcom's obligations of technology neutrality would accordingly suggest that the current market review period is one in which "the focus should be on stable and sustainable mobile regulation, rather than on any further aggressive regulatory measures". EE added that, given significant investment will be made by all the mobile networks in 4G technology during the next market review period, regulatory certainty and stability will be vital over this period. Therefore, it said, it can see significant value in stable MTRs which are not subject to any significant change over this period. In response to the January 2014 workshop, EE reiterated that LRIC would lead to higher pre-pay tariffs, and provided evidence that it believed supported this view. It also noted that several international authorities have not used LRIC.[184]

[181] H3G response, Section 2, page 4.
[182] Telefónica response, page 1, first bullet point.
[183] EE response, page 8.
[184] EE noted that, in December 2011, the Australian regulator, the ACCC rejected changing its pricing approach for mobile termination from LRIC+ to LRIC; in July 2013, the German regulator BNetzA

6.16 BT submitted that the cost model should be based on the LRIC of external call termination on a 4G network.[185] It considered the general principle of recovering bottleneck costs at the retail rather than the wholesale level is generally accepted.

6.17 Virgin Media submitted that, although Ofcom are consulting on MTRs in this review, careful consideration will need to be given to the approach taken in the 2013 FNMR which imposed regulation on fixed termination rates (FTRs) to ensure that there is a competitive level playing field between fixed and mobile CPs. As discussed in paragraph 6.9 above, the 2013 FNMR set FTRs at LRIC.

Framework for assessment

6.18 In assessing the appropriate cost standard for the proposed MTR charge control, our framework is based on the following four criteria:

- Economic efficiency, including both:
  - Static efficiency – with a particular focus on allocative efficiency which is concerned with whether the allocation of resources is optimal, taking into account the cost of supplying the service in question as well as demand (i.e. consumer preferences) for these services;
  - Dynamic efficiency – dynamic efficiency is concerned with whether firms have the correct incentives to invest and innovate;
- Competitive effects –the analysis of competitive effects seeks to identify whether one or other cost standard is more likely to encourage competition. Increased competition generally promotes both static and dynamic efficiency;
- Distributional effects on “vulnerable” consumers;.
- Commercial and regulatory consequences: in particular whether one or other of the cost standards could have unintended commercial and/or regulatory consequences.

6.19 These are the same criteria we used in the March 2011 Statement. This was also the framework that the CC followed in its 2012 Determination. We consider that this framework remains appropriate for our assessment in this market review. We also note that, in response to the October 2013 workshop, Telefónica argued that this is the appropriate framework to consider.

6.20 In the remainder of this chapter, we assess two cost standards, LRIC and LRIC+, against each of the four criteria. In so doing, we consider both theoretical arguments and empirical evidence. In particular we draw on the empirical evidence arising from the development of the market since 2011. Prior to 2011, MTRs were set using a LRIC+ cost standard. In 2011, we switched to a LRIC regime for MTRs.[186] The

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confirmed its decision to set termination rates at ‘LRIC+’ from 2012-2014 despite a Recommendation from the European Commission under the Article 7 procedure to adopt LRIC; and in August 2013, the Dutch Trade and Industry Appeals Tribunal rejected the Dutch regulator’s proposal to set MTRs on the basis of LRIC because LRIC would be a disproportionate and excessive remedy to the identified problem of significant market power, and that LRIC+ was considered to be effective.

[185] BT response, Section “Modelling of costs”, page 9.

[186] The change was phased in using a glide path, with LRIC levels to be fully implemented by 1 April 2014, which, as discussed earlier, the CC/CAT then adjusted on appeal to be 1 April 2013.

market developments that followed provide some indication of the empirical effects of moving to LRIC-based MTRs which can be compared with the pre-2011 evidence under LRIC+ MTRs. However, we cannot establish causality with certainty as the developments will have been affected by a range of other factors such as changes in costs.

Question 6.1: Do you agree that the above framework is the appropriate one? If not, please explain why.

Economic Efficiency: Static efficiency

Introduction

6.21 In this section, we consider the impact of the cost standards on static economic efficiency, and in particular, allocative efficiency. We note that allocative efficiency will also be affected by changes in the level of competition. The impact of the cost standard on competition is dealt with in a separate sub-section and so our aim here is to ascertain the effects on economic efficiency assuming the level of competition to be unchanged.

6.22 We focus on allocative efficiency because the other dimension of static efficiency, productive efficiency (which requires demand to be served at least cost), is less of a concern given the two-sided nature of termination. In particular, assets used to provide termination are also used to provide many other network services including, but not limited to, call origination. Provided that there is effective competition between MCPs at the retail level, this is likely to incentivise MCPs to minimise costs. Furthermore, both LRIC+ and LRIC approaches would involve setting MTRs within a price-cap which delivers incentives for cost minimisation.

6.23 We first consider the economic principles why one or other cost standard might perform better in terms of allocative efficiency. We explain why, on its own, this criterion does not provide a clear answer as to whether a LRIC or LRIC+ cost standard should be preferred.

6.24 We then explain that, in principle, an empirical assessment of the impact of an intervention on allocative efficiency can be informed by considering the impact of changes in MTRs on retail prices, and the consequent impact on ownership and usage. However, this can only be part of the picture since the welfare impacts of changes in prices, ownership and usage depend on complex market interactions.

Economic principles on efficient recovery of common costs

6.25 An allocation of goods or services is said to be allocatively efficient if it is such that consumers' willingness to pay for an additional unit of the service is greater than or equal to the marginal (or incremental) cost of producing that additional unit.

6.26 LRIC is not precisely equivalent to marginal cost (unless the increment is the last chargeable unit consumed), but it is a more appropriate cost standard than marginal cost for the basis of regulatory price setting since marginal cost is likely to be hard to measure and volatile, particularly if measured on a short-run basis or over a small volume increment. LRIC thus produces more stable price signals for efficient consumption and investment.

6.27 However, in practice many firms incur common costs. In particular, in the mobile industry, there are costs which, at a network level, are common to origination, termination and other traffic services, and various non-network costs are also likely to be common (e.g. certain administrative costs). These common costs need to be recovered in some way, either from termination rates, other wholesale services (e.g. wholesale access provided to MVNOs, wholesale voice and data roaming) or from retail services. In the presence of common costs, it is therefore not possible for an MCP to price all services at LRIC. In situations where common costs have to be recovered, one approach to minimising pricing distortions (relative to pricing at incremental cost) is to price discriminate according to the Ramsey pricing principle. Under Ramsey pricing, a multi-product firm would set (or would be required by regulation to set) mark-ups over incremental cost for each service based on the responsiveness of demand to prices. In particular, the mark-up over incremental cost is set in such a way that (a) the most price sensitive consumers (measured by the elasticity of demand) should face the smallest percentage mark-up and the least price sensitive consumers should face the largest percentage mark-up; and (b) the firm just breaks-even (i.e. recovers total costs, including its cost of capital, across all services and volumes).[187]

6.28 However, consistent with our approach in previous MCT reviews, we do not favour a Ramsey pricing approach to the regulation of MCT.[188] This is for the following reasons.

6.29 Ramsey pricing is rarely, if ever, applied in practice as it requires detailed knowledge of the elasticity of demand for each service as well as how price in one market affects demand in others (i.e. the cross-elasticities of demand) and there are significant practical challenges to gathering this elasticity information.[189] Instead, mark-ups over incremental cost have typically followed either the cost allocation rules implied by regulatory cost models (e.g. routing factors) or a simple rule such as an equi-proportional mark-up for each service over incremental cost.

[187] Elasticity of demand measures the percentage change in quantity demanded relative to the percentage price change. A service has a more elastic demand when small changes in price have a larger effect on the demand of that good. The Ramsey pricing rule is based on an inverse price elasticity rule whereby the least elastic service attracts the largest mark-ups and the most elastic service would attract the smallest mark-up. [188] Annex 3, paragraph A3.48 of the March 2011 Statement.

[188] Annex 3, paragraph A3.48 of the March 2011 Statement.

[189] In its 2012 Determination, the CC also argued that the information and computation requirements to calculate optimal (Ramsey) charges are likely to be prohibitive (see footnote 359). In an earlier determination on MCT (in 2002), the CC also concluded that *"there are formidable problems associated with computing correct Ramsey prices."* See: Vodafone, O2, Orange and T-Mobile – Reports on references under section 13 of the Telecommunications Act 1984 on the charges made by Vodafone, O2, Orange and T-Mobile for terminating calls from fixed and mobile networks, Volume 1: Summary and Conclusions, December 2002.
http://www.ofcom.org.uk/static/archive/oftel/publications/mobile/ctm_2003/ctm1.pdf (paragraph 1.6, page 4).
The Explanatory Note to the 2009 EC Recommendation (page 17) also states "there are significant informational requirements associated with accurately identifying such elasticities" and that "even if Ramsey pricing principles were applied to termination rates, there is a significant risk of corresponding (unregulated) retail prices not being set at Ramsey levels and overall welfare being reduced." Finally, both our March 2007 statement (Annex 17, see footnote 71 for link) and March 2011 Statement considered and rejected the use of Ramsey pricing as the basis for setting MTRs including on the grounds of practicability. In the latter Statement (paragraph A3.49 of Annex 3) we came to the view that Ramsey pricing was not a viable option for setting MTRs.

6.30 The complexity of Ramsey pricing for MCT (a wholesale service) is further compounded by the fact that, in practice, MCPs offer not only MCT but also many retail services. MCPs also price these retail services differently for different customer segments. For example, MCPs are able to price discriminate so as to segment customers either by willingness to pay and/or by elasticity of demand. One way of doing this is to offer multiple tariffs, each of which has one or more parts, e.g. a subscription fee plus separate charges for usage. Such tariffs, sometimes referred to as non-linear tariffs, can provide an efficient way to recover common costs, in particular by minimising distortions in subscription and usage levels (relative to what subscription and usage would be if each service were priced at incremental cost). The more efficiently common costs can be recovered from the retail side of the market, the more the Ramsey mark-up on MTRs would be reduced, all else being equal. Thus the existence of non-linear pricing on the retail side of the market may suggest that the optimal MTR is nearer LRIC than the LRIC+ that might be produced from a simple costing rule (such as an equal proportionate mark-up (EPMU) or an allocation based on routing factors). While in theory Ramsey pricing models can be adapted to accommodate non-linear pricing, this further adds to the modelling complexity and such models are likely to be especially difficult to calibrate and prone to spurious accuracy.

6.31 Aside from this, MTRs affect the retail pricing of competitors and, hence, the ability of MCPs to compete with one another (see paragraphs 6.55-6.80). Therefore, the simplified welfare analysis of monopoly regulation and the concerns of cost recovery do not apply in a straightforward manner to the regulation of MCT.

6.32 As noted above, these arguments were discussed in the March 2011 Statement. We came to the view that theoretical arguments do not provide a strong indication of whether LRIC or LRIC+ should be preferred in terms of allocative efficiency.

6.33 The CC also considered at length the issue of the efficient recovery of common costs in its 2012 Determination[190], and concluded that it had seen no arguments to persuade it that considerations regarding the efficient recovery of common costs necessarily pointed in favour of either LRIC or LRIC+ as superior for the setting of regulated MTRs.[191] It acknowledged that there are challenges in drawing implications from simplified economic models in a market which is highly complex and dynamic.

6.34 We are not aware of any new relevant findings in the economic and regulatory literature (since the 2012 CC Determination) that should lead us to change the view we took in the March 2011 Statement on the efficient recovery of common costs, which was consistent with the 2012 CC Determination.

Complex relationship between usage/ownership and allocative efficiency

6.35 As stated above, it is generally the case that allocative efficiency is improved, and consumers are better off, when prices are lowered towards marginal (or incremental) cost, and usage is correspondingly higher. However, as also noted previously, common costs need to be recovered and setting prices for one service at LRIC (in this case MTRs) means common costs need to be recovered elsewhere (i.e. on the retail subscription and origination side of the market).

6.36 Annex 9 presents the empirical evidence on the impact of LRIC and LRIC+ on prices and usage. It is hard, however, to make any strong inferences about allocative

[190] 2012 CC Determination, paragraphs 2.532 - 2.580
[191] 2012 CC Determination, paragraph 2.578

efficiency from these results. This is because, as the CC stressed in its 2012 Determination, given the complexity of the mobile market, the relationship between, on the one hand, mobile ownership and usage and, on the other hand, allocative efficiency is not clear.

6.37 In particular, under LRIC MTRs, it is possible that retail prices set for some customer segments which are net receivers of calls may be higher. Under LRIC, such customer segments earn their MCP less revenue from MTRs than under LRIC+, and MCPs may compensate for this by increasing retail prices. Low use pre-pay customers, in particular, have tended to be net receivers of calls (see paragraph 6.63) and if prices to these potentially price sensitive customers go up, they might reduce consumption of mobile services, or in the extreme stop consuming them altogether, resulting in a decrease in mobile phone ownership.

6.38 However, the CC said that a reduction in mobile ownership, created by a move to LRIC, would not necessarily reduce efficiency. This is because MTRs above LRIC provide a source of funding with which to subsidise retail tariffs. With more termination than outgoing traffic (as would be expected for many pre-pay customers), the value of this subsidy becomes more significant relative to the total costs of serving the customer. This could lead to a situation where MCPs may acquire certain subscribers who value the subscription less than the cost incurred by the MCP in providing that subscription.[192] The acquisition of such customers would only be socially efficient if the external benefits to others, such as the benefits that others derive from being able to call that customer, were at least as great as the subsidy received by the pre-pay consumer. If this were not the case, then losing them would not reduce (and would even increase) allocative efficiency. The CC did not see any evidence that external benefits were large relative to the consumer's own benefit and referred to the fact that it had previously ruled against an Ofcom decision to allow a mark-up on MTRs which reflected such externalities. The CC said that this issue was compounded by a model of competition that encourages frequent (subsidized) handset upgrades. Thus, while the CC did not dispute the fact that the loss of certain consumers may reduce efficiency, it argued that the loss of other consumers could increase efficiency, which would partly or completely mitigate the efficiency loss from the former group.[193]

6.39 On the other hand, MTRs at LRIC reduce the costs of serving customer segments which are net makers of calls. The reduced termination payments may allow MCPs to offer better deals at the retail level to segments which are net makers of calls. In the previous review we considered post-pay customers were likely to be net makers of calls (or that outgoing and incoming calls were in balance), although it is not clear whether or not this still holds (see paragraph 6.63).

6.40 This may mean either lower prices for out of bundle calls, and a higher volume of such calls, or larger bundles. The CC considered that while an increase in the volume of calls made outside a bundle would likely increase welfare, the same is not necessarily true for calls made within a bundle of inclusive minutes. This is because, it argued, out-of-bundle prices are set above costs, implying that consumers making these calls value them more than their costs. In contrast, consumers face a zero marginal price for in-bundle calls, meaning that they might place some calls because

[192] 2012 CC Determination, paragraph 2.800-2.809
[193] 2012 CC Determination, paragraph 2.808

they are not charged at the margin for them but not necessarily because they value these calls more than their cost.[194]

6.41 This suggests that not only are the theoretical implications from setting MTRs at LRIC in terms of allocative efficiency hard to determine precisely, but so too is the implication of the empirical evidence. Nevertheless, in Annex 9 we present the empirical outcomes to date in terms of retail pricing, subscription and usage, not least because some of these implications are relevant for the assessment in relation to other criteria in our analytical framework (e.g. analysis of impacts on vulnerable customers).

Provisional conclusion on Allocative Efficiency

6.42 In relation to allocative efficiency, we consider that this criterion it is inconclusive as to whether LRIC or LRIC+ is preferable.

6.43 We have also reviewed the empirical evidence on the impact of moving from LRIC+ to LRIC from 2011 (see Annex 9). However, it is also difficult to draw any further conclusions on allocative efficiency from these results given that, as emphasised by the CC, the relationship between prices, subscription, usage and ultimately allocative efficiency is not particularly clear for these markets.

6.44 We believe that allocative efficiency considerations do not provide any strong reason to prefer one cost standard over another, as was also the case in the previous market review.

Question 6.2: Do you agree with our analysis and views on allocative efficiency? If not, please explain why.

Economic Efficiency: Dynamic Efficiency

6.45 Whereas static efficiency is concerned with the optimal production and consumption of currently available goods and services, dynamic efficiency is concerned with the levels of investment and innovation which, over time, act to reduce costs or improve quality for existing services, and/or introduce new products and services in an optimal way.[195]

6.46 Increasing competition generally acts to increase dynamic efficiency by encouraging firms to invest and innovate in order to maximise profits. The impact of the cost standard on competition is considered in the next sub-section. Here we consider whether there are other reasons why the cost standard might impact on dynamic efficiency.

6.47 LRIC+ MTRs generate higher net termination revenues for the mobile industry compared to LRIC as they increase payments from non-mobile CPs (e.g. UK fixed CPs and overseas CPs – whether fixed or mobile). In the first year of the next charge control period, i.e. 2015/2016, we estimate the difference in net termination revenues between LRIC+ and LRIC as c. £54m. If traffic volumes were to remain constant, the

[194] 2012 CC Determination, paragraphs 2.810-2.811
[195] By optimal we mean that the expected cost of the investment is less than the expected benefits.

estimated difference gets smaller in the following years, i.e. c. £48m in 2016/17 and c. £42m 2017/2018.[196]

6.48 However, net termination revenues from non-mobile CPs would not lead to differences in the overall profits between LRIC and LRIC+ if the waterbed effect was complete. This is because under a complete waterbed effect, any shortfall in termination revenues and hence profits under LRIC MTRs would be fully recovered from retail customers. However, because we expect the waterbed effect to be incomplete, part of the shortfall would not be recovered from retail consumers.

6.49 Even if MCPs incurred lower revenues as a result of the choice of LRIC MTRs (relative to LRIC+), we do not expect this difference to adversely affect the efficient level of investment and innovation in the mobile sector for several reasons.

- First, we do not consider that higher returns on the termination-side of the market are necessary in order to provide MCPs with the incentive to invest in mobile services. Provided that MCPs have the opportunity to make returns at least as great as their forward looking cost of capital, we consider that they will have efficient investment incentives. The MCT model from which we obtain the projected LRIC of MCT is designed to provide overall cost recovery in net present value terms, based on the cost of capital for an average efficient MCP.

- Second, where there are investment opportunities with positive net present value, we would expect MCPs to have the opportunity to finance those investments (for example, via access to capital markets). MCPs' incentives to invest would therefore be affected only if capital markets are imperfect or are closed to MCPs (which we consider is not the case).

- Third, in the event that MCPs have (for whatever reason) a preference for self-financing, it is not clear that the higher revenue and profit received under LRIC+ would be used to fund investment and innovation. For example, the revenue could be used for marketing purposes in order to protect or increase their market share. Marketing activities are not necessarily beneficial to consumers (in particular those that involve just competing for economic rents rather than providing better information to consumers or expanding the total market).

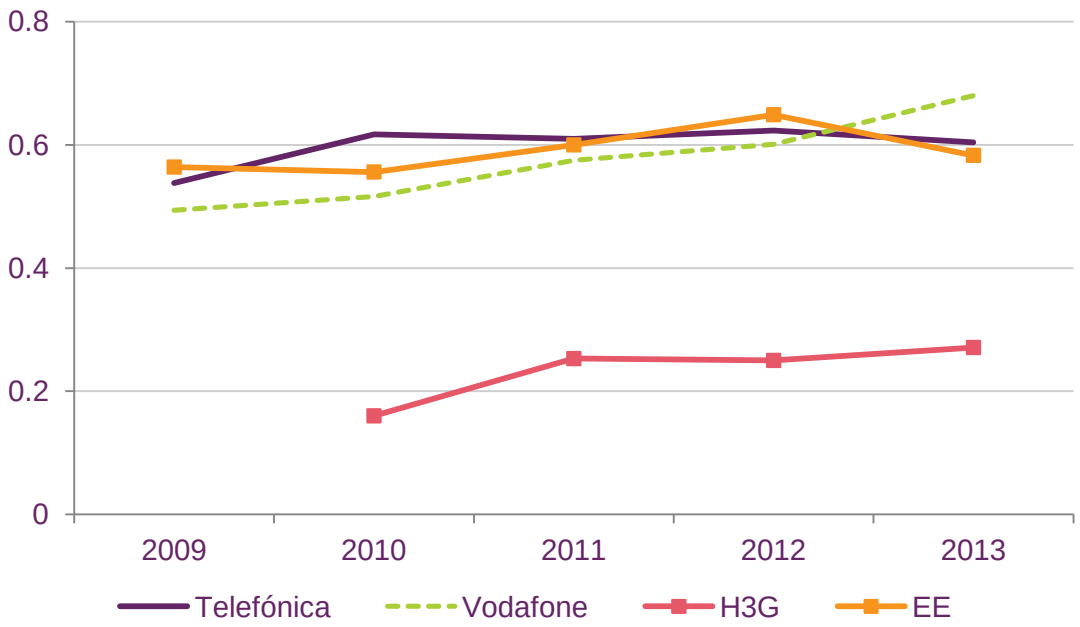
- Fourth, even if incentives to invest and innovate would potentially be affected under LRIC MTRs, we believe this is unlikely to be a significant effect. This is because, based on current traffic volumes, the difference in net termination revenues to MCPs between LRIC+ and LRIC (e.g. c. £54m 2015/16) is insignificant (i.e. much less than 1%) in comparison to the size of the mobile industry of £15.6 billion of revenue in 2013.[197] The difference is also very small when compared to c. £2bn capex (an approximately 3% effect) and c. £4.5bn EBITDA (an approximately 1% effect) - see Figure 5 and Figure 7 for the capex and EBITDA levels and trends since 2009.[198]

[196] Figures obtained by considering 11bn net terminated minutes and LRIC and LRIC+ figures from Table 14 and Table 15 in Section 7.
[197] Telecommunications market data tables Q4 2013, see footnote 4.
[198] Furthermore, any waterbed effect would further moderate the net effect on MCP revenues and profits. For ease of exposition, these calculations of net revenue effects relative to industry revenues and profits are based on the latest revenues and profits, although we recognise that these effects could be reduced if there is a waterbed effect or potentially accentuated if there is a change in competitive intensity.

6.50 Taking into account the above, we consider that while LRIC+ might generate more revenue than LRIC for the mobile industry as a whole, it is unlikely to lead to significantly greater investment incentives or more efficient investment overall. Our provisional conclusion is that LRIC+ is unlikely to generate any significant advantage in relation to dynamic efficiency, relative to LRIC. Conversely, as we set out below, we consider that LRIC is likely to lead to more competition in the retail market and this, in turn, could lead to more investment and innovation.

6.51 This is consistent with the evidence obtained since the previous review, when the difference between LRIC and LRIC+ was more significant. As shown in Figure 5 below, capex levels are at least as high in 2012 and 2013 as in the years before for the four largest MCPs.[199]

Figure 5: Capex by MCP 2008-2013 (£bn)

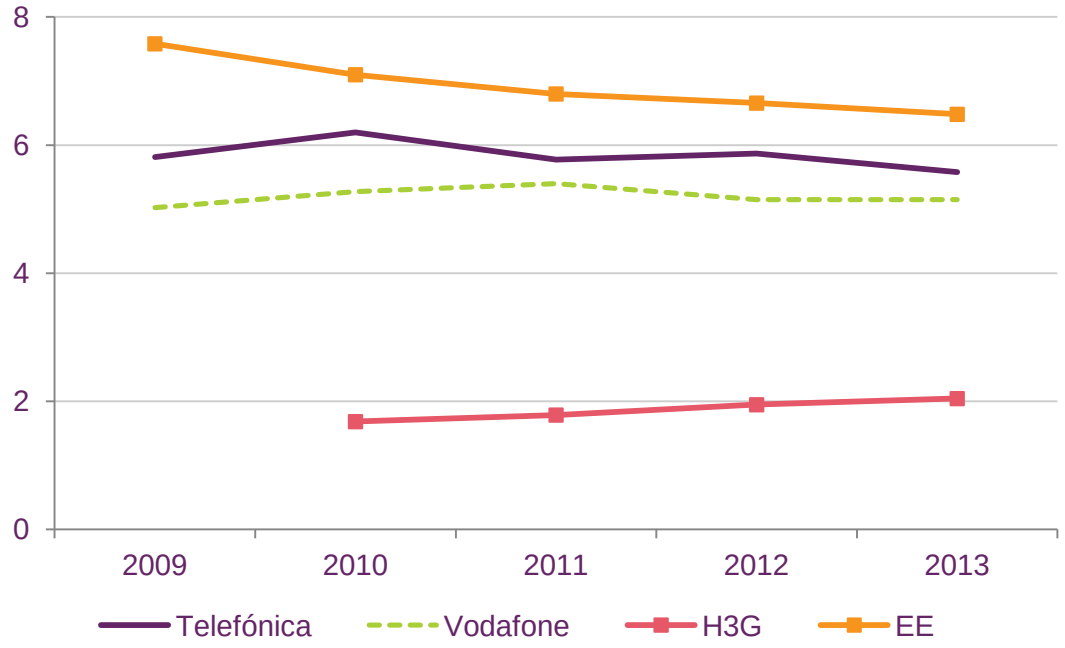


Source: Ofcom, based on Company financial reports (H3G did not publish UK reports before 2010). Telefonica 2013 data adjusted to exclude spectrum licence fees. Vodafone figures relate to the year ending March 31st following the year shown.

6.52 Figure 6 and Figure 7 below plot revenues and EBITDA since 2009 . These figures show that, in the case of Telefónica, EE and Vodafone revenues declined somewhat. The trend for profitability is mixed - Telefónica and Vodafone's EBITDA has decreased a little, but EE's EBITDA has increased. However, these three MCPs have not decreased Capex since our decision to cap MTRs at LRIC. H3G showed increasing levels of revenue, profits and capex. Therefore, overall, it appears that investment has increased despite industry profits being broadly stable.

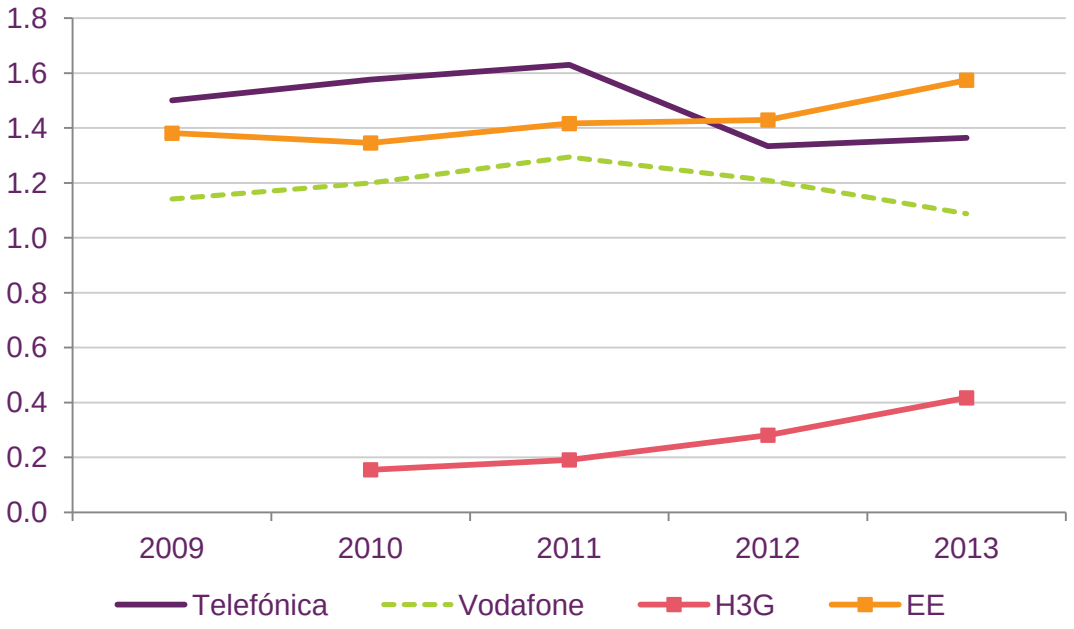
[199] We have looked at the capex of the four largest MCPs only, as the smaller MCPs, which account for less than 15% of retail subscribers (as at 2013 Q2–see Figure 10) are likely to account for a small share of industry capex.

Figure 6: Revenues, £bn



Source: Ofcom, based on Company financial reports (H3G did not publish UK reports before 2010). Vodafone figures relate to the year ending March 31st following the year shown.

Figure 7: EBITDA, £bn



Source: Ofcom, based on Company financial reports (H3G did not publish UK reports before 2010). Vodafone 2013 figure adjusted to exclude estimated impact of C&W. Vodafone figures relate to the year ending March 31st following the year shown.

6.53 In addition to the growth in mobile sector capex observed recently, it is notable that investment and innovation in both networks and services has continued apace. For example, since 2011 we have seen deeper RAN sharing, investment in S-RAN, investment in improved backhaul, improved mobile data speeds and coverage[200], comparable levels of voice coverage and quality[201], and continued take-up and promotion of handsets offering advanced functionality (i.e. smartphones). While these investments and innovations will have been driven by a variety of factors, the fact that such significant investment/innovation has continued, coupled with the fact that on the network side there is large extent of common infrastructure between voice call termination and (a) call origination and (b) other services, strongly suggests that investment and innovation has not been adversely affected by the move to LRIC MTRs.

Provisional conclusions on Dynamic Efficiency

6.54 In summary, we do not believe that investment and innovation outcomes would be expected to be, or have been, any worse under LRIC than LRIC+.

Question 6.3: Do you agree with our analysis and views on dynamic efficiency? If not, please explain why.

Competitive effects

6.55 In this section, we consider which of LRIC or LRIC+ generates the best competition outcomes. We note that, in response to the October 2013 workshop, H3G argued that the competitive impact is the most important factor in the choice of the cost standard.

Impact of the cost standard on competition

6.56 We consider that MTRs above LRIC[202] may affect competition in a number of ways, including thatMCPs with a lower market shares (for example H3G), could be put at a competitive disadvantage. In this respect, we note that in its response to the October 2013 workshop H3G argued that MTRs set at LRIC+ have the potential to create competitive distortions between operators with asymmetric market shares and traffic flows, to the disadvantage of MCPs with a lower market share.

6.57 There are three broad ways in which MTRs can affect competition between MCPs, which we explain below. We term these market-wide effects, the effect on competition for different consumer segments and the retail effect due to the on-net off-net differential. These are discussed in turn below.

6.58 First, high MTRs dampen the incentives for MCPs to reduce call prices as MTRs act as a retail price floor for off-net calls. This effect, which we previously labelled the *market-wide effect*, implies that MCPs have little incentive to lower their retail call prices as this would likely increase the number of outbound calls that their subscribers make (leading to an increase in MTR payments to other operators)

[200] Paragraphs 4.34-4.38 October 2013 Infrastructure Report, see footnote 6.
[201] Paragraphs 1.22, 1.23 October 2013 Infrastructure Report, see footnote 6. We noted however that, despite coverage levels not having changed significantly over the past year, mobile operators have embarked in major upgrades and reconfigurations of their networks.
[202] More generally the conclusions could apply to situations where MTRs are higher than marginal costs. LRIC is an approximation of the marginal cost of call termination.

without necessarily increasing inbound calls. The effect on the incentive to reduce prices is increased the lower the MCP's market share. This is because the smaller the MCP, the greater the proportion of calls that are off-net calls, and the greater the proportion of the increase in outbound call volumes resulting from a decrease in call prices that will be off-net. Thus a retail price decrease will lead to a larger increase in MTR out-payments for MCPs with a lower market share than for MCPs with higher market share.

6.59 Second, with LRIC+ MTRs, smaller operators will be at a disadvantage in competing for customer segments which tend to be net makers of calls (i.e. with more outbound than inbound calls), but at an advantage in competing for segments which tend to be net receivers of calls (we previously labelled this effect *competition for different consumer segments*). This is because MCPs with a lower market share will tend to pay more in MTRs for outgoing calls, as a greater proportion of these calls will be off-net. On the other hand, as more incoming calls will also be off-net originated calls, smaller MCPs will also receive more MTR payments. For customer segments that tend to be net makers of calls[203] the net effect is that MCPs with a lower market shareare at a competitive disadvantage from MTRs above LRIC. However, in customer segments which tend to be net receivers of calls, MCPs with a lower market share are at a comparative advantage when MTRs are above LRIC.

6.60 In contrast, under LRIC, the balance of calls of different customer types (defined by outbound to inbound call ratios) does not affect an MCP's ability to compete given its existing market share. This is because with MTRs at LRIC the cost of outbound calls off-net is, in principle, the same as the incremental cost of an on-net call and, on the inbound side, termination revenues do not provide a margin over LRIC. Effectively, with MTRs at LRIC, no MCPs make any contributions to the common costs of others. We refer to this below as the 'competitive neutrality' of LRIC.

6.61 In the previous market review (and up until the 2012 CC Determination), the evidence suggested that, overall, post-pay customers (especially high-use customers) tended to be roughly balanced or net makers of calls,[204] so MCPs with a lower market share were at a competitive disadvantage in this segment under LRIC+ MTRs. More generally, post-pay customers were also likely to attract higher revenues and profits than pre-pay customers on average.

6.62 These characteristics implied that gaining high-use (high-value) customers was therefore important to enable operators to recover the fixed and common costs of operating a mobile business - it would be hard for MCPs with a lower market share to make up for a lack of high-value customers by increasing their share of lower-value customers, as capturing sufficient numbers of these consumers to recover fixed costs would be difficult, even though MCPs with a lower market share may have a comparative advantage for lower-value customers with MTRs at LRIC+. Therefore, by lowering the barriers to expansion in the high-value/high-margin segment, setting MTRs at LRIC was likely to lead to more effective competition across all segments of the retail subscriber base.

[203]When considering call balances, we only consider calls to mobiles. This therefore excludes outbound calls to fixed and to international numbers which are not subject to UK MCT.
[204] 2012 CC Determination, paragraphs 2.34 and 2.625. Note that the CC considered the ratio of calls involving MCT: so it included off-net MTM calls, FTM calls and 'other to mobile' calls, but did not include on-net MTM, MTF or 'mobile to other' calls. See paragraph 2.27 of the 2012 CC Determination.

6.63 The data provided in response to our formal information requests do not allow us to draw strong conclusions about the current balance of calls for different customer segments. In particular, we have data covering less than half the market, and at a fairly high level of granularity, showing just the split between pre-pay and post-pay customer segments with pre-pay being further divided into three segments (£0-4.99, £5-9.99, and above £10 spend on average per month) and post-pay being further divided into two segments (more or less than £15 spend on average per month). [205] On the basis of the limited available data, the calling patterns that prevailed for pre-pay at the time of the previous review still appear to hold true. However, the limited data suggests that for some post-pay segments it may no longer be the case that post-pay customers are net makers of calls.

6.64 One explanation for this may be that pre-pay customers have now migrated to post-pay, without changing their calling patterns so as to become net makers of calls. This would tend to depress, and potentially reverse, the net call balance in the post pay segment. Migration from pre-pay to post-pay has been significant as 65% of those with a mobile phone use post-pay now rather than 49% at the time of the last review.[206] The expansion of the post-pay segment may mean the heterogeneity within it is more pronounced, in contrast to the previous market review where the key differences seemed to be between pre-pay and post-pay. It may, for example, be the case that higher-usage post-pay customers spending, say over £20 or £30 a month, are still net makers of calls. If these customers are high value customers, then it may be particularly important for MCPs with a lower market share to be able to compete on a level playing field for this segment.

6.65 Even if, however, certain high-value segments were net receivers of calls, we still believe that LRIC would be the appropriate cost standard. This is because under LRIC, there is a level playing field, in that market shares do not differentially affect an MCP's ability to compete depending on the balance of calls made by the customer segment and the MCP's market share. We recognise that, if all post-pay segments were now net receivers of calls, then MCPs with a lower market share would be at an advantage under LRIC+. But this would only be because larger MCPs pay a greater contribution to their common costs than do MCPs with a lower market share to larger MCPs.

6.66 Therefore, considering the effect of MTRs on competition for different segments leads us to believe that LRIC is preferable to LRIC+, as it creates a level playing field.

6.67 Third, on-net/off-net price differentials can make MCPs with a lower market share less attractive to consumers as a greater proportion of calls from a MCP with a lower market share will be off-net (this was labelled *retail effects* in the March 2011 Statement). Higher MTRs may increase the on-net/off-net price differential (or make it more likely that such a differential exists), as the level of MTRs effectively sets a

[205] [✂]were unable to provide the majority of the disaggregated data requested by us. [✂] did not provide any disaggregated data at all while [✂] provided data which we could not use as the nature of the data differed significantly from what we had requested and from that provided by other MCPs). A few MCPs were also unable to provide disaggregated data in relation to termination traffic (i.e. separated between calls terminating on pre-pay and post-pay customers), which is essential to establish calling patterns.

[206] Ofcom Technology Tracker data tables. Ofcom, *Ofcom Technology Tracker data tables Wave 1 2014*, published April 2014. http://stakeholders.ofcom.org.uk/binaries/research/statistics/2014apr/2014w1.pdf and Ofcom, *Ofcom Technology Tracker Wave 1 2011 – Main Set,* published 5 May 2011. http://www.ofcom.org.uk/static/marketdataresearch/statistics/main_set.pdf

floor for mobile off-net call prices and also fixed to mobile calls. Thus, higher MTRs may make the offers of MCPs with a lower market share less attractive and also make it harder for fixed CPs to compete with the on-net call prices set by larger MCPs.

6.68 In 2011, some stakeholders claimed that there were no longer any on-net/off-net differentials, or that such differentials were of no significance. In response, the CC said in its 2012 Determination that, overall, it did not consider that the appellants demonstrated that this was the case. But, the CC said it would not expect a move from LRIC+ to LRIC to result in the elimination of any remaining on-net/off-net price differentials. Indeed, there is still some evidence of on-net/off-net price differentiation although this generally materialises in an indirect way. For instance, many plans now offer a call allowance which does not differentiate between on-net and off-net calls, but offer further inclusive on-net minutes.[207] Therefore, we would still expect the retail effect due to on-net off-net price differentials to be relevant to some degree.

6.69 Overall, we consider that these arguments suggest that competition will be stronger under LRIC than under LRIC+. In the next sub-section, we consider the empirical evidence on competition in the mobile sector.

Evidence of increased competition between MCPs

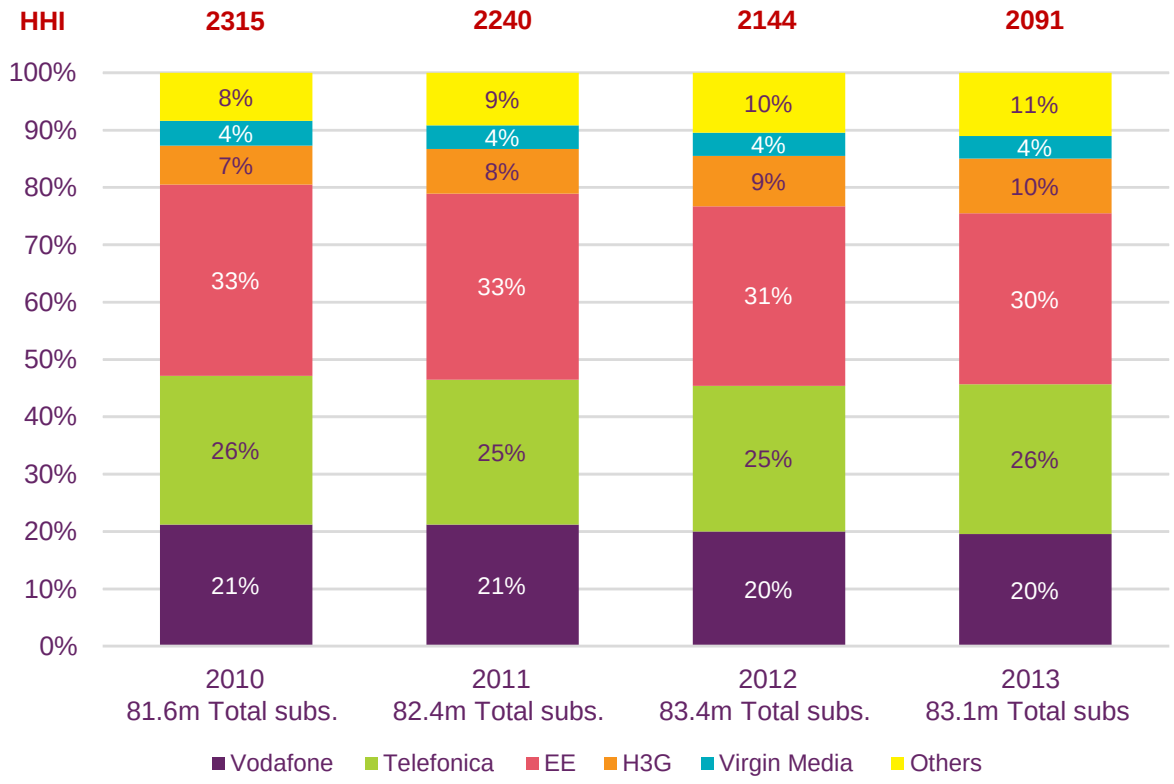
Retail market shares

6.70 There have been some changes in retail market shares over the past two years (see Figure 8), which are consistent with increasing competition for subscribers. The most marked movement relates to H3G, which has increased its market share by 3 percentage points between 2010 and 2013. H3G appears to have gained market share mainly at the expense of the larger MCPs (Vodafone and EE in particular). We also note that the market share held by EE, Telefónica and Vodafone has fallen from 80% to 76%, a loss of 4 percentage points. The increase of competition in the market is also consistent with the reduction in the Herfindahl-Hirschman index (HHI)[208] which decreases by 224 points from 2315 to 2091.

[207] Examples include post-pay bundles by Telefónica (which include up to 500 additional on-net minutes), Virgin Media (which include unlimited on-net calling), "The One Plan" by H3G (which includes an additional 5000 on-net minutes), as well as many pre-pay bundles by Lyca, Lebara, Giffgaff and Vectone (which include unlimited on-net calls). See Pure Pricing, December 2013

[208] HHI is an indicator of the amount of concentration/competition in a market. It can range from close to 0 (market very competitive) to 10000 (monopoly). The HHI is calculated by squaring the market share of each MCP and then summing the resulting numbers.

Figure 8: Evolution of market share, 2010-2013



Source: Ofcom/operators. Figures may not sum to 100% due to rounding differences.

6.71 In terms of competition in different market segments we note that H3G (in response to our information requests both in the current and previous review) shows that its segment of post-pay customers with a £15 monthly average subscription or more (excluding handset price) has grown by a substantial amount [✂] between 1st January 2011 and 30 June 2013. The growth rate in its post-pay customer segment of below £15 monthly subscription is lower at [✂] between 1 January 2011 and 30 June 2013. This compares with a growth rate of [✂] for the same segment between 30 September 2009 and 31 December 2010. This suggests that MCPs with a lower market share may have had particular success in growing in the post pay segment, and in particular, in the high-value post pay segment, consistent with the 'competition for different customer segments' effects discussed above. We recognise that this evidence is just for one of the MCPs with a lower market share, but it is the most significant of these MCPs in terms of its infrastructure investment and its growth in the higher-end of the post-pay segment is consistent with what we would have expected with MTRs moving to LRIC (other things equal).

Prices, revenues and profitability

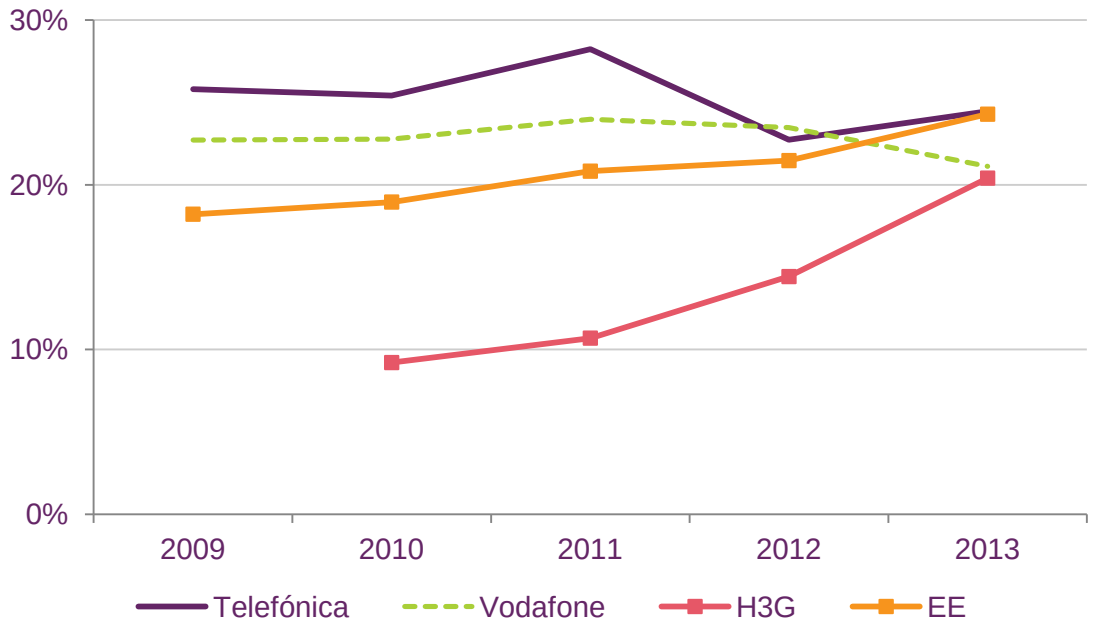
6.72 In Annex 9 we discuss how a range of evidence suggests that, overall, retail mobile prices have decreased since the last market review. This was particularly marked in the post-pay segment, where customers were considered to be net makers of calls at the time of the previous review and net payers of MTRs. Therefore, these tariffs are more likely to decrease in price in response to a decrease in MTRs, to reflect the lower level of (net) termination payments. However, even in segments that are net receivers of calls (which was primarily pre-pay at the time of the previous review), where, all else being equal, we might expect a reduction in MTRs to increase prices,

the prices of some MCPs have remained low although other MCPs have increased theirs.

6.73 The above retail pricing outcomes are consistent with increased competition, although we recognise pricing may also have been influenced by other factors, including a reduction in network costs.[209]

6.74 Competitive constraints also appear to be reflected in the profitability of the main MCPs. From Figure 9 below, it can be seen that aggregate EBITDA margins have remained relatively stable in the past five years. At a disaggregated level, however, H3G has experienced a marked increase in its EBITDA margin. This is likely to have been driven in large part by its growing market share especially in the high value post-pay customer segment.

Figure 9: Profitability of main MCPs, EBITDA margins



Source: Ofcom, based on Company financial reports (H3G did not publish UK reports before 2010). Vodafone 2013 figure adjusted to exclude estimated impact of C&W. Vodafone figures relate to the year ending March 31st following the year shown.

Competition between MCPs and FCPs

6.75 The extent of competition between mobile and fixed services is not sufficient to include them in the same relevant retail markets. Nonetheless, there is still some competition between MCPs and FCPs.

6.76 Firstly, MCPs and FCPs compete for subscribers. The higher the margin that MCPs get on MTRs, the better they will be able to subsidise retail subscriptions, therefore distorting competition between MCPs and FCPs. The proportion of UK households that have both a fixed line and a mobile phone is 80%, suggesting that competition between MCPs and FCPs for subscribers would potentially apply to a limited base.

[209] As shown in Figure A16.2 in Annex 16, LRIC+ costs of call termination have been decreasing since 2011. Given that the different mobile services largely share the same network components, we would expect the unit cost of other services to have similarly decreased.

Nevertheless, MTRs set at LRIC+ could give rise to potential adverse effects on competition at the margin between MCPs and FCPs, especially given that FTRs are now set at LRIC (see below).

6.77 Secondly, MCPs and FCPs compete for calls. MTRs act as a floor to the retail prices of fixed to mobile calls, meaning the higher they are, the higher the prices that FCPs have to set for fixed to mobile calls. This creates a potential competitive disadvantage. Further, if MTRs were to be based on LRIC+ and FTRs on LRIC, FCPs would have to recover their common costs from their own subscribers (including potentially from call origination services), thereby making call origination from fixed lines less attractive than call origination from a mobile.

6.78 Thus MTRs above LRIC would make it harder for FCPs to compete with MCPs in retail calls markets. We have noted in other Ofcom publications the declining trend in fixed call origination and the likely substitution to mobile call origination.[210]

6.79 In view of the potential competition between mobile and fixed services, we consider that, in setting MTRs, it is also important to give consideration to the approach taken in setting FTRs. We note that this view is also shared by Virgin Media, in its response to the October 2013 workshop.

Provisional conclusions on competition effects

6.80 We consider that LRIC is preferable to LRIC+ in relation to competition effects. There are a number of possible competition effects at play, some of which may be more pronounced than others. Overall, market developments are consistent with competition being somewhat stronger overall under LRIC-based MTRs.

Question 6.4: Do you agree with our analysis and views on competition impacts? If not, please explain why.

Distributional effects on vulnerable consumers

Introduction

6.81 In identifying the appropriate cost standard for the proposed charge control, our key focus is to address market failure issues arising from SMP, which would otherwise lead to consumer harm. In performing our duties, we are required to have regard to the needs of particular vulnerable groups. In this review, we have considered those on low incomes (below £11,500 per year) and/or in lower socio-economic groups (D and E) to be the most vulnerable as they can least afford an increase in price, and we refer to such consumers below as 'vulnerable consumers'.[211]

[210] Between 2007 and 2012, the volume of mobile calls increased by 26%, while fixed-line calls steadily decreased year on year, decreasing by approximately 31% over that period. We also expect this trend to continue in the future. See paragraph 5.63 of the 2013 FNMR Statement.

[211] Ofcom usually considers the 'low income group' to be those with 70% of the median household income before housing costs, adjusted for the size of household, using the Organisation for Economic Co-operation and Development (OECD) equivalence scales, and reporting that they can't afford to do at least one activity on a list of typical activities. However, for practical reasons related to data collection on mobile characteristics for this 'low income group' and consistency in comparing data from different years, we continue, as in 2011, to consider the group of consumers with an income under £11.5k.

6.82 In principle, there would be an equity concern if vulnerable customers suffer significant detriment, such as paying significantly more, as a result of our policy decisions.

6.83 The characteristics of these consumers, in terms of their usage of mobile and fixed line services, as compared to the overall UK population, are shown in Table 1111.

Table 11: Mobile characteristics of particular consumer segments

	Income under £11.5k		DE segment		Overall UK population	
	2011	2014	2011	2014	2011	2014
Do not use a mobile phone	18%	14%	13%	12%	7%	5%
Post-pay	29%	44%	30%	47%	49%	65%
Pre-pay	71%	55%	69%	53%	50%	35%
Signed for sim+handset in current contract	82%	84%	81%	82%	86%	88%
Signed for sim-only in current contract	16%	15%	14%	17%	11%	11%
Use a smartphone (from those who use a mobile)	17%	51%	21%	53%	30%	65%
Are likely to get a smartphone in next 12 months (those without) †	6%	10%	7%	13%	11%	15%
Lives in a fixed-only household	15%	11%	11%	8%	6%	4%
Lives in a mobile-only household[212]	29%	30%	25%	27%	15%	16%

Source: Ofcom Technology Trackers, Q1/2011 (except '†' where Q2/2011 has been used) and Q1/2014

Mobile only consumers

6.84 Our main concerns are in relation to vulnerable consumers who only have a mobile phone and no fixed line. This is because the detriment to these consumers, should our policy cause them to give up their phone, is likely to be significantly higher if they

[212] In the 2014 Draft Statement of the Fixed Access Market Review, Ofcom has revised the proportion of consumers who live in a mobile-only household to exclude households that have a fixed line which used only for broadband purposes. The updated estimates reduced the proportion of mobile only households to 11%. See A24.75 to A24.80 of Annex 24 of Ofcom, *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 – Annexes*, draft statement, 19 May 2014. http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/draftstatement/annexes.pdf
However, we have kept the 15% figure to ensure that the disaggregated figures (for consumers under £11.5k income and DE category) are consistent with the overall. We consider this will not have any impact on our conclusions.

lose their only way of communicating than if they also had a fixed line which they could use as an alternative.

6.85 Although the proportion of vulnerable consumers who are on post-pay contracts has increased significantly between 2011 and 2013 (by 15 percentage points for consumers under £11.5k income and 17 percentage points for consumers in the DE segment - see Table 11 above), over 50% of vulnerable consumers are still on pre-pay contracts. These consumers tend to be net receivers of MTR payments especially those who are 'low users'. The revenue (and profit margin) from MTR payments is lower under LRIC, and MCPs may in theory increase retail prices to compensate for this revenue loss (see Annex 9).

6.86 However, we consider that vulnerable customers are unlikely to be significantly affected under LRIC MTRs, relative to LRIC+. It is possible that some pre-pay prices for some MCPs (e.g. per-unit prices for some of the largest MCPs) may be lower under a LRIC+ cost standard, but we have no reason to believe that this would have any significant impact on vulnerable customers given that the move from LRIC+ to LRIC since 2011 did not appear to produce any significant increase in the pre-pay prices of a large number of MCPs (with some MCPs maintaining or even reducing their per-unit prices).[213]

6.87 Moreover, it is unlikely that any significant affordability issues will have occurred from the move to cap MTRs at LRIC. The January 2013 Consumer Experience Report[214] shows that SIM-only tariffs were available from as little as £5 a month in January 2014, with Talk Mobile's lowest priced SIM-only service being £5 per month in January 2014 and Virgin Media offering a £5 per month SIM-only service to its broadband, TV and home phone customers, or £7 per month for those not taking any of these services. Vodafone, Telefónica, Orange, T-Mobile and Tesco Mobile's lowest priced SIM-only services were between £7.50 and £9 per month.

6.88 In addition, we have shown in paragraphs A9.43 - A9.49 in Annex 9 that, in fact, ownership levels in the population have increased since the last market review. More importantly, as shown in Table 11, ownership levels within the vulnerable customers' segment increased proportionately more than in the overall UK population (by 4 percentage in the segment with income under £11.5k and 1 percentage points in the DE segment, compared to 2 percentage points in the overall population). It is possible that growth in ownership could have been slightly higher under LRIC+, but we have no reason to believe these impacts would have been significant.

6.89 Furthermore, costs are also likely to fall more generally. As shown in Table 12, the prices of basic handsets have fallen since 2011 (most likely driven by falling costs), and this trend is likely to continue. Even if there were a rebalancing of prices from the termination to the retail side of the market (consistent with the waterbed effect), any reduction in network and/or retail costs of mobile service provision (including for handsets) would mean that prices faced by consumers would increase by less than otherwise. Indeed, handset prices might even fall relative to 2011 levels if network and retail costs fell sufficiently. From the evidence below, this seems to have been the case.

[213] This is in line with the CC view in its 2012 Determination where it said that, while it identified some negative effects on mobile usage and potentially affordability (in line with its views on the expected impacts on low-use customers), it considered these were unlikely to be material. See paragraphs 2.918-919

[214] See page 107, Ofcom, *The Consumer Experience of* 2013, Research document, January 2014. http://stakeholders.ofcom.org.uk/binaries/research/consumer-experience/tce-13/TCE_Research_final.pdf

Table 12: Example of basic handsets prices

	2011	2013
Standalone price	Alcatel OT 209: £24.90 Samsung E1080: £29.90	Alcatel OT 10.10: £14.90 Nokia 105: £19.90
Pre-pay price	Tesco Nokia 1616: £11.97 T-Mobile LG GS101: £7.97 Telefónica Samsung E1080: £9.97	Tesco Nokia 100: £9 Orange Samsung E1230: £10 Tesco Samsung E1200: £10

Sources: Carphone Warehouse website, as of October 2013, and Wayback machine as of October 2011. All phones are 2G feature phones, able to make calls and send/receive SMS, and, are marketed as 'entry-level' phones.

Fixed line consumers

6.90 In this section, we consider whether there are any further impacts on vulnerable consumers with a fixed line.

6.91 If MTRs fall, we would expect this to be reflected in lower prices for Fixed to Mobile (F2M) calls and bundles including F2M calls, or fixed tariffs more generally where these include, as is invariably the case, the option to make F2M calls. Therefore, we expect prices of calls to mobiles from fixed lines to be lower under LRIC than LRIC+.

6.92 The data in Annex 9 shows that while the retail price of F2M calls has not come down as much as the reduction in MTRs, there has still been a significant degree of pass-through. Specifically, it seems that just under 50% of the MTR reduction has been passed through directly to the average. price of fixed to mobile calls. However, less than full (i.e. 100% pass-through) can be explained by two considerations. First, if each FCP faces a downward sloping demand for calls to mobiles, pass-through would be unlikely to be 100%.[215] Second, as noted above, fixed-to-mobile calls are either purchased as part of an explicit bundle of fixed line services or are purchased as part of "buy-through" from the subscription or line rental service (i.e. even if the line rental doesn't involve an explicit bundle of fixed to mobile calls, each FCP allows subscribers to make calls to mobiles once they subscribe to the FCP's fixed line service).[216]

6.93 As a result, it is possible that fixed line consumers have also benefited by means other than a reduction in the direct price for calls to mobiles. As shown in Annex 9, we have seen certain FCPs moving to introduce "add-on" allowances for calls to

[215] For example, with linear (downward sloping) demand and constant marginal costs, pass-through of changes in marginal costs (as the MTR is part of the marginal cost faced by FCPs) would be 50% for a firm with no substitutes for its service (i.e. a monopolist). Other things equal, the more competitive the market, the greater the degree of expected pass-through.

[216] Where FCPs compete for retail subscribers across both retail line rental and usage prices, any margin in usage services – such as calls to mobiles – would be expected to be competed away in the pricing of the retail line rental. The greater the competition in the retail market – particularly for the primary service of the line rental – the greater the degree of profit from the secondary services (such as calls to mobiles) that will be competed away.

mobiles since our decision to reduce MTRs to LRIC. Also, in theory, when MTRs are reduced FCPs may have an incentive to reduce line rental charges (or increase them less than they otherwise would), to attract more customers given the higher profit margins on calls to mobiles when MTRs are reduced. However, it is particularly difficult to disentangle such indirect effects of reductions in MTRs from other factors that affect line rental charges. Indeed, the 2013 CMR notes that line rental revenues per fixed line have been increasing since 2009 as these increasingly include a bundled call allowance or 'bolt-on'.[217]

6.94 In summary, it does appear that LRIC MTRs are likely to lead to lower fixed line prices, although the reduction may not be passed through to the retail fixed to mobile call price in full. This means that for fixed and mobile customers, the overall effect of LRIC MTRs on retail prices may be ambiguous – it is possible that the lower retail price for fixed line services may be counterbalanced by certain higher mobile prices, perhaps particularly for low use pre-pay customers. However, fixed-only customers will unambiguously gain. .

Summary on vulnerable consumers

6.95 In summary, none of the empirical evidence we have considered suggests that market outcomes have been worse for vulnerable consumers under LRIC compared to the outcomes observed under LRIC+.

Question 6.5: Do you agree with our analysis and views on the impact on vulnerable consumers? If not, please explain why.

Commercial and regulatory consequences

6.96 When deciding on an appropriate remedy, including the appropriate cost standard to apply for a charge control, we recognise the need to take into account the practical implications of each option and to look at other impacts on industry such as the risk of regulatory failure and the burden of regulation for each approach. Both LRIC and LRIC+ involve capping MTRs on a ppm basis and so neither approach would involve a change in the structure of wholesale charges.

6.97 The risks of regulatory failure in this case are to set MTRs either too high or too low. However, we do not consider the commercial and regulatory consequences to be significantly different between the LRIC and LRIC+ options, not least given their projected levels in 2015/16 of 0.515ppm and 1.01ppm respectively which implies a net revenue effect of £54m, if there were no waterbed effect. As noted earlier in this section, this is a small proportion of revenues and EBITDA.

6.98 In the previous market review, some stakeholders had argued that the consequences of setting MTRs too high are less severe than setting them too low.[218] We still consider that the two-sided character of MCT implies that any potential risk of setting an MTR too low would be attenuated by the ability of MCPs to recover costs on the retail side of the market. Furthermore, we have not seen any adverse regulatory or commercial consequences in the last two years that might suggest that the progressive reductions down to what are, since April 2013, LRIC based MTRs carry significantly more risks than capping MTRs at LRIC+.

[217] Page 336, 2013 CMR.
[218] Paragraphs 8.131, 8.132, March 2011 Statement.

6.99 We note that our proposal to cap MTRs at LRIC is in line with the 2009 EC Recommendation in favour of LRIC and the practice of the majority of other EU countries.

Question 6.6: Do you agree with our analysis and views on regulatory and commercial impacts? If not, please explain why.

Provisional conclusion on the appropriate cost standard

6.100 We therefore propose that for the period 2015 to 2018, LRIC remains the appropriate cost standard for the MTR charge controls.

Question 6.7: Do you agree with our proposal that LRIC should continue to be the appropriate cost standard? If not, please explain why.

Section 7

Calculating the efficient costs of MCT

Introduction

7.1 In Section 5 we proposed to set cost-based charge controls for MCT on all the MCPs identified as having SMP. In Section 6 we proposed that the appropriate cost standard to use for setting MTRs was LRIC.

7.2 In order to calculate the efficient level of costs for MCT, we have built a cost model (2014 MCT model). In this section we summarise the proposals for the cost modelling and the key modelling assumptions.

7.3 Prior to publishing this consultation we held two stakeholder workshops to set out our proposals and to invite comments from stakeholders. On 23 October 2013 we held a workshop on the background leading to this review, provided an indicative timeline and invited stakeholders to input into our preliminary thinking on what we considered to be the key issues for this review. On 23 January 2014 we held a workshop on our cost modelling of MTRs and provided stakeholders with an early opportunity to comment on the direction of the modelling.

7.4 We discuss the responses received from stakeholders to the workshops along with the more detailed aspects of model design and assumptions in Annexes 11 – 17.

7.5 Detail on the implementation of the charge control can be found in Section 8.

Overview of MCT model

7.6 The 2014 MCT model uses a bottom-up approach to calculate the costs of an average efficient national MCP.[219] The model allows us to calculate the forward looking economic costs for MCT independent of any particular network operator's business model or choice of technology.

7.7 The charge control on MCT implemented in 2011 was set using the 2011 MCT model[220] (although the charge control was amended and the model re-released in 2012 following a judgment by the CAT ('the CAT Judgment'). [221] Having considered the requirements for the 2014 MCT model, we found that the 2011 MCT model (post amendments following the CAT judgement) had a sufficient level of functionality to serve as a starting point for the development of the 2014 MCT model. In particular, we propose to calculate LRIC and LRIC+ in the same way as it was calculated in the 2011 MCT.

7.8 The changes we have made in developing the 2014 MCT model fall into the following three categories:

[219] By 'national MCP' we mean an MCP with widespread national radio access networks ('RAN'), who has independent control of spectrum, and operates in both the wholesale and retail markets.
[220] See Ofcom, *Revised MCT Cost Model accompanying Modification to SMP Conditions.* http://www.ofcom.org.uk/static/wmvct-model/model-2011.html.
[221] See paragraph 2.34 of this document for further detail of the CAT Judgement.

7.8.1 Those requiring updates purely to reflect the passage of time, e.g. updates to traffic forecasts, updates to cost trends and updates to the weighted average cost of capital (WACC);

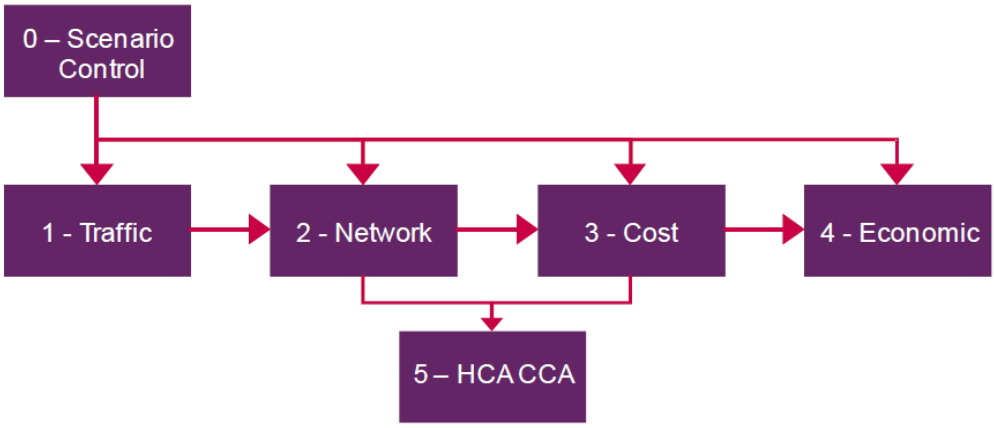
7.8.2 Those requiring modifications to existing model functionality (e.g. to reflect improvements in the capacity of high-speed packet access (HSPA), backhaul links and increases in the capacity of core network elements); and

7.8.3 Those requiring the addition of new functionality (e.g. the addition of 4G technology).

Model design

7.9 The 2014 MCT model comprises six modules, each of which represents an Excel workbook, as shown in Figure 10 below.

Figure 10 Structure of the 2014 MCT model



Source: Ofcom.

7.10 The functions of these modules are described in Annex 11.

7.11 At a high level the 2014 MCT model calculates unit costs in the following steps:

a) Step 1: Calculate the network traffic (both voice and data) that is carried by the modelled MCP;

b) Step 2: Dimension a network capable of carrying this traffic;

c) Step 3: Calculate the cost of the assets in the dimensioned network;

d) Step 4: Recover the costs of the network over time using an economic depreciation algorithm; and

e) Step 5: Recover the cost of the network across services based on the routing factors used to dimension the network.

Calculating LRIC

7.12 The model calculates the LRIC of MCT using a decremental approach. Consistent with the 2009 EC Recommendation, this involves considering incoming voice traffic

as a 'final increment' with no common costs (such as the common costs of a 'coverage network') being allocated to MCT.

7.13 The incremental costs associated with incoming voice traffic are derived by first calculating the model outputs (i.e. service demand, asset volumes and cashflows for each network element) with incoming voice traffic included and, second, with incoming voice traffic excluded. The incremental service demand, asset volumes and cashflows for each network element are then used as inputs to the economic depreciation algorithm. The output of this algorithm is the LRIC of an incoming minute of voice traffic.

7.14 The outputs of the 2014 MCT model are pence per minute (ppm) unit costs (either LRIC or LRIC+) in each year for MCT. The 2014 MCT model works in real terms using CPI inflation indexed to 2012/13 prices, and all outputs are stated on this basis.

Traffic volume forecasts

7.15 Telecommunication networks are characterised by significant economies of scale: greater volumes of traffic, caused by market growth or increased market share, lead to a smaller proportionate increase in total network cost. Similarly, in the presence of common costs, these can be recovered from a greater range of outputs and services, other things being equal. Therefore, there is an important relationship between network traffic volumes and the unit costs of network services.[222]

7.16 There have been many changes in the mobile market since the 2011 MCT model was developed. The use of services has differed to some extent from the forecasts in the 2011 model, and 4G services have been introduced. To reflect these developments, we have updated all of the demand forecasts.

7.17 The traffic module produces the total demand over the hypothetical operator's network for each of the following services:

i) Incoming, outgoing and on-net voice calls for 2G, 3G and 4G;

ii) SMS and MMS for 2G, 3G and 4G;

iii) 2G packet data;

iv) 3G handset packet data;

v) 3G datacard packet data;

vi) 4G handset packet data; and

vii) 4G datacard packet data.

7.18 A detailed breakdown of our traffic forecasts and our selected base-case scenario can be found in Annex 11.

[222] We would expect to see an inverse relationship between traffic volumes and the LRIC+ of network services. Traffic volumes and the LRIC of network services do not have such a clear relationship due to LRIC not including common costs.

Technology choice, network dimensioning and costs

7.19 As in the 2011 MCT model, the 2014 MCT model calculates the network costs (for an average efficient MCP) of delivering voice and data services to an end user. In addition to the traffic volumes, the costs of the network are also driven by the number of subscribers and the coverage requirements. However, the majority of costs are driven by the volume of network traffic.

7.20 These cost drivers (i.e. coverage, traffic and subscribers) are used to determine the required deployment of the hypothetical efficient network. In the model, the hypothetical efficient network is designed to be able to carry all the traffic volumes that are forecast to pass over it.

7.21 With regard to market shares, we consider two types: a) market share of handsets; and b) market share of datacards. We propose to take the same approach to the market share profile as was used in the 2011 MCT model. Prior to 2003/04 the market share of handsets is assumed to be 25% (corresponding to four players). Following the entry of a 3G only operator in 2003/04 market share declines to reach 20% by Q2 2010/11 (corresponding to five players). However, due to the merger (via a joint venture) between Orange and T-Mobile we consider it appropriate to move towards a 25% market share of handsets (corresponding to four players). Accordingly, from Q3 2010/11 onwards market share increases towards 25%.

7.22 We propose that the datacard market share is set at the same level as the handset market share until 2007/08 Q3. From this point onwards, we propose that the datacard market share gradually decreases to 15% by 2008/09 Q3 and remains constant at 15% until 2010/11 Q1.This decline reflects the fact that in reality, the 3G only MCP, H3G, had a greater share of the datacard market than the 2G/3G MCPs during that period and therefore our modelled 2G/3G/4G operator has a lower than 25% market share of datacards during that period. Thereafter, the datacard market share of our modelled operator increases gradually to reach 25% by 2025/26. Our proposal is consistent with the approach taken following the appeal of the March 2011 Statement where, in accordance with the directions of the CAT (following the 2012 CC Determination), we adopted a different market share assumption for datacards than for handsets

7.23 The 2014 MCT model calculates the capital and operating costs associated with network equipment, and classifies equipment as falling within the following parts of the network:

- Radio Access Network (RAN) i.e. cell sites, base station equipment and the associated controller equipment;
- Backhaul i.e. transmission links between RAN equipments, aggregation hubs, and the core network;
- Backbone i.e. transmission within the core network; and
- Core network i.e. the equipment within the core network.

7.24 We have based the costs in our model on information provided to us by the four largest MCPs in response to section 135 information requests. Further details of our section 135 information requests are found in Annex 19.

7.25 We have updated the 2014 MCT model to reflect changes in network design, technology and cost trends since the development of the 2011 MCT model. The details of our proposals are found in Annexes 11 – 17. Here we highlight a number of the key changes.

Inclusion of 4G technology and VoLTE

7.26 Since the 2011 MCT model was developed, 4G data has become a proven technology in the UK and all four largest MCPs currently provide data services over 4G networks.

7.27 Given the increasing importance of data as a proportion of total mobile network traffic (a point we consider further in the traffic forecasts below) we propose to include 4G data in the model in order to capture the effects of economies of scope in the provision of mobile services. Furthermore, we consider that the inclusion of 4G data services will appropriately reflect the forward-looking costs of mobile service provision.

7.28 We have also considered whether it would be appropriate to include VoLTE[223] technology in the 2014 MCT model. We note that VoLTE is at an early stage of development and its costs are still uncertain. However, the evidence we have is consistent with VoLTE being included in the 2014 MCT model, and as such we consider it to be an "*efficient technolog[y] available in the timeframe considered by the model"*, as envisaged in paragraph 12 of the 2009 EC Recommendation. Furthermore, we note that in responding to our October 2013 workshop and January 2014 workshop, no stakeholders have suggested to us that VoLTE should be excluded from the MCT model.

7.29 As a result we propose to include 4G data technology and VoLTE in the 2014 MCT model.

Continued inclusion of 2G and 3G technology and updates to network design

7.30 We consider that it would be unreasonable to assume that an MCP in the UK would be able to reach the market share of our modelled average efficient MCP if it offered a 4G only network. This is because the current take-up of active 4G handsets is too low. In other words, an MCP is unlikely to be able to reach the market share assumed by our modelled operator without deploying a 2G and 3G network.

7.31 Furthermore, industry expectations point to the continued existence of 2G and 3G networks over the next charge control period. The presence of 2G and 3G networks is necessary to serve customers with 2G and 3G handsets and to support international roaming customers who require access to 2G and 3G networks. We note that other NRAs are continuing to model 2G and 3G technologies through the period of the next charge control.

7.32 We do not consider it appropriate to model a 4G only network, and we therefore propose to continue to include both 2G and 3G technologies in the 2014 MCT model.

7.33 We are proposing to make revisions to the 2G/3G network design to reflect developments since the 2011 MCT review. These include:

[223] Voice over LTE ('VoLTE')

- Changes made to the HSPA network to accommodate improvements in HSPA technology;
- Changes to the backhaul design with the addition of further high-speed backhaul options;
- Changes in transmission infrastructure to the core network ('hub to core');
- Changes in backbone infrastructure within the core network; and
- Changes to network parameters used to dimension the 2G and 3G network that reflect the passage of time since the development of the 2011 MCT model.

Spectrum holdings

7.34 We propose the following spectrum holdings for our modelled MCP in the 2014 MCT model. We believe that these spectrum holdings reflect the holdings that a hypothetical efficient operator could be assumed to hold, although we note that these do not necessarily reflect the actual holdings of any current MCP. Further discussion of spectrum holdings can be found in Annex 15.

Table 13 Proposed spectrum holdings for our modelled MCP

Band	Holding (paired MHz)		Technology
800MHz	10		4G
900MHz	0		n/a
1800MHz	30	20	2G
		10	4G[224]
2.1GHz	10, increasing to 15 in 2012/13		3G
2.6GHz	10		4G

Inclusion of S-RAN technology

7.35 In the 2011 MCT model we assumed that 2G BTSs[225] and 3G NodeBs[226] remained as separate network elements in the RAN.

7.36 Since 2011, equipment vendors have designed 'combined' base stations that provide 2G, 3G and 4G functionality (or a combination of 2G, 3G and 4G functionality). This combined equipment is often referred to as single-RAN (S-RAN) equipment.

7.37 Furthermore, we have gathered evidence from MCPs that indicates the use of S-RAN equipment is becoming widespread.

7.38 Deploying S-RAN equipment has the potential to lower costs when compared to deploying separate 2G BTSs, 3G NodeBs and 4G eNodeBs[227]. Therefore, we

[224] Following refarming in 2012/13, see Annex 15.
[225] Base Transceiver Station or Base Station
[226] 3G equivalent to 2G Base Station

consider that an average efficient MCP with a 2G, 3G, 4G network configuration would deploy S-RAN technology and we propose to include the impact of deploying S-RAN in our 2014 MCT model. We discuss this proposal further and our approach to implementing S-RAN in Annexes 11 and 12.

Inclusion of active infrastructure sharing

7.39 The 2011 MCT model allowed for the sharing of passive infrastructure (i.e. cell sites and masts only). However, since the development of the 2011 MCT model, MCPs have extended infrastructure sharing to also include active infrastructure (i.e. the electronic equipment housed in each base station).

7.40 Based on the evidence gathered, we propose to extend infrastructure sharing to include active infrastructure in the 2014 MCT model. We discuss the detail of our proposal to implement active RAN sharing in Annexes 11 and 12.

Non-network costs

7.41 In addition to network costs, non-network costs are included in the 2014 MCT model, specifically administrative costs.. These costs are used to calculate the LRIC+ of MCT only. They are not included in the calculation of the LRIC of MCT since administrative costs are common costs and are not sensitive to termination traffic.

7.42 These administrative costs include general overheads and are described in more detail in Annex 15. The administrative cost in each year is allocated across all network activities in proportion to those activities' share of total network costs

Cost of capital

7.43 We propose to use a pre-tax real WACC for an average efficient MCP of 6.9%. This WACC estimate is real with respect to CPI inflation, consistent with the use of CPI as the inflation index in the 2014 MCT model. We discuss our approach to calculating the WACC in Annexes 14 and 17.

Cost recovery over time

7.44 The 2014 MCT model produces lifetime capital expenditure and operating expenditure for each network element over the life of the modelled network. We determine how these costs are recovered over time by using an economic depreciation algorithm.

7.45 We propose to use a form of economic depreciation know as Original ED. This is the same economic depreciation approach that was used in the 2011 MCT model (and the 2007 and 2005 MCT models). This method matches the cost of equipment to its actual and forecast usage over the long term. Consequently, there is relatively little depreciation in years when utilisation is low and relatively high depreciation in years of full, or almost full, equipment utilisation. As a result, the path of unit costs is determined by the profile of equipment costs and the WACC, not by the path of asset utilisation in each year. We discuss our approach to cost recovery over time in Annex 11.

[227] 4G "evolved NodeBs", equivalent to 3G NodeBs and 2G Base Stations

Calibration

7.46 Although we have constructed a bottom-up model of an average efficient MCP, the model is calibrated against actual data provided by the four largest MCPs in response to our formal requests for information. The calibration exercise is to ensure that the model provides reasonable estimates of an average efficient MCP's efficiently incurred costs. The calibration focusses on the asset counts for key network equipment used by the four largest MCPs and accounting costs based on data included in their management (or statutory) accounts. Our proposals relating to this calibration exercise can be seen in Annex 13.

Summary of model results

7.47 In Table 14 we provide our base case LRIC outputs and our high-low range using the 2014 MCT model.

Table 14 LRIC outputs (ppm, 2012/13 prices)

	Current MTR (from 1 April 2014)	From 1 April 2015	From 1 April 2016	From 1 April 2017
Base case	0.815	**0.515**	**0.498**	**0.476**
Range		0.424 – 0.680	0.402 – 0.664	0.386 – 0.649

Source: 2014 MCT model.

7.48 In Table 15 we provide the base case LRIC+ outputs using the 2014 MCT model.

Table 15 Base case LRIC+ outputs (ppm, 2012/13 prices)

	From 1 April 2015	From 1 April 2016	From 1 April 2017
Base case	**1.010**	**0.936**	**0.855**

Source: 2014 MCT model.

Question 7.1: Do you agree with our proposed modelling approach as discussed in this section, the supporting annexes and the 2014 MCT model? If not, please discuss the specific proposals that you disagree with.

Section 8

Implementation of the proposed charge control

Introduction

8.1 In Section 5 we proposed to impose a charge control on MCT provided by all MCPs with SMP. In Section 6 we discussed the choice of cost standard for setting MTRs and proposed that MTR charges should be capped on the basis of LRIC.

8.2 This section explains how we propose to implement the proposed charge control and how we propose to assess compliance with it. In particular, we set out our proposals to:

- Index the MCT charge control using a CPI+X formulation;
- Set a three year charge control between 1 April 2015 and 31 March 2018;
- Set a single MTR cap for all MCPs with SMP;
- Set a maximum cap charge control (rather than one based on a weighted average of time of day rates); and
- Align the cap to the forecast LRIC for each year of the charge control rather than use a glide path over the three year control period.

8.3 We also set out our views on whether the relevant legal tests are satisfied if we were to impose a single charge control based on LRIC on all the MCPs designated as having SMP.

8.4 Annex 7 provides our draft SMP conditions in relation to the proposed charge control for MTRs.

Form of charge control

Inflation indexed charge control

8.5 We propose to apply price-cap regulation in the form of an inflation indexed control, in which the cap is updated annually for inflation minus an adjustment (i.e. “X” in RPI+X or CPI+X) where X represents the average annual percentage by which MTRs are expected to change in real terms.

8.6 An inflation indexed charge control is a well established way to provide regulated firms with incentives to seek efficiency savings. It also provides a degree of certainty and stability to all industry players (whether providing or purchasing MCT) during the charge control.

8.7 To set an inflation indexed control, we have undertaken a detailed cost modelling exercise to forecast relevant costs. This modelling exercise is described in detail in Section 7 and Annexes 11 – 17.

8.8 Inflation indexed charge controls were used in the 2011 MCT review (and in earlier MCT reviews). While other forms of price regulation, such as rate of return controls, might fulfil certain objectives, we consider that price cap regulation better enhances dynamic and productive efficiency and is a long-standing approach to economic regulation in telecommunications and other sectors.

Choice of inflation index for the charge control

8.9 Inflation features in the setting of charge controls in two ways:

- First, to determine how the limit on prices is updated each year (e.g. in the form of CPI+X); and
- Second, when setting a charge control based on forecast costs, the cost inputs will typically be forecast to vary over time (and the cost of different inputs will vary in different ways – e.g. network element operating costs may vary differently from network element replacement costs).

8.10 In this section we are concerned with the first point i.e. how we should index the price caps for MTRs. The question of how the price of different network elements should be forecast to vary over time in our modelling is addressed in Section 7 and Annexes 11 – 17.

8.11 The reason for using an inflation index in the charge control formula is to protect the regulated firm and customers from a forecast error. If inflation rises by more than forecast, the annual update of inflation in the formula protects the firm from the cap being tighter than intended. Similarly, if inflation rises by less than forecast, the annual updating of the cap for inflation ensures that customers do not pay more than necessary to compensate the firm for general inflationary pressures.

Regulatory background

8.12 In January 2013, the Office of National Statistics (ONS) announced the outcome of its October 2012 consultation on RPI. The ONS concluded that the RPI "does not meet international standards and recommended that a new index be published".[228] The ONS has established a new index, which is the RPIJ[229] , which is designed to address the flaw identified in the methodology underpinning the RPI.

8.13 In March 2013, the UK Statistics Authority (UKSA, for which the ONS is an executive office) cancelled the designation of the RPI, including sub-indices, as National Statistics. However, the RPI will continue to be published, not least since it is important for index-linked government bonds (all of which are currently indexed to RPI). RPIJ has subsequently been designated as a national statistic.[230]

Stakeholder responses to the October 2013 industry workshop

8.14 The issue of which inflation index should be used, in the event that Ofcom imposed a charge control on MTRs as part of the 2015 MCT review, was raised at Ofcom's

[228] ONS, *Introducing the new RPIJ measure of Consumer Price Inflation*, 12 March 2013. http://www.ons.gov.uk/ons/guide-method/user-guidance/prices/cpi-and-rpi/introducing-the-new-rpij-measure-of-consumer-price-inflation.pdf
[229] RPIJ stands for Retail Price Index Jevons after the methodological change incorporated in it
[230] UK Statistics Authority, *Retail Prices Index*, Statement, 14 March 2013. http://www.statisticsauthority.gov.uk/news/statement---retail-prices-index---14-march-2013.pdf

October 2013 workshop. There we explained our proposal to use CPI as the inflation index. Participants at the workshop responded with mixed views on which inflation index we should use.

8.15 H3G noted that the ONS had announced that RPI does not meet international standards and would no longer be designated as a National Statistic. For this reason, it supported the use of CPI as the inflation index (consistent with that proposed for LLU and WLR).

8.16 Telefónica preferred the use of RPI as the inflation index to maintain consistency with earlier charge controls.

8.17 EE did not have strong views on which inflation index is used (so long as the impact on MCPs is taken into account) but considered that it is important that the justification for any change is based on the right and appropriate criteria.

8.18 Virgin Media referred to its response to Ofcom's 'Fixed access market review: Approach to setting LLU and WLR Charge Controls' consultation, published in July 2013[231] which also considered the choice of inflation index. In its response to that consultation[232] Virgin Media considered that the discussion on the potential change of inflation index is not sufficiently developed and, on balance, the status quo should be maintained, retaining RPI as the relevant metric for this control.

Our analysis and proposals

8.19 In the 2011 MCT review, we used RPI as the measure of inflation for indexing the MTR charge control. This inflation index was also used in earlier MTR charge controls.

8.20 However, the recent findings and announcements of the ONS have prompted us to consider the use of RPI in our charge controls. In addition to RPI and CPI, we see the main possible alternative as RPIJ. However, while a historic time series for RPIJ has been produced by the ONS (with annual changes calculated back to February 1998)[233], we are not aware of independent forecasts, over a sufficiently long time horizon being available.

8.21 Therefore, we consider that RPIJ would not be suitable and for the purposes of this consultation we propose to focus on whether RPI or CPI should be the measure of inflation for indexing the price cap.

8.22 Before considering the choice between RPI or CPI further, it should be noted that in principle the choice of RPI+X or CPI+X should not matter in terms of the end point for nominal charges. In expected terms either an RPI+X or a CPI+X cap should move charges from the starting level to the final year level, where the latter is based on

[231] Ofcom, *Fixed access market reviews: Approach to setting LLU and WLR Charge Controls,* Consultation, 11 July 2013. http://stakeholders.ofcom.org.uk/binaries/consultations/llu-wlr-cc-13/summary/LLU_WLR_CC_2014.pdf

[232] *Virgin Media's response to Ofcom's Consultation on the Approach to setting LLU and WLR Charge Controls*, 30 September 2013. http://stakeholders.ofcom.org.uk/binaries/consultations/llu-wlr-cc-13/responses/Virgin_Media.pdf

[233] ONS, *Introducing the new RPIJ measure of Consumer Price Inflation*, see footnote 228.

forecast costs. The end charges (in nominal terms) would be the same in both cases, but the X would vary depending on the measure of inflation used.[234]

8.23 We recognise that there is a risk that reality will not turn out as forecast, but provided we use unbiased forecasts of RPI or CPI, we should on average, achieve the forecast level.

8.24 In considering whether we should propose RPI or CPI for the purposes of this control, we have considered each against the factors below. This is consistent with the approach used by Ofcom in its charge controls for LLU and WLR as set out in the 2014 Fixed Access Market Review draft statement (2014 FAMR Draft Statement)[235] when faced with the same issue of considering the choice of inflation index.

- Official status of the index;
- Cost causality;
- Exogeneity: Is the index outside the control of the regulated firm?
- Availability of independent forecasts;
- Regulatory predictability.

Official status

8.25 There are various differences between RPI and CPI, including (a) the formula used to average relative prices; (b) the population base; (c) the commodity coverage; (d) geographical coverage; and (e) rounding conventions.

8.26 The focus of the October 2012 ONS consultation was on the formula used to average relative prices. This formula effect was found to contribute around 0.5% to 1% per annum of the difference between RPI and CPI. The other differences in the indices (noted in the paragraph above) mean that the differences between RPI and CPI will not be fully explained by the formula effect.

8.27 The ONS found that the use of an arithmetic mean (the so called 'Carli formula') to average relative price changes at the first stage of index construction was inferior to the use of the geometric average (the 'Jevons formula') as used in the CPI. The main concern identified by the ONS relates to the "upward bias" in the Carli formula which is related to the failure of the index to meet the time reversal test.[236] [237] Of the

[234] To illustrate this point, suppose that today's price is 1ppm and we forecast costs to be 0.9ppm in nominal terms. If RPI is forecast to be 3%, the RPI-X cap needs an X of 13%. If CPI is forecast to be 2%, the CPI-X cap needs an X of 12%. By adjusting the value of X, as between RPI and CPI indexation, we should end up at the same nominal cost (in forecast terms).

[235] Ofcom, *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 – Volume 2: LLU and WLR Charge Controls*, Draft Statement, 19 May 2014. http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/draftstatement/volume2.pdf

[236] That is, a Carli index calculated forwards between periods 0 to t exceeds one calculated backwards from periods t to 0.

[237] See pages 13-14 of ONS, *National Statistician's consultation on options for improving the Retail Prices Index*, 8 October 2012. http://www.ons.gov.uk/ons/about-ons/get-involved/consultations/archived-consultations/2012/national-statistician-s-consultation-on-options-for-improving-the-retail-prices-index/index.html

statistical institutes reviewed by the ONS, the UK was alone in using the Carli formula to construct national measures of consumer price inflation.[238]

8.28 Given the issues identified by the ONS, the RPI has since been de-designated as a National Statistic by the UKSA.

8.29 CPI does not use the same formula as RPI that was found problematic by the ONS. Furthermore, CPI remains a National Statistic.

Cost causality

8.30 An important part of the rationale behind indexing price caps is to compensate for forecast error in how costs might evolve over time. To this end, the choice of index should be reasonably reflective of the input prices affecting the regulated service.

8.31 The relationship with underlying costs is likely to be particularly important when setting cost-based price caps – i.e. where charges are controlled to align with costs either throughout the charge control period or by the end of the charge control period.

8.32 We have reviewed the input capex and opex price trends for the categories of costs in the 2014 MCT model with respect to how well they track against RPI and CPI. We have not been able to identify any clear relationship between CPI or RPI and the cost categories included in the 2014 MCT model. Consequently, we do not believe that either index is superior for tracking these costs.

Exogeneity

8.33 An important consideration in setting a charge control is that the index cannot be influenced by the regulated firm (or individual customers of that firm). Since CPI and RPI are both macroeconomic variables and the data is gathered by the ONS, each index is exogenous to the actions of individual operators or their individual customers.

Availability of independent forecasts

8.34 We typically use an independent forecast for inflation. Since RPI and CPI are widely used in the UK economy they are regularly forecast by analysts.

8.35 A useful compilation of such forecasts is produced by HM Treasury in its publication: *Forecasts for the UK Economy: a comparison of independent forecasts*.[239] From this publication, the average of medium term forecasts for 2018 CPI is 2.1% and RPI is 3.2%.

8.36 Another useful feature of CPI is that it forms the basis of the Bank of England's official inflation target. While actual CPI will inevitably vary from the official target, the

[238] See page 4 and Annex A, Table 2, of ONS, *International Comparisons of the Formula Effect between the CPI and RPI*, 20 March 2012.
http://www.ons.gov.uk/ons/guide-method/user-guidance/prices/cpi-and-rpi/improving-the-timeliness-of-the-cpi-and-rpi-publication.pdf

[239] See "Medium-term forecasts", May 2014, page 20 of HM Treasury, *Forecasts for the UK Economy: a comparison of independent forecasts*, May 2014.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/312824/201405forecomp.pdf

Bank of England seeks to set monetary policy to achieve 2% per annum, so in the medium to longer-term, we might expect to see CPI at or around 2% per annum[240]

Regulatory predictability

8.37 Regulatory predictability is important for dynamic efficiency since a regulatory environment that is predictable over time is more likely to be favourable to investment.

8.38 However, regulatory predictability does not mean doing the same thing at every market review. Instead, regulatory predictability requires that regulatory decisions are clearly reasoned, consulted on, and that stakeholders are given sufficient notice of regulatory changes.

8.39 While RPI has been the mainstay of indexing telecoms price caps to date, given the concerns with the RPI formula identified by the ONS and the UKSA's decision to no longer designate RPI as a National Statistic, we do not think that past regulatory practice should mean that RPI is presumed to stay as our index of choice for as long as the index is published.

8.40 CPI has not been used in the regulation of previous MCT charge controls. However, CPI has been used in the 2014 FAMR Draft Statement in relation to the LLU, WLR and WBA charge controls which will come into effect on 1 July 2014.[241] CPI has also been used by Ofcom in setting the safeguard caps on second class stamps.

Proposed inflation index

8.41 In light of the above evidence, we propose to use CPI as the inflation index in the charge control on MTRs. Therefore, we propose the charge control will be in the form of CPI+X.

8.42 The term X in the above formula contains a so-called geometric conversion factor to ensure that the real unit cost target is hit.[242] When we set a charge control, the value of X is set for each year of the control period. As such, CPI in the geometric conversion factor above must be based on a forecast for inflation, but not for the first year.[243]

Timing and duration of charge control

8.43 We propose to commence the 2015 MCT charge control on 1 April 2015. This commences immediately after the expiry of the current charge control.

8.44 The 2015 MCT review has a forward-looking period of three years, in line with the requirement in the Act and the Directives (as amended)[244] that ordinarily a market

[240] See Bank of England, 'Monetary Policy Framework', available at: http://www.bankofengland.co.uk/monetarypolicy/Pages/framework/framework.aspx
[241] See footnote 235.
[242] This is to avoid a mathematical error from the difference between a cap expressed in additive terms (i.e. CPI+X) and the fact that inflation and the required real reduction combine in a multiplicative way. The geometric (i.e. multiplicative) conversion factor is given by the real reduction, Y, multiplied by (1+CPI). That is, the value of X in the 1 + CPI + X formula, is given by X = Y*(1+CPI).
[243] We propose to use HMT's independent average medium-term forecast of CPI for the years 2016-2018 for the purposes of this consultation.
[244] See Art 16 of the Framework Directive 2001/21/EC, as amended by Directive 2009/140/EC. The Act was amended on 26 May 2011 to include these requirements under section 84A following

review should be conducted within three years of the previous review. We are proposing to set SMP conditions based on our analysis of potential market developments over the three-year period and believe that it is appropriate to align the proposed charge control with this period.

8.45 Therefore, we propose a three-year charge control period that would run from 1 April 2015 to 31 March 2018.

Scope of the charge control

8.46 In addition to the form and duration of the charge control, we need to consider the precise scope of the charge control. We identified the proposed scope of the defined markets in Section 3. The charge controls for the regulated MCPs will cover all MTRs charged for call types that fall within our proposed market definition for those MCPs.

8.47 MCT can be provided using different technologies and each MCP's technology mix will vary. When calculating the costs of a hypothetical efficient operator, we have two specific options regarding technology and operator cost modelling.

- Separate controls for each call termination technology or platform: This would involve charge controls for each MCT service by technology or platform; or
- Technology and operator neutrality: This would involve the same charge control for MCT provided by each of the charge controlled MCPs.

Separate charge controls for each call termination technology

8.48 This option would set separate controls for 2G, 3G and 4G or any other technology used to deliver MCT.

8.49 We consider that this approach fails to achieve an important policy objective, which is that regulation, where possible, should be technology neutral. Technology-specific regulation carries a number of risks, including being rendered ineffective or obsolete in the face of changes in the market(s). For this reason, technology neutrality is recognised as having value as a regulatory principle in the European Framework and in UK law (s.4(6) of the Act).

8.50 Another practical drawback in setting separate charge controls on 2G, 3G and 4G networks is that MCPs levy a single charge for termination no matter which technology it passes over. Currently, these providers cannot identify, on a call by call basis, whether a call is terminating using a specific technology and a call may transfer between these technologies during a call. As a result, today, charges for calls terminated on 2G and 3G networks are blended and charged at a single rate to all purchasers of MCT. We would also expect this to be the case for calls terminated on 2G, 3G and 4G networks.

Our proposal: Technology neutrality and operator neutrality

8.51 Given the drawbacks in relation to implementing separate charge controls for each call termination technology we propose to adopt a technology-neutral approach.

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amendment to the Directives on 19 December 2009. However, the requirement to review an earlier market power determination within a three-year period only applies where that market power determination was made after 25 May 2011 (see section 84A(4) of the Act and the market power determinations under review in this document were made prior to 25 May 2011.

Under this approach the MTR is capped independently of the technology used to terminate calls. This is consistent with the approach adopted in the March 2011 Statement.

8.52 We are also proposing to set an operator neutral-rate. Operator neutrality means that we set the same cap for all charge controlled MCPs (an outcome termed, in this document and in the 2009 EC Recommendation as 'symmetry').[245] This is also consistent with the approach adopted in the 2011 MCT review. However, as discussed in Section 5 the charge control is proposed to also apply to smaller MCPs.

8.53 Technology neutrality does not imply that the assessment of forward-looking costs can ignore the question of which technologies are available to MCPs. For example, when we model efficient costs we need to make certain assumptions about the technology mix available. The assumptions regarding the choice of technologies in the 2014 MCT model are discussed in more detail in Section 7, Annex 11 and Annex 12.

8.54 We consider that a single cap on termination rates benefits consumers. In general, consumers are unaware of, and are likely to be largely indifferent to, the type of network their calls terminate on and the technology used. With a single cap, the end user is more likely to face the same charge for what is, from their perspective, the same service.

8.55 Moreover, by modelling the efficient technology mix, MCPs with higher costs are unable to pass these higher costs through to calling parties – particularly where the latter gain no benefit.

8.56 Furthermore, if a MCP is less efficient in its network deployment than the average efficient MCP, it can always purchase access from a wholesale provider – there are today four national MCPs offering wholesale airtime contracts.

8.57 The 2009 EC Recommendation also recommends that a single efficient cost level should be identified, stating:

> "In setting termination rates, any deviation from a single efficient cost level should be based on objective cost differences outside the control of operators."[246]

8.58 An example of an exogenous factor that could cause such a cost difference is uneven spectrum assignments. However, where spectrum assignments have been carried out using a market mechanism, or where there is a secondary market in place, frequency induced cost differences are likely to be significantly reduced or eliminated.

An absolute maximum rate cap

8.59 In the March 2011 Statement, we decided to implement a simpler pricing rule (i.e. imposing a maximum absolute charge) for MTRs to prevent the practice whereby some MCPs imposed regular and substantial changes in their MTRs – a practice referred to as 'flip-flopping'. This was done in order to take advantage of the average charge formula and increase the MCP's actual revenues without exceeding the

[245] See section 3.1.3 of the 2009 EC Recommendation
[246] Paragraph 9 of the 2009 EC Recommendation

charge control (which was based on average charges calculated by reference to prior year volumes, not in year volumes).

8.60 Therefore, while allowing MCPs the ability to set different MTRs by time of day could have been used for efficient traffic management on their networks, we considered that the abuse of the flexibility allowed within the pre-2011 charge controls (via the practice of 'flip-flopping') was likely to operate counter to this efficiency objective since it was harmful to originating CPs and ultimately consumers.

8.61 Our concern was that 'flip-flopping' was harmful to the interests of customers because:

- It allowed MCPs to gain extra revenue beyond that envisaged by the regulator when the charge control was set.
- Frequent and radical changes in time of day rates increased the risks for originating providers and potentially raised their costs, in a way that was not susceptible to competitive pressure.
- Some purchasers of MCT may need to set higher retail prices to their customers to lessen the impact of these frequent changes to mitigate the risk of setting retail prices significantly below the wholesale rates.
- Even if new rates were not directly passed through to consumers in the form of high retail prices at the time they happen, retail customers are still likely to lose out in the long run from higher overall rates. If originating providers do not pass through any kind of price increase (or allow a premium in retail tariffs to cover future expected increases) then they will be worse off. In practice, this means that they are likely to recover those additional costs in some way that is ultimately borne by consumers

8.62 We consider that the absolute maximum cap imposed in the March 2011 Statement has effectively removed the risk of 'flip-flopping' that would have been present under an average charge cap and has thereby addressed the concerns previously identified. For the same reasons, we propose that an absolute maximum price cap is a proportionate approach to preventing this potential harm from 1 April 2015.

Profile of MTRs over the charge control period

8.63 In the March 2011 Statement, having considered the overall benefits of setting MTRs at LRIC, our starting position was that it was desirable for MTRs to be set at LRIC as soon as possible (in order for the benefits of MTRs at LRIC to be realised quickly). However, to ensure that we met the objective justification and proportionality obligations of our statutory obligations (described in Article 13 of the Access Directive and section 88 of the Act), we also considered the costs of moving to LRIC under different timeframes.

8.64 In weighing-up the options for a glide path to setting MTRs at LRIC we considered that the practical regulatory objectives to balance were as follows:

- reductions should be achieved sufficiently quickly in order to deliver substantial benefits to consumers; and

- reductions should allow sufficient time for operators and consumers to adjust to new levels and, in the case of consumers, potentially structures of mobile prices.[247]

8.65 Based on an assessment of the benefits of a shorter glide path against those of a longer glide path, we concluded that a four-year charge control glide-path was appropriate (i.e. where MTRs would be set at LRIC by the start of the fourth-year of the charge control, 1 April 2014). Following an appeal of the March 2011 Statement, in accordance with the CAT Judgment and the CC Determination, we subsequently implemented a three-year glide path whereby MTRs reached LRIC by the start of the third-year of the charge (i.e. 1 April 2013). The duration of the charge control period remained at four years.

8.66 We consider that there are two options for determining the profile of MTRs over the control period for the 2015 MCT review.

- Glide path approach: MTRs follow a glide path between the existing MTR and the proposed MTR at the start of the final year of the charge control (i.e. 1 April 2017); or

- LRIC cap for each and every year: Set MTRs with reference to LRIC (as determined by the MCT model) for each year of the charge control.

8.67 We note that the 2009 EC Recommendation does not specify a preferred profile for the MTR cap following the recommended date of implementing MTRs at LRIC by 31 December 2012 (i.e. in subsequent charge control periods later than 31 December 2012).

8.68 We believe that the framework used in the 2011 MCT review remains an appropriate starting point for weighing up the options. Therefore, given the overall benefits of setting MTRs at LRIC for consumers (as discussed in section 6), our starting position is that MTRs should be set at LRIC as quickly as is reasonable and proportionate whilst allowing sufficient time for MCPs and consumers to adjust.

Allowing sufficient time for MCPs and consumers to adapt to reductions in MTRs

8.69 Evidence that the proposed reduction in MTRs would cause disruption to MCPs investment and business plans would provide support for adopting a glide path approach. Indeed, this was a factor in our decision to adopt a glide path for the 2011 MCT review. We have therefore assessed the potential disruption to MCPs from our proposed reduction in MTRs in relation to the following issues:

- The strength of the waterbed effect;

[247] In one-way access settings, incentivising cost reducing investment is a critical part of the regulatory trade-off. In general, the longer prices are not re-set to an estimate of contemporaneous cost, the more high power the regulatory incentive scheme – that is, the longer the pay-off from investing in cost reducing investments. It is for this reason that regulators often favour longer charge control periods with a glide path. However, because there is competition in retail mobile access and origination between individual mobile networks, and because termination assets are also used to provide other services (such as origination), we presume that investments are cost efficient. This contrasts with situations of one-way access regulation where there is no, or at most limited, competitive pressure on the investments in the bottleneck of interest. Therefore, in the context of termination markets incentivising investment in cost reducing activities is of less importance than the competition and allocative efficiency reasons for intervening in the market.

- The potential size of the reduction in MTRs and the impact on profitability; and

- The impact on investment plans.

8.70 MCT is a two-sided market, that is, it is a market that has two distinct user groups that provide each other with network benefits. In the context of MCT, there are MCPs seeking termination on a network on behalf of the calling party on one side of the market and, on the other side, retail subscribers to the called network. Therefore, MCT costs can be recovered via another side of the market – i.e. revenue received from retail subscribers to the network.

8.71 Since there is competition in the provision of mobile retail services and because network components used to provide termination services are also used to provide other competitive services, we would expect that MCPs already have some incentives to operate efficiently and therefore the benefits of introducing a glide path for the purpose of creating greater incentives are likely to be limited.

8.72 In respect of network investment, different MCPs will implement different replacement investment programmes. Each network will be at different phases in building, testing and installing technology upgrades. However, we recognise that investment in mobile networks remains significant, and that MCPs are in a heavy wave of investment in 4G assets.

8.73 We estimate that the net reduction in MTR revenues as a result of the proposed MTRs (when compared to the current rate) will be around £35m in each year of the charge control (2012/13 prices).[248] In contrast to an each and every year LRIC cap, a glide path would provide additional MTR revenues of around £24m in NPV terms in 2012/13 prices over the control period if this were not dissipated on the retail side of the market.

8.74 However, the reduction in MTRs from current levels to the new projection of LRIC is a negligible proportion of MCP revenues (of around £15.6bn in 2013) and a very small proportion of EBITDA (of around £4.5bn in 2013).[249] Moreover, the reduction from LRIC+ to LRIC in the previous control period represented a much larger reduction in MTRs in both ppm and £m terms and investment by MCPs has continued steadily.[250]

8.75 It does not therefore seem that the additional revenue that would stem from higher MTRs under a glide path approach is likely to be a particularly important driver of efficient investment in UK mobile services.

8.76 In light of the evidence set out above, we consider that the disruptive effect on MCPs of moving quickly to the proposed MTRs will be considerably less marked than in the 2011 MCT review and does not support having a long glide path. We also do not

[248] By 'net' reduction in MTR revenues, we mean the revenue impact of the change in MTRs excluding (i) on-net calls (which do not incur an MTR); and (ii) excluding off-net mobile-to-mobile call volumes since the reduction in revenues from lower MTRs matches the lower outpayments when MTRs are symmetric (i.e. 1 minute of MCT sold to another MCP is worth the same as a minute of MCT purchased from a MCP). Therefore, across all MCPs the revenue impact for off-net mobile to mobile calls will be zero.

[249] Given the two-sided nature of MCT, we would expect reductions in MTRs to be recouped on the retail side of the market. Even if the waterbed effect were incomplete, or even negligible, these figures show that MTRs are a negligible proportion of MCP revenues and EBITDA.

[250] See paragraph 6.51

believe a glide path would provide any significant incentives for MCPs to be more efficient.

Risks of setting MTRs below LRIC using a glide path

8.77 In principle, we would be concerned if a glide path resulted in MTRs being set below LRIC at any point during the charge control period. This is because it would not accord with our main economic objectives for setting charge controls of[251]:

8.77.1 Allocative efficiency, meaning that prices reflect forward looking marginal (or incremental) costs.

8.77.2 Productive efficiency, meaning that MCPs face incentives to minimise costs and there are efficient "build or buy" signals.

8.77.3 Dynamic efficiency, meaning that there is scope for increases in output possible from existing resources as techniques of production are improved and/or new services are developed. Dynamic efficiency is driven by successful investment and innovation. Delivering dynamic efficiency in regulated markets typically involves providing the opportunity (but not a guarantee) for firms to recover efficiently incurred costs, consistent with what would be expected in a competitive market.

8.77.4 Effective competition, meaning that our intervention promotes competition (i.e. those able to do things more efficiently can do so using their own resources and infrastructure) but does not unnecessarily restrict the ability of MCPs or other CPs already operating in regulated markets from competing.

8.78 In the event that MTRs at the start of a charge control period were below LRIC, we would be likely to make a one-off adjustment to the regulated MTR so that MCPs were able to recover the LRIC of providing MCT.[252]

8.79 We believe that we should have a symmetric approach to our treatment of one-off adjustments. Given the likelihood that we would make an upward adjustment to MTRs in the event that MTRs were below LRIC, we also believe that, a downward adjustment should be made to align MTRs with LRIC.

Proposal

8.80 In light of the benefits to competition and consumers of setting MTRs aligned with LRIC and our desire to have a symmetric approach to one-off adjustments we do not propose to adopt a glide path to the new estimate of LRIC for a hypothetical efficient operator.

8.81 Instead, we propose to adopt the approach of MTRs being set with reference to LRIC (as determined by our MCT cost model) in each and every year of the charge control.

[251] Further discussion of these objectives is found in Annex 11.

[252] We have considered making one-off adjustments in previous market reviews, For example, in our consultation to set a price control for ISDN30 in 2011, we indicated that a one-off adjustment might be appropriate where there are strong allocative efficiency arguments to bring prices in line with cost. Ofcom, *Price controls for wholesale ISDN30 services, Consultation on the form and level of price controls on Openreach wholesale ISDN30 services*, Consultation, 1 April 2011 http://stakeholders.ofcom.org.uk/binaries/consultations/isdn30-2011/summary/isdn30-2011.pdf

Measuring compliance with the control

8.82 We believe that it is in the interests of all parties, and ultimately, consumers, that we specify a common practice to ensure consistency among different interconnecting operators. Therefore, consistent with the 2011 MCT review, we propose rounding the cap to three decimal places. As such, we propose that the MTR billed by an MCP will be rounded to three decimal places when judging whether it is compliant with the cap.

8.83 We propose to publish the nominal cap that applies to MCT prior to each year of the control.

Legal tests

8.84 Section 87(9)(a) of the Act authorises the setting of an SMP condition imposing charge controls in relation to matters connected with the provision of network access. Section 88(1) of the Act authorises the setting of an SMP condition falling within section 87(9) where it appears to us that there is a relevant risk of adverse effects arising from price distortion and it also appears to us that the setting of the condition is appropriate for the purposes of:

- promoting efficiency;
- promoting sustainable competition; and
- conferring the greatest possible benefits on the end-users of public electronic communication services (PECS).

8.85 As discussed in Section 4, based on our market analysis we consider that there is a relevant risk of adverse effects arising from price distortion as, absent regulation, MCPs would have the ability and incentive to set excessive MTRs.

8.86 We consider that the proposed charge control condition is appropriate for promoting efficiency as it addresses the inefficient structure of charges that results from excessive MTRs. Setting MTRs at LRIC encourages efficient consumption of services, as prices more closely reflect true resource costs.

8.87 We consider that the proposed charge control condition is appropriate for the purposes of promoting sustainable competition as it seeks to address the distortions of competition which arise from excessive MTRs. In particular, we consider that a LRIC cost standard best promotes sustainable competition, as it will intensify retail price competition, eliminate the barriers to expansion that would otherwise exist, and reduce the competitive impact of the difference between MTRs and FTRs.

8.88 We consider that the proposed charge control condition is appropriate for the purpose of conferring the greatest possible benefits on end-users of PECS. We consider that consumer benefit is maximised by our proposed choice of a LRIC cost standard.

8.89 We have taken account of the extent of investment by MCPs, as required by section 88(2) of the Act. In designing the charge control, we have taken into account the reasonable rates of return on investment required by an average efficient MCP. We consider that MCPs will continue to have the ability and incentive to invest, following the proposed imposition of Draft SMP Condition M3.

8.90 We consider that the proposed charge control condition meets the criteria set out in section 47 of the Act because it is:

i) Objectively justifiable, in that it is aimed at ensuring that MCT services are provided by MCPs at a price level that will secure efficient and sustainable competition and maximise consumer benefits. As explained in Section 5, we consider it appropriate to impose a charge control on all MCPs (regardless of retail position) as we consider that, on balance, this approach would be more effective at remedying the harm that would be caused by excessive MTRs than if some MCPs were not to be subjected to this SMP condition;

ii) Not unduly discriminatory, in that it applies equally to all designated MCPs;

iii) Proportionate, because it is the least restrictive means to address the concerns set out earlier in relation to the harm arising from MCPs' ability and incentives to charge MTRs that are above cost. As explained in Section 5, whilst we recognise that a charge control is arguably a more intrusive remedy than an obligation to ensure MTRs are fair and reasonable, we consider that, in terms of compliance costs, a simple charge control of the type we envisage (i.e. a charge control that sets a flat rate cap but does not impose additional obligations such as periodic compliance calculation and reporting) would not necessarily be more burdensome. We also consider that it is proportionate to apply a charge control to the smaller MCPs having regard to the fact that we consider it would be more effective at remedying the harm caused by excessive MTRs; and

iv) Transparent, in that the condition is transparent in its operation and has been accompanied (in this document) by an explanation of its intended operation and effect.

8.91 We have set out a transparent explanation of the proposed operation and objectives of the proposed charge control condition. Moreover, the form of the charge control (a maximum charge ceiling) is itself transparent and maintains the simple mechanism set by our March 2011 Statement. We consider that the simple charge control supports the proportionality and transparency of the condition.

8.92 We have carefully considered our duties under Section 3 of the Act. We consider that the imposition of the proposed condition is consistent with our primary duty to further the interests of citizens and to further the interests of consumers, where appropriate by promoting competition. We have had regard, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money. Of the prescribed statutory objectives in section 3(2) of the Act, we consider that securing the availability throughout the UK of a wide range of electronic communication services is particularly relevant to this review.

8.93 As discussed in Section 6, we have assessed the impact on consumers of basing a charge control on a LRIC cost standard, in terms of ownership, pricing and use of communications services. Although the evidence available has not allowed us to draw firm conclusions on all aspects of the likely impact on consumers of basing a charge control on LRIC, we consider that on balance the use of a LRIC cost standard is beneficial to consumers.

8.94 We have also considered our other duties under section 3 of the Act, particularly the obligation to have regard to the needs of the disabled, the elderly and those on low incomes (section 3(4)(i) of the Act). In Section 6, we have given careful consideration to the distributional impacts of imposing a charge control based on LRIC and we

consider that vulnerable customers are unlikely to be significantly affected under LRIC MTRs, relative to LRIC+.

8.95 In Section 5, we have also taken into account our other duties under section 3(4) of the Act as relevant, e.g. in particular the desirability of promoting competition in relevant markets and the desirability of encouraging investment and innovation.

8.96 Finally, we have acted in accordance with the six European Community requirements set out in section 4 of the Act. Of particular relevance to this decision are the requirements to promote competition in the provision of ECN and ECS, to take account of the desirability of acting in a technologically neutral manner, to promote the interests of all persons who are EU citizens, and to encourage the provision of network access for the purpose of securing efficient and sustainable competition and the maximum benefit for customers of communication providers. We have explained above that we consider the proposed charge control condition (and our choice of a LRIC cost standard) to be appropriate and proportionate for end-users. In seeking to maximise consumer benefit, we also consider that we are promoting the interests of EU citizens. In this context we have considered the needs of specific social groups of consumers and consider that our proposals do not result in significant equity concerns. In our design of the charge control, and by imposing a charge control ceiling on all MCPs, we have taken into account the desirability of acting in a technologically neutral manner.

Summary

8.97 We propose the following:

- To set a three year charge control that starts on 1 April 2015 and ends on 31 March 2018;
- The cap will be expressed as maximum charge and set to three decimal places;
- The annual specification of the nominal cap for each year of the control will be set with reference to a CPI+X formula;
- MTRs will be set with reference to the LRIC outputs of our MCT model in each and every year of the control (i.e. we will not implement a glide path).

Question 8.1: Do you agree with our proposed approach to implementing the MCT charge control? If not, please discuss the specific proposals that you disagree with.

Annex 1

Responding to this consultation

How to respond

A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 13 Aug 2014**.

A1.2 Ofcom strongly prefers to receive responses using the online web form at http://stakeholders.ofcom.org.uk/consultations/mobile-call-termination-14/howtorespond/form as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email MobileTermination2015@ofcom.org.uk Cc Valeria.Baiamonte@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.

A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.

Valeria Baiamonte
Floor 4
Competition Group
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 7783 4109

A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Confidentiality

A1.7 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, ideally on receipt. If you think your response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

A1.8 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.

A1.9 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at http://www.ofcom.org.uk/about/accoun/disclaimer/

Next steps

A1.10 Following the end of the consultation period, Ofcom intends to publish a statement between February and March 2015.

A1.11 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

A1.12 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.

A1.13 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.

A1.14 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Graham Howell, Secretary to the Corporation, who is Ofcom's consultation champion:

Graham Howell
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA

Tel: 020 7981 3601

Email Graham.Howell@ofcom.org.uk

Annex 2

Ofcom's consultation principles

A2.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A2.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

A2.3 We will be clear about who we are consulting, why, on what questions and for how long.

A2.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A2.5 We will consult for up to 10 weeks depending on the potential impact of our proposals.

A2.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why.

After the consultation

A2.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 3

Consultation response cover sheet

A3.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.

A3.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.

A3.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.

A3.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at www.ofcom.org.uk/consult/.

A3.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing ☐

Whole response ☐

Part of the response ☐

Name/contact details/job title ☐

Organisation ☐

If there is no separate annex, which parts?

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here. ☐

Name

Signed (if hard copy)

Annex 4

Consultation questions

Question 3.1: Do you agree with Ofcom's view of the relevant market? If not, please explain why.

Question 5.1: Do stakeholders agree with our assessment of the harm that would result from a lack of effective competition in MCT markets?

Question 5.2: Do you agree with our assessment that ex-post competition law would not be sufficient to address the competition problems we have identified, and that therefore deregulation is not a regulatory option?

Question 5.3: Do you agree with our proposal to impose an obligation to provide network access on reasonable request on all MCPs with SMP? If not, please explain why.

Question 5.4: Do you agree with our proposal to impose a price transparency obligation on all MCPs with SMP? If not, please explain why.

Question 5.5: Do you agree with our proposal to impose a non-discrimination obligation on the four largest MCPs, but not on smaller MCPs? If not, please explain why.

Question 5.6: Do you agree that our proposal to impose a charge control on the four largest MCPs is appropriate? If not, please explain why.

Question 5.7: Do you agree that our proposal to impose a charge control on all other MCPs with SMP is also appropriate? If not, please explain why.

Question 6.1: Do you agree that the above framework is the appropriate one? If not, please explain why.

Question 6.2: Do you agree with our analysis and views on allocative efficiency? If not, please explain why.

Question 6.3: Do you agree with our analysis and views on dynamic efficiency? If not, please explain why.

Question 6.4: Do you agree with our analysis and views on competition impacts? If not, please explain why.

Question 6.5: Do you agree with our analysis and views on the impact on vulnerable consumers? If not, please explain why.

Question 6.6: Do you agree with our analysis and views on regulatory and commercial impacts? If not, please explain why.

Question 6.7: Do you agree with our proposal that LRIC should continue to be the appropriate cost standard? If not, please explain why.

Question 7.1: Do you agree with our proposed modelling approach as discussed in this section, the supporting annexes and the 2014 MCT model? If not, please discuss the specific proposals that you disagree with.

Question 8.1: Do you agree with our proposed approach to implementing the MCT charge control? If not, please discuss the specific proposals that you disagree with.