

Reference under section 193 of the Communications Act 2003

Hutchison 3G UK Limited v Office of Communications

Case 1083/3/3/07

British Telecommunications plc v Office of Communications

Case 1085/3/3/07

Mobile phone wholesale voice termination charges

Determination

16 January 2009

Excisions in this determination marked with ✂ relate to commercially confidential information: Schedule 4 paragraph 1 to the Enterprise Act 2002.

Members of the Competition Commission who conducted this appeal

Dr Peter Davis (Chairman of the Group)

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1. Introduction to the Competition Commission's determination

Preamble

- 1.1 On 27 March 2007 the Office of Communications (Ofcom) published a Statement on Mobile Call Termination (the MCT Statement). The MCT Statement set out the conclusions of Ofcom's review of the market(s) for the supply of wholesale mobile voice call termination (MCT)—the service necessary to connect a caller with the intended mobile recipient of a call on a different network.
- 1.2 Ofcom concluded that there were separate markets for the provision of wholesale MCT in the UK to other communications providers by each of O2, Orange, T-Mobile, Vodafone and H3G, that each of the five mobile network operators (MNOs) had significant market power (SMP) in the market for termination of voice calls on its network(s), and that charge controls¹ should be imposed on the supply of MCT by each of the five MNOs and should apply without distinction to voice call termination whether on 2G or 3G networks.²
- 1.3 The SMP conditions that Ofcom imposed, which contained the charge control provisions, were set out at Annex 20 of the MCT Statement. Prior to the conditions coming into effect, charge controls had been imposed on O2, Orange, T-Mobile and Vodafone (the 2G/3G MNOs) in respect of calls terminated on their 2G networks. Charge controls had not previously been imposed on calls terminated on 3G networks. H3G, which operates only a 3G network, had not previously been subject to MCT charge controls.

The appeals and the appellate framework

- 1.4 Both H3G and BT brought appeals against the MCT Statement to the Competition Appeal Tribunal (the Tribunal) under section 192 of the Communications Act 2003 (the 2003 Act). BT and H3G both intervened in each other's appeal, and O2, Orange, T-Mobile and Vodafone (the Interveners) all intervened in both appeals.
- 1.5 The 2003 Act provides for a specific appellate regime for appeals relating to price controls imposed by Ofcom. It provides, in relevant part:

192 Appeals against decisions by OFCOM, the Secretary of State etc.

...

- (2) A person affected by a decision to which this section applies may appeal against it to the Tribunal.

...

- (5) The notice of appeal must set out—
 - (a) the provision under which the decision appealed against was taken; and
 - (b) the grounds of appeal.

¹The terms 'charge controls' and 'price controls' appear to have been used interchangeably by the parties in this appeal and we have not made a distinction ourselves between these terms.

²Ofcom's MCT Statement, paragraph 1.10.

- (6) The grounds of appeal must set be out in sufficient detail to indicate—
 - (a) to what extent (if any) the appellant contends that the decision appealed against was based on an error of fact or was wrong in law or both; and
 - (b) to what extent (if any) the appellant is appealing against the exercise of a discretion by OFCOM, by the Secretary of State or by another person.

...

193 Reference of price control matters to the Competition Commission

- (1) Tribunal rules must provide in relation to appeals made under section 192(2) relating to price control that the price control matters arising in that appeal, to the extent that they are matters of a description specified in the rules, must be referred by the Tribunal to the Competition Commission for determination.
 - (2) Where a price control matter is referred in accordance with Tribunal rules to the Competition Commission for determination, the Commission is to determine that matter—
 - (a) in accordance with the provision made by the rules;
 - (b) in accordance with directions given to them by the Tribunal in exercise of powers conferred by the rules; and
 - (c) subject to the rules and any such directions, using such procedure as the Commission consider appropriate.
 - (3) The provision that may be made by Tribunal rules about the determination of a price control matter referred to the Competition Commission in accordance with the rules includes provision about the period within which that matter is to be determined by that Commission.
 - (4) Where the Competition Commission determines a price control matter in accordance with Tribunal rules, they must notify the Tribunal of the determination they have made.
 - (5) The notification must be given as soon as practicable after the making of the notified determination.
 - (6) Where a price control matter arising in an appeal is required to be referred to the Competition Commission under this section, the Tribunal, in deciding the appeal on the merits under section 195, must decide that matter in accordance with the determination of that Commission.
 - (7) Subsection (6) does not apply to the extent that the Tribunal decides, applying the principles applicable on an application for judicial review, that the determination of the Competition Commission is a determination that would fall to be set aside on such an application.
- ...
- (9) For the purposes of this section an appeal relates to price control if the matters to which the appeal relates are or include price control matters.

(10) In this section ‘price control matter’ means a matter relating to the imposition of any form of price control by an SMP condition the setting of which is authorised by—

(a) section 87(9);

(b) section 91; or

(c) section 93(3).

...

195 Decisions of the Tribunal

(1) The Tribunal shall dispose of an appeal under section 192(2) in accordance with this section.

(2) The Tribunal shall decide the appeal on the merits and by reference to the grounds of appeal set out in the notice of appeal.

(3) The Tribunal’s decision must include a decision as to what (if any) is the appropriate action for the decision-maker to take in relation to the subject-matter of the decision under appeal.

(4) The Tribunal shall then remit the decision under appeal to the decision-maker with such directions (if any) as the Tribunal considers appropriate for giving effect to its decision.

(5) The Tribunal must not direct the decision-maker to take any action which he would not otherwise have power to take in relation to the decision under appeal.

(6) It shall be the duty of the decision-maker to comply with every direction given under subsection (4).

...

1.6 The Tribunal rules referred to in section 193 are the Competition Appeal Tribunal (Amendment and Communications Act Appeals) Rules 2004 (SI 2004 No 2068) (the 2004 Rules). The 2004 Rules provide, in relevant part:

Reference of price control matters to the Competition Commission

3.—(1) For the purposes of subsection (1) of section 193 of the Act, there is specified every price control matter falling within subsection (10) of that section which is disputed between the parties and which relates to—

(a) the principles applied in setting the condition which imposes the price control in question,

(b) the methods applied or calculations used or data used in determining that price control, or

(c) what the provisions imposing the price control which are contained in that condition should be (including at what level the price controls should be set).

...

(5) The Tribunal shall refer to the Commission for determination in accordance with section 193 of the Act and rule 5 every matter which ... it decides is a specified price control matter.

...

Determination by Competition Commission of price control matters

5.—(1) Subject to any directions given by the Tribunal (which may be given at any time before the Commission have made their determination), the Commission shall determine every price control matter within four months of receipt by them of the reference.

(2) The Tribunal may give directions as to the procedure in accordance with which the Commission are to make their determination.

(3) The Tribunal may give directions under this rule of its own motion or upon the application of the Commission or of any party.

- 1.7 The SMP conditions imposed by Ofcom in the MCT Statement were imposed pursuant to section 87(9) of the 2003 Act. Accordingly, the price control matters in the BT and H3G appeals fell to be identified and referred to us for determination.

The Tribunal's reference

- 1.8 In its Ruling on the *Reference of Specified Price Control Matters to the Competition Commission [2008] CAT 5* (the Reference Ruling), the Tribunal held that all of the issues in the BT appeal were specified price control matters to be determined by us and that H3G's appeal included price control matters which fell to be determined by us and non-price control matters which fell to be determined by the Tribunal itself.¹
- 1.9 The Reference Ruling was accompanied by a schedule entitled Reference of Specified Price Control Matters to the Competition Commission 18 March 2008 (the Reference) which specified the price control matters that were being referred to us for determination.
- 1.10 The Reference contained an order for us to determine a number of questions. One question (divided into four sub-questions) related to the BT appeal² and six questions (divided into ten sub-questions) related to the H3G appeal. Those questions, broadly, asked us to determine whether Ofcom had erred for specific reasons given by the parties. A final question (question 8), which related to both appeals, asked us to include in our determination, if the answers to any of the previous questions were 'yes', clear and precise guidance as to how any such error found should be corrected and, in so far as was reasonably practicable, a determination as to any consequential adjustments to the level of the price controls.³

¹[2008] CAT 5, 18 March 2008, paragraphs 6 & 7.

²During the course of the appeal BT stated that it was not pursuing its claim that Ofcom erred in failing to take proper account of the cost savings arising from network sharing between the MNOs (reference question 1(iv)) We have therefore not determined the issue.

³The two appeals are distinct in that they each relate to different aspects of Ofcom's decision. However, since there is an interaction between them (to the extent that our acceptance of any or all of each of them will have an impact on the level of the price controls), we have considered whether our determinations in each appeal affect our conclusions in the other. Our views are set out, where appropriate, in the determinations that follow.

- 1.11 The Reference gave us a deadline of 31 October 2008 by which to determine the issues that had been referred to us. The deadline was subsequently twice extended by the Tribunal. A copy of the Reference, and of the Tribunal's Orders giving the extensions, are at Appendix A.

The legal framework

- 1.12 Regulation of the telecommunications sector takes place across Europe under what is known as the European Common Regulatory Framework (CRF). The CRF consists of a number of Directives, the most relevant of which are Directive 2002/21/EC on the common regulatory framework for electronic communications networks and services (the Framework Directive) and Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities (the Access Directive). The CRF imposes on member states the obligation to designate independent national regulatory authorities (NRAs), sets out objectives and principles that the NRAs are to be guided by in carrying out their functions, obliges them to carry out market reviews, and empowers them to impose certain obligations on undertakings with SMP including price controls. Of particular relevance to this appeal are Articles 8 and 13 of the Access Directive, which provide, in relevant part:

Article 8

Imposition, amendment or withdrawal of obligations

1. Member States shall ensure that national regulatory authorities are empowered to impose the obligations identified in Articles 9 to 13.

2. Where an operator is designated as having significant market power on a specific market as a result of a market analysis carried out in accordance with Article 16 of Directive 2002/21/EC (Framework Directive), national regulatory authorities shall impose the obligations set out in Articles 9 to 13 of this Directive as appropriate.

...

Article 13

Price control and cost accounting obligations

1. A national regulatory authority may, in accordance with the provisions of Article 8, impose obligations relating to cost recovery and price controls, including obligations for cost orientation of prices and obligations concerning cost accounting systems, for the provision of specific types of interconnection and/or access, in situations where a market analysis indicates that a lack of effective competition means that the operator concerned might sustain prices at an excessively high level, or apply a price squeeze, to the detriment of end-users. National regulatory authorities shall take into account the investment made by the operator and allow him a reasonable rate of return on adequate capital employed, taking into account the risks involved.

2. National regulatory authorities shall ensure that any cost recovery mechanism or pricing methodology that is mandated serves to promote efficiency and sustainable competition and maximise consumer benefits. In this regard national regulatory authorities may also take account of prices available in comparable competitive markets.

- 1.13 The UK's NRA is Ofcom and the CRF was implemented in the UK by the 2003 Act, in which the powers and duties set out in the Directives are reflected.
- 1.14 Section 45 of the 2003 Act provides Ofcom with the power to set binding conditions, including SMP conditions. An SMP condition can be applied to a communications provider that Ofcom has determined as having SMP in a specific market (sections 46(7)–(8)), but only if Ofcom is satisfied that the following tests (found in section 47) are met:
- (a) that the condition is objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates;
 - (b) that the condition is not such as to discriminate unduly against particular persons or against a particular description of persons;
 - (c) that the condition is proportionate to what it is intended to achieve; and
 - (d) that the condition is, in relation to what it is intended to achieve, transparent.
- 1.15 Section 87(9) gives Ofcom the specific power to set SMP conditions that impose price controls. The imposition of price controls is subject to section 88, which provides, in relevant part:

88 Conditions about network access pricing etc.

- (1) OFCOM are not to set an SMP condition falling within section 87(9) except where—
 - (a) 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; and
 - (b) it appears to them that the setting of the condition is 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.
 - (2) In setting an SMP condition falling within section 87(9), OFCOM must take account of the extent of the investment in the matters to which the condition relates of the person to whom it is to apply.
- 1.16 The 2003 Act, in line with the CRF, also imposes more general duties upon Ofcom. These include, in section 3, duties to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate by promoting competition. Section 4 imposes certain duties on Ofcom for the purpose of fulfilling EC obligations, which, in so far as are relevant, include a requirement to promote competition in relation to the provision of electronic communications networks and services, and a requirement to take account of the desirability of it carrying out its functions in a manner which, so far as practicable, does not favour one form of electronic communications network, service or

associated facility over another or one means of providing or making available such a network, service or facility over another.

- 1.17 Although the specific questions that have been referred to us for determination focus on particular aspects of the price controls, we have had regard, in relation to each of them as well as in relation to our overall conclusions, to the CRF and the domestic provisions implementing it. We consider our conclusions to be consistent with the legal framework.

Our role

- 1.18 Prior to the terms of the reference being finalized, there was some dispute as to the nature of the investigation that we would be carrying out and the range of possible outcomes of our investigation. These matters were considered by the Tribunal in its Reference Ruling.
- 1.19 One such matter related to whether, in the event that we found some or all of the challenges to the level of the price control to be well founded, we should go on to determine for ourselves what the appropriate level of the price controls should be. BT, H3G and Ofcom argued that we should if possible determine the new price control, recognizing, however, that whether this would in fact be possible might depend on which of the grounds of appeal (if any) were successful.¹ The Interveners, broadly, argued that it was not our task to devise a new price control, and that if we found that the MCT Statement was flawed we would have to remit the question of the level of the price controls to Ofcom for reconsideration.²
- 1.20 The Tribunal accepted the arguments of BT and Ofcom that the aim of the statutory provisions was that the disposal of the appeal, incorporating our determination, should result in as high a degree of finality as possible, having regard to the grounds of appeal and the nature of our findings. It encouraged us to conduct our investigation in such a manner and to express our determination in such terms as to make clear what directions it should give in respect of the specified price control matters when remitting the decision to Ofcom. The Tribunal considered it desirable that those directions and the disposal of the appeals should, in effect, settle the question of what the price control should be for the period covered by the MCT Statement, and stated that we should carry out our investigation with that goal firmly in mind.³ It added that it had drafted the Reference questions in such a way as to acknowledge the possibility that it might not be possible for us to set an alternative price control, but so as to ensure as far as possible that the appeal resulted in a revised price control being finalized without delay and avoided a situation where there were issues which required substantial further work and the exercise of judgement by Ofcom.⁴
- 1.21 We have approached our investigation with the wording of the Reference, and the intent behind it, firmly in mind.

The standard of review

- 1.22 Various parties have made submissions as to the standard of review that should be adopted by us on price control references. O2 submitted that whilst we must deter-

¹[2008] CAT 5, paragraph 12.

²ibid, paragraph 13.

³ibid, paragraph 15.

⁴ibid, paragraph 16.

mine whether, by reference to the grounds of appeal, Ofcom's decision was wrong, we should have in mind that Ofcom is a specialist regulator and that its decision required the exercise of judgement in the evaluation of complex matters of fact and economics. O2 said that we should not substitute our own views for those of Ofcom simply because we might have chosen to exercise our judgement in a different way. O2 submitted that our role in this appeal was akin to that of the Competition Commission (CC) in appeals under section 173 of the Energy Act 2004, and drew our attention to comments on jurisdiction made in our decision on *E.ON v GEMA*.¹

- 1.23 Vodafone, similarly, submitted that we should be reluctant to reject Ofcom's judgment where it was reasonable and well-founded, that the onus lay on the appellant to show that Ofcom's judgment was wrong, and that we should bear in mind that NRAs such as Ofcom occupied a special position in the CRF and that we should be reluctant to interfere with the decision of an NRA in circumstances where it was responsible for the coherent application of the CRF in communications markets as a whole.²
- 1.24 Orange submitted that in determining whether Ofcom had committed an error, we had to apply the same level of scrutiny as that applied by the Tribunal. It acknowledged that an appeal under section 192 of the 2003 Act was not akin to a judicial review but was an appeal on the merits, but it said that this did not mean that we should place ourselves in the position of the primary decision-maker determining the appropriate price controls ab initio. Orange said that, provided that Ofcom had (a) properly applied the relevant legal tests, (b) conducted a thorough investigation of the relevant facts, (c) employed a sound economic analysis and (d) exercised its discretion within reasonable bounds, we should not interfere with the MCT Statement.³
- 1.25 Orange also referred us to the case of *Burgess v Office of Fair Trading*, in which the Tribunal held that all the following conditions needed to be satisfied for it to take its own decision on, rather than remit with directions, the matters on appeal: (a) that it has or can obtain all the necessary materials, (b) that the requirements of procedural fairness are respected and (c) that it is desirable from the point of view of the need for expedition and saving costs.⁴
- 1.26 H3G's initial position was that our role was what it called 'intrusive appellate'. It submitted that the statutory duties that Ofcom was required to comply with in setting price controls should inform the level of review we were required to engage in (which H3G described as 'strict'). It said that the grounds upon which an appeal could succeed were not limited (unlike appeals under section 173 of the Energy Act 2004), that Ofcom's discretion in setting price controls was very limited in scope, and that we were not precluded from considering whether Ofcom had reached the 'wrong' decision.⁵ H3G referred us to the Tribunal's judgment on non-price control matters⁶ in this appeal (the NPC Judgment), in which the Tribunal stated in paragraph 164:

... this is an appeal on the merits and the Tribunal is not concerned solely with the question whether the 2007 Statement is adequately reasoned but also whether those reasons are correct. The Tribunal

¹O2 Full Statement of Intervention (Sol) in the BT appeal, paragraphs 7–10, citing the CC decision in *E.ON v GEMA*, 10 July 2007, *An appeal under section 173 of the Energy Act 2004, E.ON UK Plc and Gas and Electricity Markets Authority and British Gas Trading Limited, Decision and Order of the Competition Commission*.

²Vodafone Sol in the BT appeal, paragraph 1.11.

³Orange Sol in the BT appeal, paragraphs 4.2 & 4.3.

⁴Orange Sol in the BT appeal, paragraph 4.2, citing [2005] CAT 25.

⁵H3G Reply, paragraphs 2.1–2.15.

⁶[2008] CAT 11.

accepts the point made by H3G ... that it is a specialist court designed to be able to scrutinise the detail of regulatory decisions in a profound and rigorous manner. The question for the Tribunal is not whether the decision to impose a price control was within the range of reasonable responses but whether the decision was the right one.

- 1.27 However, at a later stage of the appeal H3G submitted that the reference procedure under section 193 of the 2003 Act could only be one of a narrow appellate review of Ofcom's decision and reasoning or a more intrusive procedure provided there was sufficient information to allow us reliably to substitute our own reasoning and conclusions for those of Ofcom, but could not be a combination of the two. It argued that the default position in the courts was that an appeal should ordinarily proceed by way of review in which the court was slow to overturn factual judgments and exercises of discretion on the part of the original decision-maker, and that some of the same considerations might apply in this case. H3G said that we should exercise 'extreme caution' to the extent that we proposed to substitute our reasoning for that of Ofcom.¹
- 1.28 BT submitted that it was common ground that this was a full appeal and not a judicial review or a statutory appeal on limited grounds. It said that it was our job to decide not only whether Ofcom acted in accordance with its legal duties, but also whether it proceeded on the basis of correct findings of fact and correctly exercised its discretion. It cited section 192(6) of the 2003 Act and rule 3 of the 2004 Rules (see paragraphs 1.5 and 1.6 above) as support for this, the rule in particular envisaging that we should address ourselves to the detail of the charge including, specifically, the level at which it should be set. BT argued that, unlike in judicial review cases where a certain degree of deference to the primary specialist decision-maker was appropriate, we were as well equipped with the necessary expertise and resources as Ofcom to determine any economic or technical issues. It also argued that no sensible comparison could be made with appeals under the Energy Act 2004, as the grounds for appeals to be brought were limited and the timetable was much tighter than the present case.²
- 1.29 In our view there is not a great deal of ground between the parties on the question of the level of scrutiny we should apply in this appeal (although there are significant differences on other questions—for example, on what we should do if we find some or all of the errors alleged to be well founded).
- 1.30 Section 195(2) of the 2003 Act provides for an appeal on the merits. Section 192(6) shows that appeals can be brought on the basis of errors of fact or law or against the exercise of a discretion. The Tribunal interpreted its role under a section 192 appeal as being one of a specialist court designed to be able to scrutinize the detail of regulatory decisions in a profound and rigorous manner. In our view, our role in determining the specified price control matters that have been referred to us is similar. We note that this is the role that appears to have been contemplated for us by the Tribunal in its Reference Ruling and in the wording of the Reference itself (reference question 8 in particular).
- 1.31 We also note that the wording of rule 3 of the 2004 Rules envisages a determination of disputes that relate to the principles or methods applied or the calculations or data used in determining a price control, as well as disputes that relate to what the pro-

¹H3G response to the provisional determinations issued in the H3G appeal and in relation to the BT appeal, paragraphs 3.1–3.9.

²BT Reply, paragraphs 11–19.

visions imposing the price control should be including at what level the price control should be set. That also suggests a rigorous and detailed examination of the price control matters subject to appeal.

- 1.32 We have carried out that examination, in respect of reference questions 1 to 7, with the purpose of determining whether Ofcom erred for any of the specific reasons put forward by the parties. In determining whether it did so err, we have not held Ofcom to be wrong simply because we considered there to be some error in its reasoning on a particular point—the error in reasoning must have been of sufficient importance to vitiate Ofcom’s decision on the point in whole or in part.¹
- 1.33 We have also kept in mind the point made by the Interveners that Ofcom is a specialist regulator whose judgement should not be readily dismissed. Where a ground of appeal relates to a claim that Ofcom has made a factual error or an error of calculation, it may be relatively straightforward to determine whether it is well founded. Where, on the other hand, a ground of appeal relates to the broader principles adopted or to an alleged error in the exercise of a discretion, the matter may not be so clear. In a case where there were a number of alternative solutions to a regulatory problem with little to choose between them, we do not think it would be right for us to determine that Ofcom erred simply because it took a course other than the one that we would have taken. On the other hand, if, out of the alternative options, some clearly had more merit than others, it may more easily be said that Ofcom erred if it chose an inferior solution. Which category a particular choice falls within can necessarily only be decided on a case-by-case basis.

Our procedure

- 1.34 For this reference we adopted a procedure which, in our view, was suited to the nature of our task.² We acquired Ofcom’s MCT cost model and externality surcharge model, received written arguments and evidence from the parties, held both plenary and bilateral hearings on each appeal, issued requests (copied to all parties) where we considered we needed further information, and issued provisional determinations for comment. Overall, a great deal of material was submitted.
- 1.35 It would not be practicable to refer to or summarize in this determination all the submissions and evidence that we received from each party. Instead, in the sections that follow, we have attempted to refer to what we considered to be the key submissions and pieces of evidence in relation to each of the points we considered.
- 1.36 A number of confidentiality issues arose during the appeal process; these became somewhat complex.
- 1.37 A confidentiality ring had been established by the Tribunal in December 2007.³ When this was discussed, a number of parties pointed out that certain highly sensitive material, relating to MNOs’ cost data, had not been published by Ofcom in

¹H3G submitted in response to our provisional determinations that we had erroneously required it not only to show that Ofcom’s reasoning was wrong, but also to establish what the correct reasoning and outcome should have been. In relation to a number of our provisional determinations, it gave examples of what it considered to be the imposition of additional burdens on it (H3G response to provisional determinations, paragraphs 2.1–2.10). We do not accept that we have required H3G (or BT) to do any more than demonstrate that Ofcom’s decision was wrong. Although we may express ourselves in terms of ‘not being satisfied’ on a particular point, or of ‘H3G/BT not having demonstrated’ something, this is an appeal against a decision taken by Ofcom and, in each case, our conclusion was that we either were or were not satisfied that Ofcom’s decision was wrong.

²We informed the parties of the main steps in the procedure that we envisaged in our First Day Letter of 18 March 2008.

³The confidentiality ring was established by an Order of the Tribunal of 21 December 2007, following discussion at a case management conference held on 17 December 2007.

its MCT Statement, and the possibility of more than one level of confidentiality was raised. The Tribunal indicated that it was reluctant to envisage more than one level of confidentiality.¹

- 1.38 In our First Day Letter of 18 March 2008, we indicated that we would adopt the Tribunal's confidentiality ring.
- 1.39 However, following discussion with the parties during the course of the appeal, four levels of confidentiality emerged for the material in our determination. These four levels were:
- (a) material which was only for the Tribunal and Ofcom;
 - (b) material which could go to a restricted confidentiality ring (consisting of selected external advisers to parties);
 - (c) material which could go to the full confidentiality ring; and
 - (d) material which was suitable for publication.
- 1.40 The parties agreed that one category of material (MNOs cost data) should not be disclosed either to the full or to the restricted confidentiality ring. The parties further agreed that certain confidential information relating to projections of capacity and revenue should be disclosed only to the restricted confidentiality ring. Lastly, the parties indicated confidential material which was to be disclosed only to the confidentiality ring.
- 1.41 Following the four levels outlined above, there are different versions of this determination with different levels of confidentiality. The full version will be provided to the Tribunal and to Ofcom. Other versions will be distributed to the parties or their appropriate representatives with such information removed so as to respect the confidentiality arrangements that have been agreed upon.

¹Tribunal CMC of 17 December 2007, transcript, p23.

2. 3G spectrum costs determination: Reference question 1(i)

2.1. Preamble

- 2.1.1 This section sets out the CC's conclusions as to whether the price controls imposed by Conditions MA3 and MA4 have been set at an inappropriate level because Ofcom erred in its approach to the inclusion of spectrum costs for the reasons set out in paragraphs 83 to 148 of the BT amended Notice of Appeal.
- 2.1.2 For the reasons given below, our conclusion is that the price controls have been set at an inappropriate level because Ofcom erred in its approach to spectrum costs.

2.2. Introduction

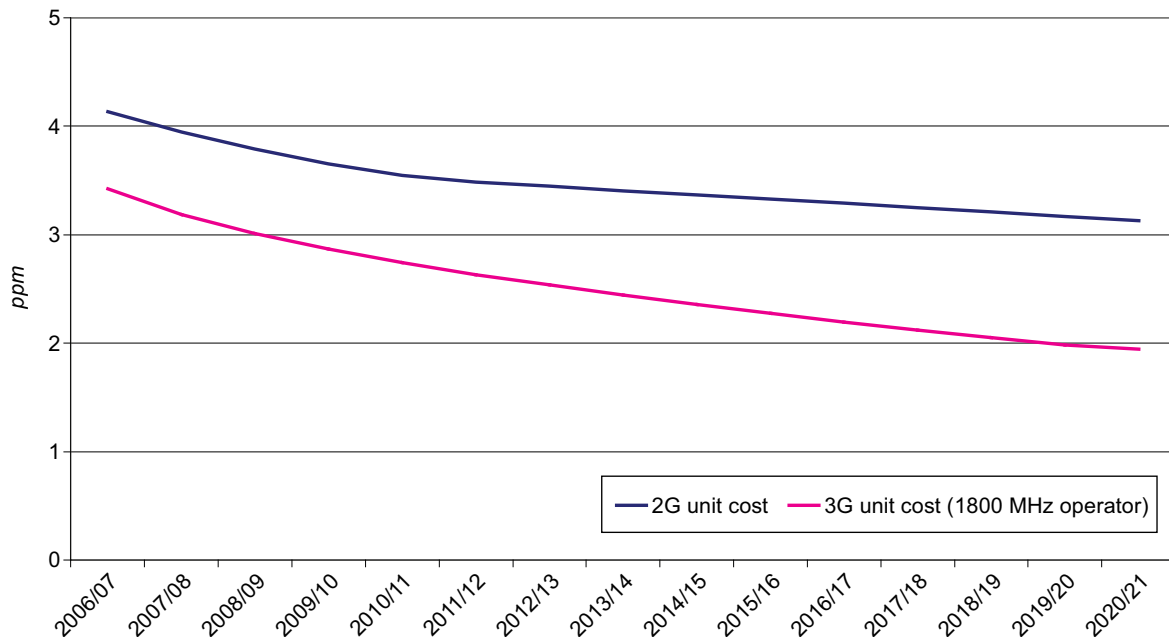
- 2.2.1 '3G spectrum' is a term used to describe a set of spectrum frequencies which are used to accommodate 3G technology. 3G stands for 'third generation'—analogue mobile technology is known as 'first generation' (or 1G) and digital technology as 'second generation' (or 2G). 3G technology enables MNOs to offer users a wide range of advanced data services that are not viable on 2G technology, including high-speed Internet access, email, video calling, games and video entertainment.
- 2.2.2 3G networks have potential transfer speeds that are faster than those of 2G networks. This is what makes 3G spectrum attractive for the provision of advanced data services. Further improvements in 3G technology are expected to increase transfer speeds yet further.
- 2.2.3 All parties agree that the physical network cost of carrying voice traffic is lower on 3G networks than on 2G networks. We have used Ofcom's MCT cost model to compare the unit cost of MCT on 2G and 3G networks.¹ The results of this exercise for the period 2006/07 to 2020/21 are shown in Figure 1 for Ofcom's medium-demand forecast for an 1800-MHz operator.²

¹Ofcom's MCT network cost model is described in detail in Annex 5 of its MCT Statement. Ofcom indicated on its website that the model was available on request.

²The different demand forecasts used in Ofcom's cost model are explained below.

FIGURE 2.1

Unit cost for voice termination for 1800 MHz operator*



*Not including spectrum fee, network externality surcharge or administration costs.

Source: CC analysis of Ofcom data from MCT cost model, non-confidential version.

2.2.4 It can be seen that the physical network unit cost of MCT on 3G networks is lower than the physical network unit cost of MCT on 2G networks, and that the difference between the two increases over time as the volume of calls terminated on 3G networks increases relative to the volume of calls terminated on 2G networks.

The 3G spectrum auction

2.2.5 In the UK, 3G spectrum licences were allocated in an auction which was held in 2000. The auction was organized as a simultaneous ascending auction. The key features of a simultaneous ascending auction are that all related licences are sold simultaneously, there are multiple rounds, new bids can be made in each round and the auction closes only when bidding on all licences has stopped.

2.2.6 The bidding in the auction was subject to a minimum increment which was announced by the Radiocommunications Agency¹ before each round began. This minimum was initially fixed at 5 per cent of the current price, and was later chosen by the Radiocommunications Agency before each round.

2.2.7 At the auction, nine new entrants bid against the four incumbents (O2 (formerly BT Cellnet), Vodafone, T-Mobile (formerly One2One) and Orange) for five licences. Two of those licences were 'large' and three were 'small'. The licences were UK-wide and each bidder could acquire at most one licence. One large licence was reserved for a new entrant.

¹The Radiocommunications Agency was an Executive Agency of the Department for Trade and Industry which was responsible for the management of the radio spectrum in the UK. It ceased to exist on 29 December 2003 and its duties were assumed by Ofcom.

2.2.8 The auction was characterized by strong competition leading to bids totalling £22.5 billion. The four incumbents won licences and the reserved large licence was taken by the new entrant H3G.¹ Table 2.1 shows licence fee payments by individual MNO, along with the associated spectrum allocation.

TABLE 2.1 3G spectrum allocations and licence fees

MNO	Licence	Spectrum allocation	Payment in 2000 (£bn)	Price per MHz (£m)
H3G	A (large and reserved for a new entrant)	2 x 15 MHz (3 carriers)	4.385	292.3
Vodafone	B (large)	2 x 15 MHz (3 carriers)	5.964	397.6
O2	C (small)	2 x 10 MHz (2 carriers)	4.030	403.0
T-Mobile	D (small)	2 x 10 MHz (2 carriers)	4.004	400.4
Orange	E (small)	2 x 10 MHz (2 carriers)	4.095	409.5

Source: National Audit Office: report on the 2000 auctions, October 2001.

2.2.9 H3G and Vodafone acquired the large licences (2 x 15 MHz) while the other incumbents won small licences (2 x 10 MHz). All four incumbents paid broadly the same price per MHz—around £400 million—while the new entrant (H3G) paid just under £300 million. On a per head basis, the proceeds from the auction in the UK were the highest achieved in the world.

2.2.10 3G licences give the MNOs exclusive rights to use the specified frequency² for establishment, installation and use of 3G technology until 31 December 2021.

The treatment of 3G Spectrum in Ofcom's MCT charge controls

Ofcom's choice of objectives

2.2.11 Ofcom's MCT charge controls are cost based. Ofcom considered that, in the case of 3G spectrum, there were a number of different ways of measuring cost. It identified three potential considerations which it thought had a bearing on how to treat the spectrum, and they were set out in the MCT Statement as follows:³

(a) providing appropriate price signals to consumers for efficient consumption of services using mobile termination;

(b) the impact on MNOs' cost recovery; and

(c) the impact on MNOs' incentives to use spectrum efficiently.

2.2.12 Ofcom considered that the primary objective should be to provide appropriate price signals to consumers, and that the implication of focusing on this was that the marginal forward-looking opportunity cost (MFLOC) of 3G spectrum was the relevant pricing concept. Ofcom equated the MFLOC of 3G spectrum with its earning power in a competitive market.⁴

¹This licence was won by TIW UMTS, a consortium in which H3G participated. It was subsequently acquired by Hutchinson 3G UK Holdings Limited.

²The spectrum auctioned was 2100 MHz spectrum. For convenience, unless otherwise indicated, references to '3G spectrum' in the rest of this determination refer to this frequency band.

³Ofcom's MCT Statement, paragraph A14.6; Ofcom's choice of objectives is discussed further in subsection 2.3 below.

⁴ibid, paragraphs A14.8, A14.21, A14.22; Ofcom defined 'earning power' as the discounted present value of expected future revenues from the output produced by the asset, less the present value of associated future operating costs.

Ofcom's modelling approach

- *3G spectrum values*

- 2.2.13 The MFLOC of 3G spectrum cannot be measured directly. Ofcom took the view that one method by which to proxy it was to draw upon information from the 2000 auction, at least as a starting point. The rationale behind considering auction fees to estimate the MFLOC was that in a competitive auction fees should typically equal or exceed an asset's opportunity cost (in this case the value of 3G spectrum to the bidder with the second-highest valuation).¹
- 2.2.14 However, Ofcom also stated that the sums paid in 2000 may not equal the current MFLOC of 3G spectrum for several reasons, chief of which were:
- (a) market conditions may have changed since 2000 such that 3G spectrum is no longer worth what was paid by way of auction fees (in this context, Ofcom took into account O2's £2.1 billion write-down of its 3G licence in 2003);²
 - (b) the 2000 licence fees may not solely reflect the opportunity cost of 3G spectrum (Ofcom suggested that the MNOs' payments in 2000 may have reflected the expected impact of a 3G licence on 2G profits, and a desire to get a 'toe-hold' in the EU for later spectrum auctions);³ and
 - (c) the 2000 licence fees may represent the average rather than the marginal opportunity cost of 3G spectrum.⁴
- 2.2.15 Ofcom decided that those factors illustrated the difficulty of deriving a precise estimate of the MFLOC of 3G spectrum and that a scenario-based approach would be the most appropriate way to take into account the uncertainties that it had identified. Ofcom therefore considered a range of estimates of the MFLOC which were eventually narrowed to five different valuations:⁵
- (a) £4.0 billion, which is equal to the auction payments made by MNOs in 2000 for a two-carrier licence (this proxy was referred to as Scenario 3);
 - (b) £4.4 billion, which adds the present value of a £4.0 billion 'renewal payment' in 2021, in addition to the initial £4.0 billion payment in 2000 for a two-carrier licence (Scenario 4);
 - (c) £3.3 billion, which is equal to the actual auction fees paid less an amount reflecting the O2 write-down (ie £2.1 billion) averaged across the existing two-carrier licences (there are three two-carrier licences) (Scenario 5);
 - (d) £1.9 billion, corresponding to the full application of O2's £2.1 billion write-down (ie subtracting £2.1 billion from the payments made for each two-carrier licence) (Scenario 6); and
 - (e) £1.4 billion, which is intended to reflect BT's suggested '2G cap' approach (we return to discuss BT's suggested approach at length in subsection 2.9 below) (Scenario 7).

¹ibid, paragraph A14.32.

²ibid, paragraphs A14.34–A14.54.

³ibid, paragraph A14.55.

⁴ibid, paragraph A15.56.

⁵ibid, paragraphs A14.60, A14.97.

- 2.2.16 Ofcom then decided the basis on which to allocate part of those values to MCT. Its cost model determined the total cost of providing all of an MNO's network services.¹ In order to determine the proportion of those costs that should be recovered through the MCT charge, Ofcom's MCT cost model included routing factors to allocate costs across different services.
- 2.2.17 In the case of 3G spectrum, Ofcom recognized that there were various ways to allocate the spectrum costs but considered that since all mobile traffic required the use of the radio spectrum, the cost of spectrum should be allocated to different services on the basis of their use of the radio resource (it called this the 'radio traffic cost driver').² The results of this allocation methodology can be seen in Table 2.2.

TABLE 2.2 **Share of lifetime radio traffic by service**

Service	% of lifetime radio traffic*
Total voice	74
Voice termination	25
Outbound voice	48
Total data	26

Source: Ofcom's MCT Statement, Figure A14.2.

*The 'total voice' figure does not equal the sum of 'voice termination' and 'outbound voice' due to rounding.

- 2.2.18 This particular allocation relates to a medium traffic forecast (explained in the following paragraphs). Due to the different mix of voice and data traffic in each traffic forecast, the proportions of voice and data are different in each traffic forecast.

- *Traffic forecasts*

- 2.2.19 These different valuations of 3G spectrum were then linked with four different traffic forecasts.³

- (a) *High voice and data traffic*: this corresponds to a very optimistic market outcome in which aggressive mobile pricing drives high levels of fixed-mobile substitution for voice calls and emerging data services, such as location-based services and music and video downloads, prove to be highly popular.
- (b) *Medium voice and data traffic*: this corresponds to a small ongoing trend towards fixed-mobile substitution for voice calls as mobile prices continue to fall (Ofcom assumed moderate growth in voice usage per subscriber of 5 per cent per year until 2010/11 and reduced growth thereafter). At the same time, the use of mobile data services continues to grow at a moderate rate.
- (c) *Medium voice-only traffic*: this considers the same demand for voice services as the medium voice and data traffic forecast but network costs are assessed as if no data traffic at all is carried on the network.
- (d) *Low voice and data traffic*: this corresponds to a pessimistic view of future demand for mobile voice and data services where there is no growth at all in

¹Including voice services, video calling, packet data (eg GPRS and mobile broadband), short message services (SMS) and multimedia message services (MMS) such as images and rich text.

²Ofcom's MCT Statement, paragraphs A14.67–A14.68.

³ibid, paragraph 9.160.

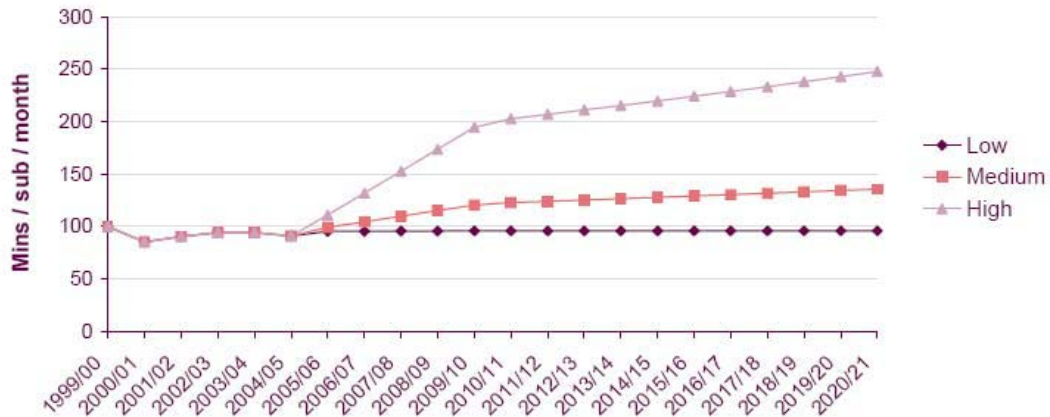
subscriber voice usage and mobile data services remain a niche product, eg limited mainly to mobile data-cards for business use.

2.2.20 As far as the three voice and data forecasts are concerned, the volume of each of incoming and outgoing voice traffic and data traffic are shown in Figures 2.2 to 2.4 below.

FIGURE 2.2

Outgoing voice call forecasts (2G and 3G subscriber weighted average)

Outgoing voice call scenarios (voice and video)

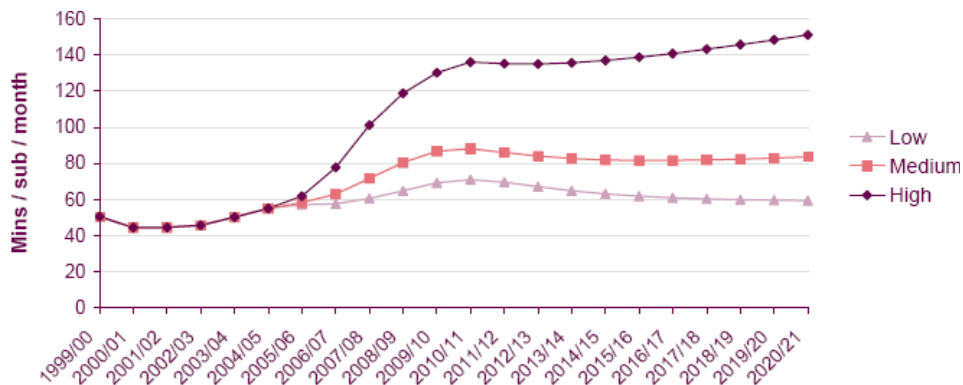


Source: Reproduction of Ofcom’s Figure A5.5 in MCT Statement.

FIGURE 2.3

Incoming voice call forecasts (2G and 3G subscriber weighted average)

Incoming voice call scenarios (voice and video)

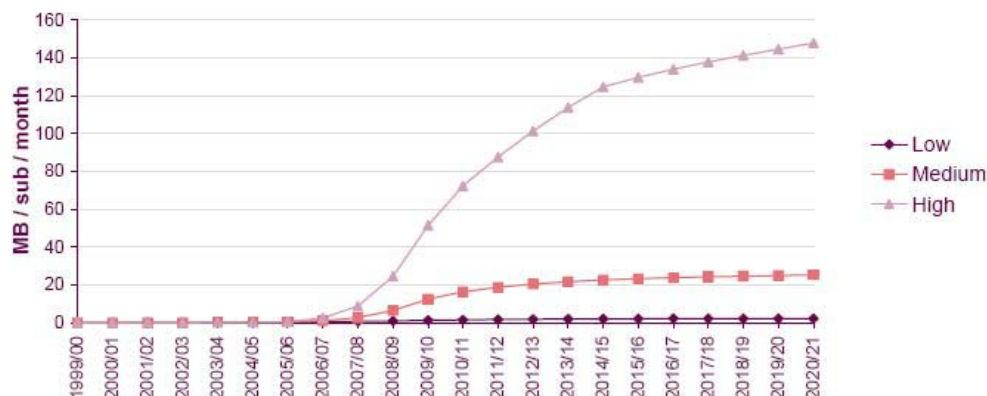


Source: Reproduction of Ofcom’s Figure A5.6 in MCT Statement.

FIGURE 2.4

Data forecasts (2G and 3G subscriber weighted average)

Average data usage scenarios

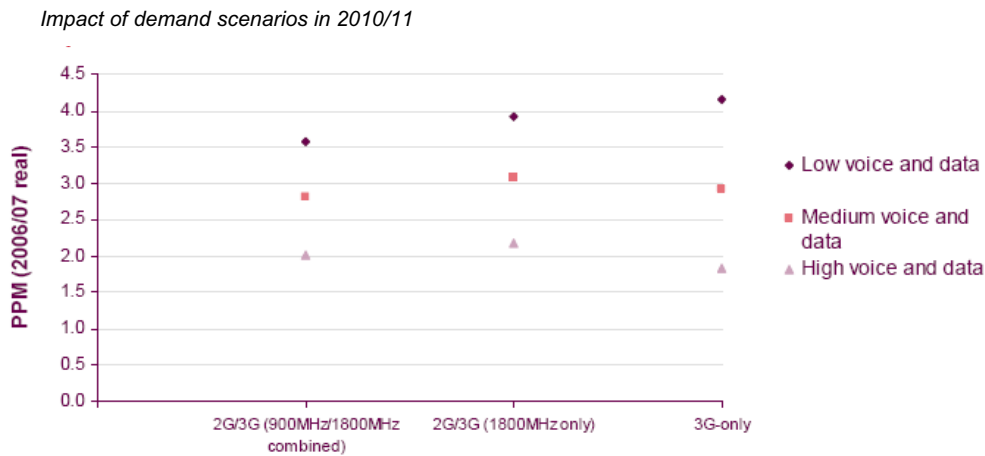


Source: Reproduction of Ofcom’s Figure A5.7 in MCT Statement.

- 2.2.21 Ofcom did not ‘mix’ these different voice and data forecasts in any of the overall forecasts described above—ie in the high voice and data traffic forecast, Ofcom used all the high forecasts as shown in the above graphs, and in the low voice and data traffic scenario, it used all the low forecasts.
- 2.2.22 One can also see from the graphs that the forecasts of data traffic are more dispersed. For instance, in relation to both incoming and outgoing voice traffic, volumes in the high-demand forecast are between 2 and 2.5 times what they are in the low-demand forecast in 2020/21, but in relation to data, volumes in the high-demand forecast are around 100 times what they are in the low-demand forecast in 2020/21.
- 2.2.23 The overall impact of the choice of traffic forecast on the final pence per minute (ppm) charge (excluding 3G spectrum costs) is significant, as can be seen from Figure 2.5.

FIGURE 2.5

Impact of demand scenarios in 2010/11 for different operator types



Source: Reproduction of Ofcom’s Figure A13.5 in the MCT Statement.

2.2.24 For all operator types, there is an inverse relationship between the amount of traffic forecast and the resulting MCT charge levels—for the low-demand forecast, unit costs are estimated to be (relatively) high, whereas for the high-demand forecast, unit costs are estimated to be (relatively) low.

- *Combinations of scenarios*

2.2.25 The two sets of inputs (3G spectrum valuations and traffic forecasts) were combined into 12 scenarios in a way which, according to Ofcom, ensured that the 3G spectrum values were broadly consistent with the traffic forecasts. This was achieved by linking spectrum values towards the higher end of the range with the high voice and data traffic forecast, and values towards the lower end with the low voice and data traffic forecast. The 12 scenarios were:¹

- High voice and data demand, using 3G spectrum values of:
 - (i) £4.4 billion; and
 - (ii) £4.0 billion.
- Medium voice and data demand, using 3G spectrum values of:
 - (iii) £4.4 billion;
 - (iv) £4.0 billion;
 - (v) £3.3 billion;
 - (vi) £1.9 billion; and
 - (vii) £1.4 billion.

¹ibid, paragraph A13.60.

- Medium voice-only demand, using 3G spectrum values of:¹
 - (viii) £4 billion;
 - (ix) £3.3 billion; and
 - (x) £1.9 billion.
- Low voice and data demand, using 3G spectrum values of:
 - (xi) £1.9 billion; and
 - (xii) £1.4 billion.

2.2.26 Ofcom calculated MCT ppm charges in 2010/11 for each of these 12 scenarios. These charges, which Ofcom referred to as efficient charge benchmarks, are shown in Table 2.3 (the figures include a 0.3ppm mark-up for administration costs (0.4ppm in the case of the 3G-only operator) and a 0.3ppm network externality surcharge). These are total MCT charges, of which 3G spectrum costs are only one component.²

TABLE 2.3 Efficient charge benchmarks in 2010/11

Benchmark	ppm		
	2G/3G (900 MHz/1800 MHz combined)	2G/3G (1800 MHz only)	3G-only
Low demand, £1.9bn	5.4	5.8	7.0
Low demand, £1.4bn	5.1	5.5	6.4
Voice only, £4bn	5.5	5.8	7.0
Voice only, £3.3bn	5.2	5.5	6.6
Voice only, £1.9bn	4.6	4.9	5.6
Medium demand, £4.4bn	5.3	5.6	6.6
Medium demand, £4bn	5.2	5.4	6.3
Medium demand, £3.3bn	4.9	5.1	5.8
Medium demand, £1.9bn	4.2	4.5	4.9
Medium demand, £1.4bn	4.0	4.3	4.6
High demand, £4.4bn	3.3	3.4	3.4
High demand, £4bn	3.2	3.3	3.4

Source: Reproduction of Ofcom's Figure A13.9 of MCT Statement.

2.2.27 Ofcom then considered, in a qualitative fashion, the relative weight to be attached to different scenarios.

2.2.28 Ofcom decided to give relatively more weight to medium-demand and voice-only scenarios (eight in total) than to low- and high-demand scenarios (four in total). Ofcom noted that the benchmarks for the eight scenarios that did not derive from either the high- or the low-demand cases tended to be on the higher side of the range, and that six of the eight scenarios lay above the midpoint. In Ofcom's view, an implication of this was that the charge control should be set at the level above the midpoint of the full range of benchmarks for the 12 scenarios.³

¹The ppm contributions to unit cost benchmarks from 3G spectrum in the voice-only scenarios were set to equal the contribution from the corresponding medium voice and data scenario (see paragraph A13.22 in Ofcom's MCT Statement).

²Ofcom did not identify a specific ppm amount which should be attributed to the 3G spectrum cost for its final choice of charge control levels.

³Ofcom's MCT Statement, paragraphs 9.163 & 9.166.

- 2.2.29 Ofcom further justified this by noting that there is a potential asymmetry in the risks and impacts of setting charges that turn out to be too low. According to Ofcom, charge controls which, in practice, fail to enable the recovery of efficiently incurred costs may have an adverse impact on investment, which would be detrimental to consumers generally. On the other hand, Ofcom considered that although the waterbed effect¹ is unlikely to be complete, even an incomplete waterbed effect ameliorates the impact of the level of termination charges on MNOs' profitability and thus reduces the risk that MNOs fail to recover their efficiently incurred costs overall. Ofcom believed that the presence of this asymmetric risk also supported a charge control level that was above the midpoint of its range of benchmarks.²
- 2.2.30 Taking into account these factors, Ofcom's judgement was that reasonable efficient charge levels at the end of the price control period in 2010/11 would be 5.1ppm for the 2G/3G operators³ and 5.9ppm for the 3G-only operator.⁴
- 2.2.31 Having decided the charge levels, Ofcom then carried out two exercises with the aim of testing the reasonableness of these charges. First, Ofcom conducted a cross-checking exercise to identify possible scenarios which corresponded to the benchmarks of 5.1ppm and 5.9ppm. Ofcom identified scenarios based on each of the low traffic, the medium traffic and the voice-only traffic scenarios, which, when coupled with appropriate 3G spectrum costs, corresponded to the pair of benchmarks of 5.1ppm and 5.9ppm. The cross-checks reported by Ofcom were:⁵
- medium demand, £3.34 billion spectrum costs;
 - voice-only demand, £2.3 billion spectrum costs;
 - low demand, £0.9 billion spectrum costs;
 - weighted average of medium demand (50 per cent) and voice-only demand (50 per cent), £2.8 billion spectrum costs; and
 - weighted average of medium demand (67 per cent) and voice-only demand (33 per cent), £3 billion spectrum costs.
- 2.2.32 In the second exercise Ofcom identified weighted averages of the benchmarks which were also consistent with benchmarks of 5.1ppm for 2G/3G operators and 5.9ppm for the 3G-only operator. Ofcom presented the following aggregate weights⁶ for each group of scenarios:⁷
- low-demand cases—10 per cent;
 - medium-demand cases—55 per cent;
 - high-demand cases—5 per cent; and

¹The 'waterbed effect' refers to the fact that excess profits from termination are (at least partially if not fully) competed away by the MNOs in the retail markets in which they operate. Thus a change in the level of MCT rates may lead to a rebalancing of retail prices.

²ibid, paragraph 9.168.

³Ofcom based the 2G/3G operators' allowance on the costs of an 1800 MHz operator. This aspect of Ofcom's decision is not under appeal.

⁴Ofcom's MCT Statement, paragraph 9.169.

⁵ibid, paragraph A13.64.

⁶These aggregate weights are allocated evenly across the individual scenarios within each group.

⁷Ofcom's MCT Statement, paragraph A13.65.

- voice-only demand cases—30 per cent.
- 2.2.33 According to Ofcom, these two exercises provided confirmation that its chosen charge levels were appropriate.

The views of the European Commission

- 2.2.34 Ofcom's MCT Statement was issued after a lengthy consultation period. During that period, Ofcom issued a consultation document in September 2006 entitled *Mobile Call Termination: Proposals for Consultation*.
- 2.2.35 In its September 2006 consultation document, Ofcom put forward the proposal that a 3G spectrum allowance of 1.1ppm for the 2G/3G MNOs and 1.9ppm for the 3G-only MNO should be included within the MCT charge controls.¹ This followed analysis of a number of scenarios relating to 3G spectrum values along the lines of what appeared in its final MCT Statement.
- 2.2.36 The European Commission responded to the consultation document in a letter dated 21 November 2006.² It commented specifically on the question of 3G spectrum costs as follows:

The value of 3G licences should be calculated at current value on a forward looking basis and not on the basis of spectrum values which approximate year 2000 levels. Termination rates should be set at the cost which would be faced by an efficient operator to provide the relevant service. What should be considered in the LRIC model, from today's perspective, are all the cost elements that are not sunk today.

It is important that LRIC models use current costs and not historical costs which risks overestimating the appropriate costs considerably. This consideration is particularly relevant for spectrum fees which have been written off by operators since the relevant frequencies were auctioned and for which Ofcom considers that they may be an overstatement of the opportunity cost of 3G spectrum. In light of the above and with a view to fulfilling the objectives of the framework and allowing end users, in particular retail fixed customers to obtain the benefits of the wholesale regulation proposed, the Commission invites Ofcom to reconsider the valuation of 3G licences.

- 2.2.37 Pursuant to Article 7(5) of Directive 2002/21/EC of 7 March 2002 on a common regulatory framework for electronic communications networks and services ('the Framework Directive'), Ofcom was obliged to take the utmost account of the Commission's comments.
- 2.2.38 In the MCT Statement, Ofcom stated that its focus on the MFLOC of 3G spectrum was in accordance with the Commission's view.³

¹Ofcom, *Mobile Call Termination: Proposals for Consultation*, September 2006, paragraph A14.44.

²European Commission letter of 21 November 2006 to Ofcom, signed by Fabio Colasanti, Director General (SG-Grefe 2006, D/206994).

³Ofcom's MCT Statement, paragraph A14.22.

BT's grounds of appeal

2.2.39 BT launched a number of criticisms of Ofcom's treatment of 3G spectrum costs. Its criticisms were divided up in its Amended Notice of Appeal into those of principle and those of methodology. On points of principle, BT argued that Ofcom erred in:¹

- (a) failing to use a current economic valuation of 3G spectrum and wrongly placing reliance on the 2000 auction fees, which were grossly inflated and premised on a rapid rise in demand for mobile data services;
- (b) ignoring the views of the European Commission;
- (c) failing to take into account the value of 2G spectrum in setting the allowance for 3G spectrum;
- (d) misunderstanding the purpose of impairment reviews and wrongly placing reliance on impairment reviews which did not write down the value of the 3G licences;
- (e) failing to treat the O2 impairment as convincing evidence that the current value of 3G spectrum is below the level of the 2000 auction fees;
- (f) overstating the value of that part of the 3G spectrum which will be used for voice termination;
- (g) including notional holding costs within the spectrum values fed into the cost model with the result, for example, that the 3G spectrum value used by Ofcom in its central scenario exceeded the amounts which the MNOs actually paid for 3G spectrum by half;
- (h) undertaking a complex and spurious examination of different scenarios in order to avoid making any assessment of their best estimate of the forward-looking value of 3G spectrum;
- (i) adopting a 'conservative' approach to elements of uncertainty, giving MNOs the benefit of any uncertainty which arises; and
- (j) issuing a decision that is not transparent or adequately reasoned.

2.2.40 On points of methodology, BT argued that Ofcom erred in:²

- (a) relying heavily on the actual auction fees and selecting and weighting the scenarios in such a way as to introduce bias in that respect;
- (b) attaching weight to voice-only scenarios which distort the outcome of its methodology;
- (c) pretending that the link it shows between its traffic forecasts and spectrum valuations supports those valuations in some way;

¹BT Amended Notice of Appeal, paragraph 85.

²ibid, paragraphs 86 & 87.

(d) discounting the high-demand scenarios, even though they were likely to be the closest to the views of the MNOs at the time of the auction because of the high values attached by them to 3G spectrum at the time; and

(e) carrying out a self-serving cross-check.

2.2.41 As will be apparent, there appears to be an overlap between many of BT's grounds of appeal, and we have found it convenient not to deal with each of them in isolation. The broad thrust of BT's argument appears to be that Ofcom was wrong to base its valuations largely on the 2000 auction fees (or adjustments thereon) when it was required to perform a forward-looking valuation. An alternative methodology, according to BT, would have been to use the total cost of 2G termination as a 'cap' on the 3G spectrum allowance to include within the MCT charge controls, on the basis that 3G is a more efficient technology than 2G and in a competitive market the introduction of a more efficient technology to provide an identical service should not result in the price of that service going up.

2.2.42 The remainder of this section of our determination addresses BT's grounds of appeal and Ofcom's treatment of 3G spectrum costs under the following sub-sections:

- the appropriate objective;
- marginal or average values for 3G spectrum;
- the use of the 2000 auction fees as a proxy for the forward-looking value of 3G spectrum;
- holding costs;
- Ofcom's use of scenarios;
- 2G cap; and
- O2's 'franchise fee' methodology.

2.3. The appropriate objective

Introduction

2.3.1 Ofcom's decision to focus on efficient price signals underpinned its choice of the MFLOC as the relevant approach for assessing the contribution that 3G spectrum costs should make to the MCT charge controls. BT accepted that focusing on efficient price signals was the correct approach.¹ However, a number of the MNOs argued that Ofcom was wrong to focus on efficient price signals in the first place, and should instead have given cost recovery considerations priority. These arguments therefore need to be addressed at the outset, as the methodology that it is appropriate to employ depends on the objective that is chosen.

¹Though it maintained that Ofcom did not follow through on its commitment to provide efficient price signals and that its approach in fact places great weight on cost recovery.

Ofcom's choice of pricing objectives

- 2.3.2 As set out in paragraphs 2.2.11 and 2.2.12 above, Ofcom identified three potential considerations in assessing the costs of 3G spectrum and concluded that providing appropriate price signals to consumers for efficient consumption of services was the primary objective in this case. Ofcom justified this on the basis that the majority of the recovery of 3G spectrum costs would be expected to come from unregulated mobile services and that, therefore, any impact from MCT charge controls on MNOs' investment incentives is likely to be muted. Ofcom also argued that it is not usually appropriate for regulation to underwrite cost recovery, as this may induce cost inefficiency—but, in general, Ofcom considers that regulation should not deny regulated firms the opportunity to recover their efficiently incurred costs.¹
- 2.3.3 According to Ofcom, there is a further relevant consideration, which relates to the potential to distort future spectrum awards, and supports a conservative approach to cost recovery. Ofcom argued that if MNOs came to expect at the time of future auctions that, were any prices to be regulated subsequently, such as those for MCT, Ofcom would include the full licence fee, then there is a risk that bidding at these auctions would be distorted. Bidders might be encouraged to overbid, because they might not expect to face the full cost of such overbidding since it would be passed on to consumers through regulation.²
- 2.3.4 At its bilateral hearing, Ofcom told us it was aware that by focusing on the forward-looking opportunity cost of 3G spectrum it would be precluding a certain amount of recovery of costs and that this was something it would not normally do lightly. Ofcom justified its decision by saying that it had been dealing with unforeseen changes in the value of 3G spectrum which occurred before regulation was put in place.³
- 2.1.3 Ofcom stated that in a competitive market it was not the case that costs would always be recovered even if they were efficiently incurred at the time they were incurred. For example, if an incumbent purchases an asset, but the asset's price subsequently falls sharply and unexpectedly, in a competitive market competitors would be able to purchase the asset at the new lower price and undercut an incumbent. That might result in the incumbent not being able to price in a way that would recover the cost of the asset. Ofcom emphasized that the converse was also true—if an asset unexpectedly increases in price, an incumbent could make a windfall gain and be able to price in a way that would more than recover the cost of the asset.⁴

The position of the Interveners

- 2.3.5 A number of the Interveners argued that Ofcom should have placed more weight on the objective of allowing MNOs to recover their efficiently incurred 3G spectrum costs. All the MNOs, except Orange, initially argued that Ofcom should have placed more weight on the amounts actually paid in 2000 in deciding what allowance for 3G spectrum to factor into the charge controls because the auction fees were efficiently incurred and that they should therefore be recoverable on that basis.

¹Ofcom's MCT Statement, paragraphs A14.9, A14.14.

²ibid, paragraph A14.10.

³Ofcom hearing on BT appeal, transcript, pp35&36. Page references to transcripts are to the non-confidential versions.

⁴Ofcom's Price Control Defence, paragraphs A2.3.6–A2.3.17.

- 2.3.6 However, H3G changed its position at its bilateral hearing, and accepted that using a forward-looking value of spectrum rather than a historical one was appropriate (though its position was that there was no difference between the two).¹ T-Mobile, similarly, appeared to accept at its bilateral hearing that, in the context of a long-run incremental cost (LRIC) approach, which it submitted was appropriate, it was forward-looking and not historic costs that were relevant.²
- 2.3.7 Nonetheless, given that other MNOs (Vodafone and O2) continue to argue that cost recovery (and therefore the historic cost of 3G spectrum) should be given more weight, and given T-Mobile's subsequent clarification that its primary case was that cost recovery should be the principal objective,³ each argument needs to be addressed in turn.

Normal regulatory practice

- 2.3.8 Vodafone argued that allowing the recovery of efficiently incurred costs would be consistent with regulatory precedent. It submitted that in network industries the accepted approach to incentivizing investment is to permit an allowance for investment at the start of a regulatory period, based on a forecast of efficient costs at that time and an assessment of investment needs, and to allow investments that are prudently made and within the limit set to be recovered. By analogy, it argued that there is a compelling case for allowing MNOs to recover an appropriate proportion of their actual investment in 3G spectrum.⁴
- 2.3.9 T-Mobile, similarly, argued that cost recovery was a well-established basis for regulatory price-setting.⁵

Assessment

- 2.3.10 Vodafone's general description and line of reasoning appears to relate to normal utility regulation, where all, or the majority, of the regulated firm's revenues are generated through regulated charges. In those circumstances, it may be the case that regulators do not apply forward-looking asset valuations in order to allow regulated firms the opportunity to recover their efficiently incurred costs, as regulated charges are their only or main source of revenue.
- 2.3.11 However, even if Vodafone's description of normal regulatory practice were to be accepted, in this case MNOs provide a number of services, most of which are not price regulated. Their price-regulated services account for a relatively small proportion of their total revenues.⁶ According to Ofcom, approximately 15 per cent of MNOs' total revenues come from MCT.⁷ Of that, two-thirds comes from inter-MNO charges which represent transfers of revenue between MNOs and as such make no contribution to cost recovery for the MNOs in aggregate (MCT is therefore not only a source of revenue to MNOs but also a cost, and any reduction in MCT rates will reduce both). Furthermore, we are focusing on one particular asset—3G spectrum.

¹H3G hearing on BT appeal, transcript, p5.

²T-Mobile hearing on BT appeal, transcript, p20.

³T-Mobile response to provisional determination, paragraph 4.

⁴Vodafone's Sol, paragraphs 3.38–3.41.

⁵T-Mobile's Sol, paragraphs 17 & 18.

⁶MCT and international roaming are the only services provided by MNOs that are regulated.

⁷Ofcom's MCT Statement, paragraph 2.17.

- 2.3.12 Accordingly, we do not think that analogies with normal regulatory practice are particularly helpful in the context of MCT regulation. Nor do we think that, because cost recovery may have been given priority in other contexts, it needs to be given priority in this case. The fact that MCT accounts for a relatively small proportion of MNOs' total revenues means that cost recovery concerns need not be paramount. MNOs have scope to recover their costs through unregulated markets.
- 2.3.13 Moreover, it is not clear how cost recovery principles would apply in this case. We agree with BT that the case of 3G spectrum is not like those encountered in normal utility regulation where there has been some ex-ante agreement between regulator and regulated firm as to what level of expenditure will be recoverable in an upcoming regulatory period.¹ Ofcom did not consult with the MNOs on their future bidding plans or endorse them. Nor did it indicate the level of recovery of 3G spectrum costs that it would allow in future price controls, or how it would allocate spectrum costs between MCT and other services.
- 2.3.14 We therefore reject the argument that normal regulatory practice indicates, by analogy, that allowing the recovery of efficiently incurred costs should be the primary concern in this case.

Maintaining an efficient structure of prices

- 2.3.15 T-Mobile argued that the fact that the majority of MNOs' revenues are unregulated does not imply that cost recovery need not be a concern, because there was still a need to maintain an efficient structure of prices. The argument was not that all efficiently incurred 3G spectrum costs should be recovered from MCT, but that the appropriate proportion should be. If recovery of the appropriate proportion were not allowed, either MNOs would not recover what they had invested, or the prices of other services would go up to compensate, leading to an inefficient structure of prices, or both.² Vodafone made substantially the same point.³

Assessment⁴

- 2.3.16 We see some force in the argument that it would be wrong to dismiss cost recovery considerations entirely because most revenue streams are unregulated. We agree that it would not be satisfactory to cause other services and products to increase in price beyond efficient levels because the appropriate proportion of spectrum costs had not been allowed in the MCT charge. Maintaining an efficient structure of prices remains a regulatory concern whether the bulk of a regulated firm's revenue streams are regulated or unregulated.
- 2.3.17 However, in this case, recognizing that an appropriate proportion of spectrum costs should be included within the MCT charge controls begs the question of what the appropriate proportion is. Determining that requires a view to be taken on the basis on which spectrum costs should be assessed, bringing us back to the question of the appropriate objective. Certainly, we do not think maintaining an efficient structure of prices necessitates cost recovery being given priority. Ensuring cost

¹BT hearing on its appeal, transcript, p14.

²T-Mobile's Sol, paragraph 20.

³Vodafone's Sol, paragraphs 3.51 & 3.52.

⁴We note that there are developments at the European level concerning broader questions of how MCT rates should be regulated in the future. For the avoidance of doubt, our task is to adjudicate on the grounds of appeal submitted to us and our conclusions, particularly in this section, should not be taken as giving the CC's view on the broader questions being addressed at the European level.

recovery may, in circumstances where some services are regulated and others are not, lead to an inefficient structure of prices.

- 2.3.18 In this respect, Ofcom is correct in concluding that a competitive market brings no guarantee of cost recovery, even if costs were efficiently incurred at the time. We see no reason why MNOs should be protected from the consequence of unexpected falls in asset prices if they occur.¹ No such protection would be afforded in a competitive market and it would not be appropriate to provide such protection through regulation in this case. To do so would essentially be to require fixed network operators (FNOs) and their customers to underwrite the value of 3G spectrum to a significant degree.
- 2.3.19 Therefore, whilst we do not reject the argument that an appropriate proportion of 3G spectrum costs should be recovered from MCT charges,² we do reject the argument that maintaining an efficient structure of prices requires cost recovery considerations to be given priority.

The choice faced in 2000

- 2.3.20 A number of Interveners argued that the circumstances of the investment in 3G spectrum were such that more weight should have been given to cost recovery considerations. Vodafone emphasized that the 3G licence fees were efficiently incurred costs and that MNOs had no option, if they wished to become 3G operators, but to participate in the auction and pay the market price.³ T-Mobile stressed that buying a 3G licence was the only way to ensure that the MNOs' businesses had a viable future.⁴ It argued that the auction fees were in fact like a tax for staying in the mobile market generally and should be recoverable as such.⁵
- 2.3.21 T-Mobile also argued that the efficiency of the costs incurred in 2000 should be considered from the point of view of society as a whole, and that society continues to benefit from the investment made in 3G.⁶

Assessment

- 2.3.22 We acknowledge the MNOs' concerns that they had to buy 3G spectrum in order to have a long-term future in the sector. However, that does not mean that bidding was not a voluntary act. Thirteen bidders took part in the auction. They faced a choice in 2000 between bidding (and winning) and either acquiring spectrum capable of delivering 3G services at a later date (for example, by purchasing the weakest winner after the auction or by participating in subsequent spectrum auctions) or (in the case of the incumbent MNOs) remaining a 2G-only operator. Some of those choices may have appeared unattractive, but they remained choices nonetheless. MNOs made a commercial decision on the future of 3G technology and invested accordingly. We do not believe that in these circumstances a successful bidder has a fundamental right to recover all its costs. As stated above, that right

¹As stated above, other concerns may apply in contexts where the majority of firms' revenues are regulated, but that is not the context we are dealing with here.

²This should not be taken to imply that we accept that such an appropriate proportion derives from historic prices—we do not.

³Vodafone's Sol, paragraph 3.14.

⁴T-Mobile's Sol, paragraph 34.

⁵Dr Mike Walker and Paul Reynolds' expert report for T-Mobile, paragraph 63.

⁶T-Mobile's Sol, paragraph 28.

would not exist (and does not exist) in the unregulated markets in which the MNOs operate.¹

- 2.3.23 In Ofcom's view, focusing on the forward-looking value of spectrum did not imply that there was anything inefficient about the auction. The key principle was simply not whether costs were efficiently incurred.² We agree. There is no guarantee of cost recovery in a competitive market. Consumers should not bear the costs of MNOs' bidding decisions if bids turned out to be higher than the forward-looking value of spectrum.
- 2.3.24 We therefore reject the argument that the circumstances of the auction and the nature of the choices that MNOs faced in 2000 justified focusing on cost recovery rather than efficient price signals.

Investment incentives and regulatory asymmetry

- 2.3.25 T-Mobile stated that failing to allow for cost recovery will undermine investment incentives and dynamic efficiency.³ It argued that because the numbers are so large in the case of 3G spectrum, not focusing on cost recovery may well affect the way that companies think about investing in the UK.⁴
- 2.3.26 It also argued, as did others, that forward-looking approaches carry a risk of regulatory asymmetry.⁵ This means that whilst Ofcom said it was taking a forward-looking approach which led it to consider values lower than the amounts actually paid for spectrum in 2000, it would not do the opposite and take a forward-looking approach if the value of spectrum had in fact increased. The MNOs maintained that they had no confidence that Ofcom would apply its stated approach symmetrically, meaning that they faced the risk of recovering less than they paid through regulated charges, but not the prospect of recovering more. That asymmetry, according to the MNOs, would harm their investment incentives, making a backward-looking cost recovery approach preferable.
- 2.3.27 The MNOs gave us three examples of where they said an asymmetric approach could be seen:
- (a) in Ofcom's treatment of 2G spectrum in the current MCT charge controls;⁶
 - (b) in Ofcom's treatment of the valuation of BT's copper access network;⁷ and
 - (c) in the CC's report of October 2002 on the economic regulation of the BAA London airports companies.⁸
- 2.3.28 The MNOs also argued that Ofcom's forward-looking approach would lead to uncertainty and possibly an erratic pattern of pricing between price control periods.⁹ It

¹Further, as set out in paragraph 2.3.34 below, guidance given at the time of the auction did not indicate that future regulation of MCT would factor in the full amounts paid for the 3G licences.

²Ofcom hearing on BT appeal, transcript, p58.

³T-Mobile's Sol, paragraph 26.

⁴T-Mobile hearing on BT appeal, transcript, pp24&25.

⁵T-Mobile's Sol, paragraph 22.2; Vodafone Sol, paragraphs 3.44–3.46; O2 Sol, paragraphs 16 & 17.

⁶Pricewaterhouse Coopers (PwC) expert report for O2, paragraph 24.

⁷Dr Mike Walker and Paul Reynolds' expert report for T-Mobile, footnote 7, referring to Ofcom's final statement on valuing BT's copper access network of 18 August 2005.

⁸Vodafone's Sol, paragraph 3.45.

⁹Vodafone's Sol, paragraph 3.47.

was said that this would lead to further increased regulatory risk, and further harm to investment incentives.¹

2.3.29 Ofcom argued that it would not act asymmetrically.² On the particular examples of asymmetric treatment levelled against it, Ofcom responded as follows:

(a) *Ofcom's treatment of 2G spectrum in the current MCT charge controls.* The point made against Ofcom was that it considered that the value of 2G spectrum may increase when it is liberalized (so that it can be used to deliver services other than 2G services) but made no allowance for that in its cost modelling:

- (i) Ofcom accepted that there was no further uplift in the benchmarks used to set the charge controls in the value of 900 MHz and 1800 MHz spectrum to reflect possible increases in value when used for 3G services.
- (ii) However, it maintained that it was important to distinguish between the particular spectrum values used to derive its benchmarks and the interpretation of the overall level of the charge control.
- (iii) The charge controls were, it argued, consistent with an increase in the value of 900 MHz spectrum that reflects estimated cost savings from using it compared with 1800 MHz spectrum, as Ofcom aligned the 2G/3G MNOs' charge controls at the higher level of 1800 MHz operators' costs. It noted that this may in part reflect a rise in the opportunity cost of 900 MHz spectrum.³

(b) *Ofcom's treatment of the valuation of BT's copper access network.* The point made against Ofcom was that it changed the depreciation methodology that it applied to BT's copper access network to prevent BT from recovering more than its historically incurred costs:

- (i) Ofcom stated that the change related to a change originally made in 1997 by Oftel to the way BT treated its network assets in its regulatory accounts from a historical cost accounting to a current cost accounting approach.
- (ii) Ofcom argued that it therefore concerned the impact of a change in depreciation methodology midway through certain assets' lives.
- (iii) The policy decision by Oftel, according to Ofcom, was motivated by a desire to stimulate infrastructure competition and would have resulted in a regulatory windfall gain to BT. When subsequent evidence emerged to suggest that infrastructure competition was unlikely to emerge, Ofcom intervened to remove those windfall gains.⁴

2.3.30 BT argued that increasing input prices had been a much more significant issue in sectors such as energy and water than in telecommunications, and that there was no evidence that regulators in those sectors systematically failed to reflect the increases in regulatory decisions.⁵ It also made the broader point that, even if there was a risk of regulatory asymmetry, it would be wrong to make FNOs and consumers pay more now because of the possibility that this may materialize in future.

¹H3G's Sol, paragraph 5.9(f).

²Ofcom's Price Control Defence, paragraphs A2.3.6–A2.3.17.

³Ofcom Reply, paragraphs 1.17–1.20.

⁴ibid, paragraphs 1.22–1.24.

⁵BT Reply, paragraph 210.

Assessment

- 2.3.31 On the question of investment incentives in general, we note that the role of the regulator should not be to encourage investment per se, but rather to promote efficient investment. Consequently, to the extent that Ofcom's decision to focus on efficient price signals rather than cost recovery may discourage some 3G investment at the margin, this may not be inconsistent with promoting efficient investment if the attractiveness of these investments was conditioned by an inefficient pricing structure for MCT services.
- 2.3.32 As far as investment in the mobile telephony industry more generally is concerned, we do not think that there would be a material adverse effect resulting from Ofcom's decision to focus on efficient price signals rather than on cost recovery in the case of 3G spectrum. MCT revenues account for a relatively modest proportion of the MNOs' total revenues. Because voice services are already in extensive use and have a well-established customer base, much of MNOs' future investment is likely to be directed towards the development of new technologies and services which will generate revenues that will not be subject to regulation.
- 2.3.33 We see these investments as being driven primarily by MNOs' search for competitive advantage over rivals through service differentiation rather than being influenced by a one-off regulatory decision relating to the treatment of 3G spectrum in setting regulated MCT charges. We think that the fact that the bulk of MNOs' revenue streams are unregulated means that investments will be recovered where they are ex-ante efficient and ex-post successful.
- 2.3.34 It is also significant in our view that guidance given at the time of the auction did not indicate that the costs of a 3G licence would be factored in to regulatory charges in future. A Frequently Asked Questions document issued before the auction stated that:
- Question:* Won't licence costs be passed on to consumers?
Answer: Bidders will be paying a cost determined by the auction based on their valuations instead of a licence fee fixed by the Government. This allows the market to determine the commercial value of scarce radio spectrum. The amount that operators will bid is determined by their overall business plans and the expected prices for 3G services and not the other way round.¹
- 2.3.35 That was an indication that market prices would not be determined by the sums paid for the licence. We think one reasonable interpretation of the guidance would have been that any future MCT charges would not factor in the 3G licence fees at all. At the very least, the guidance indicates that there was not an expectation being generated that future regulation of MCT would be factoring in the full amounts paid for 3G licences, whatever they happened to be. Accordingly, we do not think that failing to focus on cost recovery and historic prices amounts in this case to regulatory opportunism.²

¹Ofcom cited the guidance as a further reason for not focusing on cost recovery (MCT Statement, paragraphs A14.11 & A14.12).

²O2 acknowledged at its bilateral hearing that bidders would have had to take a view as to whether the 3G licence would be factored into regulation. It said that this uncertainty was not the 'be all and end all' of its business given the proportion of revenues that MCT represented (O2 hearing on BT appeal, transcript, p17).

- 2.3.36 We accept the point that uncertainty can affect investment incentives. But that, in itself, is not necessarily a regulatory problem to be avoided at all costs—it is what would happen in a competitive market. The very existence of uncertainty does not mean that one should abandon a forward-looking approach and move to one which could lead to distortions.
- 2.3.37 Furthermore, Ofcom’s approach, if applied symmetrically, should not have any material adverse impact on investment incentives. This is because the MNOs would face the risks and rewards that they would face (and do face in the unregulated markets in which they operate) in any event—the risk of under-recovery on an investment and the possibility of over-recovery will both be maintained under a forward-looking approach.
- 2.3.38 We do agree with the Interveners that a perceived risk of regulatory asymmetry could have some impact on investment incentives. However:
- (a) We do not consider that the examples put forward by the MNOs of Ofcom’s past actions are strong enough for us to conclude that it will act asymmetrically in future MCT price control reviews. Nor do we find examples of other regulators in different contexts failing to allow ‘over-recovery’ particularly helpful as a guide as to how Ofcom might or might not act in the future.
 - (b) We do acknowledge, however, that there is a risk of asymmetric treatment and that the perception of that risk can have some impact on investment incentives. Nevertheless, for the following reasons we do not consider that the existence of that risk outweighs the benefits of efficient price signals or justifies rejecting a forward-looking approach to the valuation of 3G spectrum:
 - (i) Ofcom stressed that the case of 3G spectrum fees was a unique one, and that it is in general very reluctant to depart from cost recovery principles. We therefore consider that there will be limited opportunities for regulatory asymmetry of the type feared by the MNOs in the future.
 - (ii) The MNOs are protected by the right of appeal to the Tribunal and the CC.
 - (iii) We consider that there is merit in BT’s point that it would not be appropriate to make FNOs and their customers pay more now because of possible future regulatory failure which may not materialize.
- 2.3.39 We therefore do not accept the argument that a forward-looking approach to the valuation of spectrum and a focus on sending efficient price signals should be rejected because of the impact it would have on investment incentives and the potential for regulatory asymmetry.

Distortions to future auctions

- 2.3.40 T-Mobile and Vodafone argued that Ofcom’s reasoning that allowing full cost recovery might lead to distortions to bidding in future auctions was wrong and should have been given less weight.¹ They argued that since the majority of cost recovery will have to take place in unregulated markets in any event, no rational bidder would bid more than it thought an asset was worth on the basis that a proportion of its ‘over-payment’ would be recoverable through regulated charges.

¹T-Mobile’s Sol, paragraph 21; Vodafone’s Sol, paragraphs 3.51 & 3.52.

Assessment

- 2.3.41 If bidders knew that whatever they paid for an asset at auction would subsequently be factored in to regulated charges, we would expect that to have some impact on future bidding decisions. We also note that Ofcom did not place much weight on the potential effects on future auctions that might arise if a cost recovery approach were adopted.¹ We therefore do not consider that the point made by T-Mobile and Vodafone undermines Ofcom's choice of objective.

Circularity

- 2.3.42 T-Mobile argued that there was a danger of circularity in that regulatory assessments of asset values may themselves be the product of expectations about future regulatory action.² However, we do not see how focusing solely on what was actually paid in 2000 would change this, since bids may have been influenced by perceptions of future regulatory action. We therefore do not consider this argument to have any bearing on the choice of the appropriate objective.

Legal considerations

- 2.3.43 Vodafone and T-Mobile cited both domestic and European law in support of their argument that the focus in assessing the value of 3G spectrum should be on allowing MNOs to recover their efficiently incurred costs. The two provisions cited were Article 13 of the Access Directive and section 88 of the Communications Act 2003. Those provisions (in part) provide as follows:

Article 13

Price control and cost accounting obligations

1. A national regulatory authority may, in accordance with the provisions of Article 8, impose obligations relating to cost recovery and price controls, including obligations for cost orientation of prices and obligations concerning cost accounting systems, for the provision of specific types of interconnection and/or access, in situations where a market analysis indicates that a lack of effective competition means that the operator concerned might sustain prices at an excessively high level, or apply a price squeeze, to the detriment of end-users. National regulatory authorities shall take into account the investment made by the operator and allow him a reasonable rate of return on adequate capital employed, taking into account the risks involved.

2. National regulatory authorities shall ensure that any cost recovery mechanism or pricing methodology that is mandated serves to promote efficiency and sustainable competition and maximise consumer benefits

...

¹Ofcom's MCT Statement, paragraph A14.13.

²T-Mobile's Sol, paragraphs 22.1 & 27.

Section 88

Conditions about network access pricing etc.

1. OFCOM are not to set an SMP condition falling within section 87(9) except where—

(a) 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; and

(b) it also appears to them that the setting of the condition is 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.

2. In setting an SMP condition falling within section 87(9) OFCOM must take account of the extent of the investment in the matters to which the condition relates of the person to whom it is to apply.

2.3.44 Vodafone, on the basis of section 88(2) of the 2003 Act, argued that Ofcom should have attached more weight to cost recovery considerations.¹ T-Mobile argued that both section 88(2) and Article 13(1) indicated that cost recovery should have been a 'core focus' of Ofcom's approach.²

Assessment

2.3.45 We do not consider that the statutory section and Article relied upon undermine Ofcom's decision to focus on forward-looking costs and efficient price signals. Whilst Ofcom was undoubtedly under an obligation to have regard to the extent of the investments made in 3G spectrum, in the light of the other objectives that the legal framework includes, such as promoting efficiency, competition and the interests of end-users, that obligation cannot have extended to a requirement to use a historic valuation rather than a current one, or to focus on cost recovery rather than providing efficient price signals.

2.3.46 Furthermore, as far as the obligation to allow a reasonable rate of return on adequate capital employed is concerned, Ofcom's MCT charge controls factor in the cost of capital.

2.3.47 T-Mobile acknowledged at its bilateral hearing that EC law did not require an emphasis on cost recovery in every case, that there are other efficiency considerations and that the balance to be struck depended on the facts of the particular case.³ We agree. In the context of MCT, for the reasons given above, we think that it was right to focus on sending efficient price signals rather than cost recovery.

¹Vodafone's Sol, paragraphs 3.9–3.12.

²T-Mobile's Sol, paragraphs 11 & 15.

³T-Mobile hearing on BT appeal, transcript, p10.

- 2.3.48 We note that a forward-looking approach was endorsed by the European Commission, and that Ofcom was obliged to take the utmost account of the European Commission's views pursuant to Article 7(5) of the Framework Directive.
- 2.3.49 We therefore reject the argument that the legal framework required priority to be given to cost recovery in this case.

Cost recovery in the context of MCT

- 2.3.50 The submissions of the MNOs on this topic were largely confined to abstract questions of principle. Their contention, very broadly, was that cost recovery should have been the focus, or should have been given more weight, in the case of 3G spectrum.
- 2.3.51 However, it has been a striking feature of this appeal process that there has been very little debate as to how a focus on cost recovery would be implemented in practice. It seems to have been largely assumed that Ofcom's methodology could simply be amended by using the actual amounts paid in 2000 as inputs into its cost model.¹ We do not think the matter is quite so simple.
- 2.3.52 O2, for instance, argued that Ofcom could use the licence values that were actually paid, regardless of the out-turn volumes. If out-turn volumes were below those predicted, then the licence value would be recovered over lower volumes and would increase the uplift on the regulated prices. Conversely, if out-turn volumes were above those predicted, then the uplift on regulated prices would decrease.²
- 2.3.53 That seems to us a perverse and incorrect outcome—such an approach to cost recovery would amount to a cost guarantee, the result being that the less successful the investment in 3G turned out to be, the more consumers would have to pay.
- 2.3.54 The question of what cost recovery would mean in the context of 3G spectrum and MCT charges was addressed to some extent by BT at its bilateral hearing. It told us that it was important to consider why costs were incurred, and that what drove the bidding in the 2000 auction were expectations about the value which the MNOs could derive from providing a new wave of data services.³
- 2.3.55 BT told us that its preferred approach of capping 3G MCT charges at the level of 2G cost could also be seen as a type of cost-recovery approach. BT said at its bilateral hearing that what it was trying to get was a termination rate that fairly rewarded the MNOs for the cost which they had incurred for providing the service in question, MCT.⁴
- 2.3.56 As we have decided that sending efficient price signals was the correct primary objective in this case, we have not found it necessary to pursue these issues further. They are, though, additional indications that caution should be exercised when considering notions of 'cost recovery' in the abstract.

¹O2's 'franchise fee' proposal, which is dealt with in subsection 2.10 below, is an exception to this.

²PwC's expert report for O2, paragraph 21.1.

³BT hearing on its appeal, transcript, pp7&8.

⁴ibid, p26.

Provisional conclusion on the appropriate objective

- 2.3.57 In our provisional determination, on the basis of the reasons given above, we saw no compelling economic or legal reason why, in relation to firms that are in large part unregulated, and where the 3G licences they hold were obtained voluntarily, the appropriate objective in considering the value of 3G spectrum to include within the MCT charges should be to ensure that MNOs recover their historically incurred costs. We considered that if there were evidence that the value of spectrum is less than what the MNOs paid in 2000, it would be wrong, unfair on FNOs and consumers, and contrary to what one would expect in a regulated market, for that not to be reflected in regulatory charges for a monopoly service. We stated that allowing for the recovery of historic costs in those circumstances may also result in an inefficient structure of prices.
- 2.3.58 Therefore we found that Ofcom did not err in focusing on providing appropriate price signals for efficient consumption as the main pricing objective in relation to 3G spectrum for the purposes of setting regulated MCT charges.

T-Mobile's response to our provisional conclusion on the appropriate objective

- 2.3.59 In its response to our provisional determination, T-Mobile made a number of points as to both our understanding of Ofcom's position in the MCT Statement and our reasoning for not focusing on cost recovery as a primary objective.¹
- 2.3.60 First, T-Mobile stated that we reached the provisional conclusion that no weight should be attached to the principle of cost recovery.² However, that is not an accurate interpretation of the conclusion we came to in our provisional determination. Our conclusion, set out above in paragraph 2.3.58, was that Ofcom did not err in focusing on providing appropriate price signals for efficient consumption as the main pricing objective in relation to 3G spectrum for the purposes of setting regulated MCT charges. That does not mean that we considered that no weight should be attached to the principle of cost recovery. It does, however, imply that forward-looking values, rather than historic values, are relevant, as recognized by Ofcom in its choice of MFLOC as the relevant cost concept.
- 2.3.61 Second, T-Mobile argued that we misunderstood Ofcom's decision in this regard, as it did not dismiss cost recovery as a relevant objective and afford it no weight at all, whereas our provisional determination placed no weight on it.³ We do not agree with T-Mobile's understanding. Focusing on forward-looking rather than historic values does not imply that cost recovery is being afforded no weight. Furthermore, Ofcom chose MFLOC as the relevant approach for assessing the contribution that 3G spectrum costs should make to the MCT charge controls, and the possibility that MNOs will recover less than (or more than) their historically incurred costs is a necessary consequence of that choice.
- 2.3.62 Third, T-Mobile argued that we had come to our conclusion on not focusing on cost recovery without estimating the financial impact on the industry or what is the likely scope in practice for operators to recover lost termination revenues.⁴

¹T-Mobile response to provisional determination, paragraphs 12–24.

²ibid, paragraph 13.

³ibid, paragraphs 15 & 16.

⁴ibid, paragraph 18.

- 2.3.63 We do not accept T-Mobile's characterization of 'lost termination revenues'. The use of a forward-looking value concept could, as Ofcom recognized, preclude a certain amount of cost recovery if the asset in question had fallen in value, but this is no different to what we would expect to happen in a competitive market. Furthermore, we do not consider that the use of a forward-looking value concept precludes cost recovery in this case. The paragraph that T-Mobile cites (paragraph 2.3.12 above) gives one reason for this. Paragraph 2.9.168(a) below gives another.
- 2.3.64 As to the estimation of the financial impact on the industry, this relates not to the choice of appropriate objective but to the specific levels of the charge controls on the MNOs. This is addressed in Section 16 of our determination on reference question 8. We note at this point that we have found, in relation to H3G's appeal on reference question 2, that the particular reduction in MCT revenues that is experienced by an MNO cannot tell a regulator at what level the price control level should be set (see Section 5 of this determination, paragraphs 5.5.21 and 5.5.22).
- 2.3.65 Fourth, T-Mobile considered that our argument against cost recovery on the basis that there was no ex-ante agreement between regulator and regulated firm as to what level of expenditure will be recoverable in an upcoming regulatory period was equivalent to a position that investments of over £20 billion could be dismissed because there was no explicit guarantee that the regulator would give any weight to the recovery of those investments. T-Mobile said that we were in no position to conclude that the effect of this on future investment in the industry could safely be disregarded.¹
- 2.3.66 We do not consider that it is accurate to say that we have 'dismissed' over £20 billion of investment or that we have 'argued against' cost recovery. We have decided, as did Ofcom, that it was correct to focus on efficient price signals, and, accordingly, that it is the forward-looking value of 3G spectrum that is relevant in this case. In coming to that conclusion, we explicitly considered the effect of Ofcom's choice of cost concept on investment incentives (see paragraphs 2.3.25 to 2.3.39 above).
- 2.3.67 Fifth, T-Mobile criticized our 'dismissal' of the concern of regulatory asymmetry. It argued that we gave no reasoning for our view that the examples put forward of Ofcom's past actions were not strong enough for us to conclude that it would act asymmetrically in future MCT price control reviews, and that our reliance on Ofcom's statement that the case of 3G spectrum was a unique one was misplaced because it was not clear what distinguished 3G spectrum as a cost category, and the sums involved were so large.²
- 2.3.68 It is not correct to say that we dismissed concerns about regulatory asymmetry. We accepted that the risk of asymmetric treatment, or the perception of that risk, could have some impact on investment incentives. However, we gave a number of reasons as to why we did not consider that the existence of that risk outweighed the benefits of efficient price signals or justified rejecting a forward-looking approach to the valuation of 3G spectrum (see paragraphs 2.3.38 and 2.3.39 above).
- 2.3.69 One of those reasons was based on Ofcom's statement that the case of 3G spectrum fees was a unique one. We do not accept T-Mobile's point that there is nothing that distinguishes 3G spectrum from any other cost categories. First, as Ofcom recognized in its cost modelling, there is a relationship between expected demand

¹ibid, paragraphs 19 & 20.

²ibid, paragraphs 21–23.

(ie traffic forecasts) and forward-looking 3G spectrum values. Second, there are practical issues in determining the forward-looking value of 3G spectrum that do not apply to other asset categories. The other assets in Ofcom's network cost modelling have current values that can be identified by prices that are set in markets which have (relatively) high volumes of transactions over time. There is therefore relatively little difficulty in working out what the current and past valuations of those assets are. 3G spectrum, on the other hand, is not freely traded at present, but was sold in an auction in 2000, and there is no market from which its forward-looking value can be directly identified.¹

Conclusion on the appropriate objective

- 2.3.70 After due consideration of the responses to our provisional determination, we remain of the view that there is no compelling economic or legal reason why, in relation to firms that are in large part unregulated, and where the 3G licences they hold were obtained voluntarily, the appropriate objective in considering the value of 3G spectrum to include within the MCT charges should be to ensure that MNOs recover their historically incurred costs. We consider that if there were evidence that the value of spectrum is less than what the MNOs paid in 2000, it would be wrong, unfair on FNOs and consumers, and contrary to what one would expect in a regulated market, for that not to be reflected in regulatory charges for a monopoly service. Allowing for the recovery of historic costs in those circumstances may also result in an inefficient structure of prices.
- 2.3.71 Therefore we find that Ofcom did not err in focusing on providing appropriate price signals for efficient consumption as the main pricing objective in relation to 3G spectrum for the purposes of setting regulated MCT charges.

2.4. Average or marginal valuations for 3G spectrum

- 2.4.1 In its amended Notice of Appeal, BT criticized Ofcom for adopting an average and not a marginal valuation methodology.² In the expert reports of Professor Yarrow on behalf of BT, it was argued that Ofcom had erred in focusing on the value of very large increments of 3G spectrum (2 x 5 MHz carriers) when it should have focused on much smaller increments such as the value of one more increment of output.³
- 2.4.2 Ofcom and the Interveners argued against this approach, largely on the grounds that the smallest usable increment of 3G spectrum was a 2 x 5 MHz carrier because that was the internationally agreed standard for which all the technology involved had been developed. They said that there was simply no option of buying or using a smaller increment.⁴ They also pointed out that there was no evidence of any difference between the average value of a carrier and the marginal value, as in the 2000 auction Vodafone paid approximately the same amount per carrier as the other MNOs even though it bid for, and won, a larger licence.⁵

¹Whilst technically a similarity rather than a difference, we also note that all cost categories are modelled on a forward-looking basis pursuant to Ofcom's depreciation methodology.

²BT Amended Notice of Appeal, paragraph 103.

³Professor Yarrow's second expert report for BT, paragraph 58.

⁴PwC's expert report for O2, paragraphs 125–130; Orange hearing on BT appeal, transcript, p10.

⁵Ofcom hearing on BT appeal, transcript, p10; Vodafone Sol, paragraph 3.90; Dr Mike Walker and Paul Reynolds' expert report for T-Mobile, paragraph 56; Orange hearing on BT appeal, transcript, p11.

- 2.4.3 O2 and T-Mobile also argued that using a marginal valuation for 3G spectrum would deny MNOs the opportunity to recover their efficiently incurred costs and was inconsistent with Ofcom's overall LRIC approach.¹
- 2.4.4 BT made clear during the course of the appeal that it was no longer pursuing its argument that the increment considered by Ofcom was inappropriate. It told us that its appeal was primarily about the appropriate value of 3G spectrum to be recovered through MCT charges rather than whether that value should be an average or marginal one.²
- 2.4.5 Accordingly, we have not focused on the potential differences between the marginal and average values of 3G spectrum. Given the size of the increment of 3G spectrum with which we are concerned, we think that the use of the term MFLOC could lead to confusion.³ We prefer instead to refer to the forward-looking value or opportunity cost of spectrum, and do so throughout the rest of this determination.

2.5. *The use of the 2000 auction fees as a proxy for the forward-looking opportunity cost of 3G spectrum*

Introduction

- 2.5.1 A central theme of BT's appeal was that Ofcom was wrong to use the 2000 auction fees as a guide to what the forward-looking value of 3G spectrum might be. It argued that Ofcom's reliance on the auction fees demonstrates that it did not carry out a proper forward-looking assessment.
- 2.5.2 BT argued that the period that has elapsed and the change in market conditions since 2000 were such that the auction fees should not have been relied upon at all. It argued that inflated valuations of data services heavily influenced the bidding, and that Ofcom had not attempted to form a view on the extent of the changes since 2000.⁴
- 2.5.3 Ofcom accepted that there was some evidence that the 2000 fees overstated the current value of 3G spectrum,⁵ but argued that the evidence was not so strong as to justify ignoring the auction fees altogether. It pointed out that it considered scenarios in which the value of 3G spectrum was lower than the 2000 auction fees, and that its charge controls were consistent with lower spectrum valuations as well.⁶
- 2.5.4 The Interveners, broadly, argued that the auction was the only good, market-based evidence of what 3G spectrum was worth in the UK, and that there was no good evidence that its value had fallen since the auction.⁷
- 2.5.5 BT presented a variety of evidence in an attempt to make good its claims. Each piece of evidence will be considered in turn.

¹O2's Sol, paragraph 27; T-Mobile's Sol, paragraphs 23–25; PwC's expert report for O2, paragraphs 116–121.

²BT bilateral hearing on its appeal, transcript, pp39–41.

³Ofcom agreed that its use of the term marginal had led to some confusion (Ofcom bilateral hearing on BT appeal, transcript, pp55&56).

⁴BT Reply, paragraphs 69 & 95.

⁵Its value at the time of Ofcom's market review.

⁶Ofcom's Price Control Defence, paragraph 3.6.5.

⁷T-Mobile's Sol, paragraph 33; O2's Sol, paragraph 15; Vodafone's Sol, paragraph 3.17; H3G's Sol, paragraph 5.9(a).

Features of the auction

2.5.6 BT argued that there were features of the auction itself that were likely to result in the fees being an overstatement of the opportunity cost of 3G spectrum even at the time. It cited three factors: the fact that one licence was reserved for a new entrant, the fact that the UK auction was the first to be held in Europe and that participants were keen to get a 'toe-hold' for rolling out 3G across multiple countries, and the fact that some participants drove up prices so as to weaken other bidders for future auctions.¹

Reservation of a licence for a new entrant

2.5.7 BT argued that the reservation of one licence for a new entrant led to particularly high prices in the auction. Ofcom, conversely, argued that this factor was likely to increase competition, but that this was simply likely to result in auction fees that better reflected the economic value of 3G spectrum at the time of the auction. Ofcom also questioned the relevance of this factor, pointing out that its valuation was based on a small licence, whereas it was a larger licence that was reserved for a new entrant.²

2.5.8 Orange and O2 made broadly the same points as Ofcom.³ Vodafone argued that the reservation of a licence for a new entrant could be expected to result in more vigorous competition in the mobile market eliminating any prospect of super-normal profits and would not have resulted in an overvaluation of the spectrum.⁴

2.5.9 We agree with Ofcom and the Interveners on this point. We do not see how the reservation of a licence for a new entrant, indicating increasing competition in the market in future, would have caused participants to bid more for a licence than they thought it was worth. Furthermore, we agree that the point is of limited relevance as it did not relate to the licences that Ofcom based its valuation on. Accordingly, we reject this feature of the auction as a reason why the 2000 auction fees might be overstated.

The 'toehold' effect

2.5.10 BT argued that since the UK auction was the first to be held there may have been factors influencing the bidding which had little to do with the opportunity cost of the spectrum. It cited the National Audit Office's report on the auction,⁵ which stated (in paragraph 2.20):

Vodafone told us that winning the first licences to be made available in a key European market was important to bidders:

- it enabled winners to approach equipment suppliers with realistic requirements before operators in other countries placed orders, allowing the licensees in the UK to influence the shape of the products and to secure supplies; and

¹BT Amended Notice of Appeal, paragraph 94.

²Ofcom's Price Control Defence, paragraphs A2.4.26 & A2.4.27.

³Orange's Sol, paragraph 5.16(b); PwC's expert report for O2, paragraph 10.

⁴Vodafone's Sol, paragraph 3.20.

⁵*The Auction of Radio Spectrum for the Third Generation of Mobile Telephones, National Audit Office, 19 October 2001.* We note that the report also mentions that BT and Vodafone had stated that they had overpaid for their licences (paragraph 29).

- it provided them with a stronger basis on which to bid for licences in other countries, whether allocated through auctions or through beauty contests.

We found a general view on the part of bidders that many European and global telecommunications companies saw success in the UK auction as important to qualifying to be one of a small number of pan-European operators in the next decade, after a process of consolidation within the industry.

- 2.5.11 Ofcom accepted that there was some evidence for the ‘toehold’ effect, and argued that it supported the use of scenarios other than those based directly on the auction fees. Ofcom argued that it was unclear what magnitude this effect might have had, and that if it were large, it might have been reflected in impairment reviews (whereas, as discussed below, only one MNO has impaired the value of its 3G licence).¹
- 2.5.12 Orange argued that the ‘toehold’ effect was uncertain and unproven.² O2 said that it seemed implausible, and that there were also high prices in later auctions in Germany and France.³ Vodafone’s position was that BT had provided no evidence that NTL, the last bidder to drop out of the auction and therefore the price-setter, had a pan-European strategy.⁴
- 2.5.13 We accept the point made by Ofcom and Orange that the magnitude of this effect is uncertain. However, we find it plausible, and the evidence contained within the NAO report⁵ suggests, that bidding was driven up to an extent by the desire on the part of bidders to position themselves favourably for other auctions and for operations in other countries. That desire would have led to bidding that was not solely related to the opportunity cost of the 3G spectrum in the UK. Therefore the auction fees are likely to have exceeded the opportunity cost of the spectrum.
- 2.5.14 However, as the magnitude of this effect is uncertain, we take it simply as evidence that one needs to interpret the results of the auction with some degree of caution if one is attempting to derive a current valuation of spectrum from them.

Driving up prices to weaken rivals in future auctions

- 2.5.15 BT argued that there is some evidence that participants drove up prices so as to weaken other bidders for future auctions. Ofcom submitted that this phenomenon was not universally accepted, and in any event related to the large licence that was not reserved for a new entrant, not those licences on which Ofcom’s valuation was based.⁶ The Interveners agreed with these points.⁷
- 2.5.16 We agree with Ofcom that BT’s argument does not relate to the licences on which Ofcom based its valuation. We therefore do not consider that the tactical bidding that may have taken place has any relevance as to whether the auction fees on which Ofcom based its valuation were likely to have been overstated.

¹Ofcom’s Price Control Defence, paragraph A2.4.28.

²Orange’s Sol, paragraph 5.16(b).

³PwC’s expert report for O2, paragraph 11.

⁴Vodafone’s Sol, paragraph 3.21.

⁵Which appears to have originated from bidders themselves.

⁶Ofcom’s Price Control Defence, paragraph A2.4.30.

⁷Orange’s Sol, paragraph 5.16(c); Vodafone’s Sol, paragraph 3.22; PwC’s expert report for O2, paragraph 12.

Expectations at the time of the auction

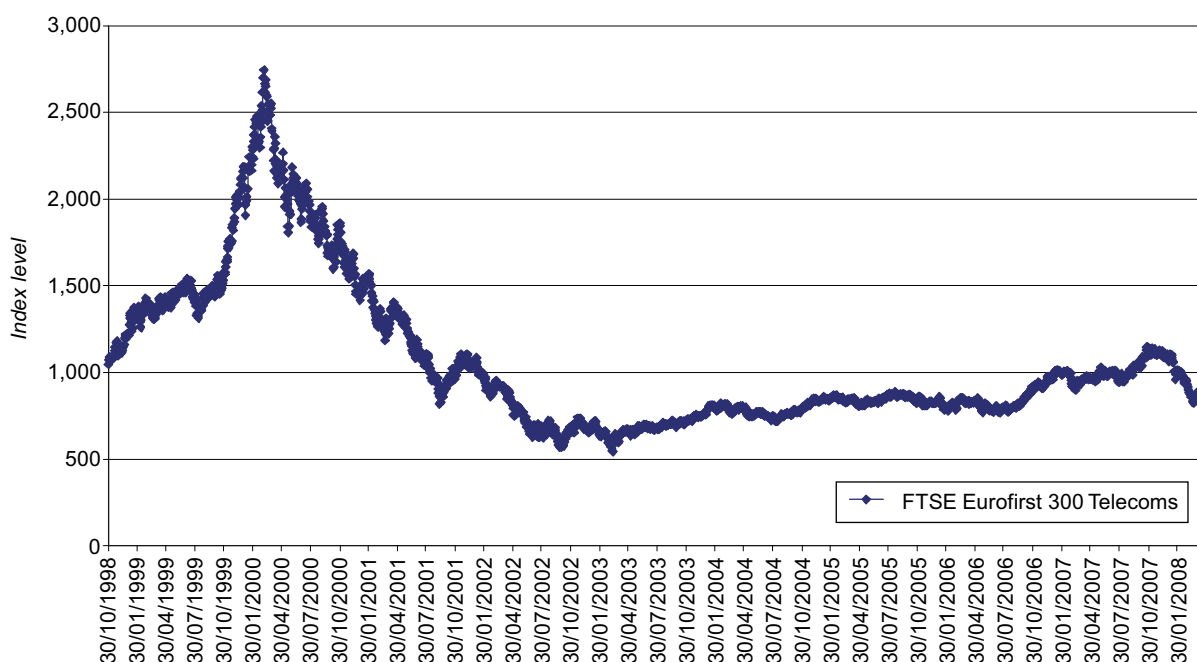
2.5.17 Aside from the features of the auction itself, BT relied upon factors prevailing at the time to aid its argument that Ofcom was wrong to rely on the auction fees as a proxy for the forward-looking opportunity cost of 3G spectrum. It argued that the auction took place at the height of the dotcom boom, and just before a severe stock market correction which was pronounced in the telecoms sector.¹ Given that timing, it argued that the auction fees were driven by wildly over-optimistic expectations of rapid growth in data services that did not materialize and accordingly that the auction fees are an extremely poor guide to the current value of spectrum.²

Changes in the market

2.5.18 As to the dotcom boom, BT gave us evidence that the telecommunications index was at its peak in March 2000 when the UK auction began, that it underwent a severe correction just afterwards, and that it has barely reached 40 per cent of its peak level since then.³ The FTSE First 300 Telecoms index over the relevant period is shown in Figure 2.6.

FIGURE 2.6

FTSE First 300 Telecoms



Source: Reproduced from BT reply.

2.5.19 BT also pointed out that the NAO report cited the telecommunications stock market boom as a reason for the very high fees generated by the auction.⁴

¹BT Amended Notice of Appeal, paragraph 91; BT Reply, paragraph 88.

²BT Amended Notice of Appeal, paragraph 98; BT Reply, paragraph 40(e); BT hearing on its appeal, transcript, pp13&84.

³BT Reply, paragraph 88.

⁴Second witness statement of Robert Jeffrey Richardson for BT, paragraph 17.

- 2.5.20 Ofcom did not address this point specifically in its defence, although it did note in the MCT Statement that the fact that the licence fees were increased by the telecommunications ‘bubble’ appeared to be supported by the NAO report.¹ It considered this to be a further indicator of the uncertain value of 3G spectrum and therefore that its scenario-based approach was reasonable.² Ofcom also noted that, whatever changes in the market had occurred, these had not led to four of the five MNOs having to impair their 3G licences.³
- 2.5.21 Most of the Interveners did not engage with this specific point. Orange, however, argued that it was difficult and therefore unsafe to use share price data to estimate 3G spectrum costs.⁴

Assessment

- 2.5.22 Ofcom’s object was to assess the forward-looking value of 3G spectrum. It used the 2000 auction fees as a proxy. We do not consider using historical data in itself to be an error—in a situation where, as here, there is limited up-to-date data that could be used to derive a current valuation, data from the past can be informative.
- 2.5.23 However, in using past data, caution must be exercised and it is critical to assess the extent to which factors which created that historical valuation may have changed. This is especially true of a rapidly developing and volatile sector such as telecommunications, in which one might expect the prospects for certain services, and the value of certain technologies, to change significantly over time.
- 2.5.24 We think that the factors cited by BT in this case (the stock market ‘bubble’ and subsequent correction) were significant, and that it was not sufficient for Ofcom simply to address them by considering a range of scenarios including those where the valuation of 3G spectrum was lower than the auction fees. In our judgement, Ofcom should have attempted to understand the factors that had driven the bidding in 2000. We do not see how Ofcom could have been confident that the changes in the market had not affected the value of 3G spectrum, possibly to a substantial extent, without trying to compare expectations at the time of the auction with current ones.
- 2.5.25 Ofcom argued that, since it was seeking to derive a valuation of 3G spectrum at the time of the market review, it did not place weight on expectations that prevailed at the time of the 3G auction in 2000.⁵ We reject that reasoning as unsound. By using the 2000 auction fees as a proxy for the current value of spectrum, Ofcom was in fact placing weight on expectations that prevailed at the time. By not investigating what those expectations were, it was doing so without knowing if that was appropriate.⁶

¹Ofcom’s MCT Statement, paragraph A14.48.

²ibid, paragraph A14.49.

³ibid, paragraph A14.41.

⁴Orange’s Sol, paragraphs 5.13–5.15.

⁵Ofcom’s Price Control Defence, paragraph 3.9.43.

⁶Some of the MNOs have acknowledged this general point—Orange agreed that if the upturn on data services was less than expected at the time of the auction, there would have been a fall in the value of spectrum (Orange hearing on BT appeal, transcript, p15); O2 accepted that if expectations today were very different from those in 2000, that would be relevant evidence (O2 hearing on BT appeal, transcript, pp28&29); Vodafone accepted that it would be relevant to look at bidders’ traffic forecasts in 2000 to test Ofcom’s assessment of 3G spectrum values (Vodafone’s Sol, paragraph 3.64).

- 2.5.26 Ofcom could, and in our view should, have investigated what the expectations of the bidders were at the time of the auction (for example, by obtaining contemporaneous business plans or other similar documents).

Evidence of expectations at the time of the auction

- 2.5.27 BT argued that had Ofcom examined the MNOs' projections at the time of the auction, it would have been apparent that the very high auction fees consisted largely of over-inflated valuations of potential data services.¹ It provided us with BT Cellnet (now O2) board papers from shortly after the auction² which showed that:

[



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- 2.5.28 BT argued that these forecasts were in line with the expectations of the market as a whole. It provided us with forecasts produced by telecommunications consultancy Analysys Research in 2001 for Western Europe, which predicted that by 2011 MNOs' voice services would account for only 35 per cent of MNOs' total revenue, with the remainder coming from data services.⁴
- 2.5.29 We asked each of the other parties for documentation from the time of the auction. With the exception of Orange (and, subsequent to the issuance of our provisional determination, H3G), none of them could locate any so we were unable to compare their expectations to those of BT Cellnet. T-Mobile told us that it did not have any papers setting out what its forecasts were at the time of the auction.⁵ Vodafone told us that its forecasts were somewhat higher than Ofcom's medium-demand scenario, but that this was consistent with the fact that Vodafone chose to acquire the largest licence available.⁶ No further details were provided and no documentary evidence was put forward. We were not told, for instance, how much of the forecast demand related to data and how much related to voice.

¹BT Reply, paragraph 107.

²BT plc Group Investment Committee 'BT Wireless (3G) Mobile', July 2000.

³All figures are in 2001/02 prices.

⁴BT Reply, paragraph 191.

⁵T-Mobile bilateral hearing on BT appeal, p53.

⁶Vodafone's Sol, paragraph 3.64.

2.5.30 H3G was initially unable to locate any documentary evidence but did tell us, in answer to a question on this subject, that it was possible that its estimations of data growth and timing at the time of the auction may have been overstated.¹ H3G subsequently provided us with an extract from a presentation dated March 2000 which was given by HSBC to Hutchison Whampoa management at the time of the 3G auction, which asserted that data would account for [X] per cent of total revenue by 2009.² We note that this is broadly consistent with the evidence provided by BT, although we acknowledge H3G's point that []³

2.5.31 []⁴

2.5.32 In our provisional determination we noted that the evidence we have received as to the expectations that prevailed at the time of the auction all pointed in one direction. BT's evidence consisted of contemporaneous documents which gave some indication of the assumptions upon which bidding decisions were being made as well as a report which, in the absence of any evidence to the contrary, we took as a broadly accurate representation of industry sentiment at the time. []

We concluded that whilst it was likely that there would have been differences in expectations between each of the bidders, all the evidence we had pointed to an expectation that data services would take off quickly and eclipse voice as the main driver of value in the mobile industry, and that 3G traffic levels were expected to be high.

2.5.33 O2 submitted in response to our provisional determination that the board papers cited by BT post-dated the auction, after BT Cellnet had paid a significant amount for its 3G licence, and that it was therefore not surprising that it chose to set itself challenging targets.⁵

2.5.34 We do not think that O2's submission undermines our conclusion for two reasons:

(a) First, the board papers we do have contain forecasts of subscriber numbers and other trends for the market as a whole. It seems unlikely to us that such forecasts were not genuinely believed, and if they were genuinely believed they cannot be explained by challenging internal targets. The fact that they are consistent with the HSBC presentation cited by H3G and the forecasts produced by Analysis Research in 2001 (see paragraphs 2.5.28 and 2.5.30 above) supports

¹H3G hearing on BT appeal, transcript, pp51–52.

²H3G letter of 2 October, 2008, Enclosure A. The [X] per cent figure appears to relate to the new operator's total revenues. The presentation stated that data would account for [X] per cent of mobile services revenue for the UK market as a whole, and that data revenues would grow rapidly from 2000/01.

³H3G letter of 2 October 2008. The letter also referred to (and annexed an extract from) an H3G operational management Information Memorandum proposal to the banking community dated October 2000 for the purposes of raising bank funding. The interpretation of the extract, and an assessment of its value in shedding light on expectations at the time of the auction, is somewhat ambiguous, but the extract does not in our view detract from the broad thrust of the rest of the evidence set out in this subsection.

⁴[]

⁵The licences were auctioned in April 2000 whereas the board papers date from July 2000 (O2 response to provisional determination, paragraph 32).

this view. Even if it was the case that BT Cellnet was employing what it knew to be over-optimistic market forecasts in order to justify the setting of challenging targets (and we have seen no evidence that it is the case), that would simply underline the point that high traffic volumes and significant growth in data revenues were required to justify the licence fee that was actually paid.

- (b) Second, evidence provided by O2 in support of its 'franchise fee' methodology¹ which pre-dates the auction is also consistent with our conclusion. In particular, O2 cited a BT Cellnet board paper from October 1999 seeking approval to enter into the 3G auction² which stated that:

[



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- 2.5.35 We therefore maintain the conclusion that we reached in our provisional determination as set out in paragraph 2.5.32 above.

The present situation

- 2.5.36 As set out below in subsection 2.7, in our view the critical comparison in this case is between the expectations from the time of the auction and the demand forecasts used in Ofcom's modelling, and not the prevailing situation today (although we recognize that Ofcom's demand forecasts would have been informed by the prevailing situation up to the MCT Statement). However, in so far as evidence on the actual market situation can shed some light on the state of the market and the trends that would have been evident in March 2007, it is appropriate to consider whether it has any implication for the treatment of the 2000 auction fees.
- 2.5.37 BT provided us with evidence that the expectations prevailing in 2000 had not been realized. It cited figures from Vodafone which indicated that it was achieving only 25 per cent of its average revenue per user (ARPU) from data as at September 2007 and from O2 which gave a figure of 33 per cent.³ These figures were unchallenged.
- 2.5.38 BT also cited Ofcom's Communications Market Reports of 2006, 2007 and 2008. The 2006 Report showed that in 2005 rental and voice calls accounted for 80 per cent of UK mobile revenue, while SMS made up 16 per cent, and other data revenue (including MMS) comprised 4 per cent.⁴

¹This methodology is discussed in subsection 2.10 below.

²PwC's expert report for O2 cited in an appendix a BT plc Group Investment Committee, Project Chestnut, 22 October 1999.

³BT Reply, paragraph 194. We are aware that these figures post-date the MCT Statement. However, Vodafone provided us with evidence of the percentage of overall revenue coming from data services for each MNO going back to December 2005 in response to H3G's appeal. The figures from December 2006 are broadly consistent with the figures from September 2007 cited by BT (Third Witness Statement of Craig Tillotson for Vodafone, p9).

⁴Ofcom's Communications Market Report 2006, section 3.3.16.

2.5.39 The Ofcom 2007 Communications Market Report showed that in 2006:¹

(a) Voice and SMS (both services available on 2G networks) accounted for 95 per cent of mobile revenue. In particular, data accounted for £0.8 billion, SMS for £2.4 billion and voice for £10.8 billion of total revenue in the industry.

(b) Average voice ARPU was £13.31 per month, whilst average data ARPU (including SMS) was £3.90 per month.

2.5.40 The 2007 Report also showed that there were approximately 7.8 million 3G subscribers in the UK by the end of 2006, of which a relatively small proportion were O2 customers.² [



]

2.5.41 [



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2.5.42 In our provisional determination, we set out a passage from Ofcom's 2008 Communications Market Report that was brought to our attention by BT during the course of the appeal.³ For the avoidance of doubt, we do not rely in our assessment of how the expectations at the time of the auction compared to the situation as at March 2007 upon any of the data contained within the 2008 Report.

Assessment

2.5.43 We consider that the evidence clearly points to a very significant difference between the expectations that prevailed at the time of the auction and the market reality as at March 2007. That does, in our view, render the auction fees from 2000 a problematic guide to the forward-looking value of 3G spectrum. If they are to be used as a proxy at all, the expectations prevailing at the time of the auction need to be properly understood so that errors are not made when it comes to any scenario analysis.⁴

Econometric analysis of international auction data

2.5.44 BT argued that the spectrum prices per head of population achieved in other European countries supported its case that the UK auction was particularly skewed.⁵ It argued that, if Ofcom wanted to use past data to proxy the current

¹Ofcom's Communications Market Report 2007, section 4.2.8.

²p268, Figure 4.16. For completeness, we note that the situation was similar in the 2008 Report, which showed that the figures were approximately 12.5 million and 2.5 million respectively (p320, Figure 5.41).

³Ofcom's Communications Market Report 2008, Section 5.15.

⁴As explained in subsection 2.6 below, we think that errors stemming from a lack of understanding of the expectations underpinning the 2000 auction fees have been made.

⁵BT Amended Notice of Appeal, paragraph 95.

value of spectrum, it should have used more than one data point and examined spectrum awards in other countries as well.¹

- 2.5.45 BT submitted a number of expert reports from Dr Daniel Maldoom. In those reports Dr Maldoom analysed spectrum awards both in Europe and worldwide and subjected the resulting data to econometric analysis to come to a prediction of what fees a 3G spectrum auction would generate in the UK in 2007. He concluded that, although there is significant uncertainty accompanying his estimate, the value of a 3G licence in the UK in 2007 should be around £3 billion (in 2006/07 prices) but subject to a wide margin of error. Comparing this to the implied spectrum value consistent with the charge controls set by Ofcom and Ofcom's medium-demand scenario (£6.2 billion including holding or gestation costs), he concluded that, whilst there may be considerable uncertainty about the true value of 3G spectrum, it is clearly lower than the one implied by Ofcom's charge controls.²
- 2.5.46 Ofcom and the Interveners argued that Dr Maldoom's analysis was of little value because:
- (a) Spectrum award processes may not reveal the true value of spectrum. Prices paid in poorly designed award processes will tend to underestimate the true opportunity cost, and competition was limited in many auctions.³
 - (b) The opportunity cost of spectrum may differ between countries due to differences in expected demand, including the pace of growth, for voice and data services, expected network costs, the price of alternative spectrum, licence terms, the number of licences issued and the regulatory environment.⁴
 - (c) The analysis is undermined by insufficient data, a lack of robustness, unjustified selection, missing variables, errors of specification, and is not state-of-the-art.⁵
 - (d) It omits recent competitive auctions that achieved relatively high prices.⁶
 - (e) It only accounts for differences between countries and award processes in a simplified way.⁷
- 2.5.47 The Interveners argued that no weight could be placed on Dr Maldoom's econometrics, whilst Ofcom argued that the evidence made it reasonable to consider values lower than those generated by the UK auction but did not justify ignoring the auction fees altogether.⁸
- 2.5.48 H3G put forward an alternative econometric analysis undertaken by Professor Browning, who submitted a report which concluded that, properly analysed, evidence from international auctions shows that there is no reason to believe that the market valuations of the 3G licences have significantly changed since the 2000 auctions. The two key variables explaining the relatively high price in the UK could be, according to Professor Browning, the fact that the UK has a large population

¹BT hearing on its appeal, transcript, p84.

²Dr Daniel Maldoom's second expert report for BT, paragraph 32.

³Ofcom's Price Control Defence, paragraphs A2.4.16–A2.4.21.

⁴ibid, paragraph A2.4.22.

⁵Orange's Sol, paragraphs 5.27–5.29.

⁶Dr Mike Walker and Paul Reynolds' expert report for T-Mobile, paragraph 71.

⁷Vodafone's Sol, paragraphs 3.31–3.37.

⁸Ofcom's Price Control Defence, paragraph A2.4.23.

and the fact that its auction was much more competitive than in other large countries.¹

Assessment

- 2.5.49 Given the views we have come to as to the caution which must be exercised when using the 2000 auction fees as proxies for the forward-looking value of spectrum, it has not been necessary for us to resolve all the questions which the arguments over the value of econometric analyses have raised.
- 2.5.50 Nonetheless, at a high level we think that whilst Dr Maldoom's analysis does have an intuitive appeal, in our view the points raised by the other parties lead to the conclusion that the analysis is not sufficiently robust to provide a sound foundation for reaching strong conclusions. In any event, we have not found it necessary to place weight on it.
- 2.5.51 In response to our provisional determination, H3G submitted that we had wrongly placed no weight on Professor Browning's analysis, which H3G said demonstrated that the current value of its 3G licence exceeded the fee paid for it in 2000.²
- 2.5.52 We do not agree with H3G's interpretation of Professor Browning's evidence. We understood his expert reports to have been submitted in order to demonstrate that Dr Maldoom's analysis was not robust and provided no sound basis for concluding that the value of 3G spectrum had fallen. Indeed, in the conclusion to his first expert report, Professor Browning stated that the historical record was incomplete and did not provide a sound foundation for drawing strong conclusions. He pointed out that the sample did not include any auctions in large countries such as the UK after 2000 which meant that it would be impossible to predict convincingly what would have happened seven years after the UK auction took place.³ We agree with those views. Therefore we do not accept that his evidence undermines our conclusions on the caution which must be exercised when using the 2000 auction fees as proxies for the forward-looking value of spectrum.
- 2.5.53 We also note that our understanding of Professor Browning's evidence appeared to have been shared by H3G prior to its response to our provisional determination.⁴

Impairment reviews

Introduction

- 2.5.54 A 3G licence is treated as an intangible asset in the MNOs' financial accounts. Under current accounting standards MNOs have a requirement to undertake an impairment review of any asset where there are indications that suggest that that an asset's carrying value may not be fully recoverable. The principle behind the impairment review is that fixed assets, tangible and intangible,⁵ should not be

¹H3G Sol, paragraph 5.9(b).

²H3G response to provisional determinations issued in the H3G appeal and in relation to the BT appeal, paragraphs 12.2–12.8; We note that the submissions in that response relating to the reasoning and provisional conclusions reached in our provisional determination on 3G spectrum costs were submitted long after the relevant deadline for submissions had passed.

³Professor Browning's first expert report for H3G, paragraph 45.

⁴H3G bilateral hearing on BT appeal, transcript, pp27–31.

⁵Intangible fixed assets are defined as identifiable non-monetary assets without physical substance.

carried in the balance sheet at more than their recoverable amount, which is defined as the higher of net realizable value and value in use.¹

- 2.5.55 An impairment review essentially involves a discounted cash flow (DCF) calculation of future revenue and cost streams. However, as it is seldom possible to associate cash flows with individual assets, the review will usually have to be applied at higher levels of aggregation, to cash generating units (CGUs) that contain groups of related assets. All the MNOs have classified their entire UK operations as a single CGU.
- 2.5.56 All the MNOs have carried out impairment tests. In the period prior to Ofcom's decision only O2 had concluded that its UK 3G licence had been impaired. Its impairment charge was £2,068 million against a net book value of £4,030 million producing a revised net book value of £1,962 million.

BT's arguments

- 2.5.57 BT made two broad arguments on impairment reviews: first, the fact that four out of five MNOs have not impaired their 3G licences does not mean those licences are currently worth the amount that was paid for them in 2000;² and second, that O2's impairment of its 3G licence is convincing evidence that the current value of 3G spectrum is below the amounts paid in 2000.³

BT's first argument

- 2.5.58 Ofcom placed some reliance in the MCT Statement on the fact that four out of five MNOs had not impaired their 3G licences.⁴ BT argued that it was wrong to do so. First, it argued that since impairment reviews are conducted at CGU level, the value of the 3G licences could have fallen below their 2000 values and yet not be impaired.
- 2.5.59 Second, it argued that goodwill carried by a CGU could act as a buffer against writing down other assets, because even if the recoverable amount calculation resulted in an impairment loss at the CGU level, it must first be written down against any goodwill allocated to that CGU ahead of any other assets. BT pointed out that a number of MNOs had made impairments against goodwill (Deutsche Telekom/T-Mobile in 2004 and 2005, and France Telecom/Orange in 2007).⁵
- 2.5.60 Ofcom submitted that BT's argument on this point did not imply that the value of 3G spectrum had necessarily fallen, because of the difficulty of inferring anything about the value of a particular asset from impairment reviews and because impairment reviews involve assessing the future value generated by an MNO's business, which in turn requires an assessment of uncertainties such as future demand, revenues and costs. Nonetheless, Ofcom did consider that impairment reviews can provide

¹Net realizable value is defined as the amount at which the asset could be disposed of, less selling costs. Value in use is defined as the present value of the future cash flows obtainable as a result of an asset's continued use, including those resulting from its ultimate disposal.

²BT Amended Notice of Appeal, paragraph 108.

³ibid, paragraph 112.

⁴Ofcom's MCT Statement, paragraph A14.41; however, Ofcom did take account of O2's impairment and incorporated it (directly and through averaging) into two of its spectrum valuation scenarios.

⁵Second witness statement of Robert Jeffrey Richardson for BT, paragraphs 25 & 26.

some useful evidence, and that the appropriate response to the uncertainty in this case was to use the range of scenarios that it did.¹

- 2.5.61 Vodafone submitted that BT's argument was perverse, because if an overvaluation had taken place in 2000 one would expect write-downs but these had not happened in four out of five cases.² T-Mobile argued that impairment reviews, being conducted at the CGU level, would reflect a multiplicity of factors, depend on an MNO's view of its own business prospects, and be subject to the problem of circularity as they may depend on expectations of regulatory treatment.³

Assessment of BT's first argument

- 2.5.62 Impairment reviews produce results at an aggregate level. For instance, in relation to the 2G/3G MNOs, the impairment reviews do not separate out the value of the 3G business and it is possible that the value of existing 2G services serves to underpin the book value of MNOs' 3G licences. Therefore the results may not be detailed enough to isolate reliably the revenues associated with the 3G licences. This could have effects in both directions—it could hide gains in value (if there are losses elsewhere) as well as losses (if there are gains elsewhere). It is also the case that goodwill must be written down ahead of any other assets and this too could hide losses in asset value.
- 2.5.63 Further, impairment reviews depend on DCF calculations which can only ever be as good as the assumptions on which they are based, and we cannot get behind the assumptions that have been used.
- 2.5.64 There is little disagreement between BT, Ofcom and the Interveners as to the difficulty of making inferences about the value of particular assets on the basis of impairment reviews. We agree that impairment reviews can only be of limited value in this context.
- 2.5.65 We note, however, that the 3G spectrum values used in Ofcom's cost modelling included holding (or gestation) costs. This issue is discussed in Section 6 below, but in short, the effect of this is that when Ofcom used the 2000 auction fees in its modelling, the value of spectrum that fed into the final benchmarks was £7.5 billion rather than £4 billion. However, the 3G licence will not include these holding costs in the MNOs' accounts. Therefore even if a 3G licence is not impaired against its 'headline' £4 billion figure, we cannot conclude that it has not fallen in value below the figures that were actually used by Ofcom.
- 2.5.66 Accordingly, whilst we do not consider that no evidence that the licences have not fallen in value can be derived from the fact that four out of the five MNOs have not impaired the value of their 3G licence, we do not think much weight can be placed on the fact that they have not done so. We therefore do not think that Ofcom could properly have relied on the results of the impairment reviews to satisfy itself that changes in market circumstances did not undermine its use of the 2000 auction fees as a proxy for the forward-looking value of 3G spectrum.

¹Ofcom's Price Control Defence, paragraph A2.4.43.

²Vodafone Sol, paragraph 3.24.

³T-Mobile Sol, paragraph 36.

BT's second argument

- 2.5.67 BT argued that even though impairment reviews could not tell Ofcom that 3G licences had not fallen in value, the fact that O2 had impaired its 3G licence was convincing evidence that 3G spectrum, in general, had fallen in value. BT also argued that the impairment demonstrated the fallacy of relying on historical spectrum values rather than seeking to carry out a genuine forward-looking analysis.¹
- 2.5.68 Ofcom argued that O2's impairment was evidence of a fall in value, and accordingly it was appropriate to take it into account in two of its valuation scenarios, but that to rely on it exclusively would have been unduly selective as impairments would depend in part on a particular MNO's strategy, outlook and expectations.²
- 2.5.69 O2 told us that the impairment in 2003 said nothing about its business in 2007.³ Orange, similarly, pointed out that between the impairment and O2's acquisition by Telefónica, O2's share price rose by a factor of 2.1–2.8.⁴
- 2.5.70 H3G, Vodafone, T-Mobile and Orange all argued that O2's write-down related to its judgement of its business at the time.⁵ H3G suggested that O2 may have written down its licence because its strategy had been to focus on 2G and that it was having trouble meeting its 3G rollout obligations.⁶ It added that the impairment could not be relevant for a 3G-only operator.⁷
- 2.5.71 O2 and Orange also argued that BT's position was contradictory because it was arguing both that impairment reviews are unreliable and that one such review provides convincing evidence of a fall in the value of 3G spectrum.⁸

Assessment of BT's second argument

- 2.5.72 Given the views we have come to as to the caution which must be exercised when using the 2000 auction fees as proxies for the forward-looking value of spectrum, it has not been necessary for us to decide whether O2's impairment provides convincing evidence that the value of 3G spectrum has fallen.
- 2.5.73 In our provisional determination we went on to state that, notwithstanding our conclusion above, we did think that the impairment further illustrated the difficulty of relying on historic valuations. In particular, we considered that Orange and O2's arguments that a 2003 impairment could tell us little about the forward-looking value of spectrum equally applied to the 2000 auction fees.
- 2.5.74 O2 disputed that point in its response. It argued that the specific value of its business changed from 2003 to 2007, that the 2003 impairment reflected the fact that the value of a 3G licence in the hands of an MNO that was not performing well at the time had decreased, but that the market value for a 3G licence would be determined by the price that an entrant would be willing to pay for it, and whilst this may

¹BT Reply, paragraphs 102–104.

²Ofcom's Price Control Defence, paragraph A2.4.45.

³O2 bilateral hearing on BT appeal, transcript, p8.

⁴Orange's Sol, paragraphs 5.25 & 5.26.

⁵H3G's Sol, paragraph 5.21; Vodafone's Sol, paragraph 3.26; T-Mobile's Sol, paragraph 36; Orange bilateral hearing on BT appeal, transcript, p23.

⁶H3G hearing on BT appeal, transcript, p32.

⁷H3G's Sol, paragraph 5.21.

⁸O2's Sol, paragraph 19; Orange's Sol, paragraphs 5.22–5.24.

vary over time the reasons for it doing so would be different to those for which the value of O2's business had varied over time.¹

2.5.75 Our point was not dependent on the value of 3G spectrum varying for any particular reasons. Rather, we saw no reason in principle why, if going back to a point in time and looking at the value of a business can tell one little about the value of that business today, going back further in time and looking at the value of an asset (without looking at the expectations underpinning that value) can tell one more about the value of that asset today. In any event, for the reason given in paragraph 2.5.72 above, it is not necessary to come to any final view on this point.

Brokers' valuations

2.5.76 BT argued that Ofcom should have looked at broker information concerning the current value of the MNOs, because if the MNOs were valued at a figure lower or not much more than the 2000 auction fees, it must follow that the licences which form part of their assets are also now valued at a level which is lower than those fees.²

2.5.77 BT provided a number of brokers' enterprise valuations of the MNOs, and pointed out that applying what it called Ofcom's 'central case'—a £6.2 billion spectrum valuation including holding charges—gives a value which exceeds the enterprise value of two of the MNOs and makes up a large proportion of the remainder.³ BT provided Tables 2.4, 2.5 and 2.6 below.

TABLE 2.4 **Ofcom's spectrum asset valuations**

	<i>£ billion</i>				
	<i>Scenario</i> 3	<i>Scenario</i> 4	<i>Scenario</i> 5	<i>Scenario</i> 6	<i>Scenario</i> 7
Headline licence fee	4.0	4.4	3.3	1.9	1.4
Used in calculations	7.5	8.3	6.2	3.6	2.6

Source: Reproduced from Dr Maldoom's expert report for BT dated 15 November 2007, Table 2.

TABLE 2.5 **Asset values of 3G licence as percentage of enterprise value**

<i>MNO</i>	<i>Average enterprise value (£m)</i>	<i>Brokers Reports (exhibit RJR4)</i>	<i>per cent</i>				
			<i>Scenario</i> 3	<i>Scenario</i> 4	<i>Scenario</i> 5	<i>Scenario</i> 6	<i>Scenario</i> 7
Vodafone	9,800	UBS, Lehman Bros, JP Morgan	77	85	63	37	27
O2	10,200	Merill Lynch	74	81	61	35	25
T-Mobile	4,500	Chevreurx, Merill Lynch, Lehmann Bros	167	184	138	80	58
Orange	7,700	Lehmann Bros, UBS, Merrill Lynch	97	108	81	47	34
H3G	2,300	UBS	326	361	270	157	113

Source: Reproduced from second witness statement of Robert Jeffrey Richardson for BT, paragraph 34.

¹O2 response to provisional determination, paragraphs 34–36.

²BT Amended Notice of Appeal, paragraph 114.

³Second witness statement of Robert Jeffrey Richardson for BT, paragraph 34.

TABLE 2.6 **Spectrum value as a percentage of enterprise value in the central case**

	<i>Enterprise value £m</i>	<i>Spectrum value as % of EV Spectrum @ £6.3bn</i>
Vodafone	9,800	64
O2	10,200	62
T-Mobile	4,500	140
Orange	7,700	82
H3G	2,300	274

Source: Reproduced from second witness statement of Robert Jeffrey Richardson for BT, paragraph 34.

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- 2.5.78 BT made clear that it was not arguing that brokers' valuations should be used to set the value for spectrum. Rather, it presented them as evidence of a drop in valuation.¹
- 2.5.79 Ofcom argued that the broker valuations were not robust enough to justify ignoring the auction fees altogether in its scenario analysis. It submitted that broker valuations may reflect brokers' views on the business prospects of a particular MNO rather than the assets it held. It also pointed out that BT had not said what an appropriate proportion of enterprise value a 3G licence should be, and that there was significant variation in the valuation of the same MNO by different brokers.²
- 2.5.80 However, Ofcom agreed that where the valuation of an MNO's business was lower than the price paid at auction, that would be evidence that the value of spectrum may be lower than that price. Ofcom took this into account by considering a range of scenarios.³
- 2.5.81 Orange argued that the markets may perceive different MNOs differently, and that there was no standard of what a 'plausible' proportion of spectrum value to enterprise value should be.⁴ Vodafone made the same point, and argued that enterprise values reflected the expected performance of the MNO in question and that there were considerable differences in valuation between brokers, although it did acknowledge that if spectrum were to be valued in excess of the value of the companies as a whole on a systematic basis across the market, that may provide some useful information.⁵
- 2.5.82 H3G argued that analysts' valuations of its business were merely opinions, and that there was not a lot of information in the public domain on which a broker could reliably base a report.⁶
- 2.5.83 T-Mobile argued that brokers' valuations were external views based on perceptions about the prospects of a particular company that would change over time and between different analysts.⁷ It also said that brokers could get it wrong, giving the example of O2. In 2002, the equity research consensus was that O2's enterprise

¹BT Reply, paragraph 76.

²Ofcom's Price Control Defence, paragraphs A2.4.49–A2.4.55.

³ibid, paragraph A2.4.54.

⁴Orange's Sol, paragraph 5.21.

⁵Vodafone's Sol, paragraphs 3.66–3.69; Vodafone hearing on BT appeal, transcript, p82—in response to this point BT pointed out that the total value of the MNOs based on the average of the brokers' valuations it had cited was £34.5 billion compared with a total spectrum value in Ofcom's 'central case' of £31.5 billion, 91 per cent of the value of the MNOs (BT letter of 24 July 2008).

⁶H3G hearing on BT appeal, transcript, p34.

⁷Witness statement of Paul Chrisp for T-Mobile, paragraphs 27–30.

value was £5.4 billion. When it was acquired by Telefónica in 2005, its valuation was £17.7 billion.¹

Assessment

- 2.5.84 Given the views we have come to as to the caution which must be exercised when using the 2000 auction fees as proxies for the forward-looking value of spectrum, it has not been necessary for us to come to a firm conclusion on whether the brokers' valuations demonstrate a fall in the value of 3G spectrum.
- 2.5.85 In our provisional determination we went on to state that we recognized that caution needed to be exercised in interpreting enterprise valuations, as they would reflect opinions about the value in and future prospects of a business, and the value of the assets that a business holds may not be determinative of these things. We recognized that valuations could also differ between brokers and change significantly over time (as seemed to have been the case with O2). Nonetheless, we found it striking that the spectrum valuation which was consistent with the charge controls set by Ofcom and its medium-demand scenario exceeded the average enterprise value² of two of the MNOs (by a very significant amount in the case of H3G).
- 2.5.86 For the reasons we gave, we thought that Ofcom's reliance on the 2000 auction fees was misplaced (at least without an investigation of expectations at the time of the auction). However, we went on to state that whilst we had not needed to place much weight on the brokers' valuations, we did consider that they raised further doubts as to whether the 2000 auction fees had been adequately adjusted to take into account changes in the market, including in particular its expected development, since the time of the auction.
- 2.5.87 In response to our provisional determination, O2 argued that no weight should have been placed on brokers' valuations. It submitted that the enterprise values were not appropriate and reflected equity investors' views on the impact of market conditions based on their short- or medium-term investment horizon, that the two MNOs for which the enterprise values were greater than the implied 3G licence value had both performed poorly in recent years, and that for the MNOs for which the 3G licence values were less than the enterprise values it did not consider that the percentages arrived at from BT's analysis were necessarily inappropriate.³
- 2.5.88 We note that BT presented broadly equivalent evidence to Ofcom during the consultation period and that Ofcom was concerned that the book value of H3G's 3G licence exceeded the average of the analysts' estimates.⁴ Ofcom also stated in these proceedings that where the proportion of enterprise value to spectrum value was over 100 per cent, that does provide evidence that the MFLOC may be lower than the 2000 auction fees and thus that it is reasonable to consider scenarios reflecting lower 3G spectrum costs.⁵ Our views on the evidential value of brokers' valuations are consistent with that.
- 2.5.89 In any event, we stated explicitly in our provisional determination that we had not found it necessary to come to a view on whether the brokers' valuations presented by BT demonstrated a fall in the value of 3G spectrum. The key evidence for us

¹ibid, paragraph 31.

²The average of the brokers' enterprise valuations submitted by BT as shown in Table 2.5 above.

³O2 response to provisional determination, paragraphs 37–43.

⁴Ofcom's MCT Statement, paragraphs A14.40, A14.51–A14.53.

⁵Ofcom's Price Control Defence, paragraph A2.4.54.

was that concerning expectations at the time of the auction and how they compared with Ofcom's demand forecasts. Our views on the brokers' valuations do not affect that comparison.

Conclusion on the use of the 2000 auction fees as a proxy for the forward-looking value of 3G spectrum

- 2.5.90 In our provisional determination we stated that whilst each individual piece of BT's evidence could be criticized in some way, we thought that together the evidence pointed strongly to the conclusion that the 2000 auction fees were a poor proxy for the forward-looking value of 3G spectrum.
- 2.5.91 We also said that in an industry such as telecommunications, one would not normally expect asset values to remain constant over time, and that in this case BT put forward evidence which suggested there had been major changes in expectations and market circumstances since the 2000 auction took place. We placed particular weight on the documentary evidence of what BT Cellnet and others were expecting at the time of the auction. We recognized that Ofcom did not have that evidence before it but we thought it should have sought such evidence if it used the 2000 auction fees as a proxy for the forward-looking value of 3G spectrum. We thought that, in the light of that evidence, Ofcom's reliance on its scenario-based approach was not an adequate response.
- 2.5.92 In particular, we did not think that it was correct of Ofcom to use the 2000 auction fees, even as one scenario alongside others, without carrying out some investigation as to the extent to which expectations and the market had changed over the intervening period.¹
- 2.5.93 In its response to our provisional determination, H3G argued that we had erroneously confused valuations with auction prices, the implication being that since the value of the spectrum in 2000 could have exceeded the auction fees, all that could be concluded from the observation that current expectations as to values were lower than 2000 expectations was that the current value of the spectrum was lower than it was in 2000. We could not conclude, however, that the current value was lower than the 2000 auction fees.²
- 2.5.94 We do not accept this argument. We are concerned with the forward-looking opportunity cost of the 3G spectrum, not a particular MNO's reservation price (see paragraph 2.2.13 above).
- 2.5.95 O2 responded by stating that we had not presented enough evidence upon which we could legitimately determine that the 2000 auction fees were not a reasonable proxy for the forward-looking value of spectrum. It submitted that we had combined a series of limited and flawed pieces of evidence, each of which was worthy of criticism on our own analysis, and that our provisional determination was defective

¹As set out below in our consideration of holding costs and Ofcom's use of scenarios in sections 2.6 and 2.7 respectively, the evidence of the expectations at the time of the auction has a significant impact on the charge control levels (when applying Ofcom's overall methodology).

²H3G response to provisional determinations issued in the H3G appeal and in relation to the BT appeal, paragraphs 12.6 & 12.7. We note, as we did above in the footnote to paragraph 2.5.51 above, that the submissions in that response relating to the reasoning and provisional conclusions reached in our provisional determination on 3G spectrum costs were submitted long after the relevant deadline for submissions had passed.

to the extent that it sought to add together a number of flawed pieces of evidence to support a conclusion that each in isolation would not merit.¹

- 2.5.96 As a general point, we do not accept that if there are various pieces of evidence pointing to a particular conclusion (and very little or no countervailing evidence), the fact that each individual piece of evidence could be criticized in some way makes it illegitimate to reach that conclusion. A decision needs to be made on the balance of evidence.
- 2.5.97 However, in our view O2's submission merits a clarification of our conclusions, and in this respect we acknowledge that the drafting of our provisional conclusion (in particular, the paragraph that is now 2.5.90 above) could have been clearer.
- 2.5.98 Our provisional conclusion rested on the evidence put forward by BT (and to some extent by others) about the expectations that prevailed at the time of the auction. This evidence was in our view critical, because (as discussed in subsection 2.7 below) an understanding of those expectations has particular implications for Ofcom's scenario-based approach, which combines different spectrum valuations with different demand forecasts. The limitations and uncertainties surrounding the other pieces of evidence discussed above, which were explicitly identified and led to evidence being given little or no weight, do not affect that central point.
- 2.5.99 Put another way, the 2000 auction fees would not necessarily have been a poor proxy for the forward-looking value of spectrum in all circumstances. We do not think, for instance, that combining them with demand forecasts that were broadly consistent with the expectations prevailing at the time of the auction would have been inappropriate. However, we do think that using them in a scenario analysis without investigating the expectations that underpinned them can lead to error.
- 2.5.100 We therefore maintain the conclusion that we reached in our provisional determination as set out in paragraphs 2.5.90 to 2.5.92 above, with that clarification.

2.6. Holding costs

Introduction

- 2.6.1 In the MCT Statement Ofcom quoted its different 3G spectrum valuations in 2000/01 prices rather than the equivalent 2006/07 prices, which it used for the other cost model inputs. It did this to assist the reader in comparing the licence fee figures with the 3G spectrum auction payments.
- 2.6.2 Two adjustments were made to the 'headline' 3G spectrum values in Ofcom's MCT cost model:
- (a) First, the 2000/01 values are converted into 2006/07 prices (indexation). This indexation methodology is consistent with all other cost inputs into the MCT cost model and has not been appealed by BT.
 - (b) Second, the cost model adjusts the 3G spectrum costs to reflect the period from the acquisition of the 3G spectrum to the date on which it is put into productive use. This is done by compounding the real discount rate over either three years

¹O2 response to provisional determination, paragraph 44.

in the case of a 3G-only MNO¹ or four years in the case of the 2G/3G MNOs.² Ofcom refers to this as the gestation cost. BT refers to it as the holding cost. It is this element of the calculation which BT has appealed against. For convenience, we will use the term ‘holding cost’; this terminology does not reflect any views we might have as to the relative weight or merits of the parties’ arguments.

2.6.3 For each of Ofcom’s four scenarios affected by holding costs,³ Table 2.7 shows the headline value for 3G spectrum that appears in the MCT Statement (in 2000/01 prices), the adjustment for indexation to 2006/07 prices and the adjustment to include holding costs. It is this final figure which is used in the MCT cost model.

2.6.4 The figures show, for example, that the headline spectrum value, ie the value of the spectrum in 2000/01 at 2000/01 prices, in Scenario 5 is £3.3 billion, its value in 2000/01 at 2006/07 prices is £3.8 billion and its value in 2004—the launch date for 3G services—at 2006/07 prices is £6.2 billion.⁴ The difference between these last two figures, £2.4 billion, is the holding cost. As can be seen, its effect is significant.

TABLE 2.7 Ofcom’s 3G spectrum asset valuations

	Scenario*			
	3	4	5	6
	<i>£ billion</i>			
3G licence† (2000/01 prices)	4.0	4.4	3.3	1.9
3G licence† (2006/07 prices)	4.6	5.1	3.8	2.2
3G licence 2006/07† prices (including holding costs)	7.5	8.3	6.2	3.6
Holding costs	2.9	3.2	2.4	1.4

Source: Dr Maldoom’s first expert report for BT, paragraph 68; and CC calculations.

*Based on 2x10 MHz licence for a 2G/3G MNO.

†CC calculations.

The inclusion of holding costs

2.6.5 BT argued that Ofcom was wrong in principle to apply a holding cost. It argued that the inclusion of a holding cost was inconsistent with the principle that the value of 3G spectrum should be forward-looking. As a result of the inclusion of holding costs BT believed that the 3G spectrum values in Ofcom’s scenarios were considerably higher than a reasonable current economic valuation, exceeded the amounts which the MNOs actually paid for 3G spectrum by about half as much again as the purchase prices, and led to inflated charge control levels.⁵

2.6.6 BT interpreted Ofcom’s calculations as effectively allowing the MNOs to include rolled up interest at the company’s cost of capital on an acquired asset.⁶ It illustrated this argument by using the analogy of a landlord who buys a house to let

¹2001/02, 2002/03 and 2003/04: H3G launched its 3G services in March 2003.

²2001/02, 2002/03, 2003/04 and 2004/05: the four 2G/3G MNOs launched services between November 2004 and February 2005.

³For Scenario 7 the value of 3G spectrum was set so as to equalize the cost of 2G and 3G termination in the medium-demand forecast, once holding costs and indexation were taken out. Scenario 7 is therefore unaffected by the length of any holding period.

⁴In order to convert 2000/01 prices to 2006/07 prices one should multiply the former by 1.1574.

⁵BT Amended Notice of Appeal, paragraphs 116A–D.

⁶Dr Daniel Maldoom’s first expert report for BT, paragraph 65; the holding cost is calculated by multiplying the spectrum cost by the real discount rate (cost of capital), eg for 2001/02 the real discount rate is calculated by dividing the nominal discount rate (hard coded input) of 16.5 per cent by the RPIX of 2.4 per cent, giving a real discount rate of 13.77 per cent.

which stands empty for four years. The landlord rolls the interest for these four years into the mortgage and then tries to set the rent to cover the increased mortgage amount. In a competitive market BT argued that this increased rent would not be charged as the house would not be worth more merely because of rolled-up interest payments.¹

- 2.6.7 BT also argued that when assessing the value of spectrum on a forward-looking basis, holding costs would only be relevant to the extent that an MNO obtaining a 3G licence today would factor in an anticipated delay before launching services, such delay not being a material factor in the market today.²
- 2.6.8 Ofcom argued that it was necessary to look at the relationship between an amount bid for an asset and its future earning power. It argued that bidders would have taken into account the future earning power of 3G spectrum and that the effect of the (expected) delay before launch would have reduced the amounts bid because the future profits to be derived from the spectrum would be delayed.³ Ofcom therefore believed that it was entirely reasonable for the future earning power of 3G spectrum to be higher than the amounts bid in 2000. As to BT's landlord analogy, Ofcom said that it would only be correct if no holding period had been expected when the house had been purchased.
- 2.6.9 Ofcom also argued that this approach was consistent with the treatment in its cost modelling of all other assets that are assumed to be deployed before they are required to meet forecast demand.⁴

Assessment

- 2.6.10 In Ofcom's network model the expenditure on a particular asset appears in the year that asset becomes operational. This is simply a device for ensuring that the revenue stream associated with an asset is aligned with the date at which that asset first becomes operational. Ofcom used holding costs to allow for the time between expenditure actually being incurred and the date at which the asset is deployed so that its approach has no impact on the total cost recovered in present value terms. We consider the use of holding costs in this manner, and in general, to be a reasonable modelling device.
- 2.6.11 In the case of 3G spectrum in particular, the licence fees paid in 2000 would have reflected the present value at that time of the expected future revenues from providing 3G services.⁵ MNOs would have built into this calculation expectations about when they would launch 3G services and the rate of take-up of these services. We therefore consider that the later the expected date for the launch of 3G services the less that an MNO would be willing to bid, all other things being equal.
- 2.6.12 The treatment of 3G spectrum is in this respect consistent with all other assets, and we therefore reject BT's argument that it was wrong to include holding costs in principle.

¹ibid, paragraph 66.

²BT Reply, paragraph 161.

³Ofcom's Response on holding costs, paragraph 1.15.



⁴ibid, paragraphs 1.32–1.36.

⁵The arguments that other elements may have influenced the bidding are dealt with in subsection 2.5 above.

The length of the holding period

- 2.6.13 BT also argued that Ofcom had erred in allowing for a much longer pre-launch period between the award of 3G licences and the start of services than the MNOs anticipated when they were bidding. It criticized Ofcom for simply applying a holding charge to the entire period up to the actual launch of 3G services rather than for the period of delay anticipated at the time of the auction.
- 2.6.14 BT gave us evidence that the MNOs anticipated launching 3G services much earlier than they in fact did, and argued that at most a two-year holding period should have been allowed.¹
- 2.6.15 Ofcom acknowledged during the appeal that it had allowed for holding costs until the actual date of 3G launch but that they should have reflected the expected period to launch at the time of the auction. If the expected date turned out to be earlier than the actual launch date, it accepted that the cost modelling should be adjusted to reflect this.²
- 2.6.16 The MNOs also agreed in principle that it was the expected rather than the actual launch date that was relevant to the calculation of the holding cost, although they differed by what was meant by 'expected'.³

Expected and actual 3G launch dates

- 2.6.17 Vodafone launched its 3G service in September 2004 but had expected that service to launch in April 2002.⁴ H3G expected its services to start in mid-2002 but actually achieved 'soft launch' in March 2003.⁵
- 2.6.18 T-Mobile stated that it had expected to be able to offer only a limited 3G service by the second half of 2002 but that it switched on its 3G network in February 2004. However, it also stated that the T-Mobile Group issued what it knew to be extremely aggressive targets for the launch of 3G services in an attempt to push the equipment manufacturers. It cited the fact that it took four years to commercially launch its 2G network after the licence was acquired as evidence of a more realistic time frame for launching 3G services.⁶
- 2.6.19 BT provided evidence in the form of a board paper of an expected launch date for BT Cellnet (now O2) of [].⁷
- 2.6.20 O2 argued that this should be treated with caution because it was created after the auction ended, and was likely to reflect challenging targets set by management rather than realistic expectations of launch. It presented us with a document originating before the auction, BT Group Mobility's 'Third Generation Mobile Strategic Assumption Set', which mentioned, in passing, []. O2 argued that there would have been a range of sensitivities around the actual

¹BT Reply, paragraphs 167–169.

²Ofcom bilateral hearing on BT appeal, transcript, pp49&50.

³Vodafone's Sol, paragraph 3.70; H3G hearing on BT appeal, transcript, p58 ; Orange hearing on BT appeal, transcript, pp46&47; O2 hearing on BT appeal, transcript, p56; T-Mobile hearing on BT appeal, transcript, p61.

⁴Vodafone's Sol, paragraph 3.70; it also stated that 'MNOs generally launched their 3G services later than they had expected'.

⁵H3G letter of 19 June 2008. We also note that the HSBC presentation to Hutchison Whampoa management cited by H3G in its letter of 2 October 2008 stated that data growth would be based on a launch of UMTS services commencing in late 2001 (H3G letter of 2 October 2008, Enclosure A).

⁶Witness statement of Paul Chrisp for T-Mobile, paragraphs 22–24.

⁷BT Reply, paragraph 168(c).

launch date and that a range of [✂] would be appropriate to consider.¹

- 2.6.21 BT responded by arguing that the board paper it originally provided was submitted to the board by the Managing Director of BT Cellnet at the time, who would have been aware of his duty to provide accurate and complete statements to the board. It also argued that the paper set out BT's realistic expectations just after it acquired its 3G licence (and was not a public document making ambitious statements) and that those expectations were in line with those of Vodafone, H3G and T-Mobile. BT provided [✂] and cited a press statement from December 2001 indicating that O2 had expected a full launch to take place in the second half of 2002. It also commented that the 'Third Generation Mobile Strategic Assumption Set' paper was preliminary thinking and prepared by relatively junior people and should carry less weight than the paper signed by the MD of BT Cellnet.²
- 2.6.22 In our provisional determination, we accepted BT's evidence on this point and, accordingly, stated that we thought that BT Cellnet bid for a 3G licence with the expectation of launching 3G services [✂].
- 2.6.23 Orange stated that it was unable to locate any contemporaneous material prior to the auction which indicated when it would launch 3G services. However, it also stated that it was aware at the time of the auction that it would not be able to launch 3G services until at least 2004.³
- 2.6.24 We asked Orange why it thought its expected launch date was so different to that of the other MNOs. We were told that, based on recollections of those who were with Orange at the time, a three-year delay was expected. Orange argued that even that would have been optimistic, as historical evidence showed networks generally take longer than that to build once equipment becomes available, and that at the time of the auction the 3G technology standard had not even been settled so manufacturers could not confidently start development of 3G equipment.⁴
- 2.6.25 In response, BT provided a number of contemporaneous press articles suggesting that Orange did think it could launch its 3G services before 2004. These included an article from December 2002 which stated that Orange said that it expected to launch full commercial 3G services in 2003 but did not plan to write down the value of its licence to reflect the delayed launch schedule.⁵
- 2.6.26 Orange submitted that such public statements provided no reliable evidence of Orange's actual expectations at the time of the auction because internal decision making and external pronouncements were unlikely to be identical and the public statements may have been mimicking the 'received wisdom' at the time.⁶
- 2.6.27 Again, in our provisional determination we preferred BT's evidence on this point. We noted that Orange could provide no contemporaneous documentation and relied on the recollections of individuals, and that whilst we placed some weight on such evidence, in the face of the articles cited by BT that weight was very limited.

¹O2 letter of 19 June 2008.

²BT letter of 9 July 2008.

³Orange letter of 20 June 2008.

⁴Orange hearing on BT appeal, transcript, pp44–50; Orange letter of 20 June 2008.

⁵BT letter of 9 July 2008.

⁶Orange letter of 15 August 2008.

We also did not see why Orange's expectations at the time of the auction would have differed from those of the other MNOs.

- 2.6.28 Therefore, we considered that the MNOs' expectations at the time of the auction were that they would be able to launch 3G services in 2002,¹ which implied that only two years of holding costs for all the MNOs should have been factored into Ofcom's cost modelling and that Ofcom erred in allowing for a longer holding period.
- 2.6.29 Orange argued in response to our provisional determination that we had given its evidence too little weight, and that its evidence was in fact the most plausible given the ongoing development of 3G technology at the time of the auction, the consequent unavailability of 3G equipment and the length of time it inevitably takes to roll out a network.²
- 2.6.30 As a preliminary point, in so far as Orange is arguing that if there is conflicting evidence on an issue, we cannot come to a conclusion that is inconsistent with any of it, we find it difficult to see how any appeal of this nature could be resolved if such a stance were adopted. We are entitled to make a decision based on our assessment of the balance of evidence. Our reasons for weighing the evidence as we did are set out in paragraphs 2.6.23 to 2.6.27 above.
- 2.6.31 Furthermore, for the purposes of Ofcom's cost modelling, it is necessary to come to a view on when the hypothetical efficient operator modelled would have expected to launch when it bid for a 3G licence in 2000 (assuming one is using the 2000 auction fees as a proxy for the forward-looking value of 3G spectrum). The question of when an operator would have expected to launch is evidence based. We received evidence relating to each of the parties, and were either told directly that they expected to launch in 2002 when bidding or received documentary evidence indicating that they expected to launch in 2002. In those circumstances, even if we accepted Orange's evidence as representing the views of those in charge of Orange's bidding strategy at the time (which remains unproven), our assessment of where the balance of evidence lay would not ultimately lead us to change our conclusion.
- 2.6.32 O2 responded to our provisional determination by reiterating that there was a range of potential launch dates at the time of the auction as evidenced by the contents of the 'Third Generation Mobile Strategic Assumption Set' paper. It argued that BT's view on possible launch dates before the auction would have been informed by the experts who contributed to the paper, and that, given that the paper was underpinning BT's 3G licence expenditure, it can be expected to have been rigorously scrutinized. O2 submitted that it was conceivable that a document produced before the fact represented a cautious view of the future, whereas a document produced after the fact represented a suitably ambitious plan that an efficient company would wish its management team to pursue with vigour, and that therefore its evidence should hold more weight than the board paper provided by BT.³
- 2.6.33 O2 submitted that there would have been a range of sensitivities around the actual launch dates, with the [] the earliest date possible. It considered that we had effectively weighted the available information on expected launch dates to consider only one extreme of the distribution of plausible values. O2 suggested that

¹Year 2002/03 in Ofcom's network model.

²Orange response to provisional determination, paragraphs 1 & 2.

³O2 response to provisional determination, paragraphs 45–48.

if we wished to use a single value, we should consider an average expected launch date of mid to late 2002/03 and therefore that at least 2.5 years of holding costs should be factored in.¹

- 2.6.34 The document submitted by O2 [] (on page 5). [] (on page 28), []. In our view, the document is not sufficient to tip the balance of evidence on the question of what we think the appropriate holding cost to factor into Ofcom's cost modelling should be.
- 2.6.35 Furthermore, if we were to model a range of holding periods, it would still be necessary for us to ultimately take a view (either explicitly or implicitly) on what the holding period should be, or take an average. Given our view of the balance of evidence, modelling a range of holding periods would not affect our conclusion on this point.
- 2.6.36 We also note that O2 suggests that a range of launch dates [] were contemplated by BT before the auction.² The range of potential delays to launch suggested by O2 therefore appears to be [] years. The choice of a two-year holding period within such a range does not appear to us to be unreasonable or 'extreme'.
- 2.6.37 We therefore remain of the view that only two years of holding costs should have been factored in to Ofcom's cost modelling and that Ofcom erred in allowing for a longer holding period.

Efficiently incurred costs

- 2.6.38 Vodafone argued that even if the MNOs had expected only a two-year delay, Ofcom should have placed weight on allowing the recovery of efficiently incurred costs. It argued that the delay was not due to any inefficiency on the part of the MNOs.³ H3G similarly argued that if the holding charge adjustment were allowed only for a period shorter than the actual delay to launch, that would amount to an assumption that the value of spectrum had fallen in present value terms.⁴
- 2.6.39 We reject those arguments. The auction fees in 2000 would have represented what the MNOs thought they could derive in future revenue streams from the 3G licences. They would have been based on a calculation of the expected future earnings from 3G services which would have factored in the period to expected launch. Ofcom has used the 2000 auction fees as a proxy for the forward-looking value of spectrum. Allowing for a holding period greater than that expected at the time is, in effect, saying that had the MNOs known in 2000 that services would not be launched until 2004 this would have had no impact on the amount they were willing to pay for the licences. We do not see any justification for reaching such a conclusion.

¹ibid, paragraphs 49–50.

²ibid, paragraph 45. We note that the board papers submitted by BT provide some evidence for an expected launch date of [] (BT plc Group Investment Committee 'BT Wireless (3G) Mobile', July 2000, paragraph 8).

³Vodafone's Sol, paragraph 3.70.

⁴H3G's Sol, paragraph 5.19.

Tapered holding costs and the actual effect of delay

2.6.40 T-Mobile argued that a full holding cost should be applied until launch and that a tapered holding cost, ie one that reflects the likely small scale of initial operations, should be applied from that point until commercially feasible services are in operation. It argued that in 2000 the expectation was that the licences would not be fully exploited until the end of 2007.¹ It cautioned against treating holding costs as a 'zero-one' issue and placing too much weight on launch dates because an operator with an expectation of an initial launch date with relatively low volumes might turn out to value a licence at a similar amount as an operator that expected to launch later but with greater initial volumes.²

2.6.41 We reject this argument for the following reasons:

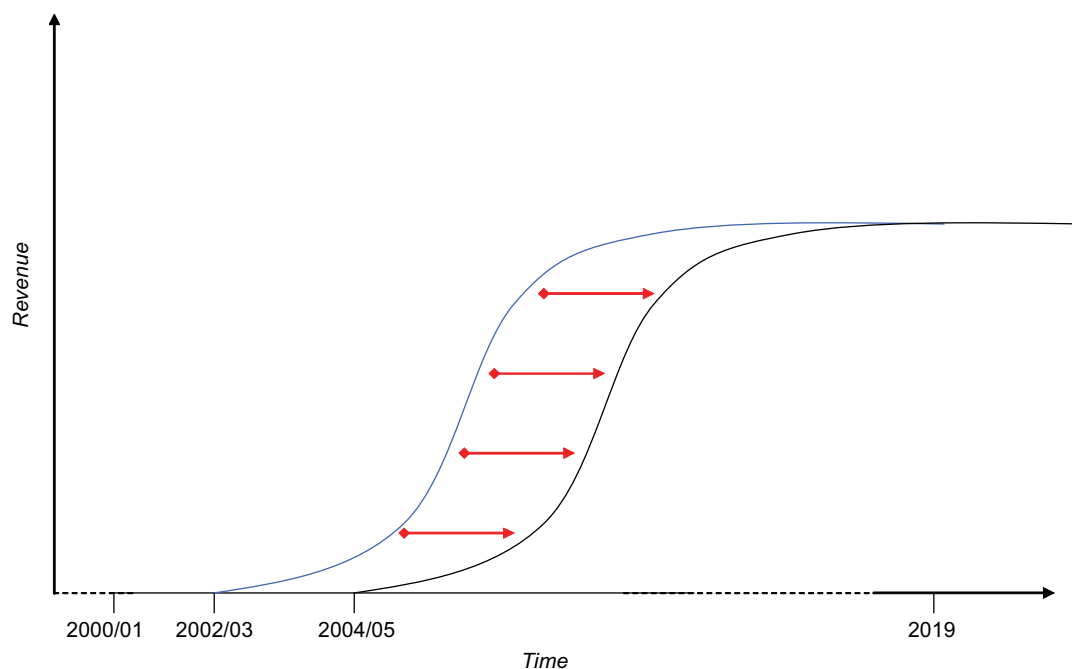
- (a) Holding costs are a modelling device that represent the expected period from acquisition to launch (in respect of all assets in Ofcom's cost modelling), and are included only to ascertain the MNOs' valuation of spectrum as at the date of expected launch.
- (b) T-Mobile's argument can be interpreted as addressing the question of whether or not a reduction in the value can be offset by an increase in the rate of take-up of 3G services. It would only be appropriate to include a holding period that reflected the actual date for launch if changes in expectations about the rate of take-up of 3G services were sufficient that the delay had no impact on the value of the licence.
- (c) The delay in the launch of 3G services would have shifted the start of the revenue stream from the anticipated start date to the actual start date. As a result, if there is no change in revenue profile the delay will have led to a reduction in the value of spectrum. This is illustrated in Figure 2.7.

¹T-Mobile's Sol, paragraph 35.

²Dr Mike Walker and Paul Reynolds' expert report for T-Mobile, paragraph 69.

FIGURE 2.7

Illustrative delay in launch of 3G services



Source: CC.

(d) Whilst we acknowledge T-Mobile’s point that this reduction in value may be offset by a change in revenue profile (a more rapid take-up of services), T-Mobile has been unable to provide any evidence that such a change in profile has taken place. The evidence we have suggests otherwise:

(i) Vodafone accepts that revenues were pushed back by two years and is not aware of any evidence that is inconsistent with that.¹

(ii) [✂]²

(iii) [✂]³

2.6.42 Accordingly, we do not think that T-Mobile’s argument justifies allowing for a longer holding period than the period of delay until launch that was expected at the time of the auction.

2.6.43 We also note that BT has argued that the delay in launch actually reduced the value of the 3G licences by shortening the length of time in which they could be put into productive use.⁴ We have not found it necessary to resolve this issue,⁵ but if correct, BT’s point would imply that the effect of any increase in the rate of take-up

¹Vodafone letter of 31 July 2008.

²See the evidence set out above in paragraph 4.27.

³[✂]

⁴BT Reply, paragraph 174.

⁵As Ofcom’s cost model extends beyond the life of the current licences, the import of BT’s criticism is not clear.

of 3G services may be offset by the reduced time period over which the 3G licences could be used to generate revenues.

Delay already effectively taken into account

- 2.6.44 Vodafone argued that, whilst in principle holding costs should only have been allowed for the period up until expected launch, Ofcom's final judgement accounted for this as the charge controls are consistent with a medium-demand scenario and a 3G spectrum value of £3.3 billion, which is less than what was paid in auction fees.¹
- 2.6.45 We reject this argument for two reasons. First, as set out in subsection 2.5 above and developed further in subsection 2.7 below, we do not think it is appropriate to combine the 2000 auction fees with Ofcom's medium-demand forecast, so we do not think that the charge controls being consistent with the medium-demand forecast and a lower spectrum value can be 'traded off' against the increase in value resulting from an extended holding cost allowance.
- 2.6.46 Second, the £3.3 billion cited by Vodafone corresponds to a figure of £6.2 billion when four years of holding costs are included. That figure is greater than the one that results from the application of the correct holding cost to the actual auction fees (£6 billion). Contrary to Vodafone's suggestion, Ofcom's charge controls are therefore consistent with a medium-demand scenario and a spectrum value greater than the actual auction fees.

Conclusion of the length of the holding period

- 2.6.47 For the reasons given above, we think that only two years' worth of holding costs should have been factored into 3G spectrum valuations based on the 2000 auction fees and that Ofcom erred in factoring in holding costs up until the actual (rather than the expected) launch of 3G services.

O2's impairment

- 2.6.48 BT argued that Ofcom made a further error in applying a full four years' holding charge to the 3G spectrum valuation based on O2's impairment as the impairment took place only one year before launch.²
- 2.6.49 Ofcom stated that the 2003 impairment could be interpreted in a number of ways depending on how the review was carried out. It also argued that it did not make precise adjustments to the impaired value given the extent of overall uncertainty surrounding the value of spectrum and the fact that the impairment was being used merely as a proxy for some diminution in spectrum value. It did acknowledge, however, that it might be appropriate to make some adjustment to its Scenarios 5 and 6. It also accepted that the £1.9 billion figure would require an adjustment for discounting and inflation.³
- 2.6.50 The 2003 impairment value produced by O2's review was based on a forward-looking valuation of its UK business including its 3G assets. Since O2 launched its

¹Vodafone Sol, paragraph 3.70.

²BT Reply, paragraph 165(c).

³Ofcom letter of 22 May 2008.

3G services less than two years from the review, it is reasonable to believe that it was able to factor in fairly accurately the expected launch date into its calculation. As such, BT would appear to be correct that only one year's holding costs should be included.

- 2.6.51 In addition, Ofcom used O2's March 2003 impaired value as an absolute figure for the 2000/01 value. It did not adjust the 2003 figure for the time value of money. This would appear to be at odds with Ofcom's approach in the model as a whole.
- 2.6.52 If impairment values are to be used within Ofcom's scenario analysis, they should be properly adjusted to provide consistency of methodological approach. This has the following implications for Scenarios 5 and 6:
- (a) For Scenario 6, the spectrum value should be calculated as the 2003/04 value with holding costs for one year plus indexation from 2003/04 to 2006/07.
 - (b) For Scenario 5, the 2003 valuation should be discounted back to 2000/01 and then the discounted value should be averaged with the other auction values. The scenario should have holding costs and indexation applied in the same way as Scenarios 3 and 4.

Instalment payments

- 2.6.53 BT argued that Ofcom erred in failing to take account of the fact that the MNOs had the option of paying the 3G licence fee in instalments with a rate of interest much lower than Ofcom's assumed cost of capital (although BT acknowledged that none of the MNOs took the deferred payment option).¹
- 2.6.54 Ofcom stated that although the instalment facility was available, none of the MNOs used it. It also argued that in fact BT's point related to the cost of capital which had not been challenged in BT's Amended Notice of Appeal.²
- 2.6.55 We think it is appropriate that if the actual auction payments are taken as proxies for the forward-looking value of spectrum, then the actual method of payment should also be used in the calculation. We think it is reasonable to assume that the bidders all financed their bids at the lowest cost of capital, implying that immediate payment was the most efficient method.
- 2.6.56 We therefore do not accept BT's argument that Ofcom erred in not taking account of alternative payment options.

Revised spectrum values and cost benchmarks

- 2.6.57 Tables 2.8 and 2.9 below show revisions calculated by the CC to the 3G spectrum valuations that Ofcom used in its cost modelling, taking account of the MNOs' expected launch dates and the revised treatment of O2's impairment value. One can see from the tables the effect these revisions have on Ofcom's range of cost benchmarks.

¹BT Reply, paragraph 165(b); BT hearing on its appeal, transcript, p86.

²Ofcom letter of 22 May 2008.

TABLE 2.8 Revised 3G spectrum valuations

CC revision	Scenario*				£ billion
	3	4	5	6	
3G licence (2000/01 prices)	4.0	4.4	3.2	1.5‡	
3G licence (2003/04)	-	-	-	1.9	
3G licence† (2006/07 prices)	4.6	5.1	3.7	2.1	
3G licence 2006/07 prices† (including holding costs)	6.0	6.6§	4.8	2.3	
Holding costs†	1.4	1.5	1.1	0.2	
<i>Ofcom decision</i>					
3G licence 2006/07 prices (including holding costs)	7.5	8.3	6.2	3.6	
Holding costs	2.9	3.2	2.4	1.4	

Source: Dr Maldoom's first expert report for BT, paragraph 68; and CC calculations.

*Based on 2x10 MHz licence for a 2G/3G MNO.

†CC calculations.

‡The £1.5 billion is shown to enable comparison of 2000/01 prices across all scenarios.

§No holding costs have been applied to the discounted renewal fee value.

TABLE 2.9 Efficient charge benchmarks in 2010/11*

Benchmark	ppm	
	2G/3G 1800 MHz only	2G/3G 1800 MHz only
	Ofcom's calculation	Revised CC calculation
Medium demand, £4.4bn	5.0	4.6
Medium demand, £4bn	4.8	4.5
Medium demand, £3.3bn	4.5	4.2
Medium demand, £1.9bn	3.9	3.6
Medium demand, £1.4bn	3.7	3.7†

Source: Partial reproduction of Ofcom's Figure A13.9 and CC calculation.

*Excluding administration costs and a network externality surcharge.

†Because of how Scenario 7 is constructed, the ppm rate is not affected by the changes to the length of the holding period.

2.6.58 The revised values demonstrate that Ofcom's errors in respect of holding costs had a significant impact on the final benchmarks from which Ofcom selected the charge controls. We note in particular that Scenario 7 (reflecting BT's preferred methodology of basing 3G MCT charges on 2G costs) does not give the lowest implied 3G spectrum valuation once holding charges are correctly applied to the other scenarios.

Conclusion on holding costs

2.6.59 For the reasons given above, we find that Ofcom erred in:

- (a) allowing for a holding period that reflected the actual rather than expected date of launch of 3G services; and
- (b) allowing for a holding period in respect of Scenario 6 that did not reflect the expected date of launch of 3G services at the time of O2's impairment review.

2.7. Ofcom's use of scenarios

Introduction

- 2.7.1 As set out above, Ofcom decided that the difficulty of coming up with a forward-looking value of 3G spectrum made a scenario-based approach the most appropriate one in the circumstances. It used five valuations of spectrum, ranging from £1.4 billion to £4.4 billion. It combined these with various demand forecasts, allocated them between MCT, data and other voice services, and then applied qualitative judgement to the final benchmarks to pick its charge control levels.
- 2.7.2 BT criticized this methodology on a number of grounds, arguing that:
- (a) Ofcom had not made the required forward-looking assessment, and cannot provide a value for spectrum by weighting scenarios that are not related to that value.¹
 - (b) Most of the scenarios used, and most of the scenarios upon which Ofcom placed greatest weight, are based on the 2000 auction fees.²
 - (c) Too much weight was given to voice-only scenarios which were expressly stated to give upper bounds of the potential impact of economies of scope from carrying data services.³
 - (d) It has largely marginalized Scenario 7, even though it is the only appropriate valuation scenario in the mix.⁴
 - (e) It incorrectly matched up spectrum valuations and demand forecasts, for instance by matching up high valuations with medium-demand forecasts and coupling historic spectrum values and current demand forecasts.⁵
 - (f) It overstated the value of that part of the 3G spectrum which is used for voice.⁶
 - (g) Its approach lacked transparency and was inadequately reasoned.⁷
- 2.7.3 Ofcom, at a high level, maintained that in the light of the uncertainty it faced, its scenario-based approach was appropriate.⁸ Orange also argued that Ofcom's approach was the best response to the uncertainties it faced.⁹ Vodafone, whilst agreeing that the chosen charge levels were appropriate, thought that valuations based on the 2000 auction fees (and the medium-demand forecast) should have been given more weight, used as a base case and subjected to sensitivity analysis.¹⁰ T-Mobile argued that the valuation based on the 2000 auction fee plus a renewal fee should have been given the utmost weight,¹¹ and H3G argued that

¹BT Amended Notice of Appeal, paragraphs 117–119; BT Reply, paragraph 111.

²ibid, paragraphs 125–128; ibid, paragraph 121.

³ibid, paragraphs 131–132; ibid, paragraphs 146–147.

⁴BT Amended Notice of Appeal, paragraph 136.

⁵ibid, paragraphs 137–140; BT Reply, paragraph 128.

⁶ibid, paragraph 116.

⁷ibid, paragraph 123.

⁸Ofcom's Price Control Defence, paragraph 3.6.4.

⁹Orange's Sol, paragraph 5.8.

¹⁰Vodafone's Sol, paragraphs 3.61 & 3.71.

¹¹T-Mobile's Sol, paragraph 35.

only values based on the 2000 auction fees with a renewal fee should have been considered.¹

- 2.7.4 O2 argued that an alternative methodology, based on the 2000 auction fees, was appropriate and supported the charge levels that Ofcom had chosen. This methodology is examined in a separate section below.²

Our view on the role of scenarios³

- 2.7.5 Considering scenarios can be a sensible way to proceed when there are inherent uncertainties in relation to future developments such as traffic growth. It may also be a useful approach to exploring the effects of various inputs which cannot be accurately estimated. However, we consider it important that a careful, consistent and systematic approach is taken to the development of relevant scenarios, the combination of variables within those scenarios, the identification (whether qualitatively or quantitatively) of the appropriate weights to be attributed to them and to the assessment of the results.
- 2.7.6 We also consider that, in the context of a regulatory decision, each of these aspects should be carefully described. Should the exercise lack adequate structure and explanation the result will lack transparency.
- 2.7.7 In general, we would expect a final assessment to be based upon a weighted balance of the results of the various likely scenarios although account would be taken of various other factors including, in particular, the distribution of outcomes and any limitations arising from the way the process was carried out (although we accept that it may be appropriate for the weighting of the scenarios to be assessed qualitatively in some cases). We would expect that in most cases purely hypothetical scenarios designed to explore upper or lower bounds, but which have little or no probability of occurring, might inform the assessment of other scenarios but would not be attributed weight in deciding upon a final figure.

Ofcom's approach

- 2.7.8 We first make some general observations about Ofcom's approach.
- 2.7.9 First, Ofcom did not purport to undertake a formal scenario analysis but sought to explore the consequences of the variability of a number of inputs. This is not necessarily wrong; a more formal approach may have been disproportionate or inappropriate.
- 2.7.10 Second, Ofcom stated that:
- an attempt to quantify the risks and probabilities [of various scenarios] would be likely to generate spurious degrees of 'accuracy', especially given the absence of compelling evidence to guide the choice of probability distribution. Furthermore, in Ofcom's view this is likely to result, in practice, in less rather than more transparency, as the judgments would

¹H3GI Sol, paragraphs 5.4 & 5.10.

²Section 2.10.

³These should be read as introductory paragraphs which set out our general views before we examine the specific criticisms that have been made of Ofcom's use of scenarios. We think setting out our views in this manner is appropriate in order to aid understanding of our treatment of the specific allegations of error that have been advanced. However, we do not intend in these paragraphs to specify the approach that should be adopted to uncertainty and modelling in all circumstances.

be embedded in the particular probabilities assigned to each of the different cost scenarios.¹

We agree that there is a risk that if such an analysis was not well described, readers might be misled. However, it seems to us that associating probabilities with the various cost scenarios could enhance transparency as Ofcom will have taken some view on their relative likelihoods, either explicitly or implicitly, in its final judgement.

- 2.7.11 Third, Ofcom uses benchmarks to explore different approaches to the problems it faced, upper and lower bounds and variation in input variables. These are all relevant things to consider, and might satisfactorily be brought together in a qualitative assessment. However, such an approach is unlikely to be either robust or transparent. We would normally expect these three issues (different approaches to problems, upper and lower bounds, and variation in input variables) to be identified as separate issues.
- 2.7.12 Ofcom has also regarded its scenario approach as a widespread response to arguments put forward by various parties (see, for example, paragraphs 2.5.3, 2.5.11, 2.5.20, 2.5.60, 2.5.80 and 2.9.5 of this section of our determination). Clearly the scenario approach cannot resolve mutually contradictory positions put forward by parties; the most it could do would be to create some sort of average, agreeing partially with each party.

Limitations on the use of scenarios

- 2.7.13 In our provisional determination we said that we did not think a scenario approach should be used in place of taking more fundamental decisions as to how an asset should be treated in a regulatory review, and we remain of that view.
- 2.7.14 We also expressed some specific concerns that Ofcom had used scenarios in this case to address what were essentially questions of principle where we thought it should have exercised reasoned judgement instead.
- 2.7.15 For example, we noted that four of the 3G spectrum valuations were based on the auction fees paid in 2000, that the licences expire in 2021, and that three of the valuations did not factor in a renewal fee, but one did. Ofcom stated that the circumstances of renewal were subject to uncertainty and omitting a renewal fee provided a lower bound as to the cost of renewal and including a renewal fee that corresponds to the original auction payments provided an extreme upper bound.² We stated that a renewal fee of zero might be characterized as an extreme lower bound and that the rationale for using the lower bound more often than the higher one was not clear. Ofcom also told us that adding in a renewal fee would have made little difference to the overall outcome given the general uncertainty and the relatively modest impact such renewal fees would have.³ Whilst we appreciated this point, we considered that Ofcom should have decided whether it was correct to include a renewal fee and having done so acted consistently with that position.⁴

¹Ofcom's MCT Statement, paragraph 9.154.

²ibid, paragraph A5.186.

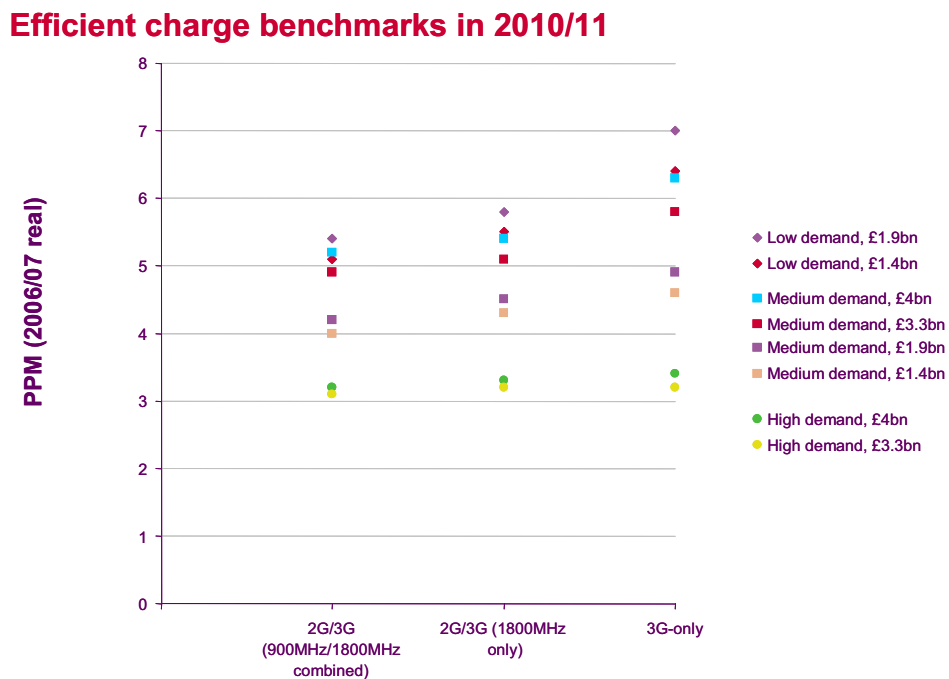
³Ofcom bilateral hearing on BT appeal, transcript, p84.

⁴We noted that including both the 'auction fee' and the 'renewal fee' spectrum valuations would logically have resulted in the scenarios being 'weighted' towards those closely based on the 2000 auction fee values. We said that it was difficult to assess what impact this would have had in practice because of the way that Ofcom selected the final charge, but given that Ofcom's position was that it placed weight on all of the final benchmarks, the impact was likely to have been to increase the charge control levels to some degree.

2.7.16 Ofcom explained in its response to our provisional determination that the valuation incorporating a renewal fee was more properly described as a sensitivity which established that, even including an 'extreme upper bound' on the reasonable value of the renewal fee, there was relatively little impact on ppm cost. Ofcom presented an updated version of its range of cost benchmarks, separated out into 'core benchmarks' and 'sensitivities' (of which the renewal fee valuation was one). These are reproduced in Figures 2.8 and 2.9.

FIGURE 2.8

Reproduction of Ofcom's Figure 1A: updated version of Figure 9.1 from the Statement reflecting the CC's views on the presentation of sensitivities: core benchmarks

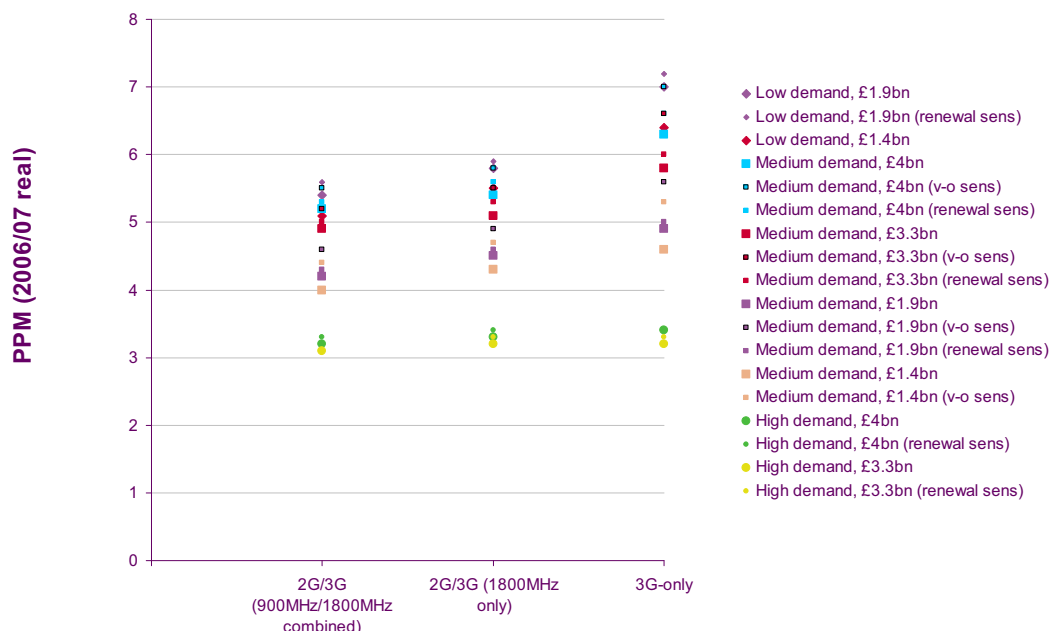


Source: Ofcom response to our provisional determination on spectrum costs, reproduction of Figure 1A.

FIGURE 2.9

Reproduction of Ofcom’s Figure 1B: updated version of Figure 9.1 from the Statement reflecting the CC’s views on the presentation of sensitivities: core benchmarks and sensitivities

Efficient charge benchmarks in 2010/11



Source: Ofcom’s response to our provisional determination on spectrum costs, reproduction of Figure 1B.

- 2.7.17 Ofcom said that whilst there were presentational differences between these charts and the original Figure 9.1 in the MCT Statement, they did not affect the substance of its analysis.¹ It submitted that our criticism was really about how it chose to present its analysis, and not about an issue of substance that had any impact on the level of the charge controls.²
- 2.7.18 Having received that further explanation, we acknowledge Ofcom’s point that our criticism related to the presentation of its analysis rather than the substance. However, we think this highlights the importance of a transparent presentation and explanation of any scenario-based approach. It was not clear to us on a reading of the MCT Statement that the renewal fee valuation was ultimately treated as a sensitivity, and, as stated in our provisional determination, it was not clear to us whether including both the ‘auction fee’ and the ‘renewal fee’ spectrum valuations resulted in the scenarios being ‘weighted’ towards those closely based on the 2000 auction fees.

¹Ofcom response to provisional determination, paragraph 3.26, explained Figures 1A and 1B as follows: Figure 1A sets out eight core benchmarks representing what we considered at the time of the Statement to be plausible combinations of input valuations. There are ten further sensitivities around those core benchmarks, shown in Figure 1B, namely the inclusion of renewal fees and the voice-only sensitivity on impact of economies of scope between voice and data. We have considered the consequential effects of the revised benchmarks set out in Figure 1A and Figure 1B for our scenario based approach. Whilst there are clearly presentational differences between these Figures and Figure 9.1 in the Statement, we do not consider that these affect the substance of our analysis.

²ibid, paragraphs 3.15–3.19 & 3.26.

- 2.7.19 In our provisional determination we also voiced concerns about Ofcom's treatment of BT's 2G cap methodology which was modelled as Scenario 7 where spectrum costs were set at a level which equalized the cost of termination on 2G and 3G networks. We stated that this methodology was based on an argument of principle that the cost of call termination on 3G should not be greater than the cost of termination on 2G given that the two are near-perfect substitutes for the purpose of voice services and that 3G is the more efficient technology.
- 2.7.20 We noted that various arguments had been advanced against BT's 2G cap proposal. However, we said that whether the 2G cap should be applied depended on whether its logic was correct and whether a realistic estimate could be made of its level. We considered the proposal to be fundamentally different to the other scenarios, which were all based to some extent on the 2000 auction fees. As such, we thought the 2G cap did not simply represent another possible valuation of spectrum to be considered along with others as a way of dealing with uncertainty, but was something that Ofcom should have agreed with or disagreed with as a matter of principle.
- 2.7.21 Ofcom responded to this point by drawing a distinction between the 'True 2G Cap', which it accepted was the appropriate principle to adopt, and the 'BT 2G Cap', which was one particular implementation or estimate of the True 2G Cap. This distinction is discussed in more detail below, but in short Ofcom did not believe that the BT 2G Cap, modelled as Scenario 7, was determinative, and therefore considered it appropriate to treat it as one estimate of an uncertain input value among others. Ofcom saw no mutual contradiction between the BT 2G Cap and the other valuation scenarios that it used, as they all reflected different implementations of the same underlying principle of the forward-looking opportunity cost of spectrum.¹
- 2.7.22 We think Ofcom's point has some validity in theory. However, whilst there may be uncertainty around the level of the True 2G Cap, we do not see how valuations based on the 2000 auction fees (or O2's impairment) address that uncertainty. As discussed below, Ofcom put forward specific reasons as to why the BT 2G Cap could not be treated as determinative. The fees generated by the 2000 auction do not relate to those issues. The scenarios that involve taking historic total values of 3G spectrum and allocating them between voice and data services are, in our view, different in nature to an analysis of the True 2G Cap, which does not depend on historic (total) values for 3G spectrum allocated across different services, but focuses on the MCT service and the relative efficiencies of 2G and 3G technology.
- 2.7.23 The point is illustrated in Table 2.10 below, which separates out the implicit 3G spectrum and network ppm allowances that are consistent with the charge controls set by Ofcom for the 2G/3G MNOs and Ofcom's medium-demand forecast (these figures relate only to the 3G component, not the blended charge). The table also shows the ppm spectrum and network allowances for 2G MCT under the medium-demand forecast, and the implicit allowance for 3G spectrum under Scenario 7 and the medium-demand forecast.

¹ibid, paragraphs 3.10–3.14.

TABLE 2.10 2G and 3G spectrum unit costs in 2010/11 (2006/07 prices)

	<i>ppm*</i>
2G unit cost	
2G incoming voice call network cost	3.55
2G spectrum allowance	0.16
Unit cost	3.71
3G unit cost	
3G incoming voice call network cost	2.74
3G spectrum allowance	2.24
Unit cost	4.98
3G unit cost under Scenario 7 (BT 2G Cap)	
3G incoming voice call network cost	2.74
Cost saving (implied 3G spectrum fee allowance)	0.96
Unit cost	3.71

Source: CC calculations from Ofcom's model. For a full explanation of this table, see paragraph 2.7.23 above.

*The 'Unit cost' figure in the last row does not equal the sum of '3G incoming voice call network cost' and 'Cost saving' due to rounding.

2.7.24 As can be seen, the difference between the implied allowance for 3G spectrum under the charge controls set by Ofcom (2.24ppm) and under Scenario 7 (0.96ppm) is 1.28ppm. Whilst there may be uncertainty over the value of liberalized 2G spectrum, the difference is of such an order of magnitude (being eight times the 2G spectrum allowance) as to appear to be unrelated to this.

2.7.25 We therefore remain of the view that it was not appropriate to treat the 2G cap in the same way as the other valuation scenarios, and also of the view that mixing questions of principle with issues of external uncertainty in scenario analysis in the way Ofcom has done lacks transparency and is unlikely to lead to an outcome that is consistent with a properly assessed MCT charge.¹

Treatment of Scenario 7

2.7.26 In addition to the above points relating to the 2G cap proposal, we noted in our provisional determination that BT's proposal was put forward as leading to an *upper* bound; Ofcom used it as a lower bound without adequate reasoning for doing so.²

2.7.27 In response to our provisional determination, Ofcom did not accept that it failed to provide adequate reasons to treating Scenario 7 as a lower bound for the value of 3G spectrum. It again highlighted the distinction between the True 2G Cap and the BT 2G Cap, and cited the possibility that 2G spectrum fees could be greater once spectrum liberalization makes it available for alternative uses³ (this issue is discussed in more detail in paragraphs 2.9.86(e) and 2.9.110 to 2.9.112 below).

2.7.28 We do not think that this response invalidates our point for the following reasons:

- (a) First, whether the BT 2G Cap is treated as a lower bound will depend on the selection and construction of the other valuation scenarios. We note that once an appropriate holding cost period is applied to the O2 impairment, as a matter of fact the BT 2G Cap is not the lowest valuation scenario in the range (see Table 2.9 and paragraph 2.6.58 above). We also note that, as discussed below, if the valuation scenarios derived from the 2000 auction fees are allocated

¹We do not think it unreasonable to explore the significance of these matters of principle—and indeed if it was shown that they had no effect this could mean that it was not necessary to decide them; however, such an exercise should not be conflated with others.

²Ofcom's MCT Statement, paragraph A14.96.

³Ofcom response to provisional determination, paragraphs 3.36 & 3.37.

across voice and data services (in the medium-demand scenario) in a way which more closely reflects the expectations at the time of the auction, they may also have resulted in lower ppm values than the BT 2G Cap.

- (b) Second, we can see no reason why the BT 2G Cap would necessarily be below the True 2G Cap. Ofcom in its response acknowledges that the BT 2G Cap could be too high or too low as a proxy for the True 2G Cap (although it considers it more likely that it is too low rather than too high).¹
- (c) Third, if the True 2G Cap is accepted in principle as an appropriate upper bound, the question of the post-liberalization opportunity cost of 2G spectrum may affect the level of the cap (ie the upper bound), but we do not see why it should result in the BT 2G Cap being treated as a lower bound.
- (d) Fourth, we note that there are factors, such as future increases in spectrum supply, that might be expected to reduce the opportunity cost of 2G spectrum and therefore the level of the True 2G Cap (see paragraph 2.9.86(e) below).

The use of multiple valuations of spectrum

2.7.29 BT argued that Ofcom, by using scenarios to proxy the value of spectrum without taking any decision as to what it thought was the most likely valuation, had in effect evaded a question that it had a duty to address.² BT argued that the benchmarks used by Ofcom are essentially estimates, and estimates that are based on assumptions and not on any meaningful estimation exercise.³ According to BT, the exploration through modelling a range of scenarios does not inform 3G spectrum valuation at all, but merely assumes what termination rates would be if the spectrum values assumed by Ofcom were in line with the forward-looking value.⁴

2.7.30 Professor Yarrow in his first expert report for BT elaborated on this particular criticism as follows:

the basic information set is, as far as I can determine, the same in all scenarios, and the differences in the scenario/benchmarking results are the consequence of discretionary choices as to how that information is processed. The different benchmarks do not, in any significant sense, add to the available information. Thus, whereas in benchmarking exercises that do rely on multiple sources of information it might be reasonable to engage in some degree of averaging when reaching a final conclusion—because different pieces of information point to different numbers—such an approach is much less meaningful when the differences between the ‘benchmarks’ are driven by differences in assumptions, not by differences in information. What meaning can be attached to an averaging of assumptions? If the benchmarks are arbitrary, in the sense of being dependent on assumptions whose relative merits remain unevaluated, then any average of the benchmarks will likewise be arbitrary.⁵

¹Ofcom response to provisional determination, paragraph 2.8.

²BT hearing on its appeal, transcript, p89.

³First witness statement of Richard Budd for BT, paragraphs 11–12.

⁴BT Amended Notice of Appeal, paragraph 119.

⁵Professor Yarrow’s first expert report for BT, paragraph 81.

- 2.7.31 Ofcom argued that it would have been less transparent for it to have come to a base case when it did not think it had the information to do so, and that the uncertainty associated with future demand had the most influence on its overall judgement as to what the charge control levels should be.¹
- 2.7.32 Whilst we acknowledge those concerns, a component of the MCT charge necessarily relates to the cost of 3G spectrum. For each of the demand forecasts an implicit cost of spectrum will have been effectively incorporated.
- 2.7.33 One can see the impact that spectrum values have on the outcome from Table 2.11.

TABLE 2.11 (repeat of Table 2.3) **Efficient charge benchmarks in 2010/11***

Benchmark	ppm		
	2G/3G (900 MHz/1800 MHz combined)	2G/3G (1800 MHz only)	3G only
Low demand, £1.9bn	5.4	5.8	7.0
Low demand, £1.4bn	5.1	5.5	6.4
Voice only, £4bn	5.5	5.8	7.0
Voice only, £3.3bn	5.2	5.5	6.6
Voice only, £1.9bn	4.6	4.9	5.6
Medium demand, £4.4bn	5.3	5.6	6.6
Medium demand, £4bn	5.2	5.4	6.3
Medium demand, £3.3bn	4.9	5.1	5.8
Medium demand, £1.9bn	4.2	4.5	4.9
Medium demand, £1.4bn	4.0	4.3	4.6
High demand, £4.4bn	3.3	3.4	3.4
High demand, £4bn	3.2	3.3	3.4

Source: Ofcom's MCT Statement, Figure A13.9.

*The figures include allowances for administration costs and the network externality surcharge.

- 2.7.34 For the medium-demand forecast and an 1800-MHz-only operator, the benchmarks range from 4.3ppm to 5.6ppm depending solely on the spectrum value. The range is greater for a 3G-only operator.
- 2.7.35 Ofcom stated that it put weight on all the final benchmarks but put most weight on the medium-demand scenarios (and significant weight on the voice-only scenarios). It treated the medium-demand scenario as the one that was most likely to be realized. Its cross-check shows that its chosen charge levels are consistent with that scenario and a 3G spectrum value of £6.2 billion (£3.3 billion plus holding costs). That seems to us to be equivalent to an acceptance that £6.2 billion is a plausible value of 3G spectrum—yet no decision to that effect has been taken explicitly.² Indeed Ofcom stated that it did not express a view on whether certain 3G spectrum values were likely to be more appropriate than others.³
- 2.7.36 We took the view in our provisional determination that it would have been appropriate to explain what weights were, explicitly or implicitly, attributed to the various valuations in its exercise of judgement, even if the weights were equal, and agreed with BT that there was a lack of transparency on this point.

¹Ofcom's Price Control Defence, paragraph 3.9.41.

²Ofcom's cross-check involves identifying specific scenarios consistent with the chosen efficient charge levels and considering the reasonableness of the set of assumptions in those scenarios (MCT Statement, paragraph 9.153).

³Ofcom's Price Control Defence, paragraph 3.9.41.

- 2.7.37 We stated that at a theoretical level we did not think that it would necessarily be wrong to attribute equal weights to a number of possible values of an input variable if there was no information available on their relative likelihoods and if such an approach was consistent with the way the possible values had been established, but that in this case we considered that additional information was available and that the way the possible spectrum values were selected would only by chance have been representative of the underlying distribution of possible values.¹
- 2.7.38 Ofcom responded on this point first by asking for clarification as to whether we were making a relatively narrow point concerning the weight given to different 3G spectrum valuations, or whether we were making a more fundamental point about the way in which uncertainty should have been approached.² We can confirm that the former, narrower interpretation is correct.
- 2.7.39 On the narrower interpretation, Ofcom stated that we had not explained how any lack of transparency, or the omission of a discussion of the qualitative weights to attach to different 3G spectrum valuations, had the consequence of the price controls being set at an inappropriate level, and that the question of transparency, in and of itself, was not a price control matter. Ofcom also pointed out that the MCT Statement contained specific cross-checks with explicit spectrum valuations.³
- 2.7.40 Whilst we accept Ofcom's first point that the transparency or otherwise of its decision does not necessarily imply that the price controls have been set at an inappropriate level, in our view Ofcom takes this point too far in divorcing the issue of transparency from our task. We do not think it would be appropriate, in an appeal of this sort, for issues of transparency to be passed over without comment. If an approach is not transparent, it may be difficult to determine whether the charge controls have been set at an inappropriate level, and a regulator could always respond to a challenge by commenting that it took everything into account in taking a decision. Furthermore, a lack of transparency may mask the fact that certain factors or inputs had not been subject to sufficient consideration, and may therefore indicate areas where further investigation would lead to the conclusion that the price controls have been set at an inappropriate level.
- 2.7.41 As to Ofcom's second point, we find it difficult to reconcile this with Ofcom's previous explicit statement that the cross-checks in the MCT Statement were illustrative only, and that it did not express a view on whether certain 3G spectrum valuations were likely to be more appropriate than others.⁴
- 2.7.42 We therefore adhere to the views expressed in paragraphs 2.7.36 and 2.7.37 above.
- 2.7.43 In our provisional determination we also agreed with the view of Professor Yarrow⁵ that Ofcom's treatment of 3G spectrum values within its scenario analysis was unsound because the differences between the scenarios related to differences in assumptions rather than differences in information. As a result we concluded that the scenarios appeared to have been inappropriately constructed, with insufficient consideration given to a key input parameter, namely spectrum value, and that this approach was unlikely to lead to an efficient MCT charge.

¹We also noted that given a precise definition there would only be one spectrum value, but as this cannot be observed we considered it reasonable to discuss an underlying distribution.

²Ofcom response to provisional determination, paragraphs 3.45 & 3.46.

³ibid, paragraphs 3.33 & 3.34, 3.47–3.49.

⁴Ofcom's Price Control Defence, paragraph 3.9.41.

⁵See paragraph 2.7.30 above.

- 2.7.44 Ofcom in its response did not accept this characterization of its analysis, arguing that the different 3G spectrum valuations it used did relate to differences in information (namely, the 2000 auction fees, the O2 impairment and the BT 2G Cap), each of which shed some light on the opportunity cost of 3G spectrum for the purposes of MCT.¹
- 2.7.45 We acknowledge Ofcom's point that the different 3G spectrum valuations it used related to different pieces of information. We also acknowledge that arguments about whether a scenario analysis is based on different 'information' or 'assumptions' can have a semantic element to them. However, we are still of the view that the point made in the final sentence quoted from Professor Yarrow—that if benchmarks are dependent on assumptions whose relative merits remain unevaluated, then any average will be arbitrary—is valid.

Combinations of demand forecasts and spectrum values

- 2.7.46 BT argued that it was meaningless to couple historic spectrum values and current demand forecasts without knowing whether or not the historic values were based on similar demand forecasts.² It submitted that if the expectations at the time of the auctions had been realized, there would be so much traffic going across the 3G networks that unit costs would be low (as they are in the high-demand scenarios), and that the effect of combining historic valuations with lower forecasts was to penalize FNOs and consumers for the failure of data traffic to materialize in line with bidders' expectations.³ BT summarized the point as follows:⁴

If you are being ex-ante, you have got to be ex-ante. You can't be ex-ante on the value and ex-post on the volumes ... Ofcom is saying the value ascribed to licences is derived from expectations before and during the auction but the volumes over which we're recovering it are the ex-post volumes we're seeing ... [That] is putting the recovery of costs over and above every objective.

- 2.7.47 We think BT is correct in its criticism of the way that Ofcom has matched up its valuations and demand forecasts.⁵ In particular, Ofcom did not investigate evidence which related to the expectations of bidders at the time of the auctions. In our view, that evidence demonstrated that bids were underpinned by expectations of high traffic growth. In the light of that evidence we think that combining valuations of 3G spectrum based on the 2000 auction fees with the medium-demand forecast skewed the range of Ofcom's benchmarks towards higher values.
- 2.7.48 Ofcom argued that since the auction fees were being used as one proxy of the current value of 3G spectrum, and the demand forecasts were current forecasts, it was entirely appropriate to associate, for example, a £4 billion valuation estimate with a contemporaneous medium-demand forecast.⁶
- 2.7.49 We do not accept that reasoning. It appears to take the auction fees at face value. However, the auction fees are not simply numbers—they were the product of a

¹Ofcom response to provisional determination, paragraphs 3.64–3.67.

²BT Reply, paragraph 128.

³BT hearing on its appeal, transcript, p24.

⁴ibid, pp24&25.

⁵We note that it is possible for there to be, say, a low spectrum valuation and for the demand outcome to be in line with the high-demand forecast. This would be likely to be a low probability combination which one might take account of in a more comprehensive scenario analysis.

⁶Ofcom's Price Control Defence, paragraph 3.9.31(ii).

bidding process in which participants would have had expectations of the future. The evidence suggests that they were in fact based on expectations of demand that were much greater than those in Ofcom's medium-demand forecast. It therefore appears inconsistent to pair this forecast with the £4 billion estimate of 3G spectrum value.

2.7.50 We consider that Ofcom's approach, in effect, allows for the recovery of the bulk of historically incurred costs which were incurred in expectation of high traffic volumes over lower traffic volumes. The following considerations illustrate this:

(a) The 3G licences gave the MNOs the ability to carry a certain amount of traffic over their networks. The evidence we have suggests that their bids were based on an expectation that traffic would be high, certainly much higher than Ofcom's medium-demand forecast.¹ But Ofcom's model spreads the value of 3G spectrum that is used as an input over the actual units of traffic that are in each scenario.

(b) The 2000 auction fees, which the evidence indicates were based on expectations of high traffic and rapid data growth, were approximately £4 billion. The high-demand forecast, even when combined with high spectrum valuations, results in ppm charges that are much lower than the ones set by Ofcom. We do not suggest that charges should be set on the basis of high-demand scenarios because of expectations at the time of the auction; rather we think that a consideration of the two demonstrates that the charge controls set by Ofcom were too high.

2.7.51 Accordingly, we find that Ofcom erred in combining valuations based on the 2000 auction fees with medium-demand forecasts without examining the differences in expectations underlying the two sets of figures.

Allocation between voice and data

2.7.52 BT further argued that one particular problem with Ofcom's methodology was that it required an estimation of the total value of spectrum and then an allocation of that total between different services.²

2.7.53 This is an aspect of Ofcom's methodology that we consider to be extremely important but we have had few submissions on it. Ofcom's allocation approach, based on the radio traffic cost driver, resulted in the allocation under the medium-demand forecast which is shown in Table 2.2 in paragraph 2.2.17 above, and is reproduced below in Table 2.12.

¹It does not matter for the purposes of this example what proportions of voice and data traffic we are dealing with.

²BT Amended Notice of Appeal, paragraph 116; BT hearing on its appeal, transcript, pp13–14.

TABLE 2.12 (repeat of Table 2.2) **Share of lifetime radio traffic by service**

Service	% of lifetime radio traffic*
Total voice	74
Voice termination	25
Outbound voice	48
Total data	26

Source: Ofcom's MCT Statement, Figure A14.2.

*The 'Total voice' figure does not equal the sum of 'Voice termination' and 'Outbound voice' due to rounding.

2.7.54 We think that this allocation exposes a flaw in Ofcom's methodology. The evidence suggests that the auction fees were based on an expectation that a very high proportion of future traffic and revenue would be derived from data. Accordingly we do not think it was correct to use values derived from the 2000 auction with scenarios where approximately 75 per cent of that value is allocated to voice.¹

2.7.55 This error has a significant impact on the final result. In our view, it will lead to a significant overstatement of the appropriate 3G spectrum allocation to include within the charge controls. If the 2000 auction fees are used as an input value, a more reasonable allocation taking account of the expectations at the time of the auction would result in a substantially reduced proportion of the fees being allocated to voice.

2.7.56 We are aware that the allocation set out in the table above varies with the demand forecast chosen. In the high-demand forecast, data has a much greater allocation. Nonetheless, Ofcom placed most weight on the medium-demand forecast so the fact that the allocations may not be fixed does not cure the basic error.

2.7.57 Accordingly, we find that Ofcom erred in the approach it took to the allocation of the 3G spectrum values derived from the 2000 auction fees between voice and data in the medium-demand forecast.

Use of voice-only demand forecasts²

2.7.58 BT argued that too much weight was given to Ofcom's voice-only demand forecasts which were expressly stated to give upper bounds of the potential impact of economies of scope from carrying data services.³ It argued that the voice-only demand forecast was unrealistic and so should have been given no weight in Ofcom's scenario exercise.⁴

2.7.59 Ofcom emphasized that it was important to understand that the purpose of the voice-only demand forecast was limited to exploring the extent of economies of scale and scope in network costs due to carrying both voice and data traffic.⁵ It maintained that the voice-only demand forecast had an important part to play in

¹Our criticism is limited to this narrow point—we do not criticize the use of a radio traffic cost driver per se (Ofcom expressed concern on this point in paragraphs 3.27–3.30 of its response to our provisional determination).

²We distinguish between the demand forecasts and the scenarios which are benchmarks derived, in general, from a combination of a spectrum value and a demand forecast. We use the term 'voice-only demand forecast' because this is used as an alternative to the high-, medium- and low-demand forecasts. For the avoidance of doubt, we do not suggest that Ofcom considered it to be a true forecast.

³BT Amended Notice of Appeal, paragraphs 131 & 132.

⁴BT Reply, paragraph 148.

⁵Ofcom's Price Control Defence, paragraph 3.9.15.

dealing with the uncertainty of data forecasts and the potential impact of this uncertainty on voice termination costs.¹

- 2.7.60 Ofcom also said that the voice-only demand forecast was not used to determine the appropriate unit cost recovery of 3G spectrum costs, and was constructed in such a way that the 3G spectrum contribution to the ppm cost benchmarks was the same under the voice-only demand forecast as under the medium-demand forecast (for the same 3G spectrum valuation input).²
- 2.7.61 In our provisional determination we agreed with BT that Ofcom appeared to have put too much weight on the voice-only demand forecast. We said that it was not good practice to consider benchmarks that set bounds as similar to those that described plausible scenarios. We concluded that whilst the voice-only demand forecast may have been of some assistance in evaluating the cost benchmarks deriving from other demand forecasts, it was not in itself a plausible one, and, as such, should not have been treated in the same way as the others in the final evaluation.
- 2.7.62 We acknowledged that Ofcom may not have attached weight (in the sense of attributing a specific probability) to the voice-only demand forecast when choosing the charge control levels (though we said that we would have expected its inclusion to affect the result to some extent). Nevertheless, we considered that its inclusion in Ofcom's cross-check suggested that Ofcom did consider the demand forecast to be plausible and of significant weight.
- 2.7.63 Ofcom responded to these points by pointing out that it explicitly placed less weight on the voice-only demand forecasts than the medium-demand scenarios, and that therefore our conclusions were based on a factual inaccuracy.³ It also said that the voice-only demand forecasts could be regarded as sensitivities (see Figures 2.8 and 2.9 above), and that our criticisms were presentational in nature and did not imply that the price controls in the statement were set at an inappropriate level.⁴
- 2.7.64 We accept that Ofcom placed less weight on the voice-only demand forecasts than on the medium-demand scenarios. Our original wording (reflected in paragraph 2.7.62 above) was intended to acknowledge that fact.
- 2.7.65 However, in the MCT Statement Ofcom included an illustrative weighting as part of its cross-check which gave a weighting of 30 per cent to voice-only demand cases.⁵ Although that weighting was illustrative, it suggested to us that Ofcom considered voice-only demand cases to be of significant weight (albeit less weight than the medium-demand scenarios). Given that, we would have expected their inclusion in the final set of benchmarks to have led to the adoption of a price control level which was higher than it would otherwise have been.
- 2.7.66 We have difficulty with Ofcom's position that these issues are merely presentational and that whatever weight Ofcom did attribute to the voice-only demand forecasts did not lead to the price control levels being set at an inappropriate level. Whilst we accept that the extent to which (if any) the inclusion of the voice-only demand forecasts led to the price control levels being set at an inappropriate level cannot be

¹ibid, paragraph 3.9.37.

²ibid, paragraph 3.9.15.

³Ofcom response to provisional determination, paragraphs 3.34 & 3.35.

⁴ibid, paragraphs 3.20–3.22.

⁵Ofcom's MCT Statement, paragraph A13.65.

determined given Ofcom's approach, we refer to our comments in paragraph 2.7.18 above about the importance of a transparent presentation and explanation of any scenario-based approach. We maintain our view that weight should not have been placed on the voice-only demand cases in a way which materially increased the price control levels.¹

Conclusion on Ofcom's use of scenarios

2.7.67 For the reasons given above, we conclude that Ofcom's scenario-based approach was flawed in its implementation. It was flawed because whilst apparently incorporating different spectrum values, it was unclear how these were balanced and in any case it did not take account of the change in expectations between the 2000 auction and those at the commencement of the control period.

2.7.68 We also think that Ofcom erred in implementing its methodology by combining spectrum valuations, demand forecasts and allocation methodologies incorrectly.

2.8. Overall conclusion on Ofcom's methodology

2.8.1 For the reasons given above, we conclude that Ofcom erred in:

- (a) using the 2000 auction fees as a proxy for the forward-looking value of spectrum without investigating how expectations at the time of the auction compared with current ones;
- (b) applying holding costs to historic 3G spectrum values for periods longer than could be justified, thereby distorting the range of benchmarks from which it chose the charge control levels; and
- (c) combining spectrum values, demand forecasts and allocation methodologies incorrectly, with the result that the charge controls have been set at a level which is too high.

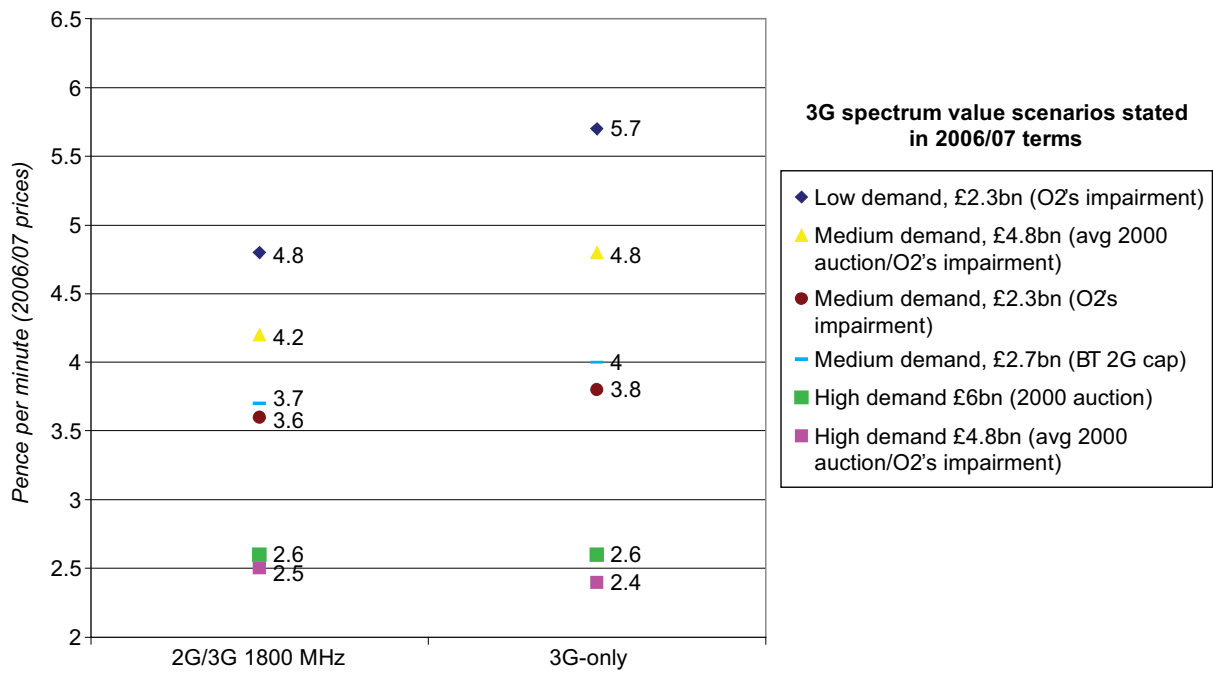
2.8.2 We have considered what implications these errors have for the benchmarks from which Ofcom selected its charge control levels. Figures 2.10 and 2.11 below show an amended set of benchmarks for a 2G/3G 1800-MHz-only operator and a 3G-only operator. Figure 2.10 includes only 'core' benchmarks, and Figure 2.11 includes both 'core' benchmarks and those that might be considered to be sensitivities.²

¹The medium-demand forecast itself was a conservative one (see further paragraph 2.9.163 below).

²The separation of the benchmarks in this way follows the presentation of its analysis that Ofcom gave in its response to our provisional determination (see Figures 2.8 and 2.9 above).

FIGURE 2.10

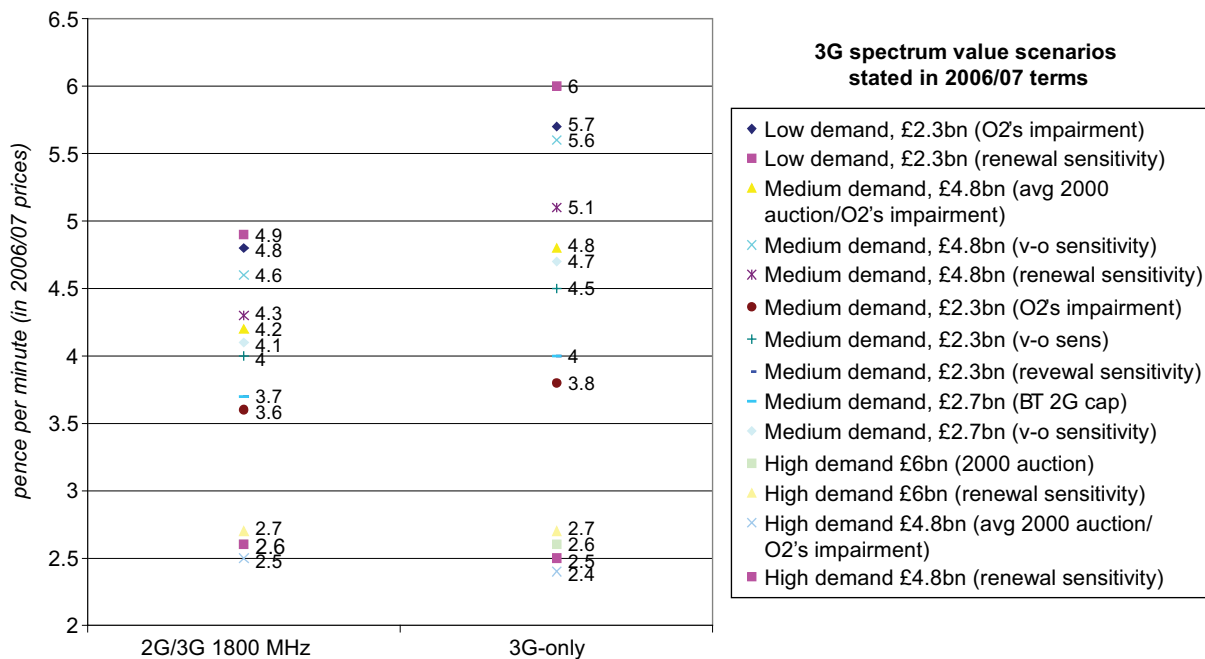
Amended set of 'core' benchmarks for a 2G/3G 1800 MHz operator and a 3G-only operator



Source: CC calculations based on Ofcom's presentation at the plenary session on 21 October (slides 7 and 8).

FIGURE 2.11

Amended set of 'core' benchmarks plus sensitivities for a 2G/3G 1800MHz operator and a 3G-only operator¹



Source: CC calculations based on Ofcom's presentation at the plenary session on 21 October (slide 8).

- 2.8.3 Ofcom submitted that we could and should determine new charge control levels by employing an amended scenario-based approach along the lines of the one employed in the MCT Statement. It said that this could be done by identifying a new set of relevant and reasonably representative benchmarks, considering in a qualitative fashion the relative weights to be attached to different benchmarks, and applying reasonable judgement to identify efficient charge levels taking into account Ofcom's objectives and other relevant considerations.²
- 2.8.4 Because of our conclusions in section 2.9 below, we have not selected new charge controls employing this methodology. However, we have considered what results such a methodology might be expected to generate.
- 2.8.5 Taking Figures 2.10 and 2.11 above as the new set of relevant and reasonably representative benchmarks, and focusing on the 'core' benchmarks first, we would, as Ofcom did, place most weight on the medium-demand scenarios. Within those, we would place less weight on the £4.8 billion 3G spectrum valuation case as that valuation is derived largely from the 2000 auction fees, and for the reasons given above we do not think that it is appropriate to combine valuations deriving from those fees with the medium-demand forecast.
- 2.8.6 In considering the 'sensitivities', we have already set out our views that weight should not be placed on the voice-only scenarios in a way that leads to a material increase in the price controls levels.

¹In its letter of 13 January 2009, Ofcom noted that the 'Medium demand, £2.3 (v-o sensitivity)' scenario for the 3G-only operator was presented by Ofcom as 4.6ppm at the plenary session, rather than the 4.5ppm which we calculated and which appears in Figure 2.11. This difference may be due to rounding.

²Ofcom's presentation for the plenary session of 21 October 2008, slides 6–11.

- 2.8.7 Under the category of other relevant considerations fall the issues of traffic uncertainty and asymmetric risk. Our views on these two issues are set out in paragraphs 2.9.159 to 2.9.169 below.
- 2.8.8 Taking all of those considerations into account, as well as Ofcom's objectives and statutory duties, we would not expect an amended scenario analysis along the lines suggested by Ofcom to result in the selection of charge control levels that deviated significantly from those resulting from the approach that we have in fact adopted (see subsection 2.9 below and Section 16 of this determination on Reference question 8).

2.9. BT's 2G cap proposal

Introduction

- 2.9.1 BT argued that customers receive no benefit from calling a 3G phone rather than a 2G phone, and that in a competitive market it would not be possible to charge a higher price for what is essentially the same service. BT argued that the cost of termination on 3G networks exceeds the cost of termination on 2G networks in Ofcom's modelling only because Ofcom overvalued 3G spectrum by placing too much weight on the 3G auction held in 2000.¹
- 2.9.2 According to BT, the value of 3G spectrum is that it enables MNOs to reduce the cost of providing their existing 2G services by deploying more efficient 3G technology and to offer new data services. BT argued that it follows that the most appropriate way to value the forward-looking value of 3G spectrum for voice is to assess the cost savings that will accrue to MNOs from using 3G rather than 2G. This would allow MNOs to keep the cost savings that accrue from using the more efficient technology.²
- 2.9.3 Given that setting MCT charges at 2G levels would enable MNOs to keep all of these cost savings, BT considered the difference between the cost of 2G MCT and the cost of 3G MCT excluding 3G spectrum costs to be an upper bound on the forward-looking value of 3G spectrum that it is appropriate to include within the MCT charges.³
- 2.9.4 Under BT's 2G cap proposal, in the final year of the current price control (2010/11) the MNOs would get 3.7ppm for the network element of the ppm charge.⁴ This is based on the cost of MCT of a 2G/3G 1800-MHz-only operator on a 2G network under the medium-demand forecast, and would include an implicit 3G spectrum allowance of 0.96ppm,⁵ a margin of 35 per cent on the network cost of MCT on 3G which is 2.7ppm (again assuming a medium-demand forecast).
- 2.9.5 Ofcom accepted that BT's proposal was a useful benchmark, and included Scenario 7 in its cost modelling and took it into account in determining the approp-

¹BT Reply, paragraph 40(a).

²ibid, paragraph 40(d).

³ibid, paragraph 229(a).

⁴The 3.7ppm figure reflects the costs of the physical 2G network plus the costs of 2G spectrum. 2G spectrum prices are not market prices but are set administratively by Ofcom. See further paragraph 2.9.81 below.

⁵The figure is not 1ppm because we have taken into account the modelled cost of MCT on 2G and 3G networks before the figures are rounded to one decimal place.

riate level of the charge controls.¹ However, it treated the scenario as a lower bound on the value of 3G spectrum.

Whether the 2G cap is appropriate in principle

- 2.9.6 A number of objections to the 2G cap were advanced by Ofcom and the Interveners. Many of these are based on practical issues rather than principle and these are dealt with later on in this section.
- 2.9.7 Vodafone, T-Mobile and O2 all accepted that in principle the 2G cap had certain merits.² Whilst the other Interveners (H3G and Orange) accepted that 3G was a more efficient technology than 2G,³ they both raised objections of principle to BT's proposal. H3G, as a 3G-only operator, argued that it simply could not apply to an MNO such as itself.⁴ This argument is addressed below in paragraphs 2.9.151 to 2.9.158.
- 2.9.8 Orange argued that the 2G cap was wrong in principle because it did not take into account opportunity costs. On its analysis, in order for price signals to be efficient the price of MCT needed to reflect the value of data services that were being displaced because the 3G spectrum was being used for carrying voice.⁵ Ofcom made a similar argument, submitting that the opportunity cost of spectrum reflects the value of the next most valuable displaced service which might be the transmission of data.⁶
- 2.9.9 BT did not disagree with the theoretical points that Orange (and Ofcom) made and accepted that the 2G cap approach would not be an upper bound if voice were displacing more valuable data services. It submitted, however, that this was not the case as there was no 3G capacity constraint (so data was not being displaced at all) and that the cost savings of carrying voice over 3G were higher than the value of marginal data services.⁷

Assessment

- 2.9.10 As a general principle, we agree with BT's basic point that in a competitive market the introduction of a new and more efficient technology should not lead to an increase in price for an existing service.
- 2.9.11 Ofcom accepted that 3G technology is more efficient than 2G technology in carrying voice traffic.⁸ It also appeared to accept BT's basic point as a matter of principle—it accepted that MCT is a homogenous service and that consumers are unable to select, are unaware of, and are likely to be indifferent to which type of network their

¹Ofcom's Price Control Defence, paragraphs A2.5.3–A2.5.4.

²Vodafone's Sol, paragraph 3.74; PwC expert report for O2, paragraph 53; T-Mobile hearing on BT appeal, transcript, p65.

³Orange hearing on the BT appeal, transcript, p34; H3G hearing on the BT appeal, transcript, p38; although in its response to our provisional determination, H3G argued that the premise that for the 3G-only operator, 2G technology would have been less efficient than 3G technology for the delivery of voice termination, was wrong because of the terms under which 2G spectrum was and is made available (see further paragraph 2.9.154(c) below).

⁴H3G's Sol, paragraphs 5.9(e), 5.11.

⁵Orange's Sol, paragraph 5.6; Orange hearing on BT appeal, transcript, p34.

⁶Ofcom's Price Control Defence, paragraph 3.9.59.

⁷BT Reply, paragraphs 40(d), 234; BT hearing on its appeal, transcript, p34.

⁸Ofcom hearing on BT appeal, transcript, p34.

calls terminate on, which implies that in a hypothetical competitive MCT market differences in 2G and 3G MCT charges would not be sustainable.^{1,2}

- 2.9.12 We also agree with BT that it is appropriate to consider the benefits that 3G spectrum brings in two parts: enabling MNOs to reduce the cost of providing 2G services by deploying more efficient 3G technology, and providing MNOs with the opportunity to offer new data services. The 2G cap would, in principle, allow the MNOs to keep the cost savings that accrue from using the more efficient technology. Put another way, to the extent that 3G spectrum could be said to have been acquired to save costs in the provision of voice services, efficiently incurred costs could be reimbursed by adopting the principle of the 2G cap.
- 2.9.13 We note, further, that we would also not ordinarily expect the release of additional capacity which can be used to provide an existing service, all else being equal, to lead to an increase in price for that service.
- 2.9.14 In taking an opportunity cost approach, however, it is important that the opportunities that are forgone if 3G spectrum is used to terminate voice calls are reflected in the price of termination. In particular, if the use of spectrum for voice services denies the opportunity to use it for some data services, then the value of those data services represents an additional cost to the MNOs of providing voice termination, which should be reflected in the MCT charge control levels. Otherwise, the MCT charge would not provide an efficient price signal for the use of the 3G spectrum.
- 2.9.15 This implies that the 2G cap, which is based on determining the value of 3G spectrum that should be factored into the MCT charge controls in terms of network cost savings it provides for voice termination relative to 2G, would not be appropriate if (a) there were capacity constraints on 3G networks and (b) voice termination services would be displacing higher-value data services. In that case, the opportunity cost of terminating a call would be the more valuable data service that could not be delivered and it would be this that should be reflected in the MCT charge for the reasons explained in paragraph 2.9.14 above.
- 2.9.16 If, however, the existing capacity can be used to deliver both voice and data services, or the value of data services that may be displaced is lower than the cost savings derived from terminating voice on 3G rather than 2G, setting the MCT charge in accordance with the 2G cap will ensure that 3G spectrum is priced for termination services in accordance with its opportunity cost, which is given by the difference in the cost between providing termination using 3G technology and the cost using 2G technology.
- 2.9.17 Whether those conditions exist is in principle an empirical matter. While determining whether they exist may be a difficult task given the different ways in which network capacity can be flexed and the uncertainty associated with long-term forecasts, in the light of our views on Ofcom's scenario analysis we do not think that this assessment can be avoided if the charge controls are to be set to correctly reflect the opportunity cost of 3G spectrum.
- 2.9.18 Our capacity assessment, the purpose of which is described in paragraphs 2.9.14 to 2.9.16 above, has focused on the 3G spectrum held by the hypothetical efficient

¹Indeed, we note that in the retail market MNOs do not price basic voice services differently depending on whether they are supplied using 2G or 3G technology.

²Ofcom's MCT Statement, paragraphs 9.22–9.25, 9.119.

operator modelled by Ofcom. That operator was assumed to have two carriers in line with the minimum licence size in the 2000 auction.

Capacity

BT's evidence

2.9.19 BT provided us with evidence on both 2G and 3G capacity. On the question of 2G capacity:

(a) BT submitted a study prepared by FMS Solutions which suggested that the MNOs' 2G networks alone could have accommodated the predicted growth in voice traffic. On the basis of the report BT estimated that the practical achievable 2G capacity in urban areas was approximately four times greater than voice demand under Ofcom's high-demand forecast.¹

(b) BT argued that adding 2G capacity would only be necessary in areas where there was high demand. It acknowledged that adding new cells would increase network investment and involve a cost premium in deployment and operational costs. However, it argued that increased traffic in urban areas generally means increased traffic across the network which implies lower average unit costs.²

2.9.20 On the question of total capacity including both 2G and 3G spectrum:³

(a) BT argued that spectrum demand would only increase if traffic levels along the lines of Ofcom's high-demand forecast came about (because the spectral efficiency gains from moving to 3G would offset the growth in data traffic in the medium-demand forecast).

(b) BT argued that the supply of spectrum was increasing due to the auction of the 3G spectrum itself, the upcoming 2.6 GHz spectrum auction and the upper half of the digital dividend spectrum becoming available for mobile services, and that only under the most optimistic demand growth assumptions, and the most pessimistic efficiency assumptions, would demand growth exceed supply growth.

2.9.21 A number of the Interveners criticized BT's evidence. Vodafone argued that the FMS Solutions report did not provide a reliable basis for assessing the absolute real-world capacity limits of a 2G network, and that the achievable capacity was much lower than the amount implied by the theoretical model used in the report. In particular, Vodafone argued that the report uses a number of simplified assumptions which ignore a host of practical problems facing an operator, including the difficulties associated with acquiring new sites in dense traffic areas, the impact of real terrain and clutter variations on radio propagation and cell geometries, and the implication of real cell geometries on frequency planning and site capacity.⁴

2.9.22 O2 agreed with Vodafone that the FMS report did not provide a reliable basis for assessing the absolute real-world capacity limits of a 2G network. In particular, it pointed out that FMS assumed that mobile traffic in central London, where MNOs have the greatest challenges, was the same as in the centre of smaller towns. As a

¹FMS Solutions expert report submitted by BT.

²BT slides of 13 June 2008, 12–16.

³*ibid*, 17–26.

⁴Witness statement of Philip White for Vodafone.

result of this assumption, the estimate of busy hour demand was subject to a great deal of averaging which was not representative of the true distribution of how busy sites are in urban areas, many of which will exceed their maximum capacity earlier than assumed by FMS. More generally, O2 argued that in order to achieve the capacity assumed by BT, there would have to be an environmentally and socially undesirable level of cell sites—five operators each with sites a few hundred metres apart.¹

- 2.9.23 T-Mobile criticized other aspects of BT's evidence. In particular, it argued that there was no agreed industry definition of spectral efficiency, and that its own calculation of efficiency figures for 3G of 1.5 to 2 times the figures for 2G was as accurate as any other potential calculations that could be used (BT assumed that 3G voice uses spectrum three times more efficiently than 2G voice, and that 3G data uses spectrum six times more efficiently than 2G voice).²
- 2.9.24 T-Mobile also argued that BT's study painted a highly misleading picture of the potential availability of future spectrum. According to T-Mobile, the mobile industry requires harmonized spectrum, preferably on a global scale but as a minimum within the European Community, to encourage vendors to develop terminals and infrastructure to meet mass market economies of scale. T-Mobile said that it can take longer than ten years to agree harmonized standards and develop commercial products. For example, in the case of 3G, work on acquiring harmonized spectrum started in the 1980s leading to a governmental decision at the 1992 World Administrative Radio Conference on the identification of suitable spectrum.³

The Independent Audit of Spectrum Holdings report

- 2.9.25 Ofcom did not carry out its own assessment of the relationship between demand and capacity. It did, however, in the context of its argument that it was implausible that an entire carrier of 3G spectrum had a zero opportunity cost, refer us to a report which was prepared by Analysys Consulting and Mason Communications as part of a spectrum demand study for the Independent Audit of Spectrum Holdings (IASH) team.⁴ The principal objective of this study was to forecast future demand for radio spectrum in the UK for commercial services for the period 2005 to 2020, with a particular focus on 2015.⁵
- 2.9.26 The study assumed that there would be 540 MHz of spectrum available for mobile services. It also assumed that if the cost savings for obtaining additional blocks of 2 x 5 MHz were to be £5 million a year or greater, an operator would acquire spectrum rather than invest in infrastructure. The study also factored in anticipated improvements in spectral efficiency arising from the deployment of new technologies.
- 2.9.27 Under low traffic assumptions, the study forecast that spectrum demand in urban areas would reach capacity in 2016 and thereafter remain constant. Under the high traffic forecast, spectrum demand was forecast to reach capacity in urban areas between 2011 and 2012, and by 2015 it was forecast to be twice the available capacity. The forecast of spectrum demand in rural areas was much lower; neither high- nor low-demand forecasts were expected to lead to capacity constraints.

¹O2 letter of 18 July 2008.

²T-Mobile letter of 15 August 2008, Annex 1.


³ibid.


⁴Ofcom's Response of 4 April.

⁵The IASH study can be found at www.spectrumaudit.org.uk/pdf/spectrum_demand.pdf.

2.9.28 BT argued that these forecasts gave a distorted picture because Analysys and Mason made no allowance for the release of the digital dividend spectrum and assumed a very low price for spectrum. Specifically, they assumed that all spectrum (including 3G) would be priced at one and a half times the current 2G level (£5 million a year for 2 x 5 MHz). BT argued that at these prices, MNOs would choose to use extra spectrum instead of deploying cell sites, and that this is why there would be a shortage of spectrum. BT also pointed out that under its 2G cap proposal, 3G spectrum would be valued at approximately 20 times the current 2G level.¹


Interveners' evidence

2.9.29 According to T-Mobile, there would be no absolute answer as to the limits of usage of 2G spectrum, but there would be a point at which construction on the 2G networks would be uneconomic due to the density of traffic. It told us that [].²

2.9.30 On the question of 3G capacity, T-Mobile told us that [].³

2.9.31 H3G told us that for a given amount of spectrum and a given coverage area it is not possible to say when capacity will be exhausted as a mix of different activities can be undertaken to increase capacity, including adding additional spectrum carriers to existing sites, increasing the number of sectors at an existing site and adding more sites. H3G stated that the costs associated with different approaches to adding capacity varied significantly.⁴

2.9.32 Consequently it said that the question of when capacity becomes exhausted is ultimately likely to be a commercial one. That point would be reached when the costs of increasing capacity are no longer outweighed by the increase in associated revenues. According to H3G, this interrelationship makes it impossible to estimate the timing of when Ofcom's demand forecasts will lead to capacity exhaustion.⁵

2.9.33 [].^{6,7}

2.9.34 []

¹BT slide 29 of 13 June 2008.

²T-Mobile letter of 15 August 2008.



³ibid.

⁴H3G letter of 7 July.

⁵ibid.

⁶[

⁷[

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]¹

2.9.35 Vodafone submitted that the 3G spectrum would be fully utilized during the life of the current 3G spectrum licences, though it gave us no further detail beyond that.²

Assessment

2.9.36 We have not found it necessary to resolve all the issues that have been raised in relation to capacity. In particular, for the reasons given below in paragraphs 2.9.127 to 2.9.134, we have not found it necessary to decide whether or not all the MNOs' projected voice traffic could be carried on their 2G networks. Nor have we found it necessary to decide whether, under the MNOs' own traffic projections, capacity will be fully utilized in the medium term.

2.9.37 The price controls we are concerned with have been set on the basis of Ofcom's traffic forecasts, and the question for us is therefore whether 3G capacity will be fully utilized under those forecasts. In light of the evidence that we have received, [], we consider that there will not be a 3G capacity constraint under Ofcom's medium-demand forecast for the duration of the explicitly modelled period.³

2.9.38 This means that the question of the opportunity cost of using 3G spectrum for voice services instead of data services does not arise in the way suggested by Orange and Ofcom (see paragraph 2.9.8 above), since the MNOs will be able to accommodate both voice traffic and data traffic on the existing spectrum capacity at the network cost in the model.

2.9.39 In our provisional determination we said that the considerations above made the 2G cap, in principle, appropriate to apply to the medium-demand forecast. Our reasons for focusing on the medium-demand forecast are set out in paragraphs 2.9.159 to 2.9.165 below.

2.9.40 In its response to our provisional determination, Ofcom argued that there were flaws in reasoning in our capacity test. In particular, it submitted that our capacity test:⁴

- (a) was irrelevant to the 2G cap because the value for liberalized 2G spectrum did not depend on the capacity constraints on 3G networks;
- (b) implied either that the opportunity cost of spectrum was zero, or was inconsistent with our provisional conclusions; and
- (c) was, in any case, not correctly specified.

2.9.41 In response to Ofcom's first point, we note that the purpose of our capacity test was not to determine the value for liberalized 2G spectrum but rather, as set out in paragraphs 2.9.14 to 2.9.16 above, to establish, in line with the concept of opportunity

¹[]

²Vodafone Sol, paragraph 3.90.

³Ofcom's MCT costs model explicitly calculates the network costs for the period 1990/91 to 2039/40. However, the model inputs are constrained to be constant from 2020/21.

⁴Ofcom response to provisional determination, paragraph A4.7.

cost, whether voice traffic was likely to displace data traffic. Specifically, if there was likely to be a shortage of capacity on the 3G networks under the existing spectrum licences, and that shortage was to result in voice services displacing more valuable data services, then the 2G cap, which is based on cost savings from terminating calls on 3G rather than 2G networks, would not be the correct basis for setting MCT rates even in principle. Put another way, if displacement of data services was expected, the value of those services would be relevant to the MCT charge control levels. If no such displacement was expected, we do not think the value that may be derived from the provision of data services would be relevant to MCT. The issue of the value of liberalized 2G spectrum is addressed separately in paragraphs 2.9.86(c), (d) and (e) and 2.9.110 to 2.9.112 below.

- 2.9.42 That said, we disagree with Ofcom that the value for liberalized 2G spectrum does not depend on the capacity constraints on 3G networks. Since liberalized 2G spectrum and 3G spectrum would potentially be close substitutes for the delivery of voice and data services, the value of 2G spectrum will depend to some extent on the capacity constraints on 3G networks. If there was a capacity constraint on the 3G networks employing only the 3G spectrum, we would expect an increase in demand for, and hence in the price of, liberalized 2G spectrum. However, as we set out in paragraph 2.9.37, we consider that there will not be a 3G capacity constraint under Ofcom's medium-demand forecasts for the duration of the explicitly modelled period and so this question does not arise.
- 2.9.43 We also disagree with Ofcom's second point, namely that our 3G capacity test implies that the long-run forward-looking opportunity cost of spectrum is zero. Ofcom put forward three alternative possibilities for the meaning of our capacity test. First, it suggested that we may think that the marginal value of voice services always exceeds the marginal value of data services, a possibility which it submitted is unlikely to be correct. Second, Ofcom suggested that we may be implying that there is an excess supply of spectrum, which it considers to be implausible as that would in turn imply a zero opportunity cost of 3G spectrum. Third, Ofcom put forward the possibility that the carrying of voice traffic displaces some data traffic on the available capacity. Ofcom considered this possibility to be the most plausible.¹
- 2.9.44 It appears that Ofcom is addressing a different question to the one we were addressing in our capacity test. Ofcom's argument relies on a type of marginal valuation (advocated by Professor Yarrow in his expert reports for BT) which abstracts from the fact that 3G spectrum is lumpy—that for technical reasons, the smallest usable increment of 3G spectrum is a 2 x 5 MHz carrier (see subsection 2.4 above).
- 2.9.45 As explained in paragraph 2.9.18 above, our capacity assessment has focused on the 3G spectrum held by the hypothetical efficient operator modelled by Ofcom. That operator was assumed to have two carriers in line with the minimum licence size in the 2000 auction. Under this approach, the fact that, according to our assessment of the evidence, it will be possible to carry all voice and data traffic predicted in the medium-demand forecast with two carriers (ie that voice will not be displacing data) at the network cost derived from Ofcom's model, does not mean that the value of 3G spectrum is zero. Rather, it means that the value of data services is not relevant to the MCT charge control levels.

¹ibid, paragraphs A4.12–A4.26.

- 2.9.46 We acknowledge Ofcom's point that in reality the medium-demand forecast would not be expected to include all traffic with a marginal value greater than zero.¹ We would expect prices to adjust in the real world to ensure all the available capacity was being used to generate some revenue. However, the MCT charge control levels were set by reference to the demand forecasts that Ofcom used, and the medium-demand forecast was given the most weight. Under that demand scenario, there is enough capacity to carry all the forecast traffic at the network cost in the model. Ofcom's model does not factor in the impact of pricing decisions on demand. In any event, the higher the levels of lifetime traffic, the lower the MCT rates under Ofcom's modelling approach.
- 2.9.47 Ofcom's third contention is that our capacity test was not correctly specified because it ignored one of the key features of wireless network design and as a consequence did not pose the right question, the key feature being the fundamental trade-off between the amount of spectrum and network cost.²
- 2.9.48 However, this criticism overlooks the critical point that Ofcom's model determines what the network cost will be, given a spectrum holding of two carriers, under specific demand forecasts. This means that once it is established that there will be sufficient capacity under the medium-demand forecast, and that therefore voice traffic will not be displacing data traffic under that forecast, there is no need for a further trade-off.
- 2.9.49 Vodafone argued in its response to our provisional determination, along similar lines, that if an MNO had to meet demand for voice without using its second 5 MHz carrier, it would have to either (a) reduce the volume of data traffic which it carried, to such an extent as to free up sufficient capacity to carry voice call termination traffic on its first carrier; or (b) install additional network infrastructure so as to increase the utilization of its only carrier to such an extent as to make up for the loss of the second carrier.³
- 2.9.50 Our capacity assessment is not directed to the question of the valuation of a single carrier of 3G spectrum. It is directed at the question of whether the provision of voice termination services on 3G networks will result in data services being displaced. As explained in paragraphs 2.9.18 and 2.9.45 above, our assessment of whether the 2G cap is appropriate is based on the total spectrum holdings of the hypothetical efficient operator modelled by Ofcom. Our methodology is not analogous to an AIP-type methodology, where one is interested in the effect of adding or taking away an increment of spectrum, which is what Vodafone appears to be advocating.
- 2.9.51 Even if we were focusing on the value of a single carrier of 3G spectrum, we would not accept the implication of Vodafone's argument—that it is necessary to factor in the cost associated with achieving higher utilization on the first carrier assuming that the second one was taken away. Our assessment of capacity suggests that there will not be a shortage of 3G spectrum capacity at an aggregate level by 2020/21 (given the network deployment modelled by Ofcom under the medium-demand forecast). This being the case, in a (hypothetical) competitive market we would not expect an individual MNO to be able to charge for the congestion it would have experienced if it did not have the second carrier.

¹ibid, paragraph A4.23.

²ibid paragraphs A4.27–A4.33.


³Vodafone response to provisional determination, paragraph 11(i).

- 2.9.52 Given a fixed total number of carriers of 3G spectrum, if an MNO were to sell its second carrier, the carrier would not disappear but would go to a new owner. The new owner's capacity to carry traffic at a given network cost would thereby be increased. If the previous owner experienced diseconomies of scale due to its smaller spectrum holding, we would expect traffic to migrate to the new owner (ie to follow the capacity) who would be able to accommodate it without experiencing diseconomies of scale and thus at a lower cost.
- 2.9.53 We therefore remain of the view that the 2G cap, in principle, is appropriate to apply to the medium-demand forecast.

*The value of voice and data*¹

- 2.9.54 Although we have concluded that under Ofcom's medium-demand forecast there will be sufficient 3G capacity to accommodate all voice and data traffic, a number of MNOs stated that their own current internal forecasts were more optimistic than this. Whilst we consider this to be of somewhat limited relevance as the MCT price controls were set on the basis of Ofcom's demand forecasts,² and not the MNOs' internal ones, we have nevertheless considered whether the MNOs' own forecast growth in traffic would be likely to result in more valuable data services being displaced by voice.
- 2.9.55 In paragraph 2.5.39, we set out the evidence that, in terms of total revenue and ARPU, voice is currently the more valuable service. In this section we make a comparison between the savings that the MNOs achieve when they terminate a call on a 3G network rather than a 2G network and the profitability of marginal data services which would be displaced if there was a shortage of capacity.

Evidence

- 2.9.56 According to BT, rapid growth in data traffic is only being achieved through sharp price reductions.³ It submitted that the market norm for mobile broadband is £15⁴ for 3GB of data⁵ which equates to 0.43p per MB. Assuming that 20 per cent of the 3GB allowance is actually used by subscribers, the average revenue is 2.15p per MB. Applying the ratio of 1MB equals 1.8 voice minutes, this would be equivalent to 1.19ppm for a voice call. According to BT, MNOs earn much more than this from voice services.⁶
- 2.9.57 Vodafone told us that the only reasonable way to compare voice and data rates is on an overall basis, by deriving an effective rate charged for each service by dividing the actual revenues received for voice and data in aggregate by actual traffic volumes incurred. According to Vodafone, in 2007/08 [].⁷ Using the same

¹Given the conclusions we have reached on capacity, it is not strictly necessary to consider the relative value of voice and data.

²Which have not been subject to appeal.


³BT Reply, paragraph 235.


⁴£12.77 net of VAT.

⁵Vodafone, T-Mobile and Orange have this package. H3G sells 5GB for £15 whereas O2 charges £20 for 3GB of mobile broadband data.

⁶BT Reply, paragraphs 236–239.

⁷Vodafone letter of 9 July 2008.


methodology, O2 reported that [].¹ Neither Vodafone nor O2 provided us with the underlying data.

2.9.58 Orange agreed with Vodafone and O2 that voice and data should be compared on an overall basis. Orange provided us with information on both its current and expected pricing of data services based on an aggregate of both mobile broadband pricing and higher-value content-rich data services. []²


2.9.59 T-Mobile provided us with data on average revenue per unit of measurement for six different services. However, it told us that any comparison between voice and data revenue would be fraught with difficulties as there was no industry agreed methodology for converting information on a per bit basis, nor was there any industry agreed methodology about the spectral efficiency of data and voice.³

2.9.60 []


Assessment

2.9.61 We have considered the evidence put to us by the parties. A number of MNOs have emphasized that it is the recent rapid take-up of mobile broadband ‘dongles’ that is driving an increase in traffic on their 3G networks, and [].⁴ This is consistent with Ofcom’s most recent market commentary which suggests that strong growth in 3G subscriptions will result from a rapid take-up of mobile broadband ‘dongles’.⁵

2.9.62 For this reason, we place more weight on the figures from T-Mobile as these give a better indication of the value of mobile broadband than the figures from other MNOs which include content-rich data. Furthermore, the information from Vodafone and O2 was presented in the form of a ratio between their current revenues from voice services and data services. As we are interested in the value of data services going forward, we place less weight on such evidence.

2.9.63 []

We accept that this might be the case, but we note that this reinforces our view that mobile broadband is the relevant comparator for the purpose of assessing the forward-looking opportunity cost of 3G spectrum.

2.9.64 []

¹O2 letter of 12 August 2008.

²[]

³T-Mobile letter of 15 August 2008.

⁴[]

⁵Ofcom Communications Market Report 2008, section 5.15.

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2.9.65 According to Ofcom’s MCT cost model, an efficient 2G/3G operator will be able to [redacted]. In order to permit comparison with data, the spectrum usage of a voice minute needs to be converted into a comparable data unit. Two different approaches to conversion have been suggested.

2.9.66 In its Reply, BT submitted that packet-switched data was more efficient than circuit-switched voice by a factor of three—the rate used by Ofcom in its network model¹—and that 1 minute of voice was equivalent to 183KB of data. BT used the network usage of an entire call rather than of just the termination leg. Using this approach, the 0.96ppm savings from terminating calls on 3G rather than 2G networks is equivalent to 1.8p per voice equivalent MB. This is the approach we adopted in our provisional determination.

2.9.67 In its response to our provisional determination, Ofcom suggested that the correct approach was to use a minute of termination voice traffic, which was equivalent to [redacted] KB, rather than a minute of an on-net call as suggested by BT, and that the ratio of packet-switched capacity utilization per MB to circuit-switched capacity utilization per MB was [redacted], which suggests that packet-switched capacity is more efficient than circuit-switched capacity by a factor of [redacted]. Using Ofcom’s approach, the 0.96ppm saving from terminating calls on 3G rather than 2G networks is equivalent to [redacted]p per voice-equivalent MB, which is higher than the saving calculated using BT’s approach.

2.9.68 Both approaches yield a figure which is much higher than [redacted].

2.9.69 [redacted]

[redacted]

]

2.9.70 [redacted]

[redacted]

]

2.9.71 We therefore consider that, on balance, though the matter is of limited relevance for the reasons given in paragraph 2.9.54 above, even if capacity becomes fully utilized in the medium term, 3G voice termination would still not be displacing higher-value data services.

¹Ofcom’s MCT Statement, paragraph A.5.95.

- 2.9.72 In its response to our provisional determination, Orange argued that the figure of 0.96ppm, which we used as an estimate of the cost saving resulting from terminating calls on 3G rather than 2G, was inappropriate. Orange pointed out that this figure was the difference between the figure of 3.7ppm, which included both network and spectrum costs for 2G, and 2.7ppm, which included the network cost of termination on 3G, but not the 3G spectrum cost. According to Orange, this showed that our assessment did not compare like with like.¹
- 2.9.73 While Orange correctly described our calculations, it was not our intention to compare the total cost of termination on 2G and 3G networks, but rather to calculate the appropriate allowance for 3G spectrum, this being the cost saving from terminating calls on 3G rather than 2G which consists of two elements; the network cost saving and the 2G spectrum fee.

Provisional conclusion on whether the 2G cap is appropriate in principle

- 2.9.74 In our provisional determination, for the reasons we gave, we considered that there would be no capacity constraint if traffic grew in line with Ofcom's medium-demand forecast for the duration of the explicitly modelled period. We also considered that even if demand growth was much higher than in Ofcom's medium-demand forecast, the termination of voice calls using 3G spectrum would not lead to displacement of more valuable data services in the medium term. Accordingly, we thought that the 2G cap gave, in principle, an upper bound on the forward-looking opportunity cost of 3G spectrum that it was appropriate to allow the recovery of through MCT charges.²

Other responses to our provisional conclusion on whether the 2G cap is appropriate in principle

- 2.9.75 Ofcom argued in its response to our provisional determination that we had collected confidential information from some MNOs which reflected the current position and current expectations of the value of voice and data services, rather than their expectations as of March 2007.³
- 2.9.76 Whilst this is correct, as stated in our provisional determination our analysis focused on assessing spectrum capacity against Ofcom's medium-demand traffic scenario which was used as the basis for setting charges. It was in response to the argument advanced by some of the Interveners that their current forecasts exceeded Ofcom's medium-demand forecast that we requested the information on the value of voice and data associated with these forecasts, in order to be able to assess the relevance of their point. In the event, we found that even if their forecasts were correct, this would not undermine the application of the 2G cap.
- 2.9.77 On a related point, Ofcom also argued that in March 2007 it did not consider that it was in a position to 'peer into the future' and definitively predict which of the emerging services would be successful and which would fail, or which popular and profitable new services would be invented.⁴

¹Orange response to provisional determination, paragraphs 8–14.

²In Ofcom's terminology, that the 'True 2G Cap' is correct in principle.

³Ofcom response to provisional determination, paragraph 4.54.

⁴ibid, paragraphs 4.40–4.54.

- 2.9.78 Whilst this may be true in relation to the question of predicted future revenues for voice and data services, we note that our assessment of capacity did not require us to predict which particular services would be successful and which would fail. It was based on the central forecast that Ofcom developed as part of its cost modelling.
- 2.9.79 Furthermore, we note that whilst Ofcom argues that it was not in a position to form a view about future traffic developments in 2006, it effectively placed considerable weight on the expectations of the MNOs about the prospects for growth of data and voice services which were made six years earlier.

Conclusion on whether the 2G cap is appropriate in principle

- 2.9.80 After due consideration of the responses to our provisional determination, we remain of the views expressed in paragraph 2.9.74 above, and accordingly, we think that the 2G cap gives, in principle, an upper bound on the forward-looking opportunity cost of 3G spectrum that it is appropriate to allow the recovery of through MCT charges.

Practical objections: AIP fees

- 2.9.81 Ofcom argued that, whatever the position in theory, the 2G cap could not be treated as definitive in practice because, among other reasons, it depended on the 2G spectrum costs in Ofcom's cost modelling accurately reflecting the opportunity cost of 2G spectrum.¹ Ofcom believed that this may not be the case for a number of reasons:
- (a) 2G spectrum prices are set pursuant to the Wireless Telegraphy Act 2006 to reflect a range of spectrum management objectives in a process known as Administered Incentive Pricing (AIP).²
 - (b) AIP fees are not market prices and the methodology for setting them is not perfect. There is considerable uncertainty involved in the process and Ofcom has chosen to set them conservatively.³
 - (c) 2G spectrum is held under licences that restrict its use to 2G GSM⁴ transmission, and the existing AIP fees are estimated on the basis of the impact on an MNO's costs of gaining or losing a carrier of 2G spectrum. They may not therefore reflect 2G spectrum's full opportunity cost because they do not take into account the potential impact of 'liberalization'⁵ which may make 2G spectrum more valuable. Ofcom gave the example of liberalized 900 MHz spectrum being used to reduce the number of sites required to provide 3G services thereby reducing network costs.⁶
 - (d) For technical reasons, the size of a 2G carrier is 2 x 200 KHz, and gaining or losing a carrier would represent a small change to an MNO's spectrum holdings

¹Ofcom's Price Control Defence, paragraph A2.5.5.

²At present, O2 and Vodafone pay annual AIP fees for 2G spectrum of £15.6 million each and Orange and T-Mobile pay £16.6 million each.

³Ofcom's Price Control Defence, paragraphs A2.5.13–A2.5.14.

⁴GSM is the European standard for 2G mobile telephony.

⁵Allowing the spectrum to be used for any service, including 3G services.

⁶Ofcom's Price Control Defence, paragraph A2.5.8; Ofcom considered that 900 MHz spectrum may be more valuable than 2100 MHz spectrum because of its advantages in terms of rural and in-building coverage (Ofcom hearing on BT appeal, transcript, p38).

—potentially less than 1 per cent. 3G spectrum, on the other hand, is available only in increments of 2 x 5 MHz, and gaining or losing a single carrier would represent a change in MNOs' holdings of 3G spectrum of up to 50 per cent. This creates comparison difficulties for two reasons:

- (i) First, given the large increments in which it is available, the value of 3G spectrum may be related to its impact on output as well as costs (whereas AIP fees are based purely on cost savings).
- (ii) Second, if there are economies of scale, the network cost saving resulting from a small change in spectrum holdings may be disproportionately small in comparison with the network cost savings from a large change in spectrum holding.¹

2.9.82 The Interveners made broadly the same points.^{2,3} H3G also argued that the current AIP fees may be too low even without taking liberalization into account. It said that in the last review of AIP fees, Ofcom's consultants calculated significantly higher marginal opportunity costs of 2G spectrum but that Ofcom did not raise the charge on the basis of discussions with 2G operators and uncertainty in the market.⁴ It argued that the real distortion with the current spectrum regime was not that 3G spectrum was valued too highly, but that 2G spectrum was priced too low.⁵

2.9.83 BT argued that Ofcom and the Interveners' arguments about 2G AIP fees were misplaced for the following reasons:

- (a) The present value of payments for 2G spectrum through 2020/21 is about £130 million per operator, but its 2G cap proposal implies a 3G spectrum value of £2.6 billion, or 20 times the 2G AIP fees. Even doubling the AIP fees would therefore have a very small—less than 0.1ppm—effect on the outcome.⁶
- (b) Ofcom decided in the last consultation on AIP pricing in 2004 that an appropriate level of AIP fees was the existing level, and in response to the consultation, each of the 2G/3G MNOs argued that the fees should be lower—T-Mobile, for instance, argued that future releases of spectrum and increased competition from services such as Wi-Fi would be expected to reduce the value of 2G spectrum, and Vodafone also argued that the future trend of AIP fees would be downwards.⁷
- (c) On liberalization, BT argued that, as Ofcom recognized, it would make 2G spectrum more valuable because it would allow 3G services to be provided at lower cost. The network cost savings that accrue to operators through using 3G technology over 900 MHz spectrum should lead to a net reduction in costs so that

¹Ofcom's Price Control Defence, paragraph A2.5.10.

²H3G Sol, paragraph 6.12; Vodafone Sol, paragraph 3.80; O2 Sol, paragraph 23.

³T-Mobile also argued that setting 3G MCT rates based on 2G AIP fees would risk operators not being able to recover their efficiently incurred costs (T-Mobile Sol, paragraph 38(b)). For the reasons given in Section 2 above, it is sending efficient price signals and not cost recovery that should be the focus here and in any event, for the reasons given below, we do not think that the 2G cap would deny MNOs the opportunity to recover an appropriate proportion of their efficiently incurred costs from MCT charges.

⁴H3G Outline Sol, paragraph 6.13.

⁵H3G hearing on the BT appeal, transcript, p39.

⁶BT Reply, paragraphs 246–248.

⁷ibid, paragraphs 251–256.

any savings would be over and above the network cost reductions that are estimated in Ofcom's model as 3G is used instead of 2G.¹

- (d) There were plans to release spectrum in the next few years and the increase in supply would be expected to result in a reduction of value.²
- (e) On the differences in size between increments of 2G and 3G spectrum:
 - (i) Under the 2G cap the price of MCT would be set at the level of 2G MCT so there should be no effect on demand. The fact that an increase in demand might come from data should be irrelevant, and because low-value data is increasing traffic levels it is hard to believe that this increase in demand will lead to an increase in the value of spectrum.³
 - (ii) BT accepted the point about economies of scale that may be derived from larger increments of 3G spectrum. However, the 2G cap is based on a comparison between 2G costs and 3G costs excluding spectrum.⁴

Our provisional assessment

- 2.9.84 In our provisional determination we stated that we did not think that the arguments of Ofcom and the Interveners on AIP fees undermined the application of the 2G cap in practice.
- 2.9.85 We noted that AIP fees were the prices that are actually paid by 2G operators for their use of 2G spectrum, and that whilst there may be some argument about whether they represented the true opportunity cost of the spectrum going forward, the 2G costs that Ofcom's model generated had not been challenged and those costs included the 2G AIP fees. The effect, we said, was that the 2G cap would set the upper bound for 3G MCT at the cost at which a substitute (2G MCT) could actually be provided.
- 2.9.86 Furthermore, we gave a number of reasons as to why we were not convinced on the evidence that AIP fees are too low:
- (a) They are set on a forward-looking basis, based on a trade-off between acquiring (or losing) 2G spectrum and building more infrastructure.
 - (b) The fact that there is subjectivity involved in the setting of AIP fees does not in our view make their use in this context inappropriate. They are already used in Ofcom's cost modelling, and introduce no more uncertainty than any other methodology for determining the appropriate 3G spectrum cost allowance.
 - (c) Our understanding is that the use of 2G spectrum for voice services is not preventing any higher-value services from being offered, and so, absent the restriction on its use, it is not clear to us that the opportunity cost of 2G spectrum would increase much over and above current 2G AIP fees which focus on cost savings in delivering voice services.

¹ibid, paragraph 265; BT hearing on its appeal, transcript, p69.

²ibid, paragraphs 267–269; BT hearing on its appeal, transcript, p69.

³ibid, paragraphs 262 & 263.

⁴BT reply, paragraph 261.

(d) As acknowledged by Ofcom,¹ liberalization may lead to cost savings as 900 MHz spectrum is used to provide 3G services, but, as argued by BT (see paragraph 2.9.83(c) above), this effect should not lead to an overall increase in 3G MCT unit costs.

(e) There are potential supply-side developments which may act to depress the value of 2G spectrum going forwards. We note that Ofcom plans to release significant spectrum for use in telecommunications in the next few years. Ofcom told us that it would be difficult to quantify the effect of these developments (liberalization and spectrum releases), but that it believed that the supply effect may dominate, leading to an overall fall in the value of spectrum.² Whilst we are cautious, in the light of the arguments about harmonization and product development made by T-Mobile, of placing too much weight on future increases in the supply of spectrum, at the very least it is clear that there are a number of potential developments in the future that could affect the value of the spectrum that is currently subject to restrictions so as only to be used to provide 2G services and it is not clear that the net effect would be to increase rather than decrease its value. These uncertainties also exist under Ofcom's current methodology just as they would under the 2G cap.

2.9.87 We also noted Ofcom's argument that because its charge controls for 2G/3G operators are based on the costs of an 1800-MHz-only MNO, they are consistent with an increase in the value of 900 MHz spectrum above the current AIP fee level.³ The 2G cap is based on the costs of an 1800-MHz-only operator, so in our view the same logic applied.

2.9.88 Furthermore, we stated that there was force in BT's argument that, given that the spectrum allowance under the 2G cap was 20 times current AIP fee levels, the uncertainty surrounding the precise opportunity cost of 2G spectrum needed to be assessed against the far greater uncertainty surrounding the precise value of 3G spectrum.⁴

2.9.89 We acknowledged that if an AIP-type exercise were to be carried out on 3G spectrum, its relatively large carrier size would present a problem. However, we said that the 2G cap did not require this, and that we were not convinced, especially given the propagation advantages that 900 MHz spectrum has over 2100 MHz spectrum, that the greater economies of scale involved would lead to a valuation more than 20 times that of 2G spectrum.

Responses to our provisional assessment: conservative setting of AIP fees

2.9.90 In response to our provisional determination, Ofcom reiterated the point that as 2G AIP fees were set conservatively it could not properly be assumed that they fully and accurately reflected the opportunity cost of 1800 MHz spectrum for the purposes of determining the level of the True 2G Cap. Ofcom considered, whilst the AIP fees were fit for the purpose for which they had been used, it was quite likely that they understated the true opportunity cost of 1800 MHz spectrum.⁵

¹And T-Mobile (T-Mobile transcript of BT hearing, p66).

²Ofcom hearing on BT appeal, transcript, p32; we note that T-Mobile expressed similar views about the impact of an increase in supply on the value of 2G spectrum in response to the consultation on AIP fees in 2004.

³Ofcom Reply, paragraphs 1.17–1.20.

⁴We referred to the evidence and analysis in subsection 2.5 above.

⁵Ofcom response to provisional determination, paragraphs 4.25–4.29.

- 2.9.91 T-Mobile, similarly, submitted that the AIP fees were designed for a specific purpose, namely to provide some additional encouragement for operators to relinquish any additional spectrum that they hold beyond what they need, and that for this reason they were set conservatively by Ofcom. T-Mobile argued that determining a forward-looking opportunity cost of spectrum, as part of determining an appropriate allowance for termination revenues, was a wholly different exercise and that there was no reason to apply the conservative approach used in relation to AIPs.¹
- 2.9.92 According to T-Mobile, if Ofcom's external advisers' central estimate of the marginal value of 2G spectrum (rather than the bottom end of the range) was used to calculate the 2G cap price, the price would increase significantly with the 2G network costs increasing from 3.7ppm to 4.0ppm.²
- 2.9.93 This is an important point which we investigated carefully. By way of background, we note that Ofcom undertook a consultation on AIP fees in 2004 in order to establish whether the fees needed adjusting.³ As part of the 2004 consultation exercise, Ofcom drew on a report that had been commissioned by the Radiocommunications Agency in 2003 by a consortium led by Indepen. The aims of the report included making recommendations about the AIP methodology used and providing comments more widely on the use of pricing. Indepen reported in 2004, recommending, among other things, the use of a widened opportunity cost methodology that valued spectrum on the basis of alternative uses in addition to its existing use.⁴
- 2.9.94 Ofcom agreed with that recommendation, and proposed to set AIP fees in relation to both the value of spectrum in existing uses and in other potential uses for each band, thus giving incentives for the spectrum to move to the most valuable uses. However, Ofcom also stated that it intended initially to set AIP fees towards the bottom of the range defined by the value of spectrum in existing uses and alternative uses, in line with its policy to set AIP fees conservatively so as not to create disincentives for trading.⁵
- 2.9.95 Indepen produced an estimate of the marginal value of 2G spectrum of £1.68 million per 2 x 1 MHz. This figure was 136 per cent higher than the prevailing AIP fees for 900 MHz licensees and 203 per cent higher than the fees for 1800 MHz licensees.⁶ However, Ofcom noted that it had been in discussions with the 2G MNOs regarding the study's recommendations, and that it had undertaken a more refined analysis of the calculations using the model developed by Indepen. It noted that the model was still sensitive to underlying assumptions—that relatively small changes in inputs could produce AIP levels both significantly below and above the current levels, but that the refined analysis gave a better representation of the actual situation in the MNOs' networks and that the range of AIP levels produced was significantly below Indepen's recommended value.⁷
- 2.9.96 Ofcom proposed no change in 2G AIP fees on the basis that its more refined analysis suggested that an appropriate level may in fact be similar to the current fees, and that it was a particularly uncertain time in the mobile market.⁸

¹T-Mobile response to provisional determination, paragraphs 25–27.

²ibid, paragraph 27.

³*Spectrum Pricing: A consultation on proposals for setting Wireless Telegraphy Act licence fees*, Ofcom, 29 September 2004.

⁴ibid, paragraphs 1.29–1.211.

⁵ibid, paragraphs 1.3.3–1.3.6.

⁶ibid, paragraph 4.2.4.

⁷ibid, paragraphs 4.2.5–4.2.6.

⁸ibid, paragraphs 4.2.7–4.2.9.

- 2.9.97 All the 2G MNOs (as well as many others) responded to Ofcom's consultation. O2 stated that it supported the overall approach outlined by Indepen and accepted by Ofcom, and that it agreed with Ofcom that the refined model Ofcom had developed gave a better representation of the actual situation in its network than the Indepen model. It went on to note that with the O2 network parameters applied to the refined model, the resulting AIP fee level was lower than the current level of fees. It accepted, however, that the refined model was still sensitive to a number of input assumptions, and therefore supported the proposal not to change the AIP fee levels.¹
- 2.9.98 Orange, similarly, endorsed the proposal to keep the fees at the current level, but stated that it did not necessarily support the rationale put forward by Ofcom. One reason given for this view was that the current fee level was somewhat higher than the results from the model based on Orange's particular network derived as a result of the more refined analysis that took place after Indepen produced its report.²
- 2.9.99 T-Mobile submitted that it was critically important that AIP was applied conservatively so that valuable spectrum was not left idle through being over-priced. It noted Ofcom's acknowledgement of this risk in principle, and its statement that it intended to set AIP fees towards the bottom of the range. However, it went on to say that Ofcom appeared to have ignored this principle, as the proposed level of 2G spectrum was in the upper end of the range calculated in the modelling work carried out by the MNOs and Ofcom. T-Mobile stated that the refined work suggested a reasonable estimate of the opportunity cost of 2G spectrum below the existing fee level.³
- 2.9.100 T-Mobile also submitted that Ofcom's reliance on uncertainty in the mobile market to maintain the fees at the current level was flawed, because consideration of developments in the market showed that they would further lower the opportunity cost of spectrum below the existing fee level. It cited the launch of 3G networks (and the great expansion in overall capacity this would bring) and the release of new spectrum as factors that could be expected to push down the value of spectrum.
- 2.9.101 T-Mobile concluded that, far from being a conservative approach, Ofcom's proposed pricing for 2G spectrum was an overestimate and ran the risk of distorting spectrum usage as well as investment decisions.
- 2.9.102 Vodafone also responded by opposing the continuation of the existing level of fees. It believed that there was sufficient objective evidence to show that the current fees were excessive, and that an appropriate estimate of the current marginal opportunity cost of mobile spectrum was between £50,000 and £75,000 per channel (compared with the current average of £121,000 per channel) and that the future trend of AIP fees set on this basis was downwards. Vodafone stated that not amending the fees would result in MNOs potentially paying £75 million more for their mobile spectrum than was warranted over the next three years.⁴
- 2.9.103 Vodafone, like T-Mobile, also took issue with Ofcom's statement that the range of results produced by its refined analysis was both above and below the current AIP level. It said that whilst this was factually correct, the vast bulk of the range of

¹O2 (UK) Limited and Airwave mmO2 Limited joint response to Ofcom's consultation on spectrum pricing, 3 December 2004.

²Orange response to Ofcom consultation on spectrum pricing, September 2004.

³T-Mobile response to Ofcom's consultation on spectrum pricing, 30 November 2004.

⁴Vodafone response to Ofcom consultation on spectrum pricing, 14 December 2004.

results was significantly below the current AIP level, that very few permutations produced a result above the current level, and that those permutations were not realistic. Vodafone submitted a probability analysis showing the distribution of possible outcomes was not a normal distribution around the mid-point of £110,000, but a highly skewed one with a median value well below £100,000 and the most likely value being in the range of £50,000 to £75,000 per channel. The analysis also showed, according to Vodafone, that there were very few solutions that provided AIP fees greater than the current levels. Vodafone suggested that it was inconsistent with the principle of erring on the lower side of the estimate to continue with the current fee levels where the vast majority of modelled possible AIP values were below current levels.

- 2.9.104 Vodafone also addressed the question of uncertainty in the market, arguing that the impact on AIP levels of all the factors cited by Ofcom—the potential growth of 3G services, future spectrum releases and potential new competition based on alternative technologies—would be generally downward.
- 2.9.105 In its 2005 decision on AIP fees,¹ Ofcom noted that it had received comments that maintaining the current level of AIP fees could distort competition as they were too low. Ofcom agreed that if a particular spectrum fee was significantly below AIP value, this could distort competition, but that in cases where it had not changed the fees, this was because there was no robust evidence that they should be adjusted up or down. Given that, and the uncertainty over the future liberalization of 2G spectrum, Ofcom took the view that it was better to maintain the current levels than to set new ones.²
- 2.9.106 Ofcom also acknowledged the arguments that the current AIP fees were too high. It recognized that the methodology for setting AIP fees was not perfect, and that it was necessary to exercise a degree of judgement based on the range of values produced by the modelling and other relevant considerations. Ofcom stated that it continued to believe that current fee levels were appropriate. It said that any reductions in fees would appear to undervalue the spectrum, even with current restrictions on use, and that there was no evidence that the current level of fees was likely to give rise to inefficient under-utilization of the spectrum. It also said that it would not be appropriate to increase the fees, for example, on the grounds that other players had paid higher prices in the past for spectrum that was now being used to provide a competing service.³
- 2.9.107 Consequently, whilst we acknowledge Ofcom's point that it takes a conservative policy towards setting AIP fees, it is not clear that this means that the fees actually set understate the opportunity cost of (unliberalized) 2G spectrum. It is possible that they do, but in our view it is also possible that they overstate the value of the spectrum (especially given the future developments cited by T-Mobile and Vodafone that in their view would lead to a reduction in the value of 2G spectrum) and this uncertainty does not make them inappropriate to use in the calculation of the 2G cap in practice. As stated above in paragraph 2.9.86(b), they are already used in Ofcom's cost modelling, and introduce no more uncertainty than any other methodology for determining the appropriate 3G spectrum cost allowance.
- 2.9.108 As to T-Mobile's specific point on the calculation of the 2G cap, in the light of Ofcom's subsequent work and the comments from the MNOs we do not think that

¹*Spectrum Pricing: A statement on proposals for setting Wireless Telegraphy Act licence fees*, Ofcom, 23 February 2005.

²*ibid*, paragraphs 3.1 & 3.2.

³*ibid*, paragraphs 3.13–3.22.

the Indepen estimate is a more appropriate proxy for the opportunity cost of 2G spectrum than the current 2G AIP fees.

- 2.9.109 We therefore do not accept the arguments that the conservative policy towards setting AIP fees makes them inappropriate to use in the calculation of the 2G cap in practice.

Responses to our provisional assessment: 2G liberalization

- 2.9.110 In response to our provisional determination, Ofcom also reiterated the point that current AIP fees were estimated on the basis of the non-liberalized value of 2G spectrum, and that the post-liberalization opportunity cost could be greater as the spectrum would be made available for alternative uses.¹ It argued that, post-liberalization, the value of 1800 MHz spectrum would increase as some marginal voice services would be displaced by some higher-value data services, and that our conclusion depended on the assumption that the marginal value of voice services was always greater than the marginal value of data services, which it did not consider to be the only reasonable assumption which could have been made in March 2007.²
- 2.9.111 To clarify, our conclusions do not depend on the marginal value of voice services always being greater than the marginal value of data services. Rather, our assessment of capacity on 3G networks given the existing spectrum allocations suggested that voice would not displace data if traffic grows in line with Ofcom's medium-demand forecast. Thus, we do not see why liberalization, which would allow spectrum bands currently restricted to 2G services to be used to provide 3G services, thereby increasing the available capacity, would itself lead to voice services displacing data services, whether on 1800 MHz spectrum or otherwise.
- 2.9.112 Furthermore, we also took other developments into account as part of our overall conclusions on the potential future value of 2G spectrum. Ofcom made the point that in the long run the value of 1800 MHz spectrum may be expected to increase or decrease.³ We agree with that, and it seems to us that a decrease in value is just as likely as an increase overall. In particular, as set out in paragraph 2.9.86(e) above, expected increases in the supply of spectrum available to provide mobile voice and data services might, in our view, be expected to reduce the value of spectrum going forwards. As such, we do not think that the possibility of the value of 1800 MHz spectrum increasing upon liberalization makes it inappropriate to use the current AIP fees in the calculation of the 2G cap in practice.

Responses to our provisional assessment: transition costs

- 2.9.113 In our provisional determination we considered that while allowing the MNOs to employ 3G technology on 2G spectrum might lead to an increase in the value of 2G spectrum, this would not necessarily lead to an increase in the overall cost of termination because there would be a corresponding decrease in network costs from employing a more efficient technology (see paragraph 2.9.86(d) above).
- 2.9.114 Ofcom accepted that there was merit in this reasoning, but argued that we had not taken into account transition costs which the MNOs would incur in switching to 3G

¹Ofcom response to provisional determination, paragraphs 4.30 & 4.31.

²ibid, paragraphs 4.34–4.54.

³ibid, paragraph 4.63.

technology on 2G spectrum.¹ We understand Ofcom's point to be that the cost savings from employing the more efficient technology might be reduced by any transition costs. According to Ofcom, this point could be taken into account by making an allowance for the costs of transition, although it had not formed a definitive view on whether such an allowance would be appropriate in practice.²

2.9.115 The relevance of this point is not entirely clear to us since the two variables—the value of 2G spectrum in excess of 2G AIP fees and the level of transition costs—are related, as explained in paragraph 2.9.113 above. If 2G AIP fees underestimate the value of 2G spectrum because of the network savings the spectrum offers relative to 3G spectrum, and if these savings are depleted to some extent by transition costs, we would expect that depletion also to have an impact on the value of the 2G spectrum itself.

Responses to our provisional assessment: 2G costs in the model

2.9.116 Ofcom argued that the comments we made in our provisional determination on the AIP fees being the prices that were actually paid by the 2G/3G operators for their use of spectrum (see paragraph 2.9.85 above) demonstrated a flaw in reasoning because it was providing efficient price signals for consumption that was the main objective in relation to 3G spectrum for the purposes of setting regulated MCT charges, and in so far as AIP fees did not reflect the opportunity cost of 2G spectrum, using them to infer 3G MCT costs would be likely to result in inefficient price signals being sent.³ A similar point was made by T-Mobile.⁴

2.9.117 We accept that the fact that the 2G AIP costs in the model had not been challenged does not mean we can uncritically assume that they represent the opportunity cost of 2G spectrum. We also accept that the fact that 2G AIP fees are the amounts actually paid by the 2G/3G MNOs does not lead to the conclusion that they reflect the opportunity cost of the spectrum.

2.9.118 However, we do not accept that (at least in the short term) the value of 3G spectrum is unrelated to the cost at which 2G spectrum can actually be obtained. In our view, the opportunity cost of 3G spectrum will in fact be affected by the prices and terms that apply to 2G spectrum. Furthermore, in a hypothetical competitive termination market, the cost at which 2G MCT can be delivered would be relevant to the 3G MCT prices that could be sustained. We also note that the 2G costs in the model, being based on the costs of an 1800-MHz-only operator, are consistent with an increase in the value of 900 MHz spectrum over the current AIP level (see paragraph 2.9.87 above).

2.9.119 In any event, given the views we have come to in paragraphs 2.9.109 and 2.9.112 above, it is not necessary for our conclusions to rely on the fact that the AIP fees are the prices that are actually paid by the 2G/3G operators or on the fact that they have not been challenged.

¹ibid, paragraphs 4.65–4.72.

²ibid, paragraph 4.72.

³Ofcom response to provisional determination, paragraphs 4.20–4.22.

⁴T-Mobile response to provisional determination, paragraphs 28 & 29.

Responses to our provisional assessment: AIP fees compared to implied 3G spectrum value

- 2.9.120 As set out above, in our provisional determination we stated that we saw force in BT's argument that, given that the spectrum allowance under the 2G cap was 20 times current AIP fee levels, the uncertainty surrounding the precise opportunity cost of 2G spectrum needed to be assessed against the far greater uncertainty surrounding the precise value of 3G spectrum.
- 2.9.121 In its response, Ofcom stated that it did not consider BT's '20 times' figure to be appropriate for this calculation. Ofcom said that under the medium-demand forecast, the implied contribution of 2G spectrum to the 2010/11 2G unit cost is 0.16ppm, and that in Scenario 7, the implied contribution of 3G spectrum costs to the 2010/11 3G unit cost (for an 1800-MHz-only 2G/3G operator) is 0.96ppm. Therefore Ofcom considered the appropriate figure to be 5 to 6 times, not 20.¹
- 2.9.122 We accept Ofcom's submissions on this point. BT's comparison relates to the total (implied) value of 3G spectrum and the total level of AIP fees, whereas Ofcom's calculation relates to the contributions that the spectrum makes, in both cases, to the MCT charge in 2010/11. We think the latter is the more appropriate comparison to make for our purposes.
- 2.9.123 T-Mobile also criticized this part of our provisional determination in its response. It argued that if there were problems with using current AIP fees to estimate 3G licence costs, the appropriate response (if a 2G cap is to be applied at all) is not to disregard those problems as being less significant than other potential errors that might arise were a different approach adopted, but to find a means of addressing them.²
- 2.9.124 We agree with T-Mobile that problems should not be disregarded simply because they are less significant than those that may arise under alternative methodologies. We did not intend to convey that impression. Rather, the point we were making was concerned with the choice between alternative methodologies—we were attempting to convey that in our view the uncertainties associated with the 2G cap approach, focusing on the MCT service, were likely to be smaller than those associated with deriving a precise valuation of 3G spectrum and allocating it across different services.
- 2.9.125 In any event, as stated above, we do not think that the use of the current 2G AIP levels to derive the level of the 2G cap is inappropriate.

Conclusion on AIP fees

- 2.9.126 For all those reasons, we do not think the fact that 2G spectrum fees are set at the current AIP levels has the effect of making the 2G cap inappropriate to apply in practice.

Practical objections: 2G-only world

- 2.9.127 Vodafone, O2 and T-Mobile raised a further objection to implementing the 2G cap. They argued, broadly, that in a world without 3G spectrum, 2G unit costs would be

¹Ofcom's response to provisional determination, paragraphs A2.14–A2.16.

²T-Mobile's response to provisional determination, paragraph 30.

higher than those that come out of Ofcom's modelling because the 2G networks would exhibit diseconomies of scale as a result of having to carry all future voice traffic. At a certain point, basic voice services would no longer be possible, or would deteriorate, in such a world.¹

2.9.128 BT argued that its case does not rely on a comparison with a 2G-only world. It submitted that the relevant issue is not whether the 3G spectrum should be used, but how it should be priced, though it also pointed out that several cities in the world operate GSM networks with a voice call density far in excess of anything developed in the UK.^{2,3} Ofcom also appeared to consider that the '2G-only world' line of argumentation did not undermine BT's approach.⁴

Assessment

2.9.129 In our provisional determination we said that we were not persuaded that consideration of a 2G-only world was necessary or relevant given that the appropriate objective was sending efficient price signals. Further, we said that it was not clear to us that it would be necessary to consider such a world even if cost recovery were the predominant objective. This was because even in 2000 the emergence of 3G was a reality. If the 2G/3G MNOs had chosen not to bid for 3G licences, some of the other nine bidders would have obtained them. But that would not have led to a 2G-only world; rather, it would have led to a world where 3G capacity existed but was not in the hands of the incumbents. Given that both 2G and 3G networks are available, we considered that setting charges under the 2G-only counterfactual world would not be efficient: the price would be set too high in relation to the available capacity.

2.9.130 We therefore did not consider that the possibility that 2G unit costs may be higher in a 2G-only world was relevant to the question of whether the 2G cap should be applied in practice.

2.9.131 In its response to our provisional determination, T-Mobile argued that the argument about a 2G-only world was not one that depended on cost recovery being the appropriate objective. It reiterated that the point was that if, without the new technology, the cost of using the original technology would have increased, the relevant point of comparison for assessing the effect on efficient costs of the new technology would not be the cost of the old technology, taking into account the cost of the new technology, but the cost that would have been incurred but for the new technology.⁵

2.9.132 T-Mobile further argued that it missed the point to say that 3G licences would have been won by others, because it being in the hands of the same operators that had 2G networks allowed them to reduce the costs of delivering services over 2G spectrum. T-Mobile argued that the critical point was that 3G spectrum reduces the cost of providing termination over existing 2G spectrum (ie it increases the efficiency of the use of existing spectrum).⁶

2.9.133 Our conclusion on the relevance or otherwise of a 2G-only counterfactual world was not dependent on which of cost recovery or sending efficient price signals was con-

¹Vodafone's Sol, paragraphs 3.74–3.79; O2 Sol, paragraphs 24–25; T-Mobile Sol, paragraph 38(c).

²Witness statement of Dr Geoff Haigh for BT, paragraph 41.

³BT Reply, paragraphs 275 & 276.

⁴Ofcom's MCT Statement, paragraph A14.76.

⁵T-Mobile's response to provisional determination, paragraph 31(1).

⁶ibid, paragraphs 31(2)–31(5).

sidered to be the appropriate objective. It was, rather, based on the actual counterfactual to the incumbents winning licences that was a realistic possibility—the entry of more new 3G-only MNO competitors. Such entry would still have resulted in extra capacity being made available for mobile services, so a world in which all traffic had to be carried on 2G networks simply would not have arisen.

- 2.9.134 It is possible to speculate about what may or may not have happened if no 3G spectrum had been released. Perhaps further developments in 2G technology would have taken place, or perhaps more spectrum for 2G services would have been released sooner. All sorts of possibilities can be envisaged.¹ We do not think it is sensible to pick one version of the counterfactual and set prices on that basis, as the prices set would not be grounded in reality and would therefore be unlikely to send efficient price signals.

Practical objections: benefits to fixed users

- 2.9.135 T-Mobile and Orange argued that fixed users benefited from calling a mobile user over a 3G network rather than a 2G network because of better sound quality and the ability of the fixed caller to remain speaking whilst the called party receives or accesses other services.²
- 2.9.136 We are not persuaded by these arguments. No evidence was provided that callers to mobiles valued and were prepared to pay for the greater sound quality that 3G calls allow, nor was any evidence submitted that callers even knew whether their calls were being terminated on a 2G or 3G network. As to the ability to access data services, it is not clear how often that situation will arise, but more importantly it seems to us more appropriate to classify the ability to access data services whilst on a call as a benefit to the 3G mobile customer rather than the caller.

Practical objections: technical constraints

- 2.9.137 A number of Interveners raised a further argument, set out in technical terms particularly by Orange, that once a customer has purchased a 3G handset, that handset will automatically ‘camp’ on the 3G network whenever the signal is strong enough so as to enable the customer to access 3G services. If the handset were to camp on the 2G network, the customer would not be able to access those services. There may also be technical difficulties and quality implications if attempts were made to transfer calls already in progress from 2G to 3G networks.³
- 2.9.138 Vodafone argued that as a result of these technical issues the provision of 2G voice call termination was no longer an option, and that there was therefore no reason to

¹We note that in Ofcom’s response to our provisional determination, it pointed out that its Scenario 7 3G spectrum valuation, and therefore the ‘BT 2G Cap’, was based on a medium migration scenario (Ofcom used three scenarios modelling the speed at which consumers were migrated from 2G networks to 3G networks—slow, medium and fast). Ofcom presented figures for the underlying 2G MCT network and spectrum ppm rates for 2010/11 under each of those migration scenarios and its medium-demand forecast—they were 3.6ppm, 3.7ppm and 3.8ppm respectively (all in 2006/07 prices) (Ofcom response to provisional determination, paragraphs A2.6–A2.8 and Figure 5). It therefore appears that the slower the migration—and the higher the lifetime traffic going across the 2G networks—the lower the 2010/11 2G unit costs. This result is consistent with Ofcom’s overall depreciation methodology. We recognize, as argued by the MNOs, that diseconomies of scale that may emerge in a 2G-only world are not accounted for in Ofcom’s model, but in our view these results imply that if a 2G-only counterfactual were to be considered, we would expect the impact of the higher lifetime 2G network traffic on unit costs to counteract, to some extent, the impact of any diseconomies of scale. However, for the reasons we have given, we do not think that consideration of a 2G-only counterfactual world is relevant so it is not necessary to pursue these possibilities.

²Witness statement of Shaun Lancaster for Orange; T-Mobile Full Sol, paragraph 38.2.

³Witness statement of Shaun Lancaster for Orange.

regard the efficient price of 2G voice call termination as setting the ceiling on what an MNO should charge for 3G voice call termination.¹

2.9.139 BT argued that this was not a justification for not applying its methodology, as it was hard to see why callers to mobiles should pay more for the same service merely because a customer has obtained a 3G handset to take advantage of other value-added services.²

Assessment

2.9.140 We recognize that in an unregulated environment the prices of MCT could vary between 2G and 3G networks. Indeed as each of the MNOs have SMP in the market for MCT on its own network, these prices could vary between operators within each of these networks.

2.9.141 However, we also think that there is force in BT's point. In a hypothetical competitive market the desire of a mobile phone user to access a more efficient technology in order to benefit from data services would not, in the absence of a capacity constraint, generally result in callers to mobiles paying more for the same service.

2.9.142 These are regulated markets and it is necessary to set a price control for them. We consider it entirely appropriate that the same prices are applied to the same services, whether utilizing spectrum designated for 2G or 3G technologies, unless there is a relevant justification for these prices to differ. We do not see a persuasive reason for the price of voice call termination on 3G networks to be greater than that on 2G networks in this case.

2.9.143 Accordingly we do not think that the point raised by the Interveners undermines the 2G cap approach.

Provisional conclusion on the 2G cap

2.9.144 In subsection 2.5 above, we determined that the 2000 auction fees were a problematic proxy for the forward-looking opportunity cost of 3G spectrum.

2.9.145 In subsection 2.6 above, we concluded that an erroneous application of holding costs had inflated Ofcom's charge control benchmarks considerably. We noted that correcting for this error alone resulted in the 2G cap no longer generating the lowest 3G spectrum valuation scenario.

2.9.146 In subsection 2.7 above, we examined Ofcom's scenario-based analysis. We concluded that it was wrong to combine valuations deriving from the 2000 auction fees with the medium-demand forecast (the forecast that was given most weight in Ofcom's qualitative judgement as to what the charge control levels should be). We also concluded that Ofcom's allocation of 3G spectrum values derived from the 2000 auction fees between voice and data led to too large a proportion of 3G spectrum costs being allocated to voice in the medium-demand forecast. We noted that combining 3G spectrum values that derived from the 2000 auction with Ofcom's high-demand forecast led to ppm benchmarks that were below those generated by the 2G cap/medium-demand forecast combination.

¹Vodafone Sol, paragraphs 3.83–3.85.

²BT Reply, paragraph 290.

- 2.9.147 For the reasons given above in this subsection, we think that the conditions under which the difference between the cost of 3G termination (excluding spectrum costs) and 2G termination would provide an upper bound on the forward-looking opportunity cost of 3G spectrum to be included within the MCT charge controls apply. We also find that the practical objections raised to the 2G cap are not well founded.
- 2.9.148 We note that the 2G cap methodology does not require any reliance to be placed on historic spectrum values which are likely to have changed over time, any choice to be made as to how to adjust a historic value to factor in expectations at the time it was generated and changes that have occurred since then, or any choice to be made about how a total value for 3G spectrum should be allocated between voice and data. It generates an upper bound for the 3G spectrum allowance within the MCT charge controls that can be derived from a coherent methodology.
- 2.9.149 We recognize that relying on 2G costs is unlikely to be a long-term regulatory possibility. However, we are concerned primarily with sending efficient price signals for this price control period. We note that there are developments at both the national and European levels which may create much wider uncertainty than that created by the question of how a 3G spectrum value would be set in future price control reviews.¹
- 2.9.150 In the light of the above, we conclude that Ofcom erred in not applying the 2G cap.²

Relevance of the 2G cap for a 3G-only MNO

- 2.9.151 H3G argued that the 2G cap could not apply to it because it does not have access to a 2G network.³
- 2.9.152 In our provisional determination we said that we did not accept that point for three broad reasons:
- (a) First, the flaws we have identified in Ofcom's methodology apply to its valuation of 3G spectrum for all operators including the 3G-only MNO. For the reasons we have given, we think the value has been considerably overstated and that too much of it has been allocated to voice.
 - (b) Second, the 2G cap methodology is a workable one which allows an upper bound on the 3G spectrum allowance to be derived from the advantages offered by 3G in carrying voice traffic. By contrast, we are not confident that Ofcom's methodology could be made workable, given the information available on the (total) value of 3G spectrum.

¹See, for example, at the national level, *Ofcom's Mobile citizens, mobile consumers: adapting regulation for a mobile, wireless world* consultation document of 28 August 2008 and, at the European level, the *Draft Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU* of June 2008.

²In its response to our provisional determination, H3G cited our conclusions on the 2G cap as an example of what it characterized as us going beyond our proper role and substituting our views for those of Ofcom. It submitted that we had adopted an approach wholly different to any considered by Ofcom in proposing to apply the 2G cap, and that this could not be the correct approach to take in the absence of a full and unrestricted fact-finding exercise (H3G response to provisional determinations, paragraph 3.8). We do not consider that H3G's characterization is accurate. Whether the 2G cap should have been applied was one of the central issues in BT's appeal. Furthermore, H3G's assertion that the 2G cap approach was not considered by Ofcom is not correct. As set out above, it was not only considered but also incorporated into Ofcom's scenario-based approach for both 2G/3G and 3G-only operators.

³H3G's Sol, paragraphs 5.9(e), 5.11.

- (c) Third, in a competitive market we would not expect different prices for the same service to result from one competitor not having access to an older (and more inefficient) technology.

2.9.153 We therefore rejected the argument that the 2G cap cannot be applied to a 3G-only operator because it does not have access to a 2G network. However, we noted that the application of the 2G cap methodology to the 3G-only operator would not necessarily lead to the same ppm rate as for the 2G/3G MNOs. The broader question of whether any greater asymmetry is justified was at that point an open one to be dealt with in H3G's own appeal.

2.9.154 In its response to our provisional determination, H3G argued that we had failed to give adequate reasons for our conclusions. It also argued that:¹

- (a) Whether or not Ofcom had overstated the value of spectrum was a question of fact and degree, not principle, and as such could have no bearing on the principle of whether the 2G cap was appropriate either in general or with respect to the 3G-only MNO.

(b) The workability or otherwise of Ofcom's approach was likewise irrelevant.

- (c) The premise that for the 3G-only operator, 2G technology would have been a less efficient technology than 3G technology for the delivery of voice termination was wrong. In particular, H3G argued that since neither technology could operate without spectrum, the relevant comparison was between 3G technology including spectrum costs and 2G technology including spectrum costs. According to H3G, from that perspective, 2G technology would have been the more efficient one for the delivery of voice termination by the 3G-only MNO because of the favourable terms under which 2G spectrum was and still is made available.

2.9.155 As to H3G's first two points, our conclusions on holding costs and on Ofcom's use of scenarios imply that the spectrum cost component in the charge controls levels that have been set has been considerably overstated. That applies to all the MNOs. We accept that this does not lead to the conclusion that the 2G cap is appropriate in principle, whether for any or all of the MNOs, but in our view it is relevant to the question of whether the 2G cap is a reasonable regulatory solution in practice. As set out above, an amended scenario analysis suggests that the level of the charge controls implied by the 2G cap and by the application of Ofcom's methodology (as amended) would not be very different (or different at all).

2.9.156 As to H3G's third point:

- (a) It appears to us that H3G's efficiency comparison is based on historic auction fees paid for 3G spectrum rather than on its forward-looking value which, in our view, is the relevant concept. H3G's argument could be interpreted as a cost recovery point. If so, all the MNOs incurred costs in the 2000 auction (indeed H3G paid approximately £1.6 billion less for a large licence than Vodafone). Treating the forward-looking value of 3G spectrum in the same way for all operators is therefore an approach that we think is appropriate.

¹H3G response to provisional determinations issued in the H3G appeal and in relation to the BT appeal, paragraphs 12.11–12.16.

- (b) For the reasons we have given, it is not clear to us that 2G spectrum was and still is made available on favourable terms (see paragraphs 2.9.90 to 2.9.109 above).
- (c) We remain of the view that the benchmark of a competitive market is a useful construct when thinking about the value of 3G spectrum to a 3G-only MNO (or indeed any MNO):
- (i) One can consider a situation where consumers commonly had multiple handsets connected to different networks, and that callers knew the price of termination on each and so could make an informed choice about which network to terminate on. A potential entrant, when deciding how much to pay for 3G spectrum in respect of its (future) termination business, would know that it would not be rational to pay more than the difference between the physical network cost of termination on 3G and the cost of termination on 2G, because if it did so it would only be able to match the prices of competitors with 2G networks by making a loss.
 - (ii) Alternatively, one can consider the situation in the origination market. A 3G-only potential entrant would similarly not find it rational to pay more than the above-mentioned cost difference for the same reason.
 - (iii) Both these examples apply equally to a 3G-only potential entrant as they would to a potential entrant into the 3G business that already has a 2G network.
 - (iv) These examples are of course simplified, and do not factor in the value that would be attached to 3G spectrum because of the opportunities it gives to provide advanced data services. Nonetheless they serve to illustrate the basic principle that underpins the 2G cap.

2.9.157 We therefore remain of the view that the 2G cap can be applied to a 3G-only operator.

2.9.158 It was noted above that the application of the 2G cap methodology to the 3G-only operator does not necessarily lead to the same ppm rate as for the 2G/3G MNOs. We have received a number of submissions on this point. BT and some of the Interveners have argued that the principle underpinning the 2G cap implies that no modelled cost differences should impact upon the 3G-only MNOs' MCT rate, because higher prices due to higher costs would not be sustainable in a competitive market. This issue is dealt with in Section 16 on Reference question 8.

Use of the medium-demand forecast

2.9.159 BT's 2G cap proposal is based on Ofcom's medium-demand forecast, and Ofcom argued that it did not take into account the uncertainty surrounding traffic forecasts.¹ We have therefore considered whether any adjustment would need to be made to the 2G cap-based MCT rates to reflect that uncertainty.

2.9.160 In our view, the medium-demand forecast can be treated as a base case. Ofcom considered it the most likely to be realized and gave it the most weight when it came to selecting the charge controls from its set of benchmarks. It also told us that

¹Ofcom's Price Control Defence, paragraph 3.9.7.

the low- and high-demand forecasts were designed to test the envelope of possible outcomes.¹

- 2.9.161 In considering whether the uncertainty surrounding future traffic growth justifies an adjustment, we do not think that unlikely possibilities should be given disproportionate weight. Nonetheless, we have considered whether the medium-demand forecast is likely to be an overstatement or an understatement of future demand growth.
- 2.9.162 We note that, under Ofcom's modelling, the high-demand forecast benchmarks produce the lowest ppm cost benchmarks even if high spectrum values are used because of the volume of traffic over which costs are recovered. Accordingly, the possibility that the medium-demand forecast understates likely traffic growth would mean that the 2G cap network allowance would be too high, not too low.
- 2.9.163 Conversely, the low-demand forecast produces the highest cost benchmarks. However, we note that Ofcom's medium-demand forecast was itself constructed so as to give rise to 'conservative' benchmarks (in relation to data traffic growth, Ofcom stated that it assumed a forecast towards the lower end of the range obtained from mobile operators, brokers' reports as well as third-party market research).²
- 2.9.164 We also note Ofcom's position that there will be opportunities in future price control reviews to make any adjustments deemed necessary because of the actual traffic out-turn differing from Ofcom's forecasts.³
- 2.9.165 We do not therefore see any reason for an adjustment to be made to reflect the possibility that the medium-demand scenario may be overstated.⁴

Asymmetry of risk

- 2.9.166 Ofcom justified its choice of charge controls (and its departure from the mid-point of the range that its benchmarks generated) in part on the basis that there was an asymmetry of risk, meaning that the consequences of setting charge controls that were too low would be worse than those of setting charge controls that were too high. In its MCT Statement, Ofcom cited potential effects on investment incentives as the source of this asymmetry.⁵ During the course of the appeal it told us that it was primarily concerned with the possibility that the development of new 3G services could be adversely affected if their prices were pushed up as a result of under-recovery of costs through MCT.⁶
- 2.9.167 Ofcom's concern informed its decision to choose charge control levels from the range that its benchmarks had generated. As we have accepted the 2G cap, the question of asymmetric risk does not arise in quite the same way.

¹Ofcom hearing on BT appeal, transcript, p81; although it emphasized in its response to our provisional determination that it considered them not to be extreme upper or lower bounds of the range of possible outcomes, but rather 'pessimistic' and 'very optimistic' views (Ofcom response to provisional determination, paragraph A2.11).

²Ofcom's MCT Statement, paragraph 9.160.

³ibid, paragraph A5.226, footnote 162.

⁴We also note that Ofcom's cross-check showed that its charge control levels were consistent with a medium-demand forecast/£3.34 billion 3G spectrum costs combination (Ofcom's MCT Statement, paragraph A13.64). On one interpretation, it might be reasonable to think that applying the 3G spectrum allowance that is implied by the 2G cap whilst holding everything else in Ofcom's judgement constant (including Ofcom's views on traffic uncertainty) would lead to charge control levels that were consistent with a medium-demand forecast/2G cap spectrum costs combination—ie the 2G cap itself.

⁵Ofcom's MCT Statement, paragraphs 9.167 & 9.168.

⁶Ofcom hearing on BT appeal, transcript, p75.

2.9.168 We have, however, considered whether any potential asymmetry of risk would justify an adjustment to be made to the 2G cap-derived charge controls. We have concluded that such an adjustment should not be made for the following reasons:

- (a) Given the outcomes under the different traffic forecasts, it is not clear to us that setting charges on the basis of the medium-demand forecast would deter the MNOs, or any other potential investors, from investing in the UK mobile telecommunications industry. If the out-turn was in line with the low-demand forecast, which assumes no growth at all in subscriber voice usage and that data services remain a niche product, the MNOs would just fall short of recovering their network costs and would not recover any sums towards their licence fees through MCT rates in 2010/11.¹ However, the shortfall in recovering network costs could be corrected at future price control reviews if deemed necessary. On the other hand, a network cost allowance of 3.7ppm is consistent with a high return on investment under the high-demand forecast. In particular, it implies a 3G spectrum valuation of £16 billion (in 2000/01 prices)²—ie four times the original investment.
- (b) Even if there was some asymmetry of risk, it is not clear to us that this would merit departure from the 2G cap. As set out above in paragraph 2.9.163, the medium-demand forecast gives rise to conservative benchmarks.³
- (c) We also think that, in assessing whether any asymmetries of risk justify an adjustment to be made to the charge control levels, consideration also needs to be given to the position of all relevant market participants including the FNOs. Setting a higher MCT charge in order to guard against a potential outcome which is considered undesirable puts the burden of that protection on the FNOs and their customers. We think this consideration is of particular relevance where the potential undesirable outcome relates to the development of new data services which, if successful, would be likely to lead to significant accruals of value to the MNOs.

2.9.169 Taking those considerations into account, we do not think that an adjustment to be made to reflect the possibility that there is an asymmetry of risk, meaning that the consequences of setting charge controls that were too low would be worse than those of setting charge controls that were too high, is justified.

2.10. O2's 'franchise fee' methodology

O2's argument

2.10.1 In its Intervention in BT's appeal, O2 put forward an alternative methodology for the treatment of 3G spectrum costs that it called the 'franchise fee' methodology. It argued that the payments for the 3G licences could be seen as payments for two separate assets: a licence to provide advanced data services, and a 'franchise fee' to continue to provide 2G-like services.⁴

2.10.2 O2 submitted an expert report from PwC, in which it was argued that the key driver of the valuation of 3G licences at the time of the auction was the need to protect 2G

¹In the first three years of this price control period, it is likely that the MNOs would still recover more than their network costs under a 2G cap-derived charge control even if the out-turn was in line with the low-demand forecast because of the glide paths.

²No holding costs have been applied in this calculation.

³Ofcom's MCT Statement, paragraph 9.160.

⁴O2's Sol, paragraphs 30–32.

revenues. Accordingly the value of a licence to an existing 2G/3G player was associated less with the ‘incremental’ value of 3G-enabled services and more with the ‘decremental’ value of failing to secure a 3G licence reflecting the strategic risk of customers migrating to a rival which could offer 3G services.¹


- 2.10.3 PwC stated that in its experience the value attached by incumbent MNOs to advanced data services at the time of the auction was no more than £1–£1.5 billion, with the difference between this and the amount paid for the licences being due to the franchise fee.²
- 2.10.4 O2 considered it to be implausible that the MNOs would have been prepared to bid so much for the ability to provide new data services alone. It stated that the risk that investments in 2G would be left ‘stranded’ was a real cost of not obtaining a 3G licence that related to 2G services. As a result, O2 submitted that in order to protect their investments the incumbents had to exceed the bids of the new entrants, and at the same time the value of the licences to new entrant bidders, on the other hand, would have been driven by the value to them of entry into a vibrant mobile market established by the past investments of the 2G MNOs.³
- 2.10.5 PwC provided board papers from BT at the time of the auction which []⁴ and told us that BT signed off on a bid ceiling significantly above the approximately £4 billion that it actually paid. PwC also cited the example of Telia, a Swedish fixed and mobile incumbent, whose share price fell 12 per cent after it failed to be awarded a 3G licence even though the licence would have come with stringent coverage obligations.⁵
- 2.10.6 PwC argued that the ‘franchise fee’ approach to 3G spectrum could be applied by taking the £4 billion auction fees and allocating £1 billion to advanced data services on the one hand and £3 billion to all 2G-like services (whether on 2G or 3G networks) on the other. It said that the results produced blended charge control benchmarks that were similar to those produced by Ofcom and that under its methodology 3G MCT rates were lower than 2G MCT rates under all scenarios, an outcome which it said was intuitively consistent with the technological improvements and greater spectral efficiency of 3G.⁶ The results of its initial analysis are shown in Tables 2.13 and 2.14.

TABLE 2.13 MCT rates under PwC methodology in 2010/11 (assuming a £3 billion franchise fee and £1 billion advanced data fee), ppm

Scenario	Blended	2G	3G
2G3G, Low	6.29	6.50	6.10
2G3G, Medium	4.82	5.60	4.39
2G3G, High	3.38	4.57	2.96

Source: PwC expert report for O2.

¹PwC’s expert report for O2, paragraphs 31–34.

²ibid, paragraph 38.

³O2’s response to provisional determination, paragraphs 5–14.

⁴BT plc Group Investment Committee paper of 22 October 1999; Morgan Stanley Dean Witter presentation to BT plc’s Board of October 1999.

⁵PwC’s expert report for O2, paragraphs 32–46.

⁶ibid, paragraphs 47–51.

TABLE 2.14 MCT rates under Ofcom methodology in 2010/11, £4 billion licence cost, ppm

Scenario	Blended	2G	3G
2G3G, Low	6.58	3.97	9.00
2G3G, Medium	4.84	3.71	5.46
2G3G, High	2.75	3.23	2.58

Source: PwC expert report for O2.

BT's arguments

2.10.7 BT argued that the franchise fee approach was misconceived for a number of reasons:

- (a) First, it argued that it was at odds with reality because in the competitive call origination market the launch of 3G services has had no impact on prices, where customers have never been asked to pay more to make a 3G rather than a 2G call and where the introduction of 3G has not stopped the continued reduction in mobile prices.¹
- (b) Second, it argued that it was a matter of speculation as to the precise implications of the release of 3G spectrum for a 2G-only business. The auction, according to BT, was not a partial expropriation of existing 2G businesses.² In any market the availability of a new input will create risks and businesses that do not make use of it will be affected. New inputs do not, however, imply the immediate demise of a new business.³
- (c) Third, it argued that it was the availability of 3G spectrum in the market that may have affected future 2G prospects, not the fact that it was sold in a particular way at particular prices. The MNOs had choices as to whether they wanted to bid for 3G licences or not, and should not be allowed to avoid the consequences of their choices.⁴
- (d) Fourth, even if the theory were to be taken at face value, BT argued that it was a large step from the franchise fee analogy to the proposition that the amounts bid in the auction should be included as a relevant cost in the regulatory charge determination.⁵
- (e) BT also contested the supporting facts and opinions put forward by O2 and PwC, stating that:
 - (i) BT Cellnet expected the majority of revenues to be derived from the 3G licence to come from data services—58 per cent of revenues by 2006/07 and 77 per cent by 2010/11, those forecasts being in line with the expectations of the market as a whole. A central plank of the PwC argument was therefore said to be without foundation.⁶

¹BT Reply, paragraph 184.

²ibid, paragraph 185.

³Second expert report of Professor Yarrow, paragraphs 89 & 90.

⁴ibid, paragraphs 91 & 92.

⁵ibid, paragraphs 87 & 88.

⁶BT Reply, paragraphs 190–192.

- (ii) As to BT signing off on a bid ceiling above £4 billion, BT argued that the reason was the faith being put in the growth of mobile data services, and that the approval was proof that many were susceptible to overenthusiastic forecasting at the time.¹
- (iii) As to the case of Telia, BT argued that it provided no useful evidence because it related to a beauty contest at an exceptionally low price (€12,000) rather than an auction, and failure to get a licence for the price offered would have been seen as value-destroying in light of the anticipated growth in 3G services foreseen at the time.²

Assessment

- 2.10.8 In our provisional determination we stated that O2's franchise fee methodology appeared to us to be a cost-recovery-orientated methodology, as it was entirely dependent on the 2000 auction fees, but for the reasons given above in (what is now) subsection 2.3, it is the forward-looking value of 3G spectrum that should have been the focus.
- 2.10.9 O2 disputed this characterization in its response, stating that whilst PwC had used the 2000 licence fee values to illustrate the methodology, the value of both the 'advanced data services' licence and of the franchise fee element could evolve over time.³ We accept that the franchise fee methodology would be forward-looking in this sense.
- 2.10.10 However, we agree with BT that even if the auction fees were driven by fears of a future without a 3G licence, that would not necessarily mean that those fees should be recoverable through MCT charges. Indeed, Ofcom told us that O2's argument could be understood as a reason why the 2000 auction fees may have overstated the forward-looking opportunity cost of 3G spectrum.⁴
- 2.10.11 This is in our view a key point. The franchise fee methodology rests on the proposition that it would be appropriate to factor into regulated prices that proportion of an asset's price which reflected the value to an incumbent of securing a future in the market over and above the value of the asset to an entrant. We do not think that such a proposition would be correct in a context where the focus is on efficient pricing.⁵
- 2.10.12 In the case of 3G spectrum, it seems to us to be self-evident that the 2000 auction did not increase the cost of providing 2G services. If an incumbent had not won a licence, we do not see how its cost of providing 2G services would have increased (although we acknowledge that the value of its business may have been affected in other ways).⁶ The value of a business which uses one technology would inevitably be put at risk by the introduction of a new technology (although we agree with BT that this does not imply the immediate demise of the business). That would be the

¹ibid, paragraphs 195 & 196.

²ibid, paragraph 200.



³O2 response to provisional determination, paragraphs 15–18.

⁴Ofcom hearing on the BT appeal, transcript, pp47&48; see also MCT Statement, paragraph A14.55.

⁵Nor, in this case, is it clear that the 2000 auction fees incorporated such a franchise fee, as the price for a two-carrier licence was fixed once NTL (which would have been a new entrant) dropped out of the auction.

⁶We note that, as Ofcom pointed out in response to our provisional determination, arguments were put to the CC during its inquiry in 2002 that the price of 2G MCT should factor in the need to finance 3G (although it is not clear that the point was made that the cost of 2G services themselves had gone up). The CC concluded that the MNOs' wish to invest in 3G did not justify (2G) MCT charges that were in excess of a reasonable estimate of their cost (2003 CC report, paragraphs 2.417–2.422).

case whether the new technology was secured by the owner of that business (thus protecting the owner from the consequences of the potential demise of its business) or by someone else.

- 2.10.13 We also think the outcomes which the franchise fee methodology would generate would be undesirable from a policy perspective. If, when a new technology appeared, a regulator took account of the premium that a firm paid for the technology in order to protect its existing business, nothing more would be produced than if another firm acquired the technology but prices would be higher than they would otherwise have been. That does not strike us as being in the best interests of consumers, at least in contexts where cost recovery considerations are not paramount. Such an approach would also imply that incumbents would be at a regulatory advantage, as they would be aware that they could pay more (and be compensated) for certain assets than could potential new competitors.
- 2.10.14 Furthermore, leaving these theoretical objections to one side, as stated in our provisional determination we are not convinced that the franchise fee methodology has sufficient grounding in fact. The evidence provided to us about the expectations at the time of the auction¹ does not suggest that only a minority of the value to be derived from owning a 3G licence was expected to come from data services. As to the evidence relied upon by O2:
- (a) The BT plc Investment Committee paper does state that [], but that statement falls to be assessed in a context where there was an expectation of substantial growth in mobile data services (see paragraphs 2.5.27 to 0 above).
- (b) Likewise, the Morgan Stanley Dean Witter presentation cited by O2, [].

2.10.15 We also find it difficult to reconcile the franchise fee theory with the fact that the large licence that was not reserved for a new entrant was bid up to a much higher value than the smaller licences. If the value of the licences, over and above the £1–£1.5 billion advanced data services fee, related to the need to protect the incumbents' existing businesses, we do not see why an incumbent would have been willing to pay a much higher fee for the large licence.

2.10.16 For all these reasons we reject O2's franchise fee methodology.²

2.11. Conclusion

2.11.1 For the reasons given above, we have concluded that:

¹Set out fully in paragraphs 2.5.27–2.5.35 above.

²O2 also argued that the reasoning underpinning its franchise fee approach undermined BT's 2G cap proposal as it made the market for call termination an abnormal one where an auction had imposed a new cost on the provision of an existing service (PwC expert report for O2, paragraph 54). As we have rejected the franchise fee more generally, we also reject that argument.

(a) Ofcom's decision to consider providing appropriate price signals for efficient consumption as the main pricing objective in relation to 3G spectrum for the purposes of setting regulated MCT charges was correct.

(b) Ofcom erred in:

- (i) using the 2000 auction fees as a proxy for the forward-looking value of spectrum without investigating how expectations at the time of the auction compared with current ones;
- (ii) applying holding costs to historic 3G spectrum values for periods longer than could be justified, thereby distorting the range of benchmarks from which it chose the charge control levels; and
- (iii) combining spectrum values, demand scenarios and allocation methodologies incorrectly, with the result that the charge controls have been set at a level which is too high.¹

(c) Ofcom erred in not applying the 2G cap.

2.11.2 We have not found it necessary to decide whether Ofcom failed to take the utmost account of the European Commission's comments.

Determination

2.11.3 For the reasons given above, we have determined that Ofcom erred in its approach to the inclusion of spectrum costs.

¹For the avoidance of doubt, we do not conclude that the adoption of a scenario-based approach in itself was an error or that a scenario approach will inherently be defective.

3. Administration costs determination: Reference question 1(ii)

- 3.1. This section sets out the CC's conclusions as to whether the price controls imposed by Conditions MA3 and MA4 have been set at an inappropriate level because Ofcom erred in its approach to the inclusion of administration costs for the reasons set out in paragraphs 149 to 159 of the BT Amended Notice of Appeal.
- 3.2. For the reasons given below, our conclusion is that Ofcom did not err in respect of its treatment of administration costs for the reasons set out in paragraphs 149 to 159 of the BT Amended Notice of Appeal.

Ofcom's treatment of administration costs

- 3.3. The MCT charge controls set by Ofcom included an allowance for administration costs of 0.3ppm for O2, Orange, T-Mobile and Vodafone (the 2G/3G MNOs), and an allowance of 0.4ppm for H3G.¹
- 3.4. Administration costs were described by Ofcom as consisting of overheads for non-network depreciation (IT equipment, furniture and office equipment), property costs, human resources (HR), finance and legal costs and IT overheads. Although we adopt Ofcom's terminology, we note that the term 'administration costs' is potentially misleading as this discussion relates only to central overheads and does not include administration costs that are directly related to network and retail activities.²
- 3.5. Ofcom considered these to be common costs between all of an MNO's activities, and as a result considered that it was appropriate for them to be recovered over all areas of an MNO's business that they help to support.³
- 3.6. In assessing the level of administration costs, Ofcom adopted a 'top-down' approach, based on financial data that was provided by the MNOs in a standard Ofcom format.⁴
- 3.7. Administration costs for the 2G/3G MNOs for the years 2002 to 2005 are shown in Table 3.1.

TABLE 3.1 2G/3G MNOs' administration costs, 2002 to 2005

	<i>£ million</i>			
	<i>Administration costs</i>			
	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>
O2	[X]	[X]	[X]	[X]
Orange	[X]	[X]	[X]	[X]
T-Mobile	[X]	[X]	[X]	[X]
Vodafone	[X]	[X]	[X]	[X]
Average	270	278	302	285

Source: Ofcom data supplied to the CC.

¹H3G's higher allowance results from the lower share of lifetime traffic that it is assumed to have in Ofcom's modelling, as well as from consideration by Ofcom of a separate total administration cost figure reflective of its smaller size. BT has not appealed specifically against H3G's higher allowance.

²Administration costs that are directly related to network or retail activities are included in network costs and retail costs respectively.

³Ofcom's MCT Statement, paragraph A15.66.

⁴There are no regulatory accounts. The data was provided to Ofcom following a request for specified information under section 135 of the 2003 Act. It was not disclosed even in the confidential version of the MCT Statement.

- 3.8. Ofcom took the average of the 2G/3G MNOs' costs in 2005 to derive an administration cost of £285 million (in 2005 prices). A cost of capital allowance of £6 million was added to give a total administration cost allowance of £291 million (in 2005 prices).¹
- 3.9. Ofcom then estimated the share of total administration costs to allocate to network activities by calculating the share of total costs² accounted for by network activities. That resulted in 49 per cent of total administration costs—£148 million in 2006/07 prices—being allocated to network activities.³ Ofcom decided to hold the allowance for the absolute level of MNOs' administration costs allocated to network activities constant in real terms over the price control period.⁴ Part of that £148 million was then allocated to MCT in proportion to its share of network traffic costs.⁵
- 3.10. Finally, the pence per minute (ppm) mark-up for administration costs on termination in 2010/11 was estimated by dividing MCT's share of the £148 million by the number of minutes terminated in that year. Ofcom ran a number of scenarios, reflecting different demand forecasts, in order to inform its overall conclusion as to what ppm mark-up to apply. The results are shown in Table 3.2.

TABLE 3.2 Ppm mark-up on termination for administrative costs under different demand scenarios in 2010/11 (2006/07 prices)

Scenario	ppm		
	2G/3G operator (average costs excl H3G in 2005)	3G-only operator (average costs excl H3G in 2005)*	3G-only operator (H3G's costs in 2005)
High traffic	0.11	0.15	[X]
Medium traffic	0.29	0.46	[X]
Low traffic	0.46	0.80	[X]

Source: Ofcom MCT Statement Figure A15.6.

*The figures in this column are derived from dividing MCT's share of the total administration costs calculated by Ofcom using the average of the 2G/3G MNOs' costs by the forecast number of minutes terminated by the 3G-only operator in 2010/11; the column to the right divides MCT's share of the 3G-only operator's own costs in 2005 by the forecast number of minutes terminated by the 3G-only operator in 2010/11.

- 3.11. Based on those figures, Ofcom considered that a reasonable mark-up for administration costs on termination in 2010/11 was 0.3ppm for the 2G/3G MNOs and 0.4ppm for H3G.⁶

- 3.12. Ofcom stated that it had adopted a balanced and proportionate approach. For example, it stated that:

- (a) 'Given the relatively small magnitude of non-network costs compared to the overall costs of termination, Ofcom, like the Competition Commission [in 2003], has not developed a bottom-up approach to non-network costs and therefore the underlying key cost drivers of administration costs have not been explored in detail.'⁷

¹Ofcom's MCT Statement, Figure A15.5.

²Excluding a category called 'other costs', which is discussed below.

³Ofcom's MCT Statement, paragraph A15.106.

⁴ibid, paragraph A15.78.

⁵ibid, paragraph A15.107.

⁶Ofcom's MCT Statement, paragraph A15.109.

⁷ibid, paragraph A15.72.

- (b) 'Ofcom considers that it has adopted a reasonable balance between more detailed analysis of every activity an MNO undertakes and a more aggregated approach to allocating administration costs, proportionate to the nature of the task in this context.'¹

BT's grounds of appeal

3.13. BT objected to Ofcom's treatment of administration costs on the following grounds:

- (a) that Ofcom gave the MNOs an allowance for administration costs which is approximately ten times greater than the allowance given to BT, and wrongly treated the MNOs more favourably than BT;²
- (b) that Ofcom failed to base the MNOs' allowance on normal regulatory practice by not basing it on the costs of the most efficient MNO;³
- (c) that Ofcom failed to base the MNOs' allowance on normal regulatory practice by not building in an assumed rate of efficiency gains over time;⁴ and
- (d) that Ofcom assumed that MNOs' costs would remain the same over the entire period of the price control, notwithstanding available material that suggested that at least one MNO had embarked on cost reduction programmes to drive these costs down.⁵

3.14. BT also argued that Ofcom should have conducted an in-depth analysis based on cost drivers to determine the appropriate allocation of administration costs between network and non-network costs. In the absence of an in-depth analysis, BT submitted that Ofcom should have allocated administration costs in proportion to operating costs rather than total costs.⁶

3.15. A theme running through BT's submissions on this reference question was proportionality. BT argued in relation to a number of issues that Ofcom simply did not do enough work given the total sums involved. We consider that the issue of proportionality is best dealt with by considering it in relation to each specific ground of appeal.

Comparison with the allowance for BT's administration costs

BT's argument

3.16. BT pointed out that the administration cost mark-up on termination allowed by Ofcom for the MNOs (0.3ppm or approximately £40 million per mobile operator a year⁷) is approximately ten times greater than the mark-up allowed for BT Wholesale (0.029ppm or approximately £23 million a year), which terminates approximately the same amount of voice traffic as do the MNOs. BT argued that this difference indicates that the costs included in the MCT rates are not directly related to the administration costs actually incurred in the termination of calls but are being driven by other

¹ibid, paragraph A15.81, in the context of an argument put by Vodafone relating to incentive payments to a distributor or dealer.

²BT Amended Notice of Appeal, paragraphs 150.1 & 150.5.

³ibid, paragraph 150.2.

⁴ibid, paragraph 150.2.

⁵ibid, paragraph 150.3.

⁶BT Reply, paragraphs 306–310.

⁷Approximately £200 million in aggregate.

factors.¹ It argued that the discrepancy should have been used by Ofcom as a 'sanity check' to indicate that its allowance for the MNOs was too high.²

Ofcom's response

- 3.17. Ofcom accepted that the number of minutes terminated across all five MNOs and BT is similar. However, it argued that the comparison drawn by BT between the absolute levels of administration costs recovered from termination masked the impact of economies of scope and scale.³
- 3.18. As to economies of scope, Ofcom pointed out that BT recovers administration costs from a wider range of services than the MNOs—total administration costs across all the MNOs are estimated to be £1,496 million in 2010/11 (in 2006/07 prices), of which MCT attracts 14 per cent, whereas total administration costs for BT were £1,587 million in 2006 with termination attracting only 1.4 per cent of these costs.⁴
- 3.19. As to economies of scale, Ofcom pointed out that whilst the total volume of minutes terminated across all MNOs is comparable to that terminated by BT, each individual MNO has a significantly lower level of termination traffic than BT. Given this, Ofcom argued that it might be reasonable to expect the combined administration costs of the MNOs to be greater than BT's. Ofcom considered that since they were not, this did not suggest that the administration costs of the MNOs were overstated.⁵

Interveners' arguments

- 3.20. All the Interveners' responses broadly endorsed Ofcom's position. In addition:
- (a) H3G argued that a more meaningful comparison would be between BT's figure for the average administration costs allowed for each MNO (approximately £40 million) and the figure allowed for BT (£53 million).⁶ H3G also cited as a meaningful comparison the total level of administration costs before allocation for each MNO of £285 million and the total level before allocation for BT of £1,430 million.⁷
- (b) T-Mobile argued that there is no reason to expect the costs of managing the business of a fixed incumbent operator with an established network and customer base and mature core market to be similar to the costs of managing a mobile operator operating in a very different market.⁸
- (c) O2 argued that the £23 million figure quoted by BT included only general support, general management and finance and billing whereas the average administration cost calculated by Ofcom included non-network depreciation, property costs, HR costs, finance and legal costs and IT overheads, making the two not properly comparable.⁹

¹BT Amended Notice of Appeal, paragraphs 150.1, 151 & 152.

²BT Reply, paragraph 326.

³Ofcom's Price Control Defence, paragraphs 3.7.10 & 3.7.11.

⁴ibid, paragraph 3.7.12.

⁵ibid, paragraph 3.7.13.

⁶H3G's Sol, paragraph 6.6; BT argued that H3G's use of this figure is an error, which appears to be the case.

⁷ibid, paragraph 6.9.

⁸Dr Mike Walker and Paul Reynolds' expert report for T-Mobile, paragraph 131.

⁹PwC's expert report for O2, paragraph 142.

- (d) O2 put forward a number of different comparisons, pointing out that administration costs account for 15 per cent of the total costs of fixed termination but only 8 per cent of the total costs of mobile termination, and that BT's total administration costs allocated to the wholesale division in 2005/06 was £1,430 million compared with an average total administration cost of MNOs allocated to network activities of £144 million. O2 did not claim that these were necessarily appropriate comparisons; rather its point was that BT's comparison was inappropriate.¹
- (e) Orange argued that it cannot be assumed that MNOs benefit from economies of scope and scale because they are all part of larger international groups, as the UK businesses could not expect their administration costs to be subsidized by parent or sister companies.²

Assessment

- 3.21. We agree with Ofcom and the Interveners that the administration costs allocation for termination in the case of BT does not provide a useful comparator, or even a sanity check, that should have caused Ofcom to reassess its treatment of administration costs in the MCT Statement.
- 3.22. In response to Ofcom's argument that BT recovers administration costs from a wider range of services than the MNOs, BT accepted that it is a highly diverse operation but argued that a large part of its operations have no synergy whatsoever with the business of terminating fixed calls and economies of scope or of scale should be taken into account only to the extent that they are relevant to the respective levels of allowed administration costs.³
- 3.23. We do not accept BT's argument that Ofcom has overstated the importance of economies of scope because a large part of BT's operations have nothing to do with terminating fixed calls. That, in our view, does not address the point that administration costs are central overheads and that all the retail and network activities of BT's business which are supported by these central functions would be expected to make a contribution to the recovery of their costs. This includes those activities not related to call termination.
- 3.24. As to the total level of administration costs, we consider that comparisons between the MNOs and BT are also problematic. On the one hand, we might expect BT to have lower administration costs than the MNOs in aggregate as a result of economies of scale (by avoiding duplication of effort).⁴ On the other hand, the fact that BT engages in a greater range of activities might lead one to expect that its total administration costs would be higher.
- 3.25. We therefore do not consider that the fact that MNOs (in aggregate) are estimated to have a similar level of administration costs in absolute terms as BT, suggests anything about whether that total is reasonable or not. In order to make a meaningful comparison, an analysis of the differences in business structure, activity, and administration cost accounting practices between BT and the MNOs would be needed. Such an analysis would be difficult to carry out in practice and could only provide information of limited value given the different nature of the businesses. In

¹ibid, paragraphs 143 & 144.

²Orange Sol, paragraph 6.2(c).

³BT Reply, paragraph 325(a).

⁴If a cost driver approach were adopted, it would therefore be reasonable to expect that the quantum of administration costs allocated to termination would be lower for BT than for the MNOs.

our view, it would have been disproportionate for a detailed analysis comparing the MNOs (in aggregate or individually) with BT to have been carried out.

- 3.26. We therefore reject BT's argument that Ofcom erred in not revising its approach in the light of the difference between the administration cost allowance for the MNOs and the administration cost allowance for BT.

Total administration costs: average or most efficient

BT's argument

- 3.27. BT argued that normal regulatory practice is to use the most efficient operator's costs as the benchmark for setting prices.¹ BT pointed out that this is the approach that is taken in relation to FNOs.² It argued that if it (BT) did not constitute an appropriate comparator in this context, Ofcom should have taken steps to determine which MNO was in fact the most efficient.³

Ofcom's response

- 3.28. Ofcom argued that there were reasons not to be unduly concerned that MNOs' administration costs may be inefficiently high given vigorous competition between MNOs in the retail mobile market and the incentives that such competition provides for MNOs to be relatively cost efficient.⁴
- 3.29. Ofcom also cited difficulties in determining which MNO was in fact the most efficient, since, for example, the MNOs may have different business strategies, business organizations, and different commercial approaches to the management of overheads, and since there was no general definition of administration costs for financial reporting purposes.⁵ This made it difficult to determine whether differences between MNOs' administration cost levels reflected differences in efficiency.
- 3.30. Ofcom told us that it analysed sub-categories below the level of administration costs in the statutory accounts, taking considerable effort to get classifications which appeared consistent between MNOs, years and headings. In addition, Ofcom performed a number of checks including:⁶
- (a) reconciliation of costs to the statutory accounts;
 - (b) an initial high-level review of cost trends;
 - (c) a calculation of cost ratios such as cost per network minute;
 - (d) a review of the nature and size of cost items in the sub-categories to identify areas of possible concern;
 - (e) a reclassification of cost items; and

¹BT Amended Notice of Appeal, paragraphs 150.2 & 154.1.

²BT told us at the plenary hearing of 9 April 2008 that BT's administration allowance is used to set the allowance of all the other regulated FNOs (transcript, p57).

³BT Reply, paragraph 313.

⁴Ofcom's Price Control Defence, paragraph 3.7.20.

⁵Ofcom considered that with five different MNOs having parents from five different countries, significant variation in the reporting of administration costs was to be expected (Response to the CC's questions on administration costs, 15 August 2008).

⁶Ofcom Response to the CC's questions on administration costs (15 August 2008).

(f) a second high-level review of cost trends following the reclassification.

- 3.31. Ofcom also argued that taking the MNO with the lowest administration costs as the benchmark rather than an average across all MNOs would not have made a material difference, because administration costs only account for a relatively small proportion (6 per cent) of the final MCT charge in 2010/11, and, because of its scenario-based approach, a very large reduction in total administration costs would have been needed to lead to even a small change in the overall MCT rate.¹

Interveners' arguments

- 3.32. T-Mobile supported Ofcom's reasoning, arguing that since MNOs operated in a fiercely competitive market, they had strong incentives to avoid inefficient expenditure.² T-Mobile observed that no evidence had been provided to indicate that MNOs were inefficiently incurring administration costs.³ O2, similarly, argued that since only around 15 per cent of MNOs' administration costs are recovered through the MCT charge, 85 per cent would have to be recovered in competitive markets leaving an incentive to be efficient.⁴ The same point was made by H3G.⁵ O2 also argued that identifying the most efficient MNO would be a difficult exercise.⁶

Assessment

- 3.33. Regulators generally attempt to mimic competitive outcomes in sectors where companies do not face effective competition. Under competitive conditions companies compete on efficiency to gain an advantage over rivals. In this respect, regulators, by trying to mimic competition, will be looking to drive efficiency to competitive levels. A regulator might estimate the costs for an efficient operator using a 'bottom-up' approach as Ofcom did with network costs or using a 'top-down' approach taking operators' actual costs and correcting for any inefficiencies.
- 3.34. BT has not argued that Ofcom was wrong to base its benchmark for administration costs on those actually incurred by MNOs. Rather BT has said that Ofcom should have taken as the benchmark the MNO with the lowest administration costs rather than an average across all MNOs.
- 3.35. Ofcom has argued that it was satisfied that competition in the retail market was sufficient to ensure that administration costs for any MNO would not be inefficiently high and that taking an average was therefore a reasonable approximation to an efficient operator's administration costs. Ofcom also told us that the variation in administration costs between MNOs was likely to be a consequence of differences in the ways MNOs account for their costs and that this was further reason why taking an average was appropriate in this case.⁷
- 3.36. We agree with Ofcom that the fact that the bulk of MNOs' administration costs have to be recovered in the retail market will, even if this market is not as vigorously competitive as argued by Ofcom, provide a sufficient incentive for MNOs not to incur

¹Ofcom estimated that a £100 million change in administration costs for an individual MNO would only change the final level of termination rates by around 0.03ppm (Response to questions on administration costs, 15 August 2008).

²T-Mobile Sol, paragraph 45.

³Plenary hearing of 9 April 2008, transcript, p153.

⁴PwC expert report for O2, paragraph 150.

⁵H3G Sol on the BT appeal, paragraph 6.11.

⁶PwC expert report for O2, paragraph 148.

⁷Ofcom bilateral hearing on BT appeal, transcript, p93.

excessive administration costs.¹ We therefore consider that, on balance, the variation in administration costs between MNOs is likely to be largely due to differences in their businesses and accounting practices.

- 3.37. We note that Table 3.1 above shows that the highest administration cost figure for an MNO in 2005 was more than double that of the lowest. There appears to be no discernible relationship between those figures and market share. In addition, administration costs within MNOs have varied significantly year on year.² (During the course of the appeal we also compared the 2002 administration costs provided by Ofcom with the 2001 administration costs provided by the MNOs to the CC in 2002. Our findings on that particular comparison are set out in Appendix B.)
- 3.38. It would be possible to investigate the causes of these variations, but such an exercise would be likely to be costly and time consuming for Ofcom and the MNOs. Detailed and specific information for each business would be required. Moreover the results would be likely to be contested and several rounds of consultation would probably be necessary. Compared with other economic regulators (for example, those of the energy and water industries), Ofcom would also be in an unusual position in that MCT, for which it sets price controls, represents a relatively small part of the MNOs' total revenues. Ofcom would not, under these conditions, have the in-depth knowledge of the workings of the regulated businesses that one might find within other economic regulators.
- 3.39. Care is, however, required in adopting the approach Ofcom has taken, as MNOs will have an incentive to 'load' costs into administration.
- 3.40. Ofcom told us that in response to variations in administration costs, both between MNOs and over time, it spent considerable time probing the data that it had, excluded from administration costs various categories that it disagreed with, and attempted to tie the results of its analysis back to the MNOs' audited statutory accounts.³
- 3.41. Ofcom considered that carrying out any further work to try and better understand the differences would have been disproportionate given that it would probably have required looking at ledger codes and cost centres, testing samples of transactions from each cost centre and general ledger code, and would probably only have led to a relatively minor impact on the final charge control levels.⁴
- 3.42. To ensure a consistent allocation of costs, a number of economic regulators have developed systems of regulatory accounts. In this case, Ofcom would be starting from a position where there are no general definitions for what constitute administrative expenses and, as discussed above, the MNOs have different internal reporting structures and business models. Having agreed on rules, Ofcom would have to develop audit mechanisms for data provided. Again, such a process would be costly both to the regulator and to the businesses that are being regulated. Given that Ofcom sets price controls that apply only to a relatively small part of the MNO's activities, approaches that would be applied as part of normal regulatory practice, such as regulatory accounting and audit requirements, may be inappropriate.

¹We have been told by all parties that the retail market in which MNOs operate is competitive, although we have not assessed the competitiveness of the retail market as part of this appeal.

²However, we note that the average has remained fairly constant (between £270 million and £302 million).

³Ofcom bilateral hearing on BT appeal, transcript, p93.

⁴Response to questions on administration costs (15 August 2008).

- 3.43. We therefore agree with Ofcom that taking an average was a reasonable way of constructing a benchmark given the variation between the MNOs' administration costs figures. We do not think that Ofcom could have gone further than it did without imposing significant costs on the MNOs and making a significant commitment of resources on its own part. For Ofcom to have gone further would, in the circumstances, have been disproportionate.
- 3.44. We appreciate BT's point that significant sums of money are at stake.¹ Nonetheless, we do not think that requiring a regulatory burden significantly greater than that imposed by Ofcom would have been appropriate given that:
- (a) Ofcom carried out work to ensure that costs were not being inappropriately 'loaded' into administration;²
 - (b) the MNOs have sufficient incentives to be efficient, because the bulk of administration costs have to be recovered from the retail market;
 - (c) it was likely that much, or all, of the variation between MNOs was due to factors other than inefficiency; and
 - (d) the outcome of any further exercise may not have affected the final charge or, if it did, the effect could well have been small.
- 3.45. We therefore reject BT's argument that Ofcom erred in basing its total administration costs allowance on an average rather than on the most efficient MNO.

Total administration costs: future trends and efficiency gains

- 3.46. In this section we deal with two closely-related grounds of appeal that are in our view best dealt with together: whether Ofcom was wrong not to build in an assumed efficiency factor over time, and whether its assumption that administration costs would remain unchanged in real terms over the price control period constituted an error.

BT's argument

- 3.47. On building in an efficiency factor, BT submitted that regulators normally build in an efficiency factor to provide the regulated business with incentives to improve efficiency from which customers would also benefit.³
- 3.48. On the trend of total administration costs, BT argued that Ofcom's assumption that they will remain unchanged in real terms over the price control period was wrong given the available material that suggested that at least one MNO had embarked on cost reduction programmes. BT cited in particular some Vodafone presentations on cost reduction programmes and some press coverage of them, and argued that such programmes are what one would expect in a competitive market.⁴

¹And therefore that taking the most efficient MNO as the benchmark rather than the average *could* make a material difference to the final charge.

²Taking the administration costs of the 'most efficient' MNO would not, in any event, alter the incentive to 'load' costs into administration. That incentive would require a response whether Ofcom took the 'most efficient' MNO or an average as the appropriate benchmark.

³BT Amended Notice of Appeal, paragraph 154.

⁴*ibid*, paragraphs 155 & 156.

- 3.49. BT also argued that Ofcom's approach, and in particular its apparent acceptance of an argument advanced by T-Mobile that certain cost categories (property and HR) may be increasing, lacks transparency and adequate reasoning.^{1,2}

Ofcom's response

- 3.50. On efficiency gains, Ofcom stated that its approach assumed that administration costs on a ppm basis would decline over time as the volume of minutes terminated increased, thereby allowing for efficiency gains.³
- 3.51. On the trend of total administration costs, Ofcom maintained that its assumption of constant aggregate costs reflected a balance of evidence it received, some of which suggested that costs would increase, and some of which suggested that they would decrease.⁴ At its bilateral hearing, Ofcom told us that it also relied on the trends it observed in the four years' worth of data that it actually had, which showed a mild nominal growth but remained fairly flat in real terms.⁵ As to the Vodafone cost-saving programmes, Ofcom stated that even if it had been in a position to take them into account, their impact would have been very small and would not have changed Ofcom's ultimate choice of a 0.3ppm mark-up.⁶

Intervenors' arguments

- 3.52. On efficiency gains, T-Mobile argued that operators already had incentives to be efficient because of the competitive retail market in which they operated. As a result there was no justification for applying some progressive efficiency factor which proceeds on the implicit assumption that the regulated firms are not efficient and do not have sufficient incentives to become more efficient on their own.⁷ A similar point was made by H3G.⁸
- 3.53. Vodafone argued, as did Ofcom, that an efficiency reduction per unit of traffic (which it calculated to be 26 per cent) had already been factored in because of increasing traffic volumes.⁹
- 3.54. On the trend of total administration costs, Vodafone made a number of points in relation to its cost reduction programmes.¹⁰ It told us that they were not UK specific, and were not focused solely on administration costs. It also told us that Vodafone measures the success of a cost efficiency initiative against its counterfactual (ie compared with what would have happened without it), rather than against the absolute level of costs. A successful initiative does not therefore necessarily mean that costs have been reduced, but rather that costs have not increased as fast as they would otherwise have done.¹¹ In addition, Vodafone argued that Ofcom's administration cost allowance was based on an average and not on Vodafone's own costs, and that

¹ibid, paragraphs 157–159.

²We consider BT's complaint that Ofcom assumed that average administration costs had increased by 2.7 per cent between 2005 and 2006 (BT Reply, paragraph 316) to be based on a misunderstanding, as the change was not an increase but an adjustment to express the 2005 figure in 2006/07 terms. As such, we do not consider this complaint further.

³Ofcom's Price Control Defence, paragraph 3.7.16.

⁴ibid, paragraph 3.7.18.

⁵Ofcom bilateral hearing on the BT appeal, transcript, p97.

⁶Ofcom's Price Control Defence, paragraph 3.7.23.

⁷T-Mobile Sol, paragraph 45.

⁸H3G Sol, paragraph 6.11.

⁹Vodafone Sol, paragraph 3.111.

¹⁰Letter of 9 July 2008.

¹¹It drew our attention to its annual report for the year ended 31 March 2008, which states that 'operating expenses were flat on an organic basis, as a result of successful control of costs'.

it was not obvious how Vodafone's initiatives could be taken to affect the costs of an average efficient operator.

- 3.55. Vodafone also argued that Ofcom had not in fact assumed that total administration costs would remain constant over the price control period, but rather that 'network-related' administration costs would remain constant. Vodafone submitted that it was reasonable to assume that network-related costs will rise over time due to rising traffic levels, and that retail-related costs will fall.¹
- 3.56. T-Mobile argued that the fact that Vodafone was engaging in good management practice and reviewing its costs only provided useful evidence that it is reasonable to calibrate cost models using actual data, as it demonstrated that the MNOs were operating in a competitive market with every incentive to maintain an efficient cost base.² More broadly, T-Mobile submitted that general UK economic factors showed that certain costs, such as labour costs, were increasing. These increases would have the effect, according to T-Mobile, of nullifying its initiatives to reduce specific cost items.³
- 3.57. O2 argued that regulators do not take account of efficiency improvements which are novel or speculative in order to preserve the incentive to make such improvements. If novel or speculative cost savings are taken into account which are difficult by their nature to accurately quantify, there is a risk that they will be overstated, decreasing firms' incentives to attempt efficiency improvements in the future. Any such efficiency improvements would in any event be factored into the next price control. O2 gave as an example the fact that Ofcom did not take into account potential future efficiency improvements for BT in relation to its Next Generation Network investments, taking into account instead BT's historic increases in efficiency, because the level of savings from these investments was too unclear.⁴

Assessment

- 3.58. We consider that the fact that the bulk of these administration costs have to be recovered in the retail market will provide sufficient incentive for MNOs not to incur excessive administration costs.
- 3.59. We do not agree with BT's argument that if Ofcom did not build into the price control the potential for improvements in efficiency, MNOs would have no incentive to cut administration costs. At whatever level a price cap is set, the MNOs would have the same profit incentive to cut costs.
- 3.60. However, LRIC-based price regulation aims to mimic the outcome of competitive markets in setting price controls at a level sufficient for a hypothetical efficient firm to earn a normal rate of return. We would therefore expect such price controls to build in expectations of the potential for an efficient operator to become more efficient, for example by taking advantage of technological developments.
- 3.61. Ofcom's position is that it is difficult to know the extent to which efficiency savings will result in overall costs going down given other indications that costs may be going up. Its judgment as to the total level of administration costs remaining constant in real terms does not therefore imply that efficiency improvements will not be made, but

¹Vodafone Sol, paragraphs 3.113–3.116.

²Letter of 15 August 2008.

³Dr Mike Walker and Paul Reynolds' expert report for T-Mobile, paragraph 133.

⁴PwC expert report for O2, paragraphs 151 & 152, Appendix III.

rather that they might be offset by unavoidable cost increases.¹ We therefore need to assess whether that judgment was erroneous.

3.62. It is inherently difficult both to obtain robust data from which future cost trends can be forecast and to carry out such forecasting. In that context, and given the limited importance of this issue within the overall task that Ofcom faced, whilst we have some concerns about Ofcom's interpretation of the data that it relied upon² we are not persuaded that Ofcom's overall judgment was wrong. We think BT's criticism of the way Ofcom expressed itself in this regard, particularly as regards the arguments advanced by T-Mobile, has some validity. It would have been better, in our view, if Ofcom had stated in its MCT Statement, as it did in its bilateral hearing, that it relied on the trend it observed in the MNOs' cost data in reaching its conclusion. However, we do not think this undermines the correctness of the overall result.

3.63. In respect of the evidence submitted by BT, it is not clear that any great, or special, weight should be placed on Vodafone's announcements of planned efficiency improvements or the press reports relating to them:

(a) Vodafone's interim results for the six months ended 30 September 2006 presentation did not relate solely to administration costs nor even to the UK.

(b) The press coverage relating to its plans to consolidate data centres also did not relate solely to the UK (though it would be reasonable to expect some UK cost savings as a result of such programmes). Another press article relating to cost-cutting drives generally³ was dated 29 February 2008, almost one year after Ofcom's MCT Statement.

(c) Its analyst and investor day presentation of 30 March 2007 post-dated Ofcom's MCT Statement, and even if Ofcom could have taken it into account, relatively little detail is given on UK-specific cost reduction programmes.

(d) Vodafone's half-yearly results presentation of 13 November 2007 (over six months after Ofcom's MCT Statement) relates to Europe as a whole and not the UK. It states that Vodafone's cost-savings programmes are on track, but it is apparent that the savings are being measured against internal targets, not absolute cost levels, and it is also apparent that data centre consolidation had not been completed in the UK.⁴

(e) Vodafone's assertions that the success of an efficiency initiative is measured against what would otherwise have occurred rather than the absolute level of costs appears to be borne out in its annual report for the year ended 31 March 2008.⁵

3.64. We therefore think that little insight as to the likely future trend of administration costs can be gained from the materials that BT cites. Even if many of the materials had not post-dated Ofcom's MCT Statement, we do not think they would have undermined

¹Ofcom's Price Control Defence, paragraph 3.7.18. We also note that Ofcom and Vodafone are correct in stating that the level of administration costs per unit of traffic will fall over the price control period. It is not possible to determine the extent to which this is natural exploitation of economies of scale and the extent to which this reflects scale adjusted efficiency improvements.

²See paragraphs 3.66 & 3.67 below.

³'Vodafone's big cost cutting drive', Exhibit RJR-24 to Robert Jeffrey Richardson's second witness statement for BT.

⁴Slide 13 of Vodafone's half-yearly results presentation of 13 November 2007, submitted by BT (exhibit 25 to Robert Jeffrey Richardson's second witness statement); half-yearly results showed that cost cuttings had delivered cost savings in Europe of £340 million.

⁵Vodafone letter of 9 July 2008.

Ofcom's overall judgment given that it already thought it likely that MNOs would attempt to make efficiency improvements.

- 3.65. In coming to its final view, Ofcom was entitled to take account of the other arguments and evidence that it had before it. Given the limited impact building in an absolute efficiency gain into the total administration costs allowance could have had on the overall level of the charge controls, we think that Ofcom was entitled to rely on the points made by T-Mobile even though it did not independently substantiate them.¹ Future cost trends are not readily 'substantiated' and Ofcom was in our view entitled to form its own judgment on the basis of the arguments that had been put to it. In any event, property costs are modelled as having an upward trend in Ofcom's network cost model. The model and its inputs were subject to extensive consultation and we see no reason why that trend should not have been reflected in Ofcom's consideration of administration costs.
- 3.66. We also think it was correct for Ofcom to take into account the administration cost trends that were evident from the data it had been given. The historic average administration costs for the period 2002 to 2005 are shown in Table 3.3. The 2G/3G average figures were those used by Ofcom in making its assessment of past trends and include special pension contributions made by Vodafone. The 'adjusted' figures show what these figures would have been had these contributions not been included.

TABLE 3.3 Average administration costs across MNOs (excluding H3G)

	<i>£ million</i>			
	<i>Average cost (excluding H3G)</i>			
	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>
2G/3G average	270	278	302	285
	(294 in 2005 prices*)			
Adjusted†	270	278	277	278
	(294 in 2005 prices*)			

Source: MNO data supplied to the CC by Ofcom. Adjustment based on company accounts and CC analysis.

*Adjusted for retail price inflation using RPI index for all items published by the National Office of Statistics.

†Adjusted to exclude Vodafone's special pension contributions relating to its triennial valuation paid of £30 million (in March 2006) and £100 million (in March 2005) as per Vodafone Limited statutory accounts for the year ended 31 March 2007, note 21.

- 3.67. Though we think it was correct of Ofcom to take account of administration costs trends over time, Ofcom told us that average administration costs had remained fairly flat in real terms over the period 2002 to 2005, but the figures above suggest that average administration costs actually fell in real terms over that period by 3 per cent (an average of 1 per cent a year) if Vodafone's special pension contributions are included, or 5 per cent (an average of 1.8 per cent a year) if these contributions are excluded. We think that Ofcom should have recognized this limited but nonetheless real reduction in administration costs and that this should have been factored into its overall judgment. In practice, however, we consider that doing so would have had no material impact on the price control for 2010/11.

¹Though, as stated above, we think it would have been preferable to have made clear that the arguments made by T-Mobile were not the only points that Ofcom was relying upon.

Conclusion on future trends and efficiency gains

- 3.68. For the reasons given above, we consider that MNOs will have incentives to reduce their administration costs. We therefore think that efficiency savings could reasonably be expected over time. We also think that it was reasonable for Ofcom make an assessment of how total administration costs might be expected to change over the period of the price control using information provided to it and in light of the trend of administration costs over the preceding years.
- 3.69. However, we think that Ofcom should have recognized that average administration costs had fallen in real terms over the preceding years and should have acknowledged and accounted for this explicitly in its overall judgment. Its failure to do so was, in our view, an error. We do not, though, consider that Ofcom's failure to take the downward trend into account, even if doing so would have led to an efficiency factor consistent with the trend being incorporated, ultimately had any material impact on the administration costs allowance that was set.

Allocation

- 3.70. As described in paragraph 3.9 above, Ofcom allocated a proportion of total administration costs to network activities by calculating the share of total costs accounted for by network activities. Part of the resulting sum was then allocated to MCT in proportion to its share of network costs.

BT's arguments

- 3.71. BT argued that administration costs should be allocated to network (and MCT) using cost drivers. BT criticized Ofcom's methodology as 'simplistic' and 'misguided' in assuming that £1 of network costs drove as much in the way of administration costs as £1 of retail costs.¹ BT argued that most administration costs would be driven by interfaces with customers, not network costs, on the basis that network costs involve 'people-light' activities.²
- 3.72. BT clarified in its bilateral hearing that it was not suggesting a bottom-up approach, but rather a more careful and reasoned look at which, of the administration costs, really are common to MCT and which were nothing to do with it. In its Reply, BT set out its views on the cost drivers of each administration cost category.³ These cost drivers were, in general, related to the number of people employed and the extent of involvement with retail activities. BT's view was that the number of people engaged in network activities would be small in comparison with the number of people engaged in customer service, sales, marketing and other retail activities. As such, an appropriate allocation would result in a network administration cost figure that would be significantly lower than the one arrived at by Ofcom. Further, BT pointed out that depreciation, amortization and the cost of capital accounted for a very significant proportion of network costs, and argued that it was difficult to see how these costs drove expenditure on administration.⁴

¹BT Reply, paragraph 306.

²BT bilateral hearing on its appeal, transcript, p98.

³BT Reply, paragraph 307.

⁴BT Reply, paragraph 308.

- 3.73. BT anticipated that its cost-driver approach would take two to three man-weeks to complete.¹ If, however, this approach was felt to be disproportionate, BT argued that a similar result could be achieved by allocating administration costs on the basis of operating costs. It argued that operating costs would be the appropriate measure to use because 'depreciation or amortisation of spectrum or costs of capital on network assets [does not drive] much by way of expenditure on the sorts of costs which are incurred with the administration cost line'.²
- 3.74. BT submitted that if administration costs were allocated on the basis of operating costs alone, the share of administration costs allocated to network activities would fall to 16 per cent of the total or about half of the amount actually allocated with the result that the administration cost mark-up would be about 0.1ppm instead of 0.3ppm.³

Interveners' arguments

- 3.75. Each of the Interveners told us that it did not allocate its administration costs to business units or activities. Orange had attempted the exercise, but abandoned it in light of difficulties in working out the correct basis for allocation.⁴ T-Mobile argued that BT's suggested methodologies would require detailed information that may not be readily available and would require resources on the part of Ofcom that it did not have.⁵
- 3.76. Vodafone argued that it would be disproportionate to conduct a very granular assessment, and that there was nothing to indicate that Ofcom's methodology produced skewed results.⁶ It argued that an allocation approach based on operating costs might in fact lead to a higher administration costs allowance once MNOs' costs were examined in detail.⁷ T-Mobile also made this point.⁸

Assessment: the cost-driver approach

- 3.77. BT's argument takes issue with Ofcom's treatment of administration costs as common across all areas of an MNO's business.
- 3.78. However, whether administration costs are in fact common or not,⁹ in order for a cost-driver approach to be a viable and proportionate alternative to Ofcom's allocation methodology, it must be reasonably practicable to identify cost drivers that establish a cause and effect relationship between specific activities and each category of administration cost. In the absence of such relationships being established, it would not be possible to apply a cost-driver methodology.
- 3.79. To identify robust cost drivers for a significant number of lines of expenditure that could be consistently applied across all MNOs would raise many of the same issues as discussed above in relation to identifying the most efficient operator (in particular, the information requirements and the lack of accepted definitions of administrative

¹BT bilateral hearing on its appeal, transcript, p98.

²ibid, p102.

³BT Reply, paragraph 310.

⁴Orange bilateral hearing on BT appeal, transcript, p51.

⁵T-Mobile bilateral hearing on BT appeal, transcript, pp74&75.

⁶Vodafone bilateral hearing on BT appeal, transcript, p87.

⁷ibid, p86.

⁸T-Mobile bilateral hearing on BT appeal, transcript, pp74&75.

⁹A proportion of administration costs are likely to be invariant with levels of outputs, but it is also likely that there will be (potentially quite complex) relationships between the total level of administration costs and volumes of inputs and outputs in various parts of an MNO's business.

costs). Regulatory guidelines would need to be agreed and information provided would have to be audited. Doing this would impose additional costs and burdens on Ofcom and MNOs.

- 3.80. We doubt whether certain administration costs would ever reasonably lend themselves to a cost-driver approach. An example would be the costs associated with senior management who have responsibilities directly related or relevant to both the retail and network sides of the business. The benefits from carrying out such an exercise would be limited to the proportion of cost for which cost drivers could be determined.
- 3.81. MNOs do not apportion administration costs as part of their management accounting. Therefore the data required for an analysis of the type BT suggests is unlikely to be readily available. All this suggests that the two to three man-weeks put forward by BT is unlikely to be a realistic estimate.
- 3.82. We do not therefore think that Ofcom erred in not carrying out an analysis of cost drivers and allocating administration costs accordingly. Whilst we think that a cost-driver approach may be desirable in theory, we do not think that it would have been proportionate in this case. As such, we do not think that Ofcom's treatment of administration costs as common constituted an error.

Assessment: allocation methodologies

- 3.83. We now turn to the question of whether Ofcom erred in the approach taken to the allocation of administration costs.
- 3.84. There is no single correct way of allocating common costs and the choice of possible methods depends on what one is trying to achieve as well as practical considerations. The allocation of common costs, by its nature, depends on the exercise of judgement.
- 3.85. In this case, Ofcom adopted an approach for the allocation of common costs based on the costs incurred in the provision of retail and network activities. The issue that has been raised is what measure of costs should be used.
- 3.86. BT has argued that operating costs would be a more appropriate basis for allocation than total costs.¹ However, it is not clear that BT's methodology would lead to a more appropriate distribution of costs. In the absence of cost causality relationships being established, we do not think it would be appropriate to assume that an allocation of administration costs on the basis of operating costs would necessarily be more appropriate than the total cost methodology adopted by Ofcom.² For the reasons we have given, we do not think Ofcom erred in not attempting to establish cost causality relationships.
- 3.87. We do not therefore consider that Ofcom erred in allocating administration costs on the basis of total costs rather than operating costs.

¹See paragraphs 3.73 & 3.74 above.

²We are also mindful of the arguments that, in order for any operating cost-based allocation methodology to be applied fairly, the question of the allocation of non-network costs between operating costs and customer acquisition, retention and service costs would need to be reopened.

Spectrum costs

- 3.88. BT cited the effect of the inclusion of amortization and the costs of capital of 3G spectrum in network costs for the purpose of the allocation of administration costs as an example of the distortions that it said were created by Ofcom's total cost allocation methodology. BT argued that it was very hard to see what administration costs would be involved in looking after a spectrum licence, but that the effect of including it within the calibration exercise made the administration mark-up 0.1ppm higher than it otherwise would have been. BT likened this to requiring FNOs to pay £15 million a year in respect of spectrum licence administration.¹
- 3.89. BT noted that Ofcom itself in the MCT Statement acknowledged that including 3G spectrum costs for the purposes of administration cost allocation might result in an overestimate because the extent to which 3G spectrum acquisition and holding requires administrative support is unlikely to be in proportion to the relative level of 3G spectrum costs compared with other network and retail costs.²
- 3.90. In the light of BT's argument, and Ofcom's position on it, we have considered whether, even under a total cost allocation methodology, Ofcom erred in not leaving out 3G spectrum costs when determining what proportion of administration costs to allocate to network activities.
- 3.91. O2 argued that since Ofcom had treated administration costs as common, it was wrong to think of any allocation to network as somehow representing the cost of administering 3G spectrum. It argued that no such causal link is suggested by the allocation. O2 also argued that BT's singling out of spectrum costs was arbitrary and that its approach would lead to inconsistency and highly subjective regulatory decision-making.³
- 3.92. Orange, similarly, argued that if spectrum costs were to be removed, costs in the non-network category, for example handset costs, would need to be examined and possibly removed as well.⁴ Vodafone also gave handset costs as an example of an area where cost had little direct relationship with the administration charge allocated to it.⁵

Assessment

- 3.93. We accept the arguments made by the Interveners on this point. In our judgement, if administration costs are to be treated as common, it would be inconsistent to remove 3G spectrum costs from the allocation exercise. Whilst there may be some merit in BT's suggestion that little administration is needed to look after the spectrum licences, we agree with Orange and Vodafone that much the same could be said about categories of cost within the non-network group. Unless a cost-driver analysis is carried out, which we do not think would be proportionate, we see no justification for singling out specific categories for exclusion.
- 3.94. Accordingly we do not think that Ofcom erred in including 3G spectrum costs within network costs for the purposes of the administration costs allocation exercise.

¹BT Reply, paragraph 309.

²Ofcom's MCT Statement, paragraph A15.92.

³PwC expert report for O2, paragraphs 154 & 155.

⁴Orange bilateral hearing on BT appeal, transcript, pp53&54.

⁵Vodafone bilateral hearing on BT appeal, transcript, pp85&86.

Other costs

3.95. Although the issue was not raised explicitly as part of BT's appeal, during the course of the appeal it became apparent that a category of costs called 'other costs' were not included within the administration costs allocation exercise, with the result that instead of administration costs being allocated to network, non-network and other costs, they were only allocated to network and non-network costs. We therefore asked for the parties' views on whether, as a matter of consistency, the 'other costs' category should have been included within the calibration exercise.

3.96. 'Other costs' are made up of interconnection charges and roaming charges (which make up 85 per cent of the category) and goodwill amortization. In the MCT Statement Ofcom stated that:

other costs ... are excluded from this analysis. This is consistent with Ofcom's and the Competition Commission's approach in previous years. However, Ofcom notes that administration costs may support activities related to interconnection and roaming. If administration costs were allocated across these activities (in addition to network and retail) the share of administration costs allocated to network activities would be lower¹

3.97. O2 argued that 'other costs' have unique characteristics which mean they should not be included within the calibration exercise:²

- (a) Outpayments should not be thought of as part of the managed cost base of an MNO but rather as revenue collected by an MNO on an agency basis for other operators (who have their own cost bases which include the costs of providing interconnection and roaming services), and it would not be reasonable for an allocation methodology to result in other operators' costs attracting an allocation of an MNO's administration costs.
- (b) An MNO provides similar services to the other MNOs and the activity of providing these services is explicitly included within an MNO's cost base. Under Ofcom's methodology there is therefore an allocation of an MNO's administration costs to the provision of these services to other operators. Similarly, other operators will have a portion of their administration costs allocated to the provision of these services to the MNO. Therefore if the MNO's administration costs were to be allocated to outpayments to other MNOs, there would be two components of administration costs allocated to these activities, which would not be reasonable.
- (c) The treatment of marking up administration costs on all costs excluding outpayments is consistent with that adopted by Oftel in modelling fixed termination rates.

3.98. Vodafone³ and T-Mobile⁴ similarly argued in their responses that both interconnection and roaming costs related to the costs not of an operator's own network but to the costs of the conveyance of traffic across other operators' networks. As such, to include them would be in effect double counting.

¹Ofcom's MCT Statement, footnote 4 to Figure A15.4.

²O2 letter of 18 July 2008.

³Vodafone letter of 31 July 2008.

⁴T-Mobile letter of 15 August 2008.

Assessment

- 3.99. Interconnection payments to other telephone networks account for more than 80 per cent of these 'other costs'. Ofcom's methodology allocated administration costs in proportion to the costs an MNO incurs in building and operating its network and in providing retail services to its subscribers. We think there is therefore a justification for treating 'other costs', which consist primarily of payments made to other MNOs, differently and not allocating a proportion of administration costs to them.
- 3.100. Amortization of goodwill is the next largest item, accounting for more than 10 per cent of 'other costs'. This entry is required by accounting standards but is unlikely to correspond to an actual loss of asset value. As such, it would not be appropriate to include this figure in an allocation base for administration costs.
- 3.101. There are certain cost items included within this 'other cost' category which might be legitimately considered to be costs related in particular to retail activities, for example vouchers and brand fees. We consider, however, that the size of these costs is such that including them would not have a material impact on the allowance for administration costs within the price controls.

Determination

- 3.102. For the reasons given above, our determination is that Ofcom did not err in its approach to the inclusion of administration costs for the reasons set out in paragraphs 149 to 159 of the BT Amended Notice of Appeal.

4. Network externality surcharge determination: Reference question 1(iii)

- 4.1. This section sets out the CC's conclusions as to whether the price controls imposed by Conditions MA3 and MA4 have been set at an inappropriate level because Ofcom erred in its approach to the allowance of a network externality surcharge (NES) for the reasons set out in paragraphs 160 to 184 of the BT Amended Notice of Appeal.
- 4.2. For the reasons given below, our conclusion is that the inclusion of an NES allowance in the MCT charge controls constituted an error.

Background: the network externality

- 4.3. Users of both fixed and mobile networks benefit from having a large number of mobile subscribers with whom they can communicate. Subscribers to a mobile network therefore generate a private benefit (ie one that accrues to themselves) from being able to make and receive calls, and an external benefit that accrues to others from contacting and being contacted by them (or from being able to do so). However, when customers decide whether or not to subscribe to a mobile network, they generally take their own private benefit into account but not the external benefit. This difference is the source of a network externality.
- 4.4. In the presence of a positive network externality, not enough consumers may choose to become mobile subscribers from the perspective of society as a whole. This is because some customers may choose not to join the network because their private benefits do not cover the cost to them of becoming a subscriber, even though total welfare would be enhanced if they did because of the benefits that their joining a mobile network would give to others.¹ In other words, in the presence of a network externality, we might expect 'too few' people to be connected to mobile networks if the cost to a subscriber of joining a mobile network were set at the cost to the MNO of linking the additional subscriber to its network.
- 4.5. The NES is intended to correct for this. It increases the MCT rate above the estimated cost benchmark for terminating calls. The intended consequence of this is that it will become more profitable than it otherwise would be for MNOs to attract or retain subscribers to its network. This is because when those subscribers² receive calls from other MNOs or calls from FNOs, the terminating MNO will receive more revenue than it would otherwise do. The higher MCT rate raises the costs for the originating network; Ofcom expects that FNOs and MNOs will pass on the higher cost to them of calls made by their subscribers in higher retail prices.³
- 4.6. With subscribers in general being more profitable than they would be without the NES, there is a greater incentive to acquire and retain subscribers. As all MNOs face the same incentive, competition in the retail market for subscribers would be expected to result in willingness by MNOs to offer subscribers more attractive terms including a lower price to join or remain on the network. This is expected to result in some people taking out (or retaining) mobile phone subscriptions who would not do so were the retail price of subscription that they faced higher.⁴ This allows the

¹Ofcom called those individuals who have private benefits less than the resource cost of subscription 'marginal subscribers'. This is a broader category than one would usually understand from the use of the term 'marginal'; however, Ofcom's definition has been used throughout the appeal and is therefore also adopted in this document.

²Whether marginal or non-marginal.

³Ofcom's MCT Statement, Annex 16, footnote 234.

⁴It is joining or remaining on a mobile network that constitutes 'subscription' in this case. The retail price of subscription is therefore the price that consumers face to join or remain on a mobile network.

positive network externalities that result from these additional subscribers joining (or remaining on) the network to be realized.

The CC's position in 2003

- 4.7. We begin by briefly describing how the CC addressed the issue of the NES in its 2003 report.¹
- 4.8. The CC decided to allow for an NES and ultimately recommended that a surcharge of 0.45ppm should be included within the MCT charges (Ofcom subsequently followed this recommendation).² This was justified on the grounds that an NES at this level 'could have the effect of bringing marginal customers on to the network and helping to retain marginal customers'.³
- 4.9. In other words, the CC recognized in principle the network externality issue and considered that a levy on wholesale call termination charges (assumed to be passed through to retail call prices) would address this issue.
- 4.10. However, the CC did not seem convinced that a reduction in the level of the subsidy would necessarily have adverse effects: 'factors such as the high levels of mobile usage, the utility of mobile ownership, and the perceived disadvantages of giving up a mobile phone after having used one would militate against subscribers leaving the network if subsidies were reduced'.⁴
- 4.11. The CC also considered that there were some significant problems or 'efficiency losses' associated with the NES. These efficiency losses were:

higher charges for all callers to mobile phones from other networks, unnecessary upgrading and switching of handsets and of customers between one network and another, fewer and shorter calls to mobiles from other networks and enforced subsidization by FNOs customers of a form of competition which is becoming less and less effective in bringing more subscribers onto the mobile network.⁵

- 4.12. With regard to the 'unnecessary upgrading and switching of handsets and of customers between one network and another', this efficiency loss flowed directly from the observation by the CC that:

the evidence ... suggests that, to the extent that the surcharge is currently being used to subsidize handsets, this is having a limited impact on the recruitment of new, or the retention of existing, marginal subscribers. Rather it is encouraging switching of existing subscribers between the different mobile networks or simply funding upgrades of handsets for subscribers who are not, in any event, considering leaving the network and some of whom are high spenders on mobile calls. This means that the customers of the FNOs, who are ultimately providing the

¹Vodafone, 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, Competition Commission, February 2003 (the 2003 CC report).

²Ofcom's determination in its June 2004 *Statement on Wholesale Mobile Voice Call Termination* raised the NES to 0.5ppm in 2000/01 prices (0.56ppm in 2005/6 prices) for the years 2004/05 and 2005/06.

³2003 CC report, paragraph 2.371.

⁴ibid, paragraph 2.365.

⁵ibid, paragraph 2.369.

subsidy by funding the surcharge on call termination, are very largely funding an ineffective subsidy.¹

- 4.13. In the light of these concerns it concluded that 'in principle, any externality mark-up should be either very small or not allowed at all'.²
- 4.14. In terms of deciding what the appropriate NES mark-up should be, the CC estimated three things: the level of subsidy needed to retain existing marginal subscribers, the subsidy needed to bring current marginal non-subscribers on to a network, and finally the extra subsidy that would need to be provided to existing marginal subscribers who would be attracted by the subsidy offered to marginal non-subscribers.
- 4.15. The CC estimated that for every additional new subscriber, as well as the private benefit accruing to the individual from taking out a subscription, the existing pool of subscribers would, in aggregate, benefit by an amount equal to 50 per cent of that individual's private benefit.³ It also estimated that the retail cost of subscription, proxied through the (unsubsidized) retail price of a basic mobile handset, was £70.
- 4.16. The CC made a number of assumptions in its calculations:⁴
- (a) that the revenues generated by the surcharge would be targeted at marginal subscribers, ie that the extra revenue on incoming calls to all subscribers generated by the NES would go towards subsidizing the retail cost of subscription of marginal subscribers;
 - (b) that in respect of marginal subscribers that were not currently on the network the amount of subsidy provided should be equal to the social (private plus external) benefits derived from the use of that subsidy; and
 - (c) that, in respect of marginal subscribers that were on the network, but at risk of not renewing their subscriptions, that it was socially optimal to retain all such subscribers and that MNOs were able to engage in first degree price discrimination to achieve this, ie that they could provide a subsidy to each subscriber equal to the difference between the unsubsidized price of subscription (£70) and their willingness to pay.

Ofcom's calculation in the MCT Statement

- 4.17. In order to quantify the appropriate size of the NES, Ofcom extended the modelling framework adopted by the CC in 2003.
- 4.18. In undertaking its analysis, Ofcom recognized the limitations of its modelling approach. Its position was that its modelling approach informed, but did not mechanically determine, its chosen NES value. Ofcom stated that it:

does not consider that any single model is, on its own, sufficiently accurate to provide a point estimate of the correct optimal surcharge due to the uncertainties in some key parameter values and the inability to capture the complex interactions between all of the factors that affect the level of the optimal surcharge. However, by placing different weights

¹ibid, paragraph 2.370.

²ibid, paragraph 2.371.

³In other words, as explained below, that the 'Rohlf's-Griffin' (R-G) factor was 1.5.

⁴2003 CC report, paragraphs 2.380–2.385.

on a range of factors, each estimate provides useful information on the level of the optimal externality surcharge.¹

- 4.19. Nonetheless, the externality surcharge model developed by Ofcom formed the basis of its analysis and it is important to examine it in some detail. It can be thought of as consisting of two elements:
- (a) an estimate of the relationship between an increase in MCT rates and the number of people who consequently take out (or retain) a mobile phone subscription who would not otherwise do so; and
 - (b) an estimate of the optimal increase in MCT rates—derived from trading off the social benefit from acquiring new or retaining existing mobile phone subscribers with the social costs associated with increased MCT rates.

The relationship between an increase in MCT rates and subscriber numbers

- 4.20. The relationship between an increase in MCT rates and the number of people who take out or retain a mobile subscription depends, in the Ofcom model, on three key factors:
- (a) The number of people who would not acquire a mobile phone subscription at the subscription price that would prevail absent the NES (which is assumed by Ofcom to be equal to the additional costs that would be incurred by an MNO in providing this subscription² and proxied by the unsubsidized retail price of a basic handset) and the demand sensitivity of these people to any reduction in the retail price of subscription.
 - (b) The extent to which the additional revenues raised through an increase in MCT rates leads to a reduction in the price of subscription faced by those customers. Ofcom's model accounts for the possibility that there could be two alternative uses of the revenues derived from these higher MCT rates: either the higher revenues could result in an increase in MNOs' profits, or they could be used to reduce the subscription price of joining or remaining on the network for those who would be prepared to pay the unsubsidized price in any event. These are referred to as 'leakage'.
 - (c) Within that segment of customers who are defined as marginal there is a considerable degree of heterogeneity: some are likely to require only a small reduction in handset price to take out or retain a subscription; others are likely to require much more significant price reductions. Therefore the extent to which MNOs can price discriminate (offer different prices to different customers depending on their willingness to pay) between different customers within this segment is also factored into the model.
- 4.21. With reference to the first of these factors, in order to estimate the number of people who would not be prepared to pay for (or retain) a mobile phone subscription were they faced with the full unsubsidized retail price of a basic handset, Ofcom considered both the unsubsidized cost of mobile handsets and how this compared with consumers' willingness to pay.

¹Ofcom's MCT Statement, paragraph A16.20. A full description of Ofcom's modelling approach is in annex 16 of the MCT Statement.

²In particular, the wholesale cost of the handset and the additional retail and administration costs associated with supplying a handset and connecting someone to a network.

- 4.22. In terms of the unsubsidized retail price of a basic handset, Ofcom used estimates of £50 and £70 in the two scenarios used in its modelling.¹ These estimates were informed by the estimate used by the CC in its 2003 report as well as by a more recent Internet search.
- 4.23. In order to estimate how many people would not be prepared to take out or retain a mobile phone subscription if the handset costs they faced were £50 or £70, Ofcom used the results of a market research survey that it commissioned (the Ofcom survey).² Using this survey, it estimated that there were 13.9 million existing pay-as-you-go (PAYG)³ subscribers who would not resubscribe if the handset price were in excess of £70 and a further 1.3 million people who were not currently subscribers and who would only subscribe at a handset price of less than £70. This yields a total number of people who would not be prepared to pay a price of £70 for a handset of 15.3 million. If a handset price of £50 is used then the equivalent figures are 8.2 million, 1.0 million and 9.3 million respectively.⁴ The number of people who would be prepared to take out or retain a subscription but only at a price below these thresholds were referred to by Ofcom as 'marginal subscribers'.
- 4.24. As the above figures demonstrate, the bulk of marginal subscribers are current mobile phone users. In general, they are only likely to cease subscribing to any mobile service when their current handset reaches the end of its life. Ofcom used an assumption that the economic life of a handset is three years in one scenario and 2.5 years in a second scenario.⁵ This implies that 33 to 40 per cent of current marginal subscribers are at risk of leaving the network in any one year.
- 4.25. With regard to the demand sensitivity to reductions in the handset price, Ofcom assumed a linear relationship between the handset price and the number of marginal subscribers who would be willing to take out or retain a subscription.
- 4.26. The second factor influencing the relationship between increases in MCT charges and the number of people who take out or retain a mobile subscription is the extent to which increases in MCT rates are not passed through to reduce the subscription (handset) prices faced by marginal subscribers. This factor is termed 'leakage'.
- 4.27. There are two key sources of leakage:
- (a) An increase in revenues from MCT rates could be retained as additional profit by the MNOs, or invested in unrelated areas.
 - (b) An increase in revenues from MCT rates could be used to compete for those people who would be willing to purchase or retain a subscription in any event (non-marginal subscribers).
- 4.28. In principle, the extent to which any increase in MCT rates caused by the NES will be retained as additional profit will depend on the strength of the competition between MNOs for subscribers (the 'waterbed effect'): the greater the intensity of retail competition, the more we would expect MCT rate increases to be used to compete for subscribers.

¹In order to reflect the uncertainty with regard to some of the key modelling inputs, Ofcom chose to run two scenarios in its modelling approach. These are discussed below.

²Ofcom: *Mobile Call Termination: Report of Market Research Findings, Research Document*, 13 September 2006.

³Due to the higher subscription price faced by those on contracts, Ofcom assumed that all subscribers on a contract would be prepared to pay £50/£70 to retain that subscription.

⁴Numbers do not sum due to rounding.

⁵The CC in its 2003 report assumed handset life to be four years in its central case.

- 4.29. The extent to which the reduction in retail prices of handsets will be targeted on marginal versus non-marginal subscribers will depend on two factors: first, on the ability of MNOs to discriminate between different customer groups and, in particular, between marginal and non-marginal subscribers; and second, assuming that there is some ability to undertake this targeting, on whether there is any incentive to do so.
- 4.30. However, while it is possible to identify in theory the factors influencing the extent of targeting, Ofcom considered that robustly quantifying this figure is difficult. Instead it 'used a wide range for the assumption on leakage in its modelling, reflecting the fact that evidence on leakage is inherently difficult to collect and no compelling evidence arose during consultation with stakeholders'.¹ A leakage assumption of 0 per cent is used in one scenario and an assumption of 75 per cent in the other.
- 4.31. The final factor that influences the relationship between an increase in MCT rates and the number of people who take out or retain a mobile subscription is the extent to which—within the segment of consumers classified as marginal—MNOs are able to successfully price discriminate. This refers to the extent to which MNOs are able to assess, for each marginal subscriber, the reduction in price needed in order to ensure that the subscriber takes out or retains their subscription, and the extent to which there is an incentive to offer a price which precisely reflects this willingness to pay.
- 4.32. Robustly quantifying this factor was also considered difficult and therefore Ofcom used two different assumptions. The first was to assume that the MNOs have no ability to price discriminate within this customer segment. The second was to assume that MNOs are able to price discriminate perfectly (offer each consumer precisely the subsidy required in order for subscribers to take out or retain their subscription).
- 4.33. Collectively the three factors outlined in paragraphs 4.20 to 4.32 above determine, in Ofcom's model, the relationship between an increase in MCT rates and the number of people who become or remain mobile subscribers who would otherwise not have done so.

Estimating the optimal NES

- 4.34. Understanding the relationship between an increase, over cost, in MCT rates and the number of people who consequently take out (or retain) a mobile phone subscription was only the first element of Ofcom's modelling approach. Once an assumption on this relationship had been acquired, Ofcom then proceeded to estimate what the optimal increase in MCT rates might be. This involves trading off two things:
- (a) *The additional benefits derived to society from gaining (or retaining) mobile subscribers.* This is expressed by the 'Rohlf's-Griffin' (R-G) factor—the ratio of the marginal total benefit to the marginal private benefit from each additional (or retained) mobile subscriber. A value of 1 implies that the marginal social benefit is the same as the marginal private benefit and that there is therefore no external benefit; a value of 2 implies that the marginal social benefit is twice the size of the marginal private benefit—and hence that the external benefits derived from an additional subscriber are the same size as the private benefits.
- (b) *The additional costs that are imposed on society as a result of a marginal subscriber taking out or retaining their subscription.* In Ofcom's modelling this con-

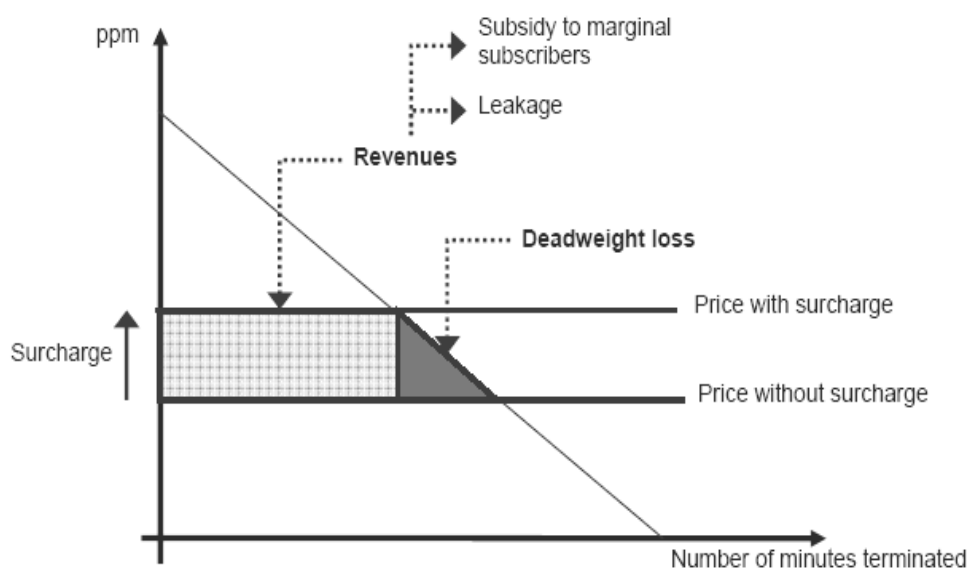
¹Ofcom's Response to BT's further submissions on price control levels, paragraph 5.31.

sists of two elements. First, there are the additional costs incurred by MNOs when someone joins their network; these were proxied by the unsubsidized retail price of a basic handset which was assumed to be £50 to £70.¹ Second, there are the external detriments associated with MCT rates being higher than they otherwise would be. There is a welfare reduction brought about as a result of the fact that the higher MCT rate leads to some calls not being made that would have been made at a lower MCT rate. This is known as the deadweight loss.

- 4.35. Ofcom stated that it is very difficult to acquire an observation of the R-G factor. Therefore values of 1.3 and 1.7 were used in its scenarios. In justifying these values, Ofcom noted that it is implicit in the very purpose of the NES that the R-G factor is assumed to be above 1. It also noted that a value greater than 2, implying that existing subscribers would benefit by a greater amount in aggregate from an individual's subscription than that individual would benefit, was unlikely. Ofcom also referred to the fact that the CC in its 2003 report used a value of 1.5 (which in turn arose from previous estimates by Oftel and a specially commissioned survey) and observed that at the time the CC took the view that this was likely to be an upper estimate.²
- 4.36. Ofcom's method for measuring the welfare losses associated with the increase in call termination charges can be seen in Figure 4.1.

FIGURE 4.1

Ofcom's diagram of the demand for calls to mobiles



Source: Ofcom's MCT Statement, Reproduction of Figure A16.2.

- 4.37. The diagram shows that with the imposition of the surcharge the number of minutes terminated falls. For all of the calls that continue to be terminated, revenues are raised—equal to the area of the hatched box—which, subject to leakage, are used to subsidize marginal subscribers. However, there are also some calls which would previously have been made—and hence which consumers had valued at more than

¹In other words, Ofcom uses one parameter for two purposes within its modelling: it assumes that the costs incurred by an MNO in providing a subscription is the same as the retail price that MNOs would charge marginal subscribers for this subscription were the NES not in place.

²Ofcom's MCT Statement, paragraph A16.67; footnote 241.

or equal to the price they were charged for making such calls—but which no longer take place as a result of the surcharge. This loss in welfare, equal to the size of the grey triangle, is the deadweight loss associated with the NES.

Ofcom's two scenarios

4.38. Ofcom recognized that many of the input parameters to its model were difficult to estimate. It therefore developed two scenarios. Scenario 1 was designed to capture the case in which network externalities were low and to provide 'a lower bound to the optimal externality surcharge'. Scenario 2, conversely, was designed to capture the case in which network externalities were large and to provide 'a potential upper bound to the externality surcharge'.¹

4.39. Table 4.1 summarizes how Ofcom used different assumptions on the various key parameters to develop the two scenarios. For each of these two scenarios, three different traffic forecasts were considered.

TABLE 4.1 Ofcom's NES modelling scenarios and the implications for the NES in ppm

		High traffic (80.59 billion minutes)	Medium (58.49 billion minutes)	Low (45.47 billion minutes)
Scenario 1:	R-G factor: 1.3 Handset cost: £50 Perfect price discrimination Handset life: 3 years No leakage	0.01	0.01	0
Scenario 2:	R-G factor: 1.7 Handset cost: £70 No price discrimination Handset life: 2.5 years 75% leakage	0.31	0.42	0.51

Source: Ofcom: Figure A 16.5 of the MCT Statement.

4.40. In addition to the above, Ofcom derived an estimate of the NES by replicating the analysis previously undertaken by the CC using its updated data. This gave a figure of 0.38ppm. Ofcom acknowledged, however, that the CC's approach was different in certain respects (in particular, that it assumed that it was optimal to maintain all current subscribers),² and this made comparisons of the results of limited value.

4.41. Ofcom ultimately decided on an NES of 0.3ppm, acknowledging that this was above the midpoint of the plausible range determined by scenarios 1 and 2.³

BT's grounds of appeal

4.42. BT objected to the inclusion of the NES in the final MCT charges on a number of grounds. In summary, BT argued that:

¹Ofcom's MCT Statement, paragraph A16.64.

²ibid, paragraphs A16.91–A16.93.

³ibid, paragraph A16.98.

- (a) the NES constitutes interference with competition between FNOs and MNOs that cannot be justified in the present market context;
- (b) if leakage is as large as scenario 2 implies (75 per cent), the NES cannot be justified;
- (c) MNOs would be likely to target marginal subscribers in the absence of the NES, making it unnecessary;
- (d) there are far fewer marginal subscribers than assumed by Ofcom;
- (e) the R-G Factor of 1.7 used in scenario 2 is too high, and there has been a high degree of internalization of the social benefit of adding subscribers to the network (which occurs when people take into account the benefits to others when deciding on whether or not to subscribe to a mobile network);
- (f) the handset cost estimates used by Ofcom are far too high; and
- (g) Ofcom's choice of 0.3ppm was neither transparent nor adequately reasoned.

4.43. For the reasons given below, we have come to the conclusion that no NES mark-up should have been included in the current MCT price controls. It has not been necessary, because of that view, to resolve all the points that BT raised.

The nature of competition for subscribers

4.44. Many of our conclusions on the NES have been influenced by an argument that was presented to us by Vodafone on how the MNOs compete for customers in the retail market, and the implications this has both for the underlying rationale for the NES and for a number of parameters relevant to Ofcom's modelling. Therefore we begin by setting out Vodafone's argument as it was put to us:¹

3.145 ... It is widely accepted (and, indeed, it appears to be implicit in the theory underlying the externality surcharge) that each MNO sets its prices to any particular customer or class of customers according to the MNO's ex ante expectation of the NPV of the revenues to be earned from the customer or class of customers over their period of subscription to the MNO's network. The NPV of such revenues is known as the 'customer lifetime value' or 'CLV'. Each MNO has an incentive to expend resources on winning customers who will generate a positive CLV. Indeed, each MNO will compete with other MNOs to offer incentives to a particular customer or class of customers to win them as subscribers. In a competitive market, each MNO will offer ever-increasing incentives to win such customers, up to the point at which the cost of the incentives cancels out the NPV of the expected revenues from such customers, thereby reducing the net CLV of such customers to zero.

3.146 In computing the CLV of any particular customer or class of customers, the MNO will take account of revenues expected to be generated by (among other things) the outgoing calls which the customer(s) will generate, and the incoming calls which they will receive.

¹Vodafone's Sol, paragraphs 3.145 & 3.146.

- 4.45. We asked the other MNOs whether they agreed with the reasoning put forward by Vodafone. The only party that did not was Orange.¹
- 4.46. We accept Vodafone's argument as a logical description of how one would expect an MNO to behave. We also think it carries with it a number of implications that are relevant to considering whether there is a case for the NES and, if so, its effectiveness. In particular, it implies that:
- (a) MNOs will have an incentive to attract subscribers that are expected to have a positive CLV even if those subscribers have a willingness to pay for a subscription which is less than the costs that would be incurred by an MNO in providing that subscription; and
 - (b) leakage is likely to be very high given the relative proportions of marginal and non-marginal subscribers and because MNOs will have no incentive to use additional profits generated by a non-marginal subscribers to offer marginal subscribers more attractive terms.
- 4.47. In our view, both these implications call into question the case for the inclusion of an NES within the MCT price control.

Is there still a case for the NES?

- 4.48. The aim of the NES is to create an incentive for MNOs to attract or retain those (potential) subscribers who may not place a sufficiently high value on mobile phone use in order to allow the network externalities their subscriptions generate to be realized. It is therefore an essential component of the argument for the NES that, without it, many subscribers would be faced with a mobile phone subscription price which would be too high for them to take out or retain a subscription. Consequently, an assessment of the need for the NES has two elements: an understanding of the extent to which MNOs already have commercial incentives to target these customers (and offer low subscription prices to them) such that, even if the NES were removed, the offering to these customers would be sufficient to retain or attract their subscription; and the incremental impact that the NES would have on this incentive.

BT's argument

- 4.49. BT argued that MNOs already have a strong incentive to target those subscribers whose willingness to pay for a mobile phone subscription is less than £50 or £70. BT argued that it is rational for an MNO to attract or retain any subscriber that makes a contribution to the fixed costs of the company, ie that an MNO has an incentive to attract or retain any customer from whom it receives an increase in revenues which is greater than the increase in costs it incurs from having to provide a service to that customer. BT considered that as the costs of retaining a subscriber on a network are relatively low, this covers most potential subscribers.

¹That disagreement was expressed in the context of an argument about leakage. Orange did, however, acknowledge that when an MNO is considering what price to charge a new subscriber, it will be willing to reduce the price below cost by the amount that it can expect to gain in increased profits (Orange Sol, paragraph 7.16(b)). It is not clear therefore how fundamental its disagreement is. Orange's position is dealt with in more detail in the section on leakage below.

Ofcom's response

- 4.50. In its Price Control Defence, Ofcom contended that without the NES it is not obvious that MNOs would have sufficiently strong incentives to target those subscribers whose willingness to pay for a mobile phone subscription is less than the unsubsidized retail price of subscription. Ofcom did recognize that MNOs may make sufficient profits on the calls made by marginal subscribers to offer some of these marginal subscribers with a sufficient reduction in the retail price of subscription to ensure that they take out or retain their subscription—but it considered that 'there are likely to be many marginal subscribers for whom this is not the case'.¹

Interveners' arguments

- 4.51. O2 told us that 'MNOs would not have the incentive and ability to subsidize marginal subscribers without the surcharge'.² It argued that while it, and other MNOs, had systems to try and retain subscribers, these systems were focused on retaining existing subscribers and that the systems had no means of identifying between marginal and non-marginal subscribers as classified by Ofcom. However, its experts' report did acknowledge that 'it is possible that MNOs could make some acquisition subsidy taking into account the future profits to be derived from the customers and therefore bring the handset cost below the private willingness to pay'.³
- 4.52. Vodafone was also equivocal about whether MNOs have the ability to target marginal subscribers but argued that what was far more important was that, as a matter of principle, MNOs had no incentive to target substantial discounts to marginal customers without an appropriate externality mark-up.⁴
- 4.53. Likewise, Orange argued that since marginal subscribers are those whose willingness to pay is less than the cost of subscription, it is not commercially rational to target them in the absence of the NES (though Orange did maintain that MNOs had the ability to target marginal subscribers).⁵
- 4.54. T-Mobile put forward a similar argument.⁶ In addition, it argued that BT's claim that MNOs will have incentives to attract marginal subscribers ignores the fact that some of the benefit associated with there being additional mobile subscribers accrues to other operators. It also argued that, irrespective of the incentive, the ability to target marginal subscribers is limited by imperfect knowledge of the value that subscribers place on their subscription (whether they are a marginal or non-marginal subscriber) and by the presence of a large number of resellers limiting the ability to offer tariffs to some customers and not others.⁷

Assessment: the impact of the nature of competition for subscribers

- 4.55. The logic of the argument presented by Vodafone implies that MNOs will be prepared to offer potential subscribers incentives to join a network, for example by discounting the price of handsets, to the extent that additional revenue generated by that sub-

¹Ofcom's Price Control Defence, paragraph 3.8.40.

²O2 Sol, paragraph 42.

³PwC expert report for O2, paragraph 165, footnote 80.

⁴Vodafone Sol, paragraphs 3.126 & 3.127.

⁵Orange Sol, paragraphs 7.6 & 7.26. Orange's position is discussed below in the section on leakage.

⁶First witness statement of Paul Chrisp for T-Mobile, paragraph 37.

⁷Dr Mike Walker and Paul Reynolds' expert report for T-Mobile, paragraph 110.

subscriber is greater than the cost incurred by the MNO in providing services to them, ie so long as that customer's CLV is not negative.

- 4.56. We note that the CC found in its 2003 report that 'the incremental cost to MNOs of maintaining low users on their networks is very small—one MNO told us that it amounted to a few pence a month, which represented the cost of maintaining them on the HLR'.¹ To the extent that the retail revenues received on outgoing calls and data services that a subscriber makes and the wholesale revenues from calls received by a subscriber exceed the additional costs incurred by MNOs associated with the provision of these services, a subscriber will generate a positive CLV.
- 4.57. Focusing on the incentives created by the MCT charge in the wholesale market to attract additional subscribers, even without the NES, to the extent that the revenue generated from terminating calls exceeds the additional cost incurred by an MNO in terminating these calls, an MNO would have an incentive to attract (or retain) such a subscriber. In particular, these subscribers would make a contribution to the recovery of fixed costs.
- 4.58. Ofcom's charge controls include an allowance of 0.3ppm² to recover administration costs. These costs were treated by Ofcom as common costs that do not increase in line with subscriber numbers. A number of MNOs also told us that these costs were fixed and/or common to all network and retail activities.³ On this basis we consider that by virtue of the allowance for a contribution to administration costs in the MCT charge controls, attracting more subscribers could be expected to increase the revenue generated by this element of the charge without a corresponding increase in administration costs (or at least without increasing them by the same proportion). Therefore the allowance for administration costs in the current MCT charge of 0.3ppm might be expected to have the same incentivizing effect as the NES. The price controls, by construction, also allow for a contribution to the recovery of fixed and common network costs and we might expect this to have a similar incentivizing effect.⁴
- 4.59. Ofcom agreed that an MCT rate that is above the unit cost of terminating calls will give MNOs an incentive to attract customers regardless of why this is the case.⁵
- 4.60. The implication of this analysis is that, even without the NES, the termination revenues received from acquiring or retaining virtually any subscriber will be likely to exceed the additional costs incurred by an MNO in terminating the calls received by that subscriber. This would create a strong incentive for MNOs to compete for additional subscribers including those who would not be prepared to pay the full cost of subscription. This competition could manifest itself in various forms; one manifestation would be that, even without the NES, it would be expected that retail handset prices would be set at a price lower than the resource costs incurred in providing them.⁶
- 4.61. The number of subscribers who would not join or stay on a mobile network but for the subsidy attributable to the NES is driven by retail subscription prices. If prices faced

¹CC 2003 report, paragraph 2.367; HLR is the home location register.

²0.4ppm in the case of H3G.

³O2 bilateral hearing on BT appeal, transcript p69; Orange bilateral hearing on BT appeal, transcript p51; T-Mobile bilateral hearing on BT appeal, transcript p75; Vodafone bilateral hearing on BT appeal, transcript p92.

⁴Ofcom bilateral hearing on BT appeal, transcript p10.

⁵Ofcom agreed with this proposition in its response to follow-up questions from the bilateral hearing (letter to CC, 21 July 2008).

⁶This does not imply that the NES will have *no* effect on an MNO's incentives; at the margin, it is likely to make some customers attractive who would not have been without it.

by consumers are high, more of them will need extra inducements to get them on to the network. Conversely, if prices are low, not only will fewer of them need such inducements, but the subsidies needed will be relatively small. At a certain price level, the required level of extra subsidy needed will become so small as to be immaterial. The need for an NES therefore depends on a proper analysis of the retail price of subscription absent the NES.¹

- 4.62. In considering the case for the NES, Ofcom has considered a situation where, without the NES, all subscribers would be required to pay a price for their subscription equal to the costs incurred by an MNO in providing that subscription. However, given the analysis above, we consider that absent the NES there would be an incentive for MNOs to offer a price which is less than these costs.
- 4.63. There are, in principle, two ways in which one can estimate what mobile subscription prices might be in the absence of the NES:
- (a) a 'bottom-up' assessment of the costs associated with providing a mobile phone subscription including wholesale handset costs, the cost of a SIM card, distribution costs and retailer margins adjusted to take account of incentives absent the NES to subsidize subscription; and
 - (b) a 'top-down' assessment based on estimates of prevailing mobile phone subscriptions that are adjusted to take account of the extent that these prices incorporate the existing NES.
- 4.64. Whichever approach is taken, in our view it is essential to keep in mind the correct counterfactual against which the need for an NES, and its effectiveness, needs to be considered. As discussed above, it will be rational for MNOs to reduce the price of subscription below the full cost of providing a subscription to the extent that the expected CLV of a customer is positive. The implication is that what needs to be assessed is the retail price of subscription that would prevail in the absence of the NES.
- 4.65. We put this point to the parties in the course of the appeal. Ofcom accepted that there is a difference between the marginal cost of subscription and the prevailing retail price of handsets which is not due to the existence of the NES.² Moreover, it agreed that ideally any subsidy that MNOs provide to marginal subscribers, independent of the NES, should be taken into account by reducing the retail price of subscription used for the modelling of network externalities.
- 4.66. O2 did not give us a definitive response on the point.³ Orange,⁴ T-Mobile⁵ and Vodafone,⁶ however, all accepted its validity.
- 4.67. BT argued that if Ofcom had realized how inexpensive handsets had become, it would not have concluded that the NES served any useful purpose. BT provided us with evidence of PAYG handsets available from Carphone Warehouse, Phones 4U, Tesco Mobile and T-Mobile for under £20.⁷ The responses of Ofcom¹ and the

¹This point could be said to be about the quantification of the NES rather than its justification. However, we have not found such a distinction useful, since the relevant question is whether there should be an NES in the present market circumstances.

²Ofcom letter of 21 July.

³O2 bilateral hearing on BT appeal, transcript p73.

⁴Orange bilateral hearing on BT appeal, transcript p73.

⁵T-Mobile bilateral hearing on BT appeal, transcript pp80&81; though Dr Mike Walker, T-Mobile's expert, said that the point really applied to contract and not pre-pay customers.

⁶Vodafone bilateral hearing on BT appeal, transcript p111.

⁷Second witness statement of Richard Budd for BT, paragraph 17; Exhibit RMB1.

Intervenors² all focused, in general, on the reasonableness of Ofcom's choice of parameter for subscription costs and the possibility that the prices cited by BT reflected subsidies attributable to the NES.

- 4.68. We recognize that BT's evidence was based on an Internet search that was undertaken on 8 October 2007, and so post-dated the MCT Statement. However, in the MCT Statement Ofcom reported that it had found a number of SIM-free handsets in the range of £30 to £60.³ Such SIM-free handsets will not have been subsidized, and it is plausible that basic handsets sold as part of a PAYG subscription would have had a lower retail price.⁴ BT's evidence appears to be consistent with that (and we also note that many of the prices cited include some airtime). No party responded to BT's evidence by arguing that there had been a material change in basic handset prices between March and October 2007, nor were we provided with evidence that PAYG subscriptions were not available at the prices suggested by BT's evidence (or similar prices) at March 2007. We therefore think it reasonable to infer from BT's evidence and Ofcom's own findings that PAYG subscriptions were available in March 2007 at prices similar to those found by BT.
- 4.69. BT argued that it was implausible that the NES could explain the difference between the prevailing level of retail handset prices and the estimated resource costs of providing a handset of £50 to £70. In particular, Mr Budd (BT's Regulatory Economics Manager) argued using illustrative numbers that the NES could not explain more than a subsidy of around £6 per handset which was only a small proportion of the difference between the assumed unsubsidized cost of a basic handset and the retail price at which handsets were available.
- 4.70. Mr Budd submitted⁵ that the impact of the NES on a hypothetical marginal subscriber that receives 10 minutes of incoming calls a week can be determined arithmetically as follows: 10 minutes a week at 0.3ppm equals a subsidy of £1.56 per year ($0.3 \times 10 \times 52$). Given Ofcom's assumption of a handset life of 2.5 years, that £1.56 per year translates into a subsidy of £3.90 per handset.
- 4.71. Mr Budd also gave evidence, referred to in paragraphs 4.67 and 4.68 above, of PAYG mobile subscription retail prices of under £20, including some airtime.⁶ It is acknowledged that these prices may reflect, to some extent, the NES subsidy currently in place. But assuming that the resource cost of subscription is £50, the lower bound used in Ofcom's modelling, the arithmetic above suggests that the NES might only account for a small proportion of the overall subsidy (£3.90 out of a total of

¹Ofcom argued that its assumption of £50–£70 was reasonable given the evidence it had available to it at the time. This included Internet searches of basic (SIM-free) handset prices as well as confidentially acquired wholesale handset price information. Ofcom also expressed caution regarding both the evidence presented by BT on the costs which might be incurred in bringing a handset to market (based on a single quote from a manufacturer) and the evidence of low retail handset prices (which will already reflect the impact of the NES).

²O2 argued that Ofcom's estimate of subscription costs was appropriate (O2 Sol, paragraph 43). It considered subscription costs (without taking into account the wholesale cost of the handsets themselves) to be between £[x] and £[x]. T-Mobile criticized BT for focusing on subsidized subscription prices whereas it is unsubsidized prices that are relevant (T-Mobile Sol, paragraph 43.6). Vodafone also broadly endorsed Ofcom's assumptions. It gave evidence that the average cost of sale of the cheapest 35 per cent of handsets (excluding VAT) sold by Vodafone during the period April–August 2007 was £70.10 (Vodafone Sol, paragraph 3.134; the handset costs underlying this average were said to be £[x]) (Vodafone Sol, Annex 6, paragraph 38)).

³Ofcom's MCT Statement, paragraph A16.72, footnote 244. We note also that BT gave us evidence from or before June 2007 that SIM-free handsets were available for around £25 to £35 (Witness statement of Dr Geoffrey Haigh, paragraph 21; Exhibits GH1 and GH2).

⁴Ofcom presented the results of its market research findings on handset spend only in the form of averages, so it is not possible to determine what the lowest retail PAYG subscription prices found by Ofcom's market research were, although Ofcom notes that the averages imply that some handsets will have been acquired at lower prices (MCT Statement, paragraph A16.78, footnote 245).

⁵Second witness statement of Richard Budd on behalf of BT, paragraph 20.

⁶Exhibit RMB1.

£30 or more). If we assume that the resource cost of subscription is £70, the proportion is lower. Even adjusting for the higher surcharge that was in place before the present price control period (giving a subsidy of £7.28 per handset), a large proportion of the handset subsidy appears to have little to do with the NES.¹

- 4.72. An alternative analysis put forward by BT comes to much the same conclusion. BT argued that, even if all net NES revenues were passed on in the form of lower handset prices, the result would be a subsidy per handset of approximately £2 (on the grounds that there are estimated to be 69.7 million active handsets in the UK² which would imply 28 million handsets being sold each year assuming a 2.5-year handset life, and that the NES raises about £45 million per year³).⁴ Again, adjusting for the previous higher NES level of 0.56ppm⁵ does not significantly undermine this analysis.
- 4.73. O2 provided us with evidence that it provides a subsidy of approximately £[~~2~~] per handset to the retail price of the five cheapest handsets that it sells. This seems consistent with the analysis above, although we are cautious of reading too much into this level of subsidy because the handsets in question are not basic handsets and the subsidy may reflect NES revenues deriving from, and intended to attract, non-marginal subscribers.

Our provisional conclusion on incentives and the need for an NES

- 4.74. In the light of the evidence and considerations set out above, in our provisional determination we considered that, even without an NES, MNOs would still have strong incentives to attract new subscribers to (and retain existing subscribers on) their networks even if those subscribers would have a willingness to pay for a subscription which is lower than the costs that would be incurred by an MNO in providing that subscription. We therefore considered that, in so far as there was an issue to which the NES may be a solution, that problem was smaller than Ofcom's analysis indicated.

Responses to our provisional determination

- 4.75. In their responses to our provisional determination, Orange, T-Mobile and Vodafone challenged our assessment of the incentives absent the NES for MNOs to subsidize subscription.

Orange

- 4.76. Orange argued that the inclusion in the MCT charges of a contribution to administration costs and common/fixed network costs was justifiable in its own right and should have no bearing on the justification or otherwise of the NES.⁶

¹It has been suggested that Mr Budd may be underestimating the number and length of calls received per week. However, we consider it to be plausible that marginal subscribers, who by definition place a low value on their mobile subscription, will receive a modest number of calls. The Ofcom survey is consistent with this, showing that potential subscribers expect to receive five calls per week, while existing PAYG customers receive on average 11 calls per week. Moreover, even doubling (or trebling) the estimated number of incoming calls per week would not undermine the broad point that Mr Budd makes.

²Ofcom, *The Communications Market Report 2007*, p274.

³On the basis that only fixed to mobile calls are a source of net subsidy to the MNOs.

⁴BT Reply, paragraph 347.

⁵In 2005/06 prices.

⁶Orange response to provisional determination, paragraph 5(c).

- 4.77. We think this argument is based on a misunderstanding of the point that was made in our provisional determination (and we have attempted to refine the drafting of the relevant paragraph—now paragraph 4.58 above—accordingly). A key distinction we were seeking to draw was between allowances for the recovery of specific cost categories on the one hand (assessed on a long-term, LRIC+ basis) and the incentives, given those allowances, that an MNO would have to subsidize subscription prices on the other (assessed on a CLV basis). In particular, the fact that an allowance is made within the termination charge for a contribution towards administration and fixed/common costs means that MNOs will have incentives to subsidize subscription prices for marginal subscribers even in the absence of an NES.
- 4.78. As Ofcom explained in its MCT Statement, the purpose of the NES was to give MNOs a commercial incentive to subsidize subscription for certain individuals who might not otherwise join a mobile network. Ofcom was concerned that because of the positive network externality associated with more people subscribing to mobile networks the market outcome absent an NES could be too few subscribers compared with the socially optimal outcome.¹ The NES was a mechanism by which Ofcom could intervene to encourage a more efficient outcome.
- 4.79. In the provisional determination the point that we were making was simply that Ofcom's approach to the NES assumes that, absent the NES, all marginal subscribers would be required to pay the full cost of subscription. We think that this approach is wrong because absent the NES MNOs would still have an incentive to subsidize subscription for marginal subscribers to the extent that they would be expected to generate profits for the MNO (assessed on a per-subscriber basis) and that their contributions towards fixed and common costs would have an impact on that expectation. Our analysis above in paragraphs 4.62 to 4.73 supports the conclusion that discounting would still take place in the absence of the NES.

T-Mobile

- 4.80. T-Mobile argued that in our analysis we explicitly assumed that termination charges contributed to the acquisition costs that allowed customers who were not willing to pay the resource cost of a mobile phone to come on to, or remain on, the mobile networks, but that the cost base for setting the MCT charge controls does not provide for the recovery of these costs. T-Mobile argued that if we did not allow for the recovery of subsidies offered to marginal subscribers as defined by Ofcom, we would be preventing the recovery of the other cost categories.²
- 4.81. Again we consider that T-Mobile has focused on costs rather than incentives, whereas our focus was on the latter. The purpose of the NES is to provide MNOs with an incentive to encourage marginal subscribers to join their networks—it is explicitly not based on the cost of termination. The costs of providing these incentives would be recovered from the profits that these individuals generate. If those customers would be profitable on a CLV basis absent the NES, there would still be an incentive to subsidize subscription prices. Again, our analysis in paragraphs 4.62 to 4.73 above supports this conclusion.
- 4.82. Put another way, T-Mobile's argument fails to distinguish the average costs of termination from the marginal or incremental costs of attracting or retaining a subscriber on the network. The contribution of MCT charges towards the incentives to attract

¹Ofcom's MCT Statement, paragraphs A16.1–A16.2.

²T-Mobile response to provisional determination, section 3.2.

subscribers (in particular, because of the allowance within those regulated charges for a contribution towards fixed and common costs) does not say anything about whether or not MCT charges, in total or on average, are sufficient to recover (total or average) MCT costs.

Vodafone

- 4.83. Vodafone made, broadly, two arguments that related to incentives and the level of discounting in the retail market. First, it argued that we were wrong to conclude that MNOs will be incentivized to apply revenues generated by the 0.3ppm administration costs allowance via discounts to subscribers. It argued that this would only be possible if administration costs were joint costs in the sense that they were generated in a fixed amount in order for MNOs to provide all or any of the services that they provide. Vodafone submitted that administration costs were common costs, not joint costs, and that its relevant administration costs will vary with volumes of traffic. It further argued that we had misunderstood the remarks made by the MNOs on this issue.¹
- 4.84. We note that administration costs in this case are the costs associated with central corporate functions. In particular, Ofcom has included within the category non-network depreciation (IT, furniture and office equipment), property costs, HR, finance and legal costs and IT overheads. Ofcom treated these as common costs between all of an MNO's activities.
- 4.85. We do not accept, as seems to be implied by Vodafone's argument, that the relationship between these costs and the volume of voice minutes terminated is likely to be anything other than weak. As a matter of common sense, it seems unlikely to us that there will be a direct relationship between the volume of voice minutes terminated and the costs of these central corporate activities. In particular, we do not think it is plausible that each additional minute terminated would increase administration costs by 0.3p or be expected to do so. Therefore, to the extent that any additional administration costs incurred in terminating an additional voice minute were less than 0.3ppm, we would expect the inclusion of this allowance in the MCT charge controls to contribute to the incentives that MNOs have to attract additional subscribers.
- 4.86. Furthermore, the point we made in our provisional determination was that the administration costs allowance and the allowance for a contribution towards fixed and common network costs within the MCT charge controls would contribute to the incentives that MNOs have to attract additional subscribers. The point was not dependent solely on the 0.3ppm administration costs allowance.
- 4.87. Second, Vodafone argued that in assessing the unsubsidized cost of providing mobile services to marginal subscribers, it was necessary to take account not only of the cost of providing the handset but also the cost of providing the outbound call services to the subscriber and associated billing costs. Vodafone stated that a marginal subscriber was unlikely to be willing to pay anything for a mobile subscription unless they planned to make some calls. Vodafone's point was not entirely clear, but it appeared to be as follows: the NES should take into account the overall cost to a subscriber of subscribing and making calls. The inclusion of any mark-up within MCT charges (including either one for administration costs or an NES) will increase the cost of outbound mobile-to-mobile calls. Therefore this would also need to be taken

¹Vodafone response to provisional determination, paragraphs 12–15.

into account in considering what level of NES is required to reduce the overall cost of participation to a level which a marginal subscriber will be willing to pay.¹

- 4.88. We understood Vodafone's original argument on the cost of outbound calls to be that since a surcharge would increase the costs of outgoing mobile-to-mobile calls for marginal subscribers, thus depriving them of part of the subsidy which was intended for them, a higher surcharge will be needed in order to deliver the full subsidy (see paragraph 4.108(b) below). If that is the point that Vodafone is making in its response, we do not see how it affects our conclusions on the incentives to discount or the level of discounting of handset prices that would prevail in the absence of the NES.
- 4.89. It is possible that Vodafone is arguing that higher outbound prices generated by a mark-up other than the NES reduce the effectiveness of the NES by reducing the CLV of a given customer in such a way as to reduce the incentive to offer discounted handset prices, thus necessitating a higher NES. If this is the case, again, we do not see how it affects our analysis of the incentives and discounts that would prevail in the absence of the NES. One implication of this argument could also be that MCT charges should be reduced generally.
- 4.90. On either of the above interpretations, if Vodafone's key point—that the application of a mark-up to MCT charges will increase the cost of outbound calls which will require an even higher NES to reduce the cost to a marginal subscriber of having a mobile subscription—is correct, that would in our view be a further reason as to why the NES is an ineffective mechanism for addressing the problem it is intended to address, because it would be, at least in part, self-defeating. Indeed, if the price of calls was a bigger concern to certain consumers than the price of a handset, the NES could actually be making the problem it was intended to remedy worse.
- 4.91. On another interpretation of Vodafone's response it may be arguing that the incentives generated by the NES lead to reductions not just in subscription prices but in outgoing mobile-to-mobile call prices, and that our analysis of the level of discounting that would prevail in the absence of the NES does not take account of the latter (the implication presumably being that the revenues generated by the NES find their way into subsidies on outgoing calls and thereby help to attract or retain marginal subscribers on the network).
- 4.92. If this is Vodafone's argument, we do not see how it relates to the case for the NES that Ofcom or any other party made in this appeal, which was focused on subscription prices, on which groups of consumers were not willing to pay the unsubsidized cost of subscription, and on the level of subsidy that would be needed to reduce subscription prices below costs sufficiently to ensure an optimal number of subscribers on mobile networks. As such, Ofcom's estimate of the number of marginal subscribers was based on a survey in which people were asked what they would be prepared to pay for a new handset to join or stay on a network. This was not placed in any particular context in relation to the retail packages and outgoing call prices that would be available to them.
- 4.93. Whilst we accept that there may be people who would not be prepared to subscribe to a mobile network unless the retail price for them to make calls is subsidized, we do not have reason to believe that the subscribers defined by Ofcom as marginal would all require such subsidies. Nor do we have reason to believe that the revenues

¹ibid, paragraphs 16–19.

generated by the NES are being used to subsidize outgoing mobile-to-mobile calls for marginal subscribers. Furthermore, it seems to us more likely than not that demand for outgoing mobile-to-mobile calls will be affected to a greater extent than demand for subscription among marginal subscribers by the removal of any subsidy on outgoing call prices of the magnitude of the NES (assuming such a subsidy is currently applied). Finally, again, we note that Vodafone's argument would imply that the NES is, at least in part, self-defeating.

- 4.94. Vodafone also provided in its response, in support of its view that the NES was unlikely in practice to influence the handset purchasing behaviour of non-marginal customers, an estimate of the additional revenue it would expect the NES to generate for the average non-marginal customer of £[X].¹ It said that for non-marginal customers this would represent only [X] per cent of the average price of a handset. We think that these figures are further evidence that the NES is not sufficient to explain the low retail prices at which handsets can be acquired (or, as an alternative, that the resource cost of handsets is much lower than the MNOs have argued). As such, it supports the provisional conclusion we had reached.

Conclusion on incentives and the need for an NES

- 4.95. After due consideration of the responses to our provisional determination, our conclusion remains that, even without an NES, MNOs would still have strong incentives to attract new subscribers to (and retain existing subscribers on) their networks even if those subscribers would have a willingness to pay for a subscription which is lower than the costs that would be incurred by an MNO in providing that subscription. We therefore consider that, in so far as there is an issue to which the NES may be a solution, that problem is smaller than Ofcom's analysis indicated.

Effectiveness of the NES

- 4.96. Notwithstanding our scepticism as to the case for an NES, we recognize that the NES would at the margin have an impact on incentives and that allowing MNOs to charge higher MCT rates could therefore result in more people subscribing to mobile networks than might otherwise be the case. We have therefore also considered whether the potential benefits associated with the NES could be expected to outweigh any adverse effects that it causes.² Our considerations have focused on the likely level (and consequences) of leakage.

BT's argument

- 4.97. BT argued that the NES is an inappropriate form of intervention because much of the additional revenue from MCT rates that it generates is subject to leakage and does not flow through to reduced subscription prices for those who would not subscribe without such a subsidy. BT considered it a perverse outcome that Ofcom's modelling implies that the higher the leakage, the greater the NES should be (at least until very high levels of leakage are reached).³

¹ibid, paragraph 26, footnote 20.

²No parties produced any direct evidence as to whether the NES has been or is effective in attracting or maintaining marginal subscribers on to the network. However, we would not necessarily expect such evidence to be readily available given the indirect nature of the surcharge.

³Second Witness Statement of Richard Budd on behalf of BT, paragraphs 35 & 36.

Ofcom's response

- 4.98. In its Price Control Defence Ofcom stated that the existence of leakage did not undermine the case for the NES as it still served a welfare-enhancing purpose so long as leakage was not complete because a proportion of the NES would go towards subsidies for marginal subscribers and leakage in itself (as opposed to the higher call prices to raise the funds that are subsequently leaked) had no adverse welfare consequences. Ofcom considered that its model captured the welfare losses associated with the NES by taking into account a deadweight loss in the form of the reduction in calls that resulted from an increase in the MCT rate.¹
- 4.99. However, at its bilateral hearing, Ofcom accepted that it may not have taken fully into account the adverse welfare consequences of leakage.²

Interveners' arguments

- 4.100. O2 argued that leakage was simply a transfer, not a real cost to society, and that it should therefore not be of undue concern so long as the scheme is welfare positive overall.³ The same position was taken by T-Mobile, which argued that an appropriate balancing of benefits and detriments was captured in Ofcom's modelling.⁴ Vodafone submitted that the NES generates substantial welfare gains even with a high degree of leakage,⁵ and Orange argued that leakage was adequately reflected in the modelling.⁶

Issues for assessment

- 4.101. In assessing the impact of leakage, we have considered both what the level of leakage is likely to be and what implications that level of leakage has for the appropriateness of the NES as a regulatory remedy.

The likely level of leakage

- 4.102. Ofcom's two scenarios used leakage levels of 0 per cent and 75 per cent respectively. Ofcom did not attempt to give a point estimate of what it thought a plausible level of leakage would be. However, at its bilateral hearing Ofcom did consider the likely level of leakage to be significant.⁷
- 4.103. BT, through in particular the evidence given by Mr Budd, maintained that leakage was likely to be high, as it was the subsidy generated by an individual subscriber, or an estimate of it, that an MNO would use to subsidize that subscriber (the implication being that extra revenue generated by an NES mark-up on non-marginal subscribers would not be targeted at marginal subscribers). Ofcom expressed agreement with Mr Budd's logic at its bilateral hearing.⁸

¹Ofcom's Price Control Defence, paragraph 3.8.52.

²Ofcom bilateral hearing on BT appeal, transcript p132.

³PwC expert report for O2, paragraph 173.

⁴T-Mobile Sol, paragraph 43.3; Expert report of Paul Reynolds and Dr Mike Walker, paragraphs 115 & 116.

⁵Vodafone Sol, paragraph 3.152.

⁶Orange Sol, paragraphs 7.19–7.21.

⁷Ofcom bilateral hearing on BT appeal, transcript p132.

⁸ibid, p107.

4.104. The parties, other than Orange, agreed that the level of leakage was likely to be high. Vodafone in particular presented us with an analysis of leakage that was based on its views, given above, as to the nature of competition in the retail market:¹

3.147 ... where a non-marginal customer (or class of customers) is expected to receive incoming calls, then, if those calls carry with them the benefit to the MNO of an MCT including an externality surcharge, the MNO will, in a competitive market, compete with other MNOs to offer ever-increasing benefits to win and retain that customer, up to the point at which all the benefits associated with that customer's subscription (including the benefit of such an externality surcharge) have been competed away. A mobile operator would not, however, offer a subsidised 'subscription' to a customer who has a negative CLV.

3.148 It also follows that, in a competitive market, competing MNOs will inevitably be incentivised to apply any externality surcharge revenues deriving from non-marginal subscribers in competing to win and retain such non-marginal subscribers. If an MNO decided instead to apply the revenues generated from incoming calls to non-marginal subscribers, he would find that other MNOs would offer greater inducements to poach his non-marginal subscribers, thereby securing for themselves the revenues derived from incoming calls to such non-marginal subscribers ...

3.150 In the light of these considerations, it follows that, if the waterbed effect is complete, all subscribers received a uniform volume of incoming call minutes, and if 34 per cent of subscribers are marginal, MNOs would apply the externality surcharge revenues uniformly across all subscribers and only 34 per cent of any externality surcharge would be applied towards winning marginal subscribers. This would imply a leakage parameter of at least 66 per cent.²

4.105. T-Mobile, H3G and O2 explicitly agreed with Vodafone's logic. Orange, however, disagreed, and asserted that the NES did provide an incentive to target marginal subscribers. It argued that mobile virtual network operators (MVNOs) (organizations which provide mobile phone services but do not have their own mobile networks and instead have arrangements to use those of the MNOs) were good vehicles for targeting marginal subscribers, and that the extra revenues generated by the NES mark-up above cost would be shared with MVNOs to ensure that they were viable business propositions. It submitted that 'MNOs will typically share some, or all, of the termination revenue from calls to customers of the MVNO with the MVNO for inbound calls whilst charging a network fee for all calls made to or by the MVNO customer'.³

4.106. Given that it stood in stark contrast to the arguments advanced by the other MNOs, we considered Orange's argument carefully. However, for the following reasons, we did not find this argument convincing:

(a) Orange's submission does not, in our view, necessarily imply that there is any targeting of revenues generated by incoming calls to non-marginal subscribers to marginal subscribers. This is for two reasons:

¹Vodafone Sol, paragraphs 3.147–3.150.

²We note that these assumptions are simplified and not realistic.

³Witness Statement of Michael Hunt for Orange, paragraph 17.

- (i) It does not imply, in so far as MVNOs' own subscribers (marginal and non-marginal) are concerned, that the revenues derived from incoming calls are split or directed in any particular way, and we do not see why the logic that we have accepted as to the nature of competition for subscribers would not apply to MVNOs just as it applies to MNOs.
 - (ii) Orange's submission does not tell us anything about termination revenues that are generated by non-MVNO customers.
- (b) We do not consider that the NES would affect the behaviour and incentives of MVNOs in a different way to the administration costs allowance or the inclusion of a contribution towards fixed and common network costs in the MCT rate.
 - (c) All the MNOs have MVNOs operating on their networks, and we do not understand why their presence would present Orange with an incentive to target marginal subscribers when it does not appear to have that effect on the other MNOs.
 - (d) Orange's argument seems inconsistent with its acceptance that an MNO would be willing to reduce subscription prices below cost by the amount that it would expect to gain in increased profits.¹
 - (e) We do not understand, whatever the ability of MVNOs to target marginal subscribers in a way that MNOs cannot, why a rational MNO would use revenue generated by non-marginal subscribers to enable MVNOs to target marginal ones.

4.107. We therefore reject Orange's submission that the NES earned on incoming calls received by non-marginal subscribers would be used to compete for marginal subscribers. We accept Vodafone's argument since this appears to reflect the rational behaviour that one would expect an MNO to adopt. The logical result therefore is that there is no reason to expect that MNOs would target the subsidy that is funded by NES revenue at marginal subscribers.

4.108. That implies, assuming that Ofcom's estimate of the number of marginal subscribers is correct, a leakage rate of at least 66 per cent. Some of the parties have presented us with arguments as to why the leakage rate is likely to be significantly higher than this:

- (a) Vodafone suggested that, to the extent that marginal subscribers receive fewer incoming calls, the increase in CLV arising from an NES mark-up will not be distributed evenly across all customers, but will be weighted towards non-marginal subscribers.² O2 also suggested that marginal subscribers may receive fewer calls than non-marginal subscribers,³ and Orange described marginal subscribers as likely to be low-profitability, low-volume users.⁴
- (b) Vodafone also argued that where the NES was applied to mobile-to-mobile calls, it would have the effect of increasing the cost (and hence the price) of calls for

¹Orange Sol, paragraph 7.16(b).

²Vodafone Sol, paragraph 3.154.

³O2 transcript of bilateral hearing on BT appeal, p73; though O2 did also suggest that marginal subscribers would make relatively fewer outbound calls than others.

⁴Orange Sol, paragraph 7.6.

marginal subscribers, taking away a small part of the subsidy that was intended to go to the marginal subscriber each time they called another mobile network.¹

(c) Vodafone also pointed out that to the extent that the waterbed is not complete, a proportion of the revenues generated by the NES would be retained by the MNOs and not passed through into lower subscription costs.²

4.109. Vodafone gave us an estimate of 85 to 88 per cent as the appropriate leakage parameter implied by its analysis.³ Similarly, BT said that leakage will be higher than implied by the percentage of subscribers that are considered to be non-marginal as it would expect more of the subsidy to be targeted at the more profitable non-marginal customers and because it doubted that the number of marginal subscribers was as large as suggested by Ofcom because of the incentives that MNOs would have absent the NES to attract subscribers.⁴

4.110. We have not found it necessary to come to a final point estimate of what the correct leakage parameter is. However, given the evidence set out above, we have come to the conclusion that leakage is likely to be higher than 66 per cent, and possibly much nearer 90 per cent.⁵

Responses to our provisional determination on the likely level of leakage

4.111. Orange argued in response to our provisional determination that we had misunderstood its argument on the role of the MVNOs in targeting the NES at marginal subscribers and that we had consequently discounted the possibility that the level of leakage may in fact be lower than we had concluded.

4.112. In support of this position, Orange developed its argument in the following way. It submitted that MVNOs provided an effective mechanism for reaching subscribers that it found hard to reach, and that the customers of the MVNOs tended to be (though were not always) lower-income, lower-spend customers. Orange therefore believed that a higher proportion of MVNO customers were likely to be 'marginal' than the MNO customer base. It therefore considered that MVNOs were an effective mechanism for targeting (in the marketing sense) marginal subscribers, and that MVNO deals could also be valuable to MNOs because of the additional traffic generated which could help to drive down unit costs through economies of scale.⁶

4.113. Orange also argued that the viability of an MVNO's business depends on two main factors: first, the likely revenues generated by the MVNO from outgoing calls, and second, the sharing of inbound revenues between the MNO and MVNO. It said that it was precisely because an MNO received the NES on inbound calls to subscribers on its own network (many of whom, it accepted, may not be marginal) that it was able to fund MVNO business cases by sharing the NES revenue (thus generating more valuable incremental traffic on its network). On that basis, Orange submitted that, con-

¹Vodafone Sol, paragraphs 3.155 & 3.156.

²ibid, Annex 6, paragraph 52.

³Letter from Vodafone to the CC, 9 July 2008.

⁴Letter of 24 June 2008.

⁵Due, primarily, to the incomplete waterbed effect, the likelihood of marginal subscribers receiving fewer incoming calls than non-marginal subscribers, and our view that the number of subscribers that could properly be called 'marginal' (in that the subsidies generated as a result of the NES will affect their subscription decision) is lower than the number estimated by Ofcom.

⁶Orange response to provisional determination, paragraph 4(a)–(d).

trary to our provisional view, revenues generated by incoming calls to non-marginal subscribers (including MNOs' customers) were directed to marginal subscribers.¹

- 4.114. We do not challenge Orange's argument that the commercial relationships it and other MNOs have with MVNOs generate additional traffic on their networks or that the additional (MVNO) subscribers make a valuable contribution to the recovery of fixed costs. We did not (and do not) intend to suggest that MNOs entering into commercial relationships with MVNOs is irrational.
- 4.115. However, we consider that the arguments being made by Orange are general ones that are not specific to the impact of the NES on the incentives that MVNOs have to attract marginal subscribers. Furthermore, we consider that whether MVNOs have a higher share of existing subscribers that would be defined according to Ofcom's definition as marginal is, in itself, irrelevant, as it is the level of leakage across the industry as a whole that is relevant to the assessment of the case for the NES.
- 4.116. The thrust of Orange's argument is that MNOs, because of the role played by the MVNOs, would have an incentive to use the additional (NES) revenue generated by non-marginal subscribers to attract marginal subscribers. This appears to be largely a reassertion of its original argument. We have set out our conclusions on this issue in paragraph 4.106 above, and due consideration of Orange's response has not altered them. In particular, we are not persuaded by Orange's submissions on the critical question of whether, and why, MNOs and MVNOs would have the incentive to use revenues generated by non-marginal subscribers to target marginal subscribers.

The implications of a high level of leakage

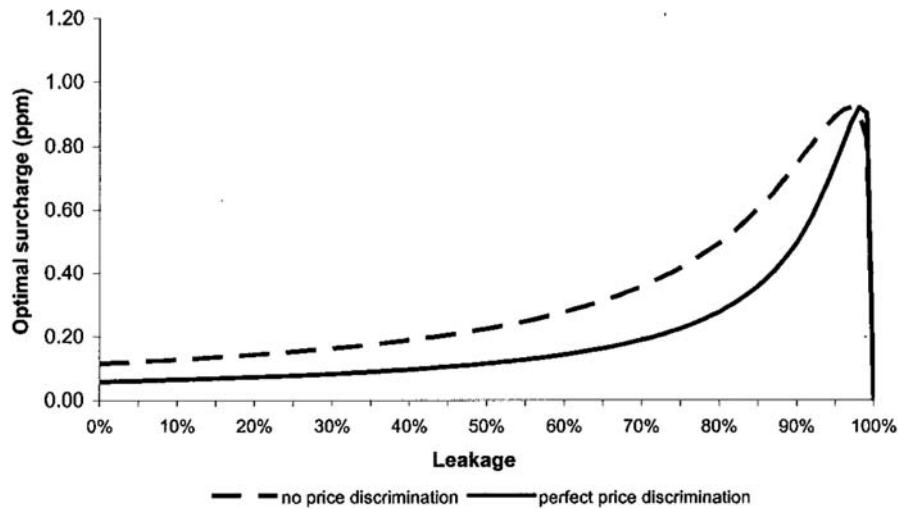
- 4.117. Under Ofcom's modelling approach, the impact of leakage on the optimal NES is twofold. More leakage implies that the optimal NES is higher as a larger surcharge is required in order to ensure that the necessary subsidy reaches its intended recipients. However, with a higher NES, the social cost per subscriber attracted or retained associated with the impact of higher MCT rates on the number of calls terminated is higher. The calibration of Ofcom's model results in the former effect dominating the latter until very high levels of leakage are reached. This is shown in Figure 4.2 below, provided by Ofcom.²

¹ibid, paragraphs 4(e)–5(a).

²We see force in BT's argument that this is unattractive: the greater the proportion of the surcharge that is wasted, the higher it needs to be.

FIGURE 4.2

NES Scenario 2 (medium traffic): optimal surcharge and leakage



Source: Ofcom letter to the CC, 12 September 2008.

- 4.118. However, the only costs taken into account in the modelling are the private cost incurred by the MNO in joining a subscriber to the network (proxied by the unsubsidized retail price¹ of a basic handset) plus the external cost of the deadweight loss resulting from higher termination charges. No value is attributed to the adverse effects of leakage.
- 4.119. In our view, there are detriments associated with leakage that have not been taken into account. When revenues generated by the NES are not used to subsidize marginal subscribers, a certain proportion will be retained by MNOs as profit to the extent that the waterbed is not complete, and the remainder will be dissipated in competition for non-marginal subscribers. Neither of these consequences is welfare neutral.
- 4.120. Ofcom has said that it expects the waterbed effect to be incomplete.² Vodafone cited a figure of 90 per cent from a paper by Genakos and Valletti.^{3,4} We would therefore expect that additional revenue generated by the NES from non-marginal subscribers would be largely dissipated in competition for these customers.
- 4.121. In its 2003 report, the CC recognized some of the adverse effects of the NES as follows: unnecessary upgrading and switching of handsets and of customers between one network and another, distortions in the number and length of calls to mobile phones, and enforced subsidization by fixed-line customers of a form of competition which is becoming less and less effective in bringing more subscribers on to the mobile network.⁵

¹It has been argued that Ofcom should have excluded VAT from the retail price of handsets in estimating the cost to MNOs of joining someone to or retaining someone on their network.

²Ofcom's MCT Statement, paragraph 7.40.

³CEP Discussion Paper No 827, October 2007, Testing the "Waterbed" Effect in Mobile Telephony, Christos Genakos and Dr Tommaso Valletti.

⁴Vodafone Sol, Annex 6 ('The Treatment of Externalities in Ofcom's decision'), paragraphs 51 & 52.

⁵CC 2003 report, paragraphs 2.358–2.360.

4.122. In addition, we note that many of the inefficiencies associated with excessive charges generally (listed by Ofcom in the MCT Statement) apply to leaked NES revenues:

- (a) excessive prices: to the extent that the waterbed is not complete, a high level of leakage would bring with it excessive profits on termination that would not be fully competed away in competition for mobile customers so that, overall, MNOs may generate excess profits and consumers pay too much for calls to mobiles;
- (b) an inefficiency in the structure of prices leading to an undervaluation of mobile handsets and excessive churn;¹ and
- (c) inequitable distributional effects associated with a transfer of resources from fixed-line customers to mobile customers (such transfers being unjustified in so far as they constitute leakage).

4.123. We note that Ofcom has recognized that the model does not take into account all the potential adverse welfare consequences from allowing the NES and that there would be merit in taking these into account. Ofcom said that these adverse consequences might be divided into categories: first, the retail price of subscription for non-marginal customers is likely to be subsidized and this may lead to distortions in consumption by non-marginal customers such as excessive handset churn; and secondly, that the extra revenue from the surcharge that is not spent on marginal customers may lead to MNOs spending more on customer acquisition, retention and service (CARS) in general and that this 'excessive' CARS expenditure could in part reflect unproductive use of resources leading to a welfare loss to society as a whole.²

4.124. We are not in a position to be able to quantify these distortions but in our judgement they are likely to be significant in comparison with the benefits of the NES (considered further below) given the high proportion of leakage.

Responses to our provisional determination on the implications of a high level of leakage

4.125. T-Mobile and Vodafone argued in response to the provisional determination that we had overstated the detriments associated with leakage. Before considering the specific points made, we note that they no longer seem to be arguing that leakage is simply a transfer payment for which there is no associated detriment.

Excessive profits

4.126. Both T-Mobile and Vodafone argued that we had underestimated the strength of the waterbed effect and as a result overstated the extent to which leaked NES revenues would be retained as profits. However, the strength of the waterbed effect is not determinative of our ultimate conclusion. Ofcom established in making the case for the regulation of MCT rates that there were substantial detriments associated with termination rates in excess of cost whether or not the excessive charges were retained as profit or dispersed in competition in retail markets.³ We agree with that conclusion.

¹Distortions in consumption by non-marginal customers was one potential adverse welfare consequence of leakage cited by Ofcom in its response to follow-up questions from the bilateral hearing (21 July 2008). It also cited excessive CARS expenditure as another.

²Ofcom letter of 24 June 2008.

³See, for example, Ofcom's MCT Statement, paragraph 7.40.

Inefficient structure of prices

- 4.127. T-Mobile argued that whether the NES would lead to an inefficient structure of prices depended on whether the NES would lead to a net increase in consumer welfare, which could only be decided after weighing the benefits of the NES against any detriments.¹
- 4.128. To clarify, our analysis of the implications of a high level of leakage identified detriments which had not been taken into account by Ofcom. Some of those detriments were those discussed by Ofcom in relation to the impact of excessive charges generally under the heading 'inefficient structure of prices'.² Whilst we do not disagree with T-Mobile that, ultimately, whether the NES would lead to an inefficient structure of prices depends on weighing the benefits of the NES against any detriments, in order to isolate and identify those detriments we have considered the implications of a move away from cost-based MCT rates absent any positive network externality (our analysis of the benefits of the NES, and the weighing of those benefits against the detriments, are set out above in paragraphs 4.55 to 4.95 and below in paragraphs 4.147 to 4.160).
- 4.129. The purpose of the NES is to raise MCT rates above cost so that subscription prices are brought below cost so as to exploit a network externality. However, moving prices away from costs will bring about certain detriments. Indeed, this is partly captured in Ofcom's modelling of the deadweight losses associated with above-cost MCT rates. In addition, when subscription or other prices are also brought down (further) for non-marginal subscribers then this also creates inefficiencies in terms of, for instance, excessive churn or inefficiently low prices for some retail services. In our view it is entirely appropriate to evaluate these inefficiencies resulting from a non-cost-reflective structure of prices against any benefit that the NES might be expected to bring.
- 4.130. Specifically on the inefficiencies we cited in our provisional determination, T-Mobile provided us with new material to suggest that there was no evidence that changes in MCT rates lead to changes in subscriber acquisition costs (SAC)—when SAC are measured in terms of the size of the handset subsidy offered to consumers—and that there was no evidence that supports the contention that there was excessive churn in the UK mobile sector.³
- 4.131. In relation to the first of these points, T-Mobile's argument would appear to undermine the case for the NES as currently conceived. The purpose of the NES is to increase MCT rates (above cost) with the expectation that this will lead to an increase in subsidy on/reduction in the prices of handsets for marginal subscribers such that marginal subscribers take out or retain a mobile phone subscription allowing network externalities to be exploited. We have been concerned that much of the revenue raised is leaked on subsidies on handsets provided to non-marginal subscribers (and in other ways). T-Mobile's analysis, by contrast, asks us to consider the proposition that there is, in fact, no relationship between changes in MCT rates and changes in subscription prices—either for marginal or non-marginal subscribers.⁴ If this was accepted, then the existing intellectual rationale for the NES would be invalidated. We also note that T-Mobile's original Statement of Intervention in BT's appeal does not raise this possibility at all.

¹T-Mobile response to provisional determination, p5.

²Ofcom's MCT Statement, paragraphs 7.41–7.51.

³T-Mobile response to our provisional determination, Annex A.

⁴The waterbed effect, instead, operating through changes in call prices.

- 4.132. In addition, if we did accept T-Mobile's argument that none of the revenue raised by the NES was used to provide handset subsidies, then, assuming a strong waterbed effect, this would simply result in reductions (below cost) of other aspects of an MNO's retail offering, particularly call prices. In this event, the outcome would still be an inefficient structure of prices because, for instance, fixed-to-mobile prices would be providing revenues to subsidize mobile-to-mobile or mobile-to-fixed calls.
- 4.133. Put another way, revenues generated by the NES that are leaked could lead to a number of different effects—they could be retained as excess profits to the extent that the waterbed effect is not complete, or they could be competed away in the form of subscription subsidies for non-marginal subscribers or subsidies on other aspects of MNOs' retail offerings. The revenues will not simply disappear, and our conclusion is not dependent on which detriment in particular happens to manifest itself most materially in practice.
- 4.134. We note that Ofcom's rationale for regulating MCT rates was based on an assessment of the detriments that would flow from MCT charges being above MCT costs, in particular an inefficient structure of prices.¹ Whilst we acknowledge that in the case of the NES these detriments need to be balanced against the likely benefits of the surcharge, arguments that above-cost MCT rates do not lead to inefficiencies would appear to be inconsistent with Ofcom's rationale for regulation.
- 4.135. In relation to the second point, T-Mobile suggested that there is no relationship between higher MCT rates and higher levels of churn by reference to the following evidence:²
- (a) A comparison over time of MCT rates and churn rates in the UK and Germany. T-Mobile argued that churn rates increasing as MCT rates fell was inconsistent with our claim that higher MCT rates as a result of the NES were likely to lead to excessive churn.
 - (b) A comparison of churn rates in calling party pays (CPP) regimes where there are higher MCT rates and in mobile party pays (MPP) regimes where there are no MCT rates which, T-Mobile argued, demonstrate no relationship between churn rates and MCT charges.
 - (c) Evidence that the key determinant of international differences in churn rates is the number of networks in each country and that, once this is controlled for, there is no evidence that CPP regimes have higher churn rates than MPP regimes.
- 4.136. We do not find this evidence particularly persuasive as a reason for dismissing the contention that MCT rates in excess of costs can be expected to lead to a reduction in handset prices which, in turn, will lead to handset churn rates higher than would be expected if handset prices were not reduced as a result of the NES:
- (a) It is important to distinguish between customer churn (a measure of the number of consumers switching networks or subscriptions) and handset churn (the rate at which handsets are replaced). Whilst in other aspects of these appeals it is the former that is relevant, on this issue we are principally concerned with the latter. T-Mobile's evidence appears to relate to customer churn rather than handset churn. As such, it does not address the measure of churn we are principally concerned with.

¹Ofcom's MCT Statement, paragraphs 7.41–7.51.

²T-Mobile response to provisional determination, Annex A, pp14–17.

- (b) In any event, the comparison of termination rates and churn rates over time is a single factor analysis and, in the case of Germany, no evidence has been presented as to how MCT rates relate to MCT costs.
- (c) It is difficult to draw any meaningful conclusions from the analysis of different MCT rate regimes as (i) there are only four MPP regimes in the analysis and (ii) within the CPP dataset no attempt is made to control for which countries have an NES within regulated charges or, more generally, for the relationship between MCT charges and MCT costs.
- (d) As regards the argument that when the number of networks has been controlled for there is no difference between CPP and MPP regimes, the points in (c) above remain valid.
- 4.137. Moreover, we note that T-Mobile has not provided a compelling reasoned argument as to why the NES would not lead to excessive handset churn separate from its argument that there is no relationship between MCT rates and subscription prices at all which, as noted above, undermines the stated rationale for the NES.
- 4.138. Furthermore, as stated above in paragraphs 4.132 and 4.133, leakage could manifest itself in a number of ways, excessive churn being one. If the NES did not lead to increased handset subsidies, the revenues it generated would either be retained or competed away in other distortive ways.
- 4.139. Vodafone, similarly, argued that any detrimental impact from lowering handset prices for infra-marginal subscribers was likely to be minimal due to the low level of the NES and hence the relatively small subsidy. To illustrate this point, Vodafone used the numerical example cited by us in our provisional determination regarding a customer who receives 10 minutes of incoming calls per week who would generate sufficient revenues to justify a handset discount of £3.90 once every 2.5 years. Vodafone argued that if we were correct that infra-marginal subscribers were likely to prefer relatively more expensive handsets, this degree of discount would appear to be unlikely to generate any significant degree of wasteful upgrading of handsets. Vodafone also calculated, on the basis of its own data, the relative significance of the NES for non-marginal subscribers, and suggested that the revenue raised per subscriber per 2.5 years would be around £[~~3.90~~]. Vodafone argued that this was a small proportion of the average cost of a handset, and that it would be unlikely to influence handset purchasing behaviour (and therefore churn).¹
- 4.140. As with T-Mobile's point on the relationship between MCT rates and CARS, Vodafone's argument undermines the case that would otherwise exist for the NES. We note in this regard that Vodafone's calculation of the NES value generated by non-marginal subscribers (which we would expect to be higher than the value generated by marginal subscribers) is broadly consistent with our analysis above in paragraphs 4.62 to 4.73. If the pricing of handsets at below cost is not explained to any significant degree by the NES, then the removal of the NES could not be expected to make any significant difference to the retail prices of handsets. As such, the justification for an NES to allow network externalities to be exploited is undermined.
- 4.141. Moreover, the points made above in paragraphs 4.132 to 4.134 also apply to Vodafone's argument just as they did to T-Mobile's.

¹Vodafone response to provisional determination, paragraphs 25 & 26.

4.142. We therefore remain of the view that we expressed in our provisional determination that there are detriments associated with leakage in terms of an inefficient structure of prices, with this clarification: the detriments associated with an inefficient structure of prices will be different in nature depending on the proportion of the NES that impacts upon subscription prices. Assuming a strong waterbed effect, either the NES does not have a material impact on subscription prices, in which case the rationale for it falls away (and we would expect it to impact inefficiently upon the prices of other aspects of MNOs' retail offerings such as call prices or other aspects of CARS expenditure), or it does, in which case the detriments associated with excessive handset churn, given our views on the likely level of leakage, are likely to be material in comparison to the benefits to be derived from the NES.

Inequitable distributional effects

4.143. T-Mobile argued that the evidence suggests that any transfers from fixed to mobile customers would have positive and not negative distributional effects, as mobile phones played a particular role in providing telecommunications access to low-income households.¹ Vodafone made a similar point.²

4.144. To clarify, in citing inequitable distributional effects in our provisional determination we were particularly concerned with transfers from fixed customers to mobile customers which would not serve the purpose for which they were intended (in other words, which would be leaked) and which would therefore not correspond to any benefit accruing to fixed-line customers. We do not accept that the socio-economic make-up of the two groups, or the fact that there may be some overlap between them, is relevant to that basic point, and we did not intend to refer to distributional consequences in terms of transfers from people in different parts of the income scale. In any event, leakage, by definition, means that the higher prices paid by fixed customers (whatever their socio-economic group) will be going in large part precisely to those mobile subscribers who do not need lower prices in order to subscribe.

4.145. Furthermore, we do not understand the NES to have been conceived as a tool to effect a general rebalancing between (alleged) fixed-line dominance in the communications markets³ and we do not think that it would be justified to ignore the implications of high leakage on such a basis.

Conclusion on the implications of a high level of leakage

4.146. For the reasons given above, we are still of the view expressed in our provisional determination (and set out in paragraphs 4.119 to 4.124 above) that there are detriments associated with leakage and that they are likely to be significant in comparison with the benefits of the NES (considered below) given the high proportion of leakage.

Benefits of the NES

4.147. We have considered whether the circumstances exist in which, despite high levels of leakage, the benefits of the NES were likely to outweigh the detriments. It is our judgement that the benefits arising from the small proportion of revenue generated by

¹T-Mobile response to provisional determination, p5.

²Vodafone response to provisional determination, paragraph 27.

³Ofcom appears to have been hostile to the idea of promoting competition between mobile and fixed operators by providing MNOs with more favourable regulatory treatment at the expense of fixed operators and callers to mobiles (MCT Statement, paragraph 7.54).

the NES charge that is used to attract or retain additional subscribers would have to be large to outweigh the detriment associated with much of the revenue being retained as profit or used in competition for non-marginal customers. This could be the case if, compared with marginal subscribers' own valuations of the benefits of subscribing, others had particularly high valuations of the benefits of these individuals subscribing—ie if the R-G factor were sufficiently large.

4.148. T-Mobile suggested that the R-G factor lay above the range that was considered by Ofcom (1.5–1.7). It argued that a reasonable estimate for the RG factor would be 2, a factor of 1.7 implying a high degree of internalization which was not justified by the available evidence.¹ Orange also submitted that the RG factor should have increased since 2002, though it was not clear whether it was arguing that it had increased beyond 1.7.²

4.149. In our judgement, the R-G factor would have to be very much higher than 2 for the (potential) benefits of the NES to outweigh the detriments. However, as the CC did in 2003,³ we think that 2 represents an upper bound on what the R-G might plausibly be. Accordingly we do not think that the benefits generated by the NES are likely to outweigh the detriments that we have identified.

Our provisional conclusion

4.150. In our provisional determination we concluded that in a context in which:

- (a) the NES results in higher prices for customers of FNOs;
- (b) at least 66 per cent and possibly up to 90 per cent of revenues gained from the NES will be used for purposes other than that for which the NES was intended; and
- (c) the use of the revenues for those purposes imposes social costs (including excessive prices, an inefficiency in the structure of prices and inequitable distributional effects);

the NES was not in our view a proportionate regulatory mechanism for achieving its ends.

4.151. We were therefore of the view that there was no longer a sound case for the NES and that its inclusion within the MCT price control was an error.⁴

Responses to our provisional determination: quantification of the costs and benefits of the NES

4.152. T-Mobile⁵ and Vodafone⁶ argued that our provisional determination was flawed because we had not quantified the potential adverse effects associated with the NES and were not therefore in a position to conclude on whether the potential benefits

¹T-Mobile expert report by Dr Mike Walker and Paul Reynolds, paragraph 113.

²Orange Sol, paragraph 7.13.

³CC 2003 report, paragraphs 2.343–2.346.

⁴We stated that conclusion held irrespective of whether subscription levels would be suboptimal in the absence of an NES (even though for the reasons we gave we were not convinced that would be the case).

⁵T-Mobile response to provisional determination, pp3&4.

⁶Vodafone response to provisional determination, paragraphs 21–28.

associated with the NES could be expected to outweigh any adverse effects that it causes.

- 4.153. We accept that in many circumstances it will be necessary, or in any event good practice, to quantify the costs and benefits associated with a particular regulatory course of action before taking a decision. However, we do not accept that this will always be the case, and we do not think it is the case in relation to our decision on the NES. This is for a number of reasons.
- 4.154. First, Ofcom accepted that its NES modelling could not capture the complex interactions between all the factors that affect the level of the optimal surcharge.¹ Because of these difficulties and uncertainties, Ofcom considered a range of estimates and used its judgement to arrive at an NES of 0.3ppm.² Its analysis was not therefore based solely on a quantitative cost-benefit analysis.
- 4.155. We agree that capturing all relevant factors in an NES model would be a formidable task, and one that may not be possible. Assuming that it could be done, it would not in our view be proportionate to undertake a purely quantitative analysis of the costs and benefits of the NES given the complexity involved and given the likely balance of costs and benefits in this case. It is appropriate, in our view, to come to a view based on the application of qualitative judgement after a consideration of the rationale for the NES, Ofcom's modelling approach, and the conclusions we have come to on the incentives and subscription prices that would exist in the absence of the NES, the nature of the detriments associated with leakage, and the likely level of leakage.
- 4.156. Second, we concluded in paragraph 4.95 above that MNOs would still have incentives to subsidize subscriptions for those not willing to pay the full resource cost of subscription absent the NES. The implication of that conclusion is that the relevant input into any NES model for the retail price of subscription would be the retail price of subscription absent the NES, rather than the full resource cost of subscription. In Ofcom's NES model, if the subscription price absent the NES was less than the £70 or £50 that Ofcom estimated to be the resource cost of subscription, the optimal level for the NES (holding all other parameters constant) would be reduced.³
- 4.157. Third, although we have not quantified the detriments associated with leakage, we note that Ofcom recognized that there were a number of detrimental effects of above-cost MCT rates and it did not seek to quantify all of them in coming to its decision as to whether to impose regulation or not.⁴ These detriments overlap with those that, in our judgement, flow from the NES raising MCT rates above cost and from the effects of leakage. Other than the deadweight loss due to the impact of above-cost MCT rates on demand for calls to mobiles, those detriments are not taken into account in Ofcom's NES model. Logically, if they were (or if they were considered qualitatively as part of an assessment of any modelled results), they would reduce the level of the optimal surcharge.
- 4.158. We recognize that the size of the detriments will depend upon how much in excess of costs MCT rates are. However, the benefits associated with the NES will also depend

¹Ofcom's MCT Statement, paragraph A16.20.

²ibid, paragraphs A16.95–A16.98.

³By way of example, we estimate using Ofcom's NES model and the Ofcom survey that if the retail price of subscription absent the NES were £30, the optimal NES would be between 0.05ppm and 0.1ppm (depending on the effectiveness of price discrimination) assuming 75 per cent leakage, a medium-demand scenario, a handset life of 2.5 years and an R-G factor of 1.5. This approach would not, however, take into account the detriments associated with the leakage.

⁴Ofcom's MCT Statement, section 7.

on the level at which it is set. If the NES is lower the detriments will be lower but so will the benefits.

4.159. Fifth, the expected level of leakage is a highly material factor in our overall judgement on the likely costs and benefits of the NES. Where there is a high level of leakage and the detriments associated with it are taken into account, we consider it implausible that the benefits of the NES would outweigh the costs,¹ and in our view it would certainly not be an effective and proportionate mechanism for achieving its objectives.

Conclusion on the costs and benefits of the NES

4.160. For the reasons given above, we remain of the view that the NES is not a proportionate regulatory mechanism for achieving its ends, that there is no longer a sound case for the NES, and that its inclusion within the MCT price control was an error.²

Remaining grounds of appeal

4.161. Because of the nature of our assessment, in particular as to the significance and likely level of leakage, it has not been necessary to resolve all of BT's grounds of appeal or to come to a definitive view on some of the arguments put forward by the Interveners as to why the optimal NES might be higher than the 0.3ppm chosen by Ofcom. We have considered all those arguments, but even if they were all resolved against BT, our overall conclusion would not be affected.

Other issues: reliance on the 2003 CC report

4.162. In response to our provisional determination, Vodafone said that in various places we appeared to place reliance on the 2003 CC report to support our reasoning in the present case. Vodafone argued that we were not entitled to do this as the 2003 CC report has no precedent or other authority in the present proceedings and was challenged in judicial review proceedings (in which the merits of the CC's reasoning could not be in issue).³

4.163. We do not accept Vodafone's criticism for a number of reasons:

- (a) The 2003 CC report was cited by Ofcom⁴ and certain Interveners⁵ in this case. Accordingly, it was before us and we were entitled to have regard to it. We also note that it is one of the very few examples presented to us of a regulator considering the case for the NES in some detail in the context of the UK mobile market. To have no regard to it would in our view have been unjustified.
- (b) We did not treat the 2003 CC report as binding on us. Indeed, as set out above, we came to the view that the inclusion of an NES within the charge controls constituted an error, whereas the CC in 2003 (despite its misgivings) came to the opposite view.

¹We note that no party argued in response to our provisional determination that the R-G factor was greater than 2.

²We also remain of the view that this conclusion holds irrespective of whether subscription levels would be suboptimal in the absence of an NES (even though for the reasons we have given we are not convinced that would be the case).

³Vodafone response to the provisional determination, paragraphs 10 & 11.

⁴Ofcom's Price Control Defence, paragraph 3.8.34.

⁵Orange Sol, paragraph 7.3.

- (c) In our provisional determination (and in this determination) we discussed the 2003 CC report at some length because it formed a key part of the background to the approach taken by Ofcom in the MCT Statement and the past treatment of this issue in the UK (we do not understand Vodafone to be critical of this aspect of our treatment of it).
- (d) We do not employ the same reasoning as that contained in the 2003 report. We do, on certain points, agree with the conclusions it reached. But that is not because of any misconception as to its precedential value—rather, it is because, after due consideration, we considered those conclusions to be well founded.
- (e) We note that as far as the specific paragraph of our provisional determination that Vodafone cites (paragraph 4.56 above) is concerned, apart from Vodafone's general point that we are not entitled to rely on the 2003 CC report, no party argued in response to our provisional determination that the factual point set out was wrong.

Other issues: consistency with other determinations

- 4.164. In response to our provisional determination, T-Mobile argued that the decision we had (then) come to on 3G spectrum costs would reduce the contribution made by MCT charges to fixed and common costs and hence lead to retail prices rising, a reduction in the number of subscribers willing to join or remain on mobile networks, and a loss of social welfare. It said that there was no evidence that we had taken this into account.¹
- 4.165. The conclusions we have come to in relation to 3G spectrum costs stand in their own right. The 3G spectrum issue relates, broadly, to the correct calculation of the appropriate MCT cost benchmark. The case for the NES depends on whether or not it is appropriate for there to be a mark-up over costs to reflect network externalities: it is not related to the question of what is the appropriate allowance for costs in the first place.
- 4.166. It is also not clear to us how T-Mobile's point is consistent with its argument (and evidence) that significant reductions in MCT rates had not led to a fall in spend on acquiring subscribers.² In any event, even allowing for the effect of our determination on 3G spectrum, MCT charges will still make a contribution towards fixed and common costs, and will therefore still contribute to the incentives to attract or retain subscribers who would not be willing to pay for the full resource cost of subscription.
- 4.167. We also note that T-Mobile's argument omits any mention of the welfare losses associated with having MCT charges in excess of efficient MCT costs. Its logic could be used as a justification against any reduction in MCT rates from whatever the prevailing level happened to be.

Conclusion

- 4.168. In the light of the above considerations, and in particular:

¹T-Mobile response to provisional determination, p7.

²ibid, Annex A.

- (a) the strong incentives the MNOs already have to attract customers with a positive CLV even if the costs incurred in providing a subscription to those consumers is greater than the amount they are willing to pay to join or stay on the network; and
- (b) the fact that leakage is likely to be high (at least 66 per cent and possibly up to 90 per cent) leading to detriments identified above in paragraphs 4.119 to 4.146;

we think that no NES should have been included within the MCT charge controls.

Determination

4.169. For the reasons given above, we have determined that the price controls imposed by Conditions MA3 and MA4 on all of the MNOs have been set at an inappropriate level because Ofcom erred in its approach to the allowance of a network externality surcharge.

5. 'Effects-based analysis' determination: Reference question 2

5.1. *Preamble*

- 5.1.1 This section sets out the CC's conclusions as to whether the price controls imposed on H3G were too low relative to the price controls imposed on the other 2G/3G MNOs because Ofcom erred in failing to take account, or sufficient account, of the financial impact of these controls on H3G's business and on the adverse effect of that impact on competition, for the reasons set out in paragraphs 3.3 to 3.12 of the H3G Amended Price Control Appendix.
- 5.1.2 For the reasons given below, we do not consider that Ofcom erred in failing to take account, or sufficient account, of the financial impact of the price controls on H3G's business and on the effect of that impact on competition. Further, we do not consider that H3G's price controls were too low relative to the price controls of the other 2G/3G MNOs for the reasons set out in paragraphs 3.3 to 3.12 of the H3G Appendix.

5.2. *Ofcom's approach in the MCT Statement*

- 5.2.1 In its MCT Statement, Ofcom set charge controls that were to apply to all MNOs for four years, from 2007/08 to 2010/11. Ofcom's methodology, broadly, was to select a target average charge (TAC) for 2010/11 that was based on an assessment of the efficient cost of providing MCT in that year. The TAC was to apply as a cap on what the MNOs could charge for MCT, on average, in that year. Ofcom then set a glide path for each MNO. The function of the glide path was to determine how, over the period of the charge controls, the MCT charges of the various MNOs were to decrease until they converged with the TAC in 2010/11.
- 5.2.2 Although Ofcom applied the same remedy, price controls, to each MNO, it did not set the same charge controls for each of them. A single TAC in 2010/11 was set for Orange, O2, T-Mobile and Vodafone (the 2G/3G MNOs), and a separate one was set for H3G. Further, the glide paths of the MNOs differed, reflecting primarily the different starting points of their MCT charges. The 2G/3G MNOs had been subject to regulation prior to the MCT Statement coming into effect, whereas H3G had not, and H3G's MCT charges were higher than those of the 2G/3G MNOs and its glide path reflected this.
- 5.2.3 There were a number of reasons for the differences in the 2010/11 TACs between H3G and the 2G/3G MNOs. H3G is a 3G-only operator—that is, it only operates a 3G network. The 2G/3G MNOs, on the other hand, operate both 2G and 3G networks. The differences in TACs in 2010/11 reflected this as under Ofcom's cost modelling the cost of MCT on each network was different. Ofcom also took into account the fact that H3G entered the market much later than the 2G/3G MNOs and would take time to build up its market share, so would have lower lifetime traffic than the 2G/3G MNOs and would not achieve economies of scale immediately.
- 5.2.4 As to the glide paths, Ofcom did not consider that reducing the MNOs' MCT rates to cost immediately would be in the longer-term interest of consumers. Each of the MNOs therefore enjoyed, under Ofcom's glide path, a mark-up over efficient costs for each year of the price control up until 2010/11.
- 5.2.5 Ofcom set a TAC for the 2G/3G MNOs in 2010/11 of 5.1ppm, and a TAC for H3G of 5.9ppm (in 2006/07 prices). Table 5.1 shows the differences in the charges to apply in each year of the price control for each operator type caused by the differences in TACs and glide paths.

TABLE 5.1 Ofcom's TACs for each operator type (2006/07 prices)

	2007/08 ¹	2008/09	2009/10	2010/11
H3G's TAC (ppm)	8.5	7.5	6.7	5.9
1800-MHz-only MNOs' TAC (ppm)	6.0	5.7	5.4	5.1
900/1800 MHz MNOs' TAC (ppm)	5.5	5.4	5.2	5.1
Difference between H3G's and 1800-MHz-only MNOs' TAC (%)	42	32	24	16
Difference between H3G's and 900/1800 MHz MNOs' TAC (%)	55	39	29	16

Source: CC calculations based on Ofcom's MCT Statement, Figures 9.4 and 9.5.

5.2.6 As can be seen, under Ofcom's charge controls for 2007/08 H3G's TAC is between 42 and 55 per cent higher than those of the 2G/3G MNOs, and this difference falls to between 32 to 39 per cent in 2008/09, between 24 and 29 per cent in 2009/10, and 16 per cent in 2010/11.

5.2.7 Ofcom acknowledged that the charge controls it set were asymmetric, and that asymmetric regulation could lead to undesirable outcomes. Specifically, it said that if certain MNOs were allowed to earn greater 'excess profits' than others by charging a relatively higher margin over cost, that had the potential to create a competitive distortion in the retail market to the detriment of consumers.² Ofcom told us that it was important for any asymmetry to be competitively neutral and not to distort competition in any way. It considered that its approach was competitively neutral in that the different TACs set for 2010/11 reflected differences in efficient costs between the operators (although it recognized that the price controls allowed H3G to earn a higher margin on MCT than the 2G/3G MNOs during the first three years due to the different glide paths for the operator types).³

5.2.8 Ofcom recognized that the charge controls, by requiring a reduction in each MNO's MCT charges, would have a financial impact on the MNOs. It recognized, first, that the balance of termination revenues between MNOs would be affected, and that the size of this impact on a particular MNO would depend on the balance of incoming and outgoing traffic between MNOs and the level of regulated charges that applied to each MNO; and second, that for traffic originating from FNOs, all five MNOs would see a reduction in their incoming termination revenues.⁴

5.2.9 Ofcom considered the consequences of the charge controls on the MNOs' commercial positions, including their effect in relation to the MNOs' expectations as expressed in their business plans. It assessed whether the charge controls were likely to generate any financial effects which presented an unreasonable adjustment for the MNOs. In particular, it recognized that the charge controls imposed on H3G required it to reduce its MCT charges by a significantly greater percentage than the

¹The figures for 2007/08 are those defined by Ofcom's glide paths before the adjustment made by Ofcom to the charge controls to account for the fact that the MCT Statement was not published 60 days before the date on which the new controls were to come into force. In the MCT Statement Ofcom explained that although it was general practice to give communication providers 60 days' notice of new charge controls, it was of the view that the new charge controls should take effect on 1 April 2007 (four days after publication). Ofcom therefore adjusted the charge levels for the first year by weighting them as though they applied for only ten months of the year and that for two months the headline charges in the previous year had continued to apply. In the case of the 2G/3G MNOs, Ofcom said that the impact on the TACs was less than 0.1ppm. For H3G, this adjustment resulted in a TAC for 2007/08 of 8.9 ppm (in 2006/07 prices) (see paragraphs 9.181, 9.182 and 9.192 of the MCT Statement).

²Ofcom's MCT Statement, paragraph 7.39.

³Ofcom bilateral hearing on H3G appeal, transcript, p10.

⁴Ofcom's MCT Statement, paragraphs 9.197–9.199.

other MNOs, and it therefore expected H3G to be subject to a greater financial impact.¹

5.2.10 H3G had argued in the consultation process leading up to the MCT Statement that Ofcom's proposed charge controls would significantly reduce H3G's revenues and result in a transfer of revenue from H3G to the other MNOs. However, Ofcom concluded that H3G's (then) current charges were well above cost and that the partial reduction in H3G's revenue was required to bring its charges closer to an efficient cost-based benchmark.²

5.2.11 Ofcom also rejected H3G's argument that the charge controls should be set to ensure a net neutral impact on termination payments and revenues between H3G and the other MNOs, and that the net termination payments made by H3G to the other MNOs (which reflected the fact that H3G's retail customers made more calls to the other MNOs than they received from them) amounted to a subsidy to the other MNOs. Ofcom recognized that H3G originated more calls than it terminated, and therefore might pay more to the other MNOs than it receives from them in respect of MCT, but considered that MCT charges should be cost oriented, which implied that net purchasers of termination services would pay more.³

Furthermore, Ofcom did not accept H3G's argument that the imbalance of traffic that H3G experienced was an inevitable and unavoidable result of H3G being a more recent entrant and currently a smaller competitor than the other MNOs, considering that targeting subscriber types who tended to make more calls than they received was not the only entry strategy available to H3G. Ofcom noted that previous entrants had targeted price-sensitive customers and focused on 'pay as you go' ('PAYG' or 'pre-pay') customers and as a result are net receivers of termination payments. It also noted that whilst an entry strategy that targeted customers who made more calls than they received may have disadvantages in terms of wholesale revenue, the entrant benefits from higher retail revenues.⁴

5.3. H3G's grounds of appeal

5.3.1 H3G's argument, broadly, was that Ofcom failed to take account, or sufficient account, of the financial impact of the charge controls on H3G, and the consequences of that impact for competition in the UK mobile market, in setting the charge controls that it did. Its argument had, in essence, three limbs:

(a) First, H3G argued that Ofcom's decision will have a net negative annual impact on H3G's financial position of between £[] and £[] a year. H3G expects to pay a net amount of [] to the other MNOs in respect of MCT, which, compared with perpetuating H3G's (then) current MCT rate, represents a worsening of H3G's payments to the other MNOs of [] million for the price control period.⁵

(b) Second, H3G argued that underlying the financial impact is the imbalance in H3G's traffic flows, which has been persistent since it entered the market. The traffic imbalance is said to be caused, in summary, by the current donor-led

¹ibid, paragraphs 9.200 & 9.201.

²ibid, paragraphs 9.204 & 9.205.

³ibid, paragraphs 9.210 & 9.211.

⁴ibid, paragraph 9.211.

⁵H3G's Amended Price Control Appendix, paragraphs 3.3 & 3.4.

arrangements for mobile number portability (MNP) and by the strategy H3G had to adopt as a new entrant in a saturated market.¹

- (c) Third, H3G argued that the wider effect of the above will be detrimental to the level of competition in the UK given H3G's role as the 'maverick' competitor. H3G's presence is said to have had a positive effect on competition in terms of both price and innovation. H3G argued that the financial impact of the price controls will reduce its ability to act as the maverick, that the additional money being passed to the other MNOs is likely to be retained as profit or spent on retaining customers, and that this situation is unlikely to result in significantly lower retail prices or other consumer benefits.²

5.3.2 Before turning to each aspect of H3G's case in detail, we would make the following preliminary comments:

- (a) H3G's appeal on price control matters has two components: one which relates to Ofcom's modelling of costs and its selection of charge controls based on its efficient cost benchmarks, and one which does not relate to Ofcom's cost modelling at all. This particular section is concerned with the latter—ie the arguments made by H3G in paragraphs 3.3 to 3.12 of its Price Control Appendix are arguments that Ofcom should have allowed it a higher mark-up over costs (or reduced the 2G/3G MNOs' charge controls below cost), and do not relate to the proper calculation of the costs of a 3G-only operator's MCT service itself.³ Before dealing with H3G's specific points, it is therefore necessary to address, at least to some degree, whether and in what circumstances asymmetries that are unrelated to the cost of MCT may be justified.
- (b) There is a large degree of overlap between this particular reference question and the question of whether it was disproportionate for Ofcom to impose a price control obligation on H3G at all. That question was determined by the Tribunal in its judgment on non-price control matters of 20 May 2008 (the NPC Judgment).⁴ A number of parties have cited the NPC Judgment, and have made submissions as to whether and to what extent it is binding on us. We consider our conclusions to be entirely consistent with the NPC Judgment so the circumstances in which it would have been necessary to decide whether and to what extent it is binding on us have not arisen.
- (c) The Tribunal also ruled on the admissibility of certain materials and arguments that H3G attempted to introduce during the course of the appeal on 20 May 2008 (the Admissibility Ruling).⁵ We have had regard to the Admissibility Ruling and have confined our considerations to those properly raised by H3G in its Price Control Appendix as determined by the Tribunal.

5.4. Asymmetry

H3G's arguments

5.4.1 In its Amended Schedule of Evidence, H3G argued that asymmetric regulation of MCT rates (other than to reflect objective cost differences) would be justified by the

¹ibid, paragraphs 3.5–3.7.

²ibid, paragraphs 3.8–3.12.

³H3G's arguments as to specific errors in Ofcom's cost modelling are addressed in other sections of this determination.

⁴[2008] CAT 11.

⁵[2008] CAT 10.

competitive disadvantages it suffers as a result of its position as a late entrant, and the donor-led MNP system.

5.4.2 H3G argued that it was 'widely acknowledged' among economists that a later entrant in the mobile sector is not able to compete on equal terms with earlier entrants and is unable to 'catch up' with them where MCT rates are symmetric. A later entrant, it was said, must make a huge investment in a reduced period of time so that it is able to offer the same quality of service as the incumbents, and so will be faced with a huge loss at the outset and must realize its investment very quickly.¹

5.4.3 H3G also argued that later entrants' disadvantages are reinforced by the termination payments they make to incumbent operators. While this allows incumbents to subsidize retail prices, it decreases the profitability of the later entrant and its ability to compete, hindering retail competition.² H3G put forward asymmetric regulation as a possible solution to this, the implication being that, if the entrant's MCT rates are regulated at a higher level than the incumbents', the entrant's profits will increase and it will be able to become a more competitive influence on the market, ultimately increasing consumer welfare. H3G acknowledged that once the later entrant had gained sufficient competitive strength so that it could compete on roughly equal terms with the incumbents, asymmetric regulation should be replaced with symmetric regulation. It argued, however, that that point had not yet been reached due to the barriers to switching resulting from the current MNP arrangements, and that any decision to move to symmetric regulation should be based on a detailed analysis of H3G's position in and the general fluidity of the market.³

5.4.4 H3G provided the following materials in support of its position:

- (a) two articles by Dr Peitz which it was said supported its position (the Peitz Articles);⁴
- (b) a decision by the French telecommunications regulator, ARCEP, of October 2007 in which ARCEP adopted asymmetric regulation (the ARCEP Decision);
- (c) a draft decision by the Portuguese telecommunications regulator, ICP-ANACOM, also of October 2007, of similar effect (the ANACOM Decision);
- (d) comments on the Italian telecommunications regulator's decision to apply asymmetric regulation from European Commissioner Reding, also of October 2007;
- (e) the European Regulators' Group's Common Position paper on symmetry of fixed and mobile termination rates, adopted in February 2008 and a draft of which was made available in December 2007 (the ERG Common Position); and
- (f) the expert reports of Dr Stephen Littlechild, originally submitted in support of H3G's case on non-price control matters before the Tribunal.

5.4.5 Those materials are discussed under 'assessment' below (in paragraphs 5.4.29 to 5.4.51).

¹H3G's Amended Schedule of Evidence, paragraph 5.3.

²ibid, paragraph 5.4.

³ibid, paragraph 5.7.

⁴Dr Martin Peitz, *Asymmetric access price regulation in telecommunications markets* (2002) and *Asymmetric regulation of access and price discrimination in telecommunications* (2005), submitted by H3G with its Amended Schedule of Evidence.

5.4.6 H3G also argued that the UK retail market was not fully competitive, and that it could be made more so, particularly by H3G being free to play the role of the 'maverick competitor' (hence there being an additional justification for asymmetric regulation in its case).¹

Ofcom's arguments

5.4.7 Ofcom's position was that greater competition in the mobile market was desirable, but, given the characteristics of the UK, this was better achieved by encouraging competition on the merits than by 'entry assistance' through greater asymmetry in regulated MCT charges. Its position was not that asymmetric MCT rates could never be justified, but that it was important to weigh up their negative and positive effects to determine whether they were justified in any particular case.²

5.4.8 As to the negative effects of asymmetric regulation, Ofcom argued that it risked:

(a) Distorting competition, because if different MNOs earned different profit margins on MCT over the efficient level of costs due to regulation, one MNO would find it more profitable than its competitors to serve a given subscriber in the retail market, even if it charged the same retail prices and was equally efficient. Similarly, if equally efficient, it would be able to undercut its competitors' retail prices and still be profitable while raising its competitors' costs. This would be a distortion rather than competition on the merits since its competitive advantage in the retail market would arise from its unique ability to exploit its market power in the wholesale MCT market.³

(b) Encouraging inefficient operators that offered inferior services to consumers or had inefficiently high costs to enter the market, or keeping unsustainable competitors in the market only by virtue of entry assistance.⁴

5.4.9 A paper on asymmetric regulation by Dr Valletti was also cited which set out a number of the potentially negative effects of asymmetric regulation (the Valletti Article),⁵ as were the views of the European Commission that termination rates should normally be symmetric and that asymmetry, acceptable in a number of cases, required adequate justification. These are considered under 'assessment' below (in paragraphs 5.4.29 to 5.4.51).

5.4.10 As to the positive effects, Ofcom stated that they depended on the magnitude, timing and nature of any long-run increase in competition. However, Ofcom considered that these potentially positive effects needed to be assessed in the light of the particular market circumstances that existed in the UK:⁶

(a) Whilst it had not assessed it in detail, Ofcom thought that the level of competition in the retail market was likely to be significant.⁷ The wholesale access and origination market (which is closely linked to the retail market) had been found to be effectively competitive by Ofcom's predecessor, Oftel, in 2003 (meaning that no MNO had been found to have significant market power), and Ofcom considered

¹H3G bilateral hearing on its appeal, transcript, pp24&25; H3G's amended Price Control Appendix, paragraphs 3.8–3.12.

²Ofcom's Response, paragraphs 2.22–2.25.

³First witness statement of Geoffrey Myers for Ofcom, paragraphs 27–29; Ofcom's Price Control Defence, paragraph 5.5.5.

⁴Ofcom's Response, paragraphs 2.22–2.25.

⁵First witness statement of Geoffrey Myers for Ofcom, paragraph 72, citing Dr Tommaso Valletti, *Asymmetric regulation of mobile termination rates* (2006).

⁶Ofcom's Response, paragraph 2.25; Ofcom slides for bilateral hearing on H3G appeal, slides 13 & 17.

⁷Ofcom's Price Control Defence, paragraph 5.5.8, footnote 90.

that the retail market had probably become more competitive since that time, partly because of the presence of MVNOs.¹

- (b) There were five MNOs in the retail market, four of whom were of a roughly similar size, and a number of MVNOs which had achieved market shares that were very much higher than in many other European countries.²
- (c) The decisions cited by H3G related to markets that both had much higher HHIs³ than the UK and only three MNOs, the third having a markedly lower share than the other two, so the fact that regulators there had imposed asymmetric charge controls could not simply be 'read across' into the different circumstances of the UK market. Ofcom considered the UK mobile sector to generally be more competitive than in other European countries, and unique in having no MNO with a greater than 30 per cent market share.⁴
- (d) Therefore, the benefits of stimulating any further increase in competition may be lower than in heavily monopolized markets. Moreover, there is greater scope for entry assistance to have a detrimental impact, both as a result of placing existing competitors at a regulatory disadvantage and given the risk of stimulating inefficient entry.

5.4.11 Ofcom did recognize that if a new entrant or smaller player faced an unavoidable competitive disadvantage, that would be something that might merit examination, though it would not necessarily lead to any asymmetry in MCT rates because other remedies might be more appropriate and direct, and any asymmetry put in place as an indirect remedy might lead to adverse effects of its own.⁵

5.4.12 Ofcom also noted that H3G had not set out its reasoning of why a late entrant would not catch up with incumbent operators in any coherent way. For instance, Ofcom said that H3G had provided no explanation as to why a new entrant needed to realize its investment very quickly. Hence, it was not possible for Ofcom to comment on the magnitude of the disadvantage alleged by H3G.⁶

Interveners' arguments

Position in relation to increasing asymmetries

5.4.13 Orange, T-Mobile and Vodafone submitted that asymmetric rates should only be allowed (if at all) to reflect certain cost differences (ie arising from smaller scale and technological reasons linked to spectrum allocations). They argued that Ofcom had already allowed for these, and that further asymmetry should be rejected.⁷

5.4.14 O2 and BT submitted that they disagreed in principle with Ofcom's view that the MCT charges of H3G should be different to those of other MNOs. It follows that they are also opposed to increasing the level of asymmetry.⁸ O2 said that only relevant

¹Ofcom bilateral hearing on H3G appeal, transcript, pp26&27.

²Ofcom's Response, paragraph 2.25 and footnote 13.

³Herfindahl-Hirschmann Index: a commonly accepted measure of market concentration which takes into account both the number of firms in a market and their relative size. The HHI will increase as the number of firms in the market decreases or the difference between their market shares increases.

⁴Ofcom bilateral hearing on H3G appeal, transcript, p73.

⁵ibid, pp15&20.

⁶Ofcom's Response, paragraph 2.28.

⁷Orange bilateral hearing on H3G appeal, transcript, pp32-36; First expert report of Dr Mike Walker for T-Mobile, paragraphs 2.10 & 2.11; Vodafone bilateral hearing on H3G appeal, transcript, pp10&11.

⁸PwC expert report for O2, paragraphs 28&29; BT bilateral hearing on H3G appeal, transcript, p7.

exogenous factors (ie factors that go beyond the control of an operator) should be taken into account in setting MCT rates (consistent with the CC's position in its 2003 report), and that these factors only included spectrum allocations that had been determined by non-market-based mechanisms (so excluding auctions).

- 5.4.15 O2 and BT also made the point that MCT is a homogenous product, there being no difference from a caller's perspective between 2G and 3G MCT.¹ O2 said that if there were a competitive MCT market, it would not be sustainable for a new entrant to charge higher prices simply because it had different costs. Allowing H3G to charge higher termination rates amounted to entry assistance and, in any event, was not justified in a market that was already competitive before H3G's entry. O2 did acknowledge that, in theory, greater entry assistance could lower barriers to entry and increase competition in the long run. However, it argued that manipulating MCT charges was an inefficient way of promoting entry as this in itself distorted competition in the retail market.²
- 5.4.16 O2 also noted that H3G's MCT charges currently are, uniquely among the MNOs, significantly above efficient costs, allowing H3G to subsidize its retail activities from excessive MCT charges, such activity ultimately being funded by its rival MNOs and their customers. This was because the glide path for H3G allowed a higher margin above costs than those of the other MNOs. O2 described this as a 'regulatory windfall' for H3G.³ O2, like Ofcom, cited the Valletti Article and noted that even academics and regulators who supported short-term asymmetry rejected permanent asymmetry, as it would allow inefficient or unsustainable operators to enter and remain in the market to the detriment of society.⁴
- 5.4.17 Similarly, T-Mobile said that it was important for efficiency that firms faced incentives to enter the market only where they might be expected to bring additional benefits that outweighed the costs of their entry, and asymmetric regulation distorted those incentives.⁵ Allowing one MNO to receive a higher margin over MCT costs than others damages efficiency and distorts competition as it allows the MNO to compete harder for subscribers, possibly undercutting the competition even if it is less efficient. The higher MCT rate also increases the MNO's competitors' costs and puts upward pressure on their retail prices, giving it a further regulatory advantage.⁶ In relation to H3G in particular, T-Mobile cited H3G's 'We Pay' tariff that was launched in January 2006, whereby customers were given a 5p credit for each minute of incoming traffic received, as evidence of the competitive advantage that could result from being allowed to make uniquely high margins over MCT cost.⁷
- 5.4.18 T-Mobile also submitted that the focus should remain on the relevant market, being the wholesale market for MCT. Whilst the retail market was important, the purpose of Ofcom's regulation was to prevent abuse in the relevant market, not engineer some particular result in the retail market.⁸
- 5.4.19 In addition to potentially distorting competition and creating or perpetuating inefficiencies, Orange argued that giving H3G any further asymmetry would leave the UK out of step with mainstream thinking among national regulatory authorities

¹ibid, paragraph 31; ibid, transcript, p7.

²PwC expert report for O2, paragraphs 34–47.

³O2 Sol on H3G appeal, paragraph 34; First witness statement of Nicholas Blades for O2, paragraph 70.

⁴PwC expert report for O2, paragraphs 43–47.

⁵First expert report of Dr Mike Walker for T-Mobile, paragraph 2.9.

⁶ibid, paragraphs 2.10–2.16.

⁷ibid, paragraphs 2.24–2.25.

⁸T-Mobile bilateral hearing on H3G appeal, transcript, p22.

(NRAs) in Europe, namely that termination charges should normally be symmetric and that asymmetry requires adequate justification.¹

5.4.20 BT argued that particular concerns arose when one brought the FNOs into consideration. Asymmetric treatment would mean that fixed-line customers would be paying more for a monopoly service to help an MNO meet its alleged problems resulting from its more recent entry or from the competitive situation in the mobile market.² Indeed, greater asymmetry would in fact, according to BT, be harmful to competition between fixed and mobile operators.³

5.4.21 Vodafone stated that the only reason a regulator might wish to confer the benefit of an asymmetric charge on one MNO would be where a temporary period of asymmetric regulation could be expected to rectify a relevant competitive disadvantage suffered by the MNO and leave it able thereafter to participate in the market on equal terms with other firms. In such a case, any detriments of asymmetry would be outweighed by the longer-term benefits of strengthened competition to consumers. However, in this case Vodafone submitted that H3G has provided no compelling explanation as to what relevant competitive disadvantage justifies such asymmetric regulation in its case, nor as to how such asymmetric regulation in the short term would promote more effective competition in the longer term—the benefits cited by H3G (eg its ability to offer more attractive retail tariffs) all depend on the continuance of the asymmetry.⁴

5.4.22 In its bilateral hearing, Vodafone summarized what it thought would generally need to be demonstrated for asymmetries to be justified:

- (a) a (competitive) asymmetry that was in some sense fundamental or inherent to a new entrant;
- (b) the asymmetry would have to limit the ability of that entrant to grow or compete;
- (c) if the entrant were to grow and compete, it would make sufficient difference in due course that would offset any detriments associated with the shorter run asymmetric treatment; and
- (d) the asymmetric treatment would have to solve the problem, and then be unnecessary.

In addition, in this particular case, Vodafone considered that the (competitive) asymmetry may have to have been unforeseeable, because if difficulties were foreseeable, they should have been factored in to the amount that H3G was prepared to pay for its 3G licence.⁵

Position in relation to the retail market

5.4.23 Vodafone also submitted that there was no justification to confer regulatory advantages on H3G to ensure that the market becomes or remains competitive given that competition is already strong, something on which the other 2G/3G MNOs agreed. Vodafone cited the five MNOs and over 13 MVNOs competing in the retail market,

¹Orange Sol on H3G appeal, paragraphs 4.2 & 9.1.

²BT Sol, paragraph 64.

³H3G plenary session, transcript, p64.

⁴Vodafone Sol on H3G appeal, paragraph 5.5(ii).

⁵Vodafone bilateral hearing on H3G appeal, transcript, pp9&10.

and Ofel's, Ofcom's and the CC's consistent findings that the retail market was effectively competitive. It also mentioned the Tribunal's finding that the UK market was characterized by vigorous competition, with substantial switching and no evidence of stagnancy, and the finding that there was no evidence that H3G would be forced to exit the market as a result of the imposition of the price control, or that there was nothing to suggest that its network would cease to be operated even if it did so.¹ Similarly, T-Mobile pointed out that the UK mobile market was the least concentrated in Europe, with the small players being effective competitors and all MNOs having significant revenue market shares, and there being no significantly larger operator that might be operating as a price leader.²

5.4.24 A number of operators gave us other indicators that the retail market was a competitive one:

- (a) Orange submitted that inter-operator churn (meaning movement of customers between MNOs) was around [X] per cent for contract customers and nearly [X] per cent for pre-pay customers.³ It also told us that around [X] per cent of its current customers had been with it for the past four years, leaving around [X] per cent who had switched from another network or joined the market.⁴
- (b) O2 submitted that the market was characterized by high levels of churn, being between 17 and 23 per cent for the 2G/3G MNOs as at September 2007 and even higher prior to that. It also submitted that the size of the mobile market had grown by 37 per cent since H3G's launch. Retail competition, it said, had been driven by innovative pricing packages offered by the 2G/3G MNOs.⁵
- (c) T-Mobile provided figures from Merrill Lynch's Global Wireless Matrix for the fourth quarter of 2006, showing that churn in the market, as reported by the operators themselves, had been between 33 and 36 per cent from 2005 to 2007, higher than any other country in Europe.⁶ It said that there had been approximately 100 million new connections and an increase of approximately 17 million (30 per cent) in total subscribers since H3G's entry into the market.⁷ It also said that there was significant pressure broadly to match other MNOs' main deals at each price point and provided us with some details of products it had launched in the past 24 months.⁸ In short, T-Mobile submitted that it was difficult to look at these factors and come to the view that the retail market was not subject to effective competition.⁹ It also submitted that a 'heavy weight' should be placed on Ofel's previous findings as to the competitiveness of the retail market.¹⁰
- (d) Vodafone said that it experienced higher churn rates in the UK than in any other major European market in which it operated, with an annual churn rate of [X] per cent for contract customers, a 33 per cent annual churn rate for Vodafone as a whole and an estimated industry churn rate of approximately 36 per cent. It estimated that there have been 104 million gross connections (instances when a new number is activated on a mobile network) and an increase in the total number of

¹Vodafone Sol on H3G appeal, paragraphs 1.8(v) & 5.5(v).

²T-Mobile bilateral hearing on H3G appeal, pp9,10&23; T-Mobile slide 8 for plenary session on H3G appeal.

³Orange hearing on BT appeal, transcript, p26.

⁴Orange letter of 15 October 2008.

⁵First witness statement of Nicholas Blades for O2, paragraphs 15–25, 40.

⁶First witness statement of Philip Barden de Lacroix for T-Mobile, paragraphs 7–9.

⁷ibid, paragraphs 56–58.

⁸ibid, paragraph 16; T-Mobile slide 7 for plenary session on H3G appeal.

⁹T-Mobile bilateral hearing on H3G appeal, transcript, pp23–26.

¹⁰ibid, pp20&21.

mobile connections of 21 million (40 per cent) since H3G entered the market.¹ It also told us that average retail prices had dropped by around 30 per cent between 2001 and 2006,² that value for customers had been increasing through 2007/08,³ and that there was a high level of innovation and differentiation in the market.⁴

Precedents from other jurisdictions

- 5.4.25 As to the precedents from other jurisdictions that H3G cited, T-Mobile and Vodafone argued that these did not assist H3G's case. T-Mobile argued that the level of asymmetry allowed by ARCEP and ANACOM was less than the amount that Ofcom had allowed in the charge controls, that the asymmetry permitted by the Italian regulator had been criticized by the European Commission, and that the ERG Common Position only supports asymmetry on the basis of differences in cost, which Ofcom has allowed, or on the basis of conditions that do not apply in the UK.⁵
- 5.4.26 Vodafone added that the cases cited by H3G appeared to contemplate only that a new entrant may be allowed to operate under a differentiated charge control for a limited period, where effective competition is dependent on the survival and effective participation of the new entrant and where such assistance is necessary to allow the new entrant to survive and compete effectively, without the benefit of asymmetric regulation, in due course. Vodafone stated that the Tribunal, in its NPC Judgment (in paragraph 279) had supported this view, finding that the materials relied upon by H3G did not support the conferring of a competitive advantage on a relatively new entrant MNO which serves only to allow it to compete with an unfair advantage in the retail market.⁶

Other considerations

- 5.4.27 BT and Orange submitted that H3G has already had some very substantial assistance. A 3G licence was reserved for a new entrant, it was acquired for much less than the price paid by others for an equivalent licence, and H3G had access to a roaming service as the result of a regulatory requirement, so it could immediately offer services on a national basis (unlike earlier entrants).⁷
- 5.4.28 Vodafone argued further that, in so far as there were any features of the retail market which distorted competition (for instance, as H3G alleged, the MNP arrangements), they should be addressed directly, there being no basis for treating MCT charges as a 'balancing item' or 'safety valve' to address any problems in the retail market that may exist.⁸ Similarly, BT emphasized that, even if an MNO were being disadvantaged for some reason beyond its control, and competition were distorted as a result, that would still not be sufficient to justify asymmetric MCT rates. It would still have to

¹First witness statement of Craig Tillotson for Vodafone, paragraphs 11, 25–27, 63.

²Vodafone slide 2 for plenary session on H3G appeal.

³Vodafone bilateral hearing on H3G appeal, transcript, pp35&36; Vodafone slides 3–6 for bilateral hearing on H3G appeal.

⁴Vodafone slide 8 for bilateral hearing on H3G appeal.

⁵T-Mobile Sol, paragraph 15.3.

⁶Vodafone Sol, paragraph 5.5(iv).

⁷Orange bilateral hearing, p31; BT bilateral hearing, pp10&11; H3G pointed out in its response to our provisional determination that it was not entitled to rely immediately on national roaming to offer services on a national basis—rather, it was required to offer 3G coverage to 20 per cent of the population before being entitled to purchase national roaming from O2 or Vodafone (H3G response to provisional determination, paragraph 10.2).

⁸Vodafone Statement of Intervention in the non-price control matters, paragraph 78(ii).

be the case that the remedy would be effective and proportionate and not itself more harmful than the problem it was intended to cure.¹

Assessment

5.4.29 We begin our assessment of H3G's arguments with a discussion of the materials that have been cited by the parties. We then present our views.

The Peitz Articles

5.4.30 H3G submitted the Peitz Articles in support of its argument for more asymmetric treatment. Dr Peitz argued that the potential disadvantages of asymmetric MCT regulation might, under certain circumstances, be compensated for by an increase in retail competition. He argued that this would be the case when asymmetry increases an entrant's expected profits so that it would have a stronger incentive to enter the market and make the necessary investments. Given entry, competition and consumer welfare will increase (although the effect on total surplus will be ambiguous).

5.4.31 Dr Peitz set up a theoretical model with two players, an incumbent and an entrant, where the regulator commits to allowing the entrant a mark-up on its MCT costs whilst regulating the incumbent at cost before the entrant makes its investment decision. Once the regulator has set access prices, the operators simultaneously set per-minute usage retail prices. The entrant's above-cost interconnection rate means that it will make positive wholesale profits which gives it an incentive to enter the market.

5.4.32 Dr Peitz recognized that once the entrant had gained competitive strength so that it could compete on equal terms with the incumbent, asymmetric regulation should be replaced with symmetric regulation. He also noted that if the asymmetry was time-persistent, the regulator had to worry about inefficient entry, that a regulator committed to an asymmetric policy might in fact attract less efficient entrants, and that asymmetric regulation was likely to reduce the incumbent firm's investment incentives.

5.4.33 We consider that a model which considers an entrant coming into a market with only one incumbent can only be of limited relevance to the case at hand. Further, the fact that Dr Peitz's analysis depends on the regulator committing to a particular regulatory policy before the new entrant has decided to enter the market makes it of doubtful application in the context of the mobile UK market.

5.4.34 Nonetheless, we would not dissent from the basic, albeit limited, point that asymmetric MCT regulation can in some circumstances lead to an increase in competition and consumer benefit in the long run.

The Valletti Article

5.4.35 Dr Valletti refers to asymmetric regulation as an improper and inefficient way of enacting entry assistance policies. He highlights that asymmetric regulation can lead to allocative and productive inefficiencies and distort competition:

¹BT bilateral hearing on H3G appeal, transcript, p3.

- (a) Since asymmetric regulation leads to cross-subsidies between firms that compete in the same retail market, it can result in productive inefficiencies and distort competition. More efficient operators' wholesale costs would be higher as they are required to pay higher rates for terminating their subscribers' calls on the network of the less efficient operator. The termination costs of the less efficient firm will be covered and, in parallel, its wholesale costs would be lower thanks to the relatively lower termination charges of the more efficient operators. These differentials in costs may then impact on retail prices, distorting the process of competition.
- (b) The asymmetry may mute the entrant's incentives to become more efficient and reach scale, as it may prefer to stay relatively small and keep the benefits of its regulatory protection. This may also reduce the incentives that more efficient firms have to invest in cost-reducing activities while protecting (and even attracting) less efficient operators. This could result in a slower convergence of prices to efficient costs to the detriment of consumers.

5.4.36 Taking those effects into account, Dr Valletti argued that a single symmetric charge for all MNOs competing in the same retail market might provide the right incentives to improve efficiency. This is because the more efficient firms will be able to capture profits at the regulated price while the inefficient firms will incur losses.

5.4.37 Ofcom and a number of the MNOs have cited the Valletti Article in support of the argument that no further asymmetric treatment of H3G would be justified. We consider that the article does provide support for their position.

The ARCEP Decision

5.4.38 This is a decision of the French regulator setting the MCT rates of MNOs operating in France.¹ In so far as this is relevant:

- (a) The decision relates to the MCT rates of three MNOs.
- (b) ARCEP emphasized that it supported the principle of MCT charge symmetry in the long term. It stated that transitional asymmetry, in the short term, is only justified to take into account additional costs borne by one operator and resulting from data² on entering the market beyond the control of that operator, or to rectify problems of competition resulting from the gradual convergence of MCT rates towards the underlying cost references.³
- (c) Cost differences arising from different spectrum frequency allocations were taken into account in setting the charge controls.⁴
- (d) Later entry and smaller market share were taken into account in ARCEP's cost modelling, leading to cost differences of between 25 and 45 per cent for Bouygues, the later entrant MNO (the cost modelling was based on historic cost accounting). These additional costs were not considered by ARCEP in themselves to be enough to justify asymmetry, and were only to be taken into account on the basis that, for exogenous reasons, Bouygues had been unable to acquire

¹ARCEP decision: Decision no 2007–0810 of the Post and Electronic Communications Regulatory Authority of 4 October 2007.

²This may be a translation error, and it seems to us that the correct word is 'circumstances'.

³ARCEP decision, p88.

⁴ibid, pp88–90.

a market share comparable to competitors. Low churn rates in France and the fact that number portability had only been made effective in May 2007¹ were taken into account in this regard. ARCEP described the French market as ‘particularly inflexible’. It stated explicitly that it did not wish to judge the relevance of Bouygues’ commercial strategy, and could avoid doing so as it had decided that additional costs associated with lower economies of scale should only be taken very partially into account.²

- (e) On-net/off-net pricing differentials³ and the resulting traffic imbalances were also seen as reasons for asymmetry. However, ARCEP noted that offsetting a problem of competition between mobile operators through asymmetric MCT rates would have effects on FNOs, and decided that traffic imbalances should be taken into account only partially. Further, ARCEP thought that the problem was foreseeable to an extent and was affected by the types of offers that Bouygues made.⁴
- (f) Bouygues was ultimately granted a termination charge that was approximately 31 per cent higher than the other two operators, with a ‘sunset’ date of 2010 or 2013 depending on an analysis of the fluidity of the market.⁵

5.4.39 We acknowledge that the ARCEP Decision demonstrates that another European NRA has implemented asymmetric MCT regulation. However, the source of much of the asymmetry related to differences in efficient costs (due to differences in spectrum allocation and economies of scale). Ofcom has allowed for these, and in so far as H3G criticizes Ofcom’s cost modelling those criticisms are dealt with elsewhere (in Section 7) and not in this section of our determination.⁶

5.4.40 Furthermore, whilst a proportion of the asymmetry was based on traffic imbalances, it was the combination of on-net/off-net pricing differentials and above-cost MCT rates, not the traffic balance itself, that was identified as the problem.⁷ Those issues fall outside the scope of this appeal.⁸

5.4.41 Finally, the value of the decision as a precedent has to be assessed in the light of the specific market that one is dealing with. The market circumstances in the UK may not be the same as those in France, and therefore the fact that non-cost-based asymmetry was considered justified in France does not necessarily mean that it would be justified in the UK.

The ANACOM Decision

5.4.42 This is a decision of the Portuguese regulator.⁹ Again, it related to a market in which there were three MNOs. ANACOM took account of differences in the date of market entry in setting its charge controls, although it commented that the differentiation in

¹H3G pointed out in its response to our provisional determination that number portability had been introduced into the French market in 2003, and that the significant development in May 2007 was a move to a recipient-led porting system and a shortening of porting time (H3G response to provisional determinations, paragraph 10.4).

²ibid, pp90–95.

³Which are, given the Tribunal’s Admissibility Ruling, outside the scope of the present proceedings.

⁴ARCEP decision, pp96–100.

⁵ibid, pp103&104.

⁶It should be noted that Ofcom took a different approach to market shares and economies of scale to ARCEP, using an economic depreciation methodology rather than an accounting one. Whether Ofcom erred in choosing its methodology is dealt with in Section 7 of this determination on Reference question 3(ii).

⁷ARCEP decision, p96.

⁸Pursuant to the Admissibility Ruling.

⁹ANACOM decision: Resolution of 24 October 2007 of ANACOM.

rates due to network utilization (ie market shares) should be limited in time in order to avoid creating incentives for inefficiency. Traffic imbalances caused by on-net/off-net pricing differentials were also thought to be a further justification for asymmetry, although the asymmetry was said to be a transitional remedy and symmetry remained the regulatory aim. ANACOM noted that setting asymmetric rates actually risked exacerbating some of the problems that the smaller network, Optimus, was experiencing.

5.4.43 Taking those factors into account, ANACOM concluded that Optimus should benefit from a moderate and transitional asymmetry in MCT rates, corresponding to a rate 20 per cent higher than that of the other two MNOs.

5.4.44 The comments made in paragraphs 5.4.39 to 5.4.41 above in relation to the ARCEP Decision apply equally to this decision.

The European Commission's position¹

5.4.45 A number of parties have brought to our attention the comments that the European Commission has given under Article 7 of the Framework Directive in relation to draft MCT price control decisions:

(a) In its letter of 2 September 2007 to ARCEP, the European Commission stated that MCT rates should normally be symmetric and that asymmetry requires adequate justification. It recognized that, in certain exceptional cases, an asymmetry might be justified by objective cost differences that are outside the control of the operators concerned, such as differing spectrum allocations and different dates of market entry. The fact that an MNO entered the market later was said to justify higher MCT rates for a transitory period only. The persistence of asymmetry would not be justified after a period long enough for the entrant to adapt to market conditions and become efficient and could even discourage smaller operators from seeking to expand their market share.

(b) In its letter of 13 September 2007 to ARCEP, the European Commission noted that ARCEP justified asymmetric MCT rates for Bouygues on the basis of traffic imbalances and the significant net payments Bouygues was making to the other two operators. It commented that such traffic imbalances may have been caused by MCT rate asymmetries as well as on-net/off-net differentiation that were within the control of the operators. For that reason, it stressed the importance of reducing the level of MCT rates to the level of costs of an efficient operator.

5.4.46 H3G also cited a press release in which in which Commissioner Reding, commenting on an Italian price control measure in October 2007, stated that asymmetric MCT rates could temporarily be an effective instrument to promote competition and encourage investments by new market entrants, especially where there are objective cost differences. We do not consider that this statement is inconsistent with what appears to be the general position of the European Commission, which is that asymmetry might be justified by objective cost differences, and in any event should be transitory.

¹The European Commission issued a draft Recommendation on fixed and mobile termination rates and an accompanying explanatory note during the course of this appeal, which H3G brought to our attention on 4 July 2008. Given that the Recommendation was only a draft and was open to consultation, dealt with a number of inadmissible topics and was issued over one year after Ofcom set its price controls, we have not taken it into account.

The ERG Common Position

- 5.4.47 The ERG is a body that is made up of NRAs that operate under the European regulatory framework. In February 2008 it adopted its Common Position dealing with the question of asymmetry of fixed and mobile termination rates.
- 5.4.48 Its general position was that asymmetric MCT rates might be justified under some circumstances for a limited period, where the positive benefits for long-term competition more than offset short-term risks of productive inefficiency. The nature of the trade-off would depend on country-specific factors. For example, the benefits of promoting competition would be greater where retail markets are heavily concentrated. The ERG stated that NRAs should bear in mind the drawbacks of asymmetry, such as an increase in off-net tariffs, competitive distortions, lower incentives to invest and innovate, and the risk of inefficient entry.¹
- 5.4.49 The ERG discussed three specific circumstances in which asymmetry may be justified:
- (a) First, where there are differences in cost that are outside the control of the operators arising from differences in spectrum allocations (operators with an 1800 MHz spectrum licence may face higher costs for covering a given geographical area, or ensuring indoor coverage, than those with an 900 MHz licence) or in the way in which spectrum was assigned (which will be the case only when licences are allocated by non-market-based mechanisms and, hence, excludes auctions).²
 - (b) Second, where an MNO has entered the market at a later date and hence does not have the same market share and scale as the incumbent operators. The ERG noted that although market shares may not be entirely outside the control of a firm (an entrant can increase its scale more rapidly by offering lower retail prices than incumbents), an efficient entrant may still need some time to acquire a significant market share (eg because incumbents make it difficult for customers to switch operators). If there are economies of scale, the unit costs of the services provided by new entrants (including MCT) would be higher than those of more established operators and it therefore may be appropriate to allow new entrants to benefit from asymmetric MCT rates.³ However, the ERG commented that NRAs should avoid allowing differences in MCT rates that do not only cover higher costs but also subsidize retail services. It also mentioned that tools such as economic depreciation can reduce the impact of year-on-year variations in unit costs over time due to changing asset utilization, so the fact that a new entrant has an initial small scale does not imply that its unit cost of termination is necessarily very high. The ERG also warned of the dangers of setting too high an MCT rate based on late entry which could be damaging to the new entrant even if it improves its short-term financial position because of the reactions it may bring from other operators.⁴
 - (c) Third, where the combination of on-net/off-net cost differentials, MCT rates that are not set at costs, and network effects leads to a traffic imbalance. The ERG

¹ERG Common Position, pp82&83.

²ERG Common Position, pp83&84.

³The ERG notes that differences in entry date may be a better factor than market shares when deciding whether to allow termination rate asymmetries in favour of the smaller entrant. This is because the date when an operator enters the market is in most cases outside its control whereas market shares, as discussed above, may not be entirely exogenous (ERG Common Position, pp86–89).

⁴ERG Common Position, pp86–93.

stated that the importance of traffic imbalances would vary between countries, and that traffic imbalances per se are not necessarily a problem to be corrected. It also said that there may be downsides in addressing the problem through asymmetry, because asymmetry would cause higher prices for consumers, would impact on other MNOs and FNOs, and could make the problem worse if it encourages larger operators to increase further the differences between on-net/off-net prices and increases the prices for calls going to the later entrant. The ERG considered that the trade-off would depend on country-specific factors, and that the competitive disadvantage, and benefits of addressing it, would be greater in a relatively concentrated retail market where there are strong network effects.¹

5.4.50 We consider that the ERG's position is consistent with that of the European Commission: that is, that any asymmetries should be temporary, based on certain cost differences (with the exception identified above), have a number of potentially negative effects associated with them, and need to be considered in the light of the particular market circumstances that an NRA is dealing with.

The Littlechild expert reports

5.4.51 Three expert reports of Dr Littlechild were submitted by H3G in support of its appeal against the imposition of any price control upon it. Dr Littlechild therefore does not, for the most part, deal specifically with the question of asymmetric MCT rates. He does, however, state that asymmetric regulation can cause competitive distortions to the detriment of efficiency and consumers but that he does not consider it to be a significant problem in the case of H3G in the UK at the present time, and refers to the Peitz Articles, the ANACOM and ARCEP Decisions, and the ERG Common Position.²

Appropriateness of asymmetric MCT regulation in general

5.4.52 We have considered the arguments of all the parties, and the materials cited by them. We accept that, under certain circumstances, asymmetry may bring long-term benefits. This may be the case if a new entrant, for whom different treatment is necessary in order for it to overcome certain barriers to entry and expansion and become a self-standing competitive force, will bring competitive benefits to the market in due course. The extent of those benefits will depend on the particular market circumstances one is dealing with.

5.4.53 However, we also consider that asymmetric MCT regulation has a number of potentially negative effects:

(a) If it is not based on differences in efficient costs, the beneficiary MNO will be able to make excess profits from MCT and may use those excess profits to compete harder for any given subscriber in the retail market. This could give the MNO a competitive advantage over its rivals that is caused by differential regulatory treatment, not greater efficiency or better service.

(b) The asymmetric MCT rate will raise the wholesale costs for other MNOs and FNOs. This may put upward pressure on the other operators' retail prices,

¹For the avoidance of doubt, arguments relating to on-net/off-net price discrimination and its potential effect in the UK market are outside the scope of this appeal (pursuant to the Admissibility Ruling), this paragraph being intended only to describe the ERG's position on asymmetry.

²Second expert report of Dr Stephen Littlechild, paragraphs 18, 19, 27–32.

making it harder for them to compete with the beneficiary MNO, adding to the distortions of competition between MNOs and potentially hindering competition between mobile operators and between mobile and fixed operators.

- (c) Asymmetry may mute the incentives of the beneficiary MNO to reach efficient scale, as doing so would cause it to lose the protection of the asymmetry, and may also lead to, or sustain, inefficient entry.
- (d) Asymmetric MCT rates may not be an effective mechanism for intervention as any increase in retail prices (if they are applied specifically to calls to the beneficiary MNO) would ultimately be harmful to the beneficiary MNO, as they may reduce the amount of traffic and termination income received by it, and may hinder its growth.

5.4.54 It appears to us that there is, to some degree, a consensus about the correct way to approach the question of whether asymmetric rates are justified in any particular case. Although we consider it undesirable to set hard and fast rules (and do not wish to be taken as setting any), in general, we consider that the detriments of allowing non-cost-based asymmetric regulation are unlikely to be justified unless, in the competitive conditions of the particular marketplace that is being dealt with, an increase in competition that the MNO in question may bring in the long run will be substantial enough to outweigh the potential detriments to efficiency and competition mentioned above, and the asymmetric regulation is necessary to enable the MNO to reach a position where it can bring that increase in competition without the need for continued asymmetric treatment.

Asymmetric regulation and H3G's appeal

5.4.55 Applying those considerations to this case, we consider that further non-cost-based asymmetry would not be justified unless H3G could demonstrate that it would have a positive effect on retail competition that is substantial enough to outweigh the potential inefficiencies the asymmetry may bring.

5.4.56 Ofcom's position is that the UK retail market is 'effectively competitive', and that the benefits of asymmetry in the UK are likely to be lower than in some other more concentrated markets in other jurisdictions. The Interveners argued that the UK retail market is extremely competitive.

5.4.57 We note that, although H3G argued that there are specific problems in the UK market that impact upon its position (notably the current MNP arrangements) and that, in general, the retail market is not as competitive as it could be, H3G did seem to acknowledge that the market is, in general, a competitive one. It submitted that the UK market exhibits strong service price competition, and it submitted a report by Oxera¹ on the competitive impact of H3G, setting out trends which are consistent with that proposition.² Accordingly, it is not clear that there is a dispute that, leaving the competitive position of a new entrant and the specific disadvantages that it allegedly faces to one side, the UK retail mobile market is a competitive one.

5.4.58 Whatever agreement there may or may not be between the parties on the competitiveness of the UK market, we consider that it would be neither practical nor propor-

¹*Analysis of H3G's competitive impact on the mobile market*, 2008 by Oxera (the Oxera Report), submitted by H3G with its further submissions of 7 March 2008. This report is considered in more detail in part 5.7 below.

²First witness statement of David Dyson for H3G, paragraph 26; Oxera Report (see, in particular, Figures 3.9, reproduced as Figure 5.4 below, and 3.10).

tionate for us to engage in a detailed analysis in this appeal. At best, a high-level assessment, based on the evidence we have been given, as to the state of the market can be achieved. These remarks should be understood with that proviso in mind.

5.4.59 The UK market has five MNOs (four with roughly equal market shares), a number of MVNOs and, according to the evidence we have been presented with, higher rates of churn than in any other market in Europe. On the face of it, there is therefore some evidence before us that the market is such as to make the benefits of asymmetric regulation lower, and the distortions it brings greater, than in the other markets in relation to which we have been given precedents demonstrating that asymmetric regulation has been applied. Furthermore, H3G has already been allowed a degree of non-cost-based asymmetry due to the glide path that Ofcom set for it, and its margin over termination costs is likely to be significantly higher than the other MNOs until the final year of the charge controls (see Table 5.1). Indeed, the asymmetry already allowed to H3G is greater than that allowed by both ANACOM and ARCEP.

5.4.60 We also think it is relevant that H3G entered the UK market after obtaining a 3G licence which had been reserved for a new entrant. As a result of that reservation, the licence was obtained for approximately £1.6 billion less than was paid for an equivalent licence that was not so reserved. We would expect the prices bid at auction for this licence to reflect the different commercial circumstances of a new entrant. Under these circumstances allowing further asymmetry might effectively compensate twice for the challenges facing an entrant.

5.4.61 Given the above, it may be possible that a case could be made for further asymmetric treatment, but we would expect it to be based on an unavoidable competitive disadvantage, and a sufficient lack of competition, before it could potentially be justified. Even then, there would be a serious question as to whether MCT rate asymmetry would be the appropriate response. Based on the arguments that have been made and the evidence we have been given, however, H3G has not satisfied us that further non-cost-based asymmetry would be justified in this case.¹

5.4.62 The following subsections of this section deal with H3G's specific grounds of appeal.

5.5. The financial impact of the charge controls on H3G and the relevance of H3G's traffic imbalance

H3G's arguments

5.5.1 H3G argued that Ofcom's decision would have a net negative annual impact on H3G's financial position of between £[] a year. H3G expects to pay a net amount of [] to the other MNOs in respect of MCT, which, compared with perpetuating H3G's (then) current MCT rate, represents a worsening of H3G's payments to the other MNOs of [] for the price control period.² According to H3G, underlying the financial impact is the imbalance in its traffic flows, which has been persistent since it entered the market.

¹In its response to our provisional determination, H3G questioned whether these conclusions could stand given our provisional determinations in the BT appeal (H3G response to provisional determinations, paragraph 7.3(a)). We consider that they do still stand. Our determination will result in new TACs being set for 2010/11, but (a) the glide paths will remain, with H3G's margin over termination costs still likely to be significantly higher than the other MNOs until the final year of the charge control period, and (b) cost-based asymmetry is retained in the final year of the charge control period, as it was under Ofcom's price controls.

²H3G's Amended Price Control Appendix, paragraphs 3.3 & 3.4.

- 5.5.2 Both Mr Kevin Russell, H3G's Chief Executive Officer, and Mr David Dyson, H3G's Chief Financial Officer, gave evidence as to how this financial impact would affect their business. Mr Russell stated that H3G has had to modify its retail offerings, and withdraw successful promotions, as a result of the imposition of Ofcom's charge controls.¹ Mr Dyson stated that H3G was not yet profitable, and that the charge controls would make H3G's struggle for profitability harder. He explained that MCT rates were important to H3G's financial situation because of their impact on customer lifecycle values (CLVs), and that the reduction in H3G's MCT rates that Ofcom's charge controls required would reduce the CLVs of its customers (as each incoming minute of termination would generate a lower revenue).² We note that H3G did not argue that the reductions in MCT revenue brought about by the price controls would lead to the company exiting the market.
- 5.5.3 H3G also stated that the MCT payments that it had to make to the other MNOs were a problem for it. Mr Dyson stated that the cost of terminating outgoing calls to other MNOs was the largest individual cost item in the customer margin calculation.³ H3G argued that the price controls, in requiring a proportionally greater reduction in its own MCT rates than that of the other MNOs, put it at a financial disadvantage because of the net interconnect payments that would result.⁴ Mr Dyson presented the results of modelling that had been carried out showing that net interconnection payments to other MNOs could only be avoided at significant detriment to the value of H3G's business.⁵
- 5.5.4 Dr Littlechild, in his expert reports for H3G, argued that it was hard to see how the imposition of a price control on a loss-making new entrant which would result in significant net payments being made to incumbents could be supported.⁶ Similarly, Mr Russell considered that the interconnection payments to the incumbents would provide them with funds to maintain their market share and defeat H3G's attempts to win customers from them, describing this as a 'regulatory windfall'.⁷
- 5.5.5 H3G further argued that its traffic imbalance, which, along with the degree of asymmetry between its own MCT rate and those of the other MNOs, causes its net interconnection payments, was something that Ofcom should have investigated, citing the ARCEP Decision, the ANACOM Decision and the ERG Common Position.⁸

Ofcom's arguments

- 5.5.6 Ofcom recognized that the charge controls would have a negative financial impact on H3G's termination revenues since its unregulated charges were well above cost. However, it did not accept that the prospect of an adverse financial impact should itself determine the level of the charge controls, rather than a consideration against a benchmark of cost. Any financial impact, correctly calculated, would merely be a reflection of the partial reduction in revenue required to bring H3G's charges better into alignment with costs. Ofcom concluded that its charge controls would not undermine H3G's overall financial position, and that its reduced MCT revenue would be

¹First and second witness statements of Kevin Russell for H3G generally.

²First witness statement of David Dyson for H3G, paragraphs 22–28.

³*ibid*, paragraph 25.

⁴H3G's Reply, Annex 1, paragraph 1.6(b).

⁵First witness statement of David Dyson for H3G, paragraphs 29–35.

⁶First expert report of Dr Stephen Littlechild for H3G, paragraph 53.

⁷First witness statement of Kevin Russell for H3G, paragraphs 32–34.

⁸H3G's Amended Schedule of Evidence, paragraphs 2.8–2.15.

small compared with its overall revenues.¹ It also noted that the CC concluded that it was appropriate to impose price controls on T-Mobile in its 2003 report, notwithstanding that T-Mobile had recorded overall accounting losses in each of the six previous years.²

- 5.5.7 In any event, Ofcom did not accept that H3G's forecasts were a true measure of the financial impact, being instead a measure of its net interconnect position (NIP). Ofcom considered that a more appropriate measure would be a comparison of H3G's cash flows under the charge control and without it, taking into account in the counterfactual the reductions in H3G's MCT rate that were anticipated in its February 2006 business plan. It also thought that H3G's estimate was overstated as it did not take into account the waterbed effect. Ofcom calculated the change in H3G's net termination revenue with other MNOs and FNOs (ie the difference between termination revenues and payments) and estimated that it would fall by £[✂] in net present value over the charge control period. Ofcom also calculated that the reduction in H3G's gross termination revenues under the charge control and without it would be less than £[✂] in net present value terms, which we calculate represents [✂] per cent of its projected overall revenues.³
- 5.5.8 Ofcom also did not accept that its charge controls specifically disadvantaged H3G. It noted that the discounted gross termination revenues of Vodafone and O2 will fall by more than £100 million, and of those of Orange and T-Mobile by a little over £250 million.⁴ Ofcom said it was clear that the price controls actually reduced rather than increased the payments that H3G made to the other MNOs.⁵ It also stated that the fact that the charge controls allowed H3G higher MCT charges and profits on termination than the 2G/3G MNOs for the first three years of the price controls could be seen as giving H3G a relatively advantageous competitive position.⁶ Since H3G's MCT charges would continue to be above cost for the first three years of the price control, and so will be significantly profitable, the source of any lack of overall profitability could not be its MCT charge being too low.⁷
- 5.5.9 As to the relevance of the traffic imbalance, Ofcom's position was that it and net MCT payments are not relevant metrics for the purpose of assessing the proportionality of the level of the price controls for incoming calls. It considered that MCT charges should be cost-oriented and that implied that net purchasers of termination will have net outpayments and net receivers will have net receipts.⁸ Ofcom stated that MNOs provided two sets of services: outgoing and incoming. Whether the MNO is a net receiver or net payer of termination does not determine its profitability, which is rather a function of its revenues for each service in relation to its costs for providing each service. An increased traffic imbalance caused by more outgoing calls will increase, not reduce, profitability, unless the price of such calls is forced to be below the (perceived) marginal cost.⁹

¹Ofcom's MCT Statement, paragraphs 9.204 & 9.205; Price Control Defence, paragraphs 5.3.1, 5.3.2, 5.3.5 & 5.3.6.

²First witness statement of Geoffrey Myers for Ofcom, paragraph 79.

³Ofcom's Price Control Defence, paragraphs 5.3.3 & 5.3.4; Annex to Ofcom's letter of 25 July 2008.

⁴Ofcom's MCT Statement, paragraph 9.202.

⁵First witness statement of Geoffrey Myers for Ofcom, paragraph 82.

⁶Ofcom's Price Control Defence, paragraphs 5.5.10 & 5.5.11.

⁷First witness statement of Geoffrey Myers for Ofcom, paragraph 78.

⁸Ofcom's MCT Statement, paragraph 9.211.

⁹Ofcom's Price Control Defence, paragraph 5.4.2.

5.5.10 For that reason, Ofcom said that it did not see the relevance of comparing the termination payments paid by an MNO to others with the termination payments paid by others to an MNO: they related to different services in different markets.¹

5.5.11 Ofcom said that it was also wrong to see net outpayments as a cross-subsidy as H3G seemed to do, because the payments being made reflected cost-based MCT charges.² It recognized that other operators, both fixed and mobile, would benefit from a reduction in H3G's termination charges towards costs, but considered that to be a benefit of the charge controls and the unwinding of a distortion to efficient pricing and competition caused by H3G's excessive MCT charges.³

Intervenors' arguments

5.5.12 As to the reduction in H3G's termination revenues:

- (a) O2 argued that H3G had enjoyed a distortion of competition in its favour through the non-regulation of its MCT charges by being able to use the funds generated by those charges to subsidize customer acquisition, and that the charge controls represented a removal of that distortion. The charge controls would therefore have a financial impact on H3G, but they had done so on all MNOs. H3G had, however, had many years to plan accordingly.⁴ Its profitability was not a relevant factor, according to O2, as charges should be set at an economically efficient level and it was not the job of a regulator to subsidize inefficiency.⁵ In fact, O2 argued, because H3G has been permitted higher margins over cost than the other MNOs, it continued to enjoy a competitive advantage.⁶
- (b) T-Mobile, similarly, accepted that the charge controls would reduce H3G's termination revenue per subscriber by a greater percentage than for the other MNOs, but argued that that was just a reflection of the fact that H3G had, prior to the regulation, enjoyed a higher margin over termination than the other operators.⁷ It also argued that the financial impact comparison H3G put forward was irrelevant, since it must be taken as given on a price control reference that price controls are warranted.⁸
- (c) Vodafone argued that there had been no evidence that the impact of the charge controls on H3G would lead it to exit the market, and that there was no evidence that its network would cease to be operated if it did so.⁹ Even if H3G needed to write down its 3G licence or refinance its business, Vodafone submitted that that should not adversely affect its ability to compete effectively in future.¹⁰

5.5.13 As to H3G's NIP/traffic imbalance analysis, Vodafone took issue with the description of H3G's net interconnection payment position as an 'imbalance' as if there was some natural balance that H3G should be, but is not, achieving. It told us that all

¹Ofcom bilateral hearing on H3G appeal, transcript pp25&26.

²ibid, pp25&26.

³Ofcom's Price Control Defence, paragraph 5.5.9.

⁴O2 Sol, paragraphs 7–10.

⁵PwC expert report for O2, paragraphs 162 & 163.

⁶O2 Sol, paragraph 33.

⁷T-Mobile Sol on H3G appeal, paragraph 14.1(d).

⁸ibid, paragraph 13.



⁹Vodafone Sol on H3G appeal, paragraph 1.8(v).

¹⁰Vodafone's Statement of Intervention in non-price control matters, paragraph 73(i).

MNOs originate more minutes than they terminate and that the relative volumes of outgoing traffic are, to a large extent, driven by MNOs' commercial choices.¹

5.5.14 T-Mobile submitted that H3G's traffic imbalance was irrelevant, because the logic of H3G's argument, namely that MNOs should expect to recover termination payments from the revenues they receive on their own termination services, confused what service was being provided to whom and who paid for it. H3G's termination outpayments were incurred in services ultimately provided to H3G's retail customers and they should pay for them. H3G's own MCT rates are not there to cover these costs, but the costs of providing wholesale termination services to other networks are ultimately paid for by the retail customers of those networks.²

5.5.15 So, according to T-Mobile, whether termination payments happened to balance out was irrelevant to whether an operator could recover its efficiently incurred costs. As long as termination rates covered termination costs, and retail prices covered termination outpayments plus retail costs, an operator could remain profitable regardless of its net termination payments position. An operator, as long as it was earning a contribution over costs on off-net calls, would prefer its customers to make more outgoing calls even if it went into a net termination deficit as a result.³

5.5.16 T-Mobile said that this analysis meant it was misleading for H3G to suggest that its net termination deficit was a barrier to it being able to compete effectively or that Ofcom should impose a remedy to remove the deficit.⁴ It told us that [].⁵ It also told us that [].⁶

5.5.17 The key metric, according to T-Mobile, was the margin an operator received over its termination costs, and Ofcom's charge controls already gave H3G an advantage in this respect with the result that individual customers would be more valuable to it and it would have the incentive and ability to compete harder and offer lower outbound prices to them. At the same time, its competitors' costs would be increased. This was a distortion of competition, and should not be made any worse.⁷ Vodafone, like T-Mobile, also submitted that the correct focus was on the individual customer and their CLV. Provided that an H3G customer individually received the same number of incoming calls as would be received on any other network, H3G could effectively compete and win the customer because it would have the same surplus of incoming call monies to plough back into serving the customer. On that analysis, the fact that H3G had a traffic imbalance did not impede its ability to compete.⁸

5.5.18 T-Mobile considered that, on a proper analysis, the characterization by H3G of the imposition of regulation as a 'cross-subsidy' to the other MNOs was incorrect, and that regulation would in fact lead to a removal of the cross-subsidy from the other

¹First witness statement of Craig Tillotson for Vodafone, paragraph 45.

²Second expert report of Dr Mike Walker for T-Mobile, paragraph 7; O2 argued along the same lines that H3G's traffic imbalance simply implied that it was purchasing more MCT than others were purchasing from it. Outpayments were therefore to be expected, and their existence should not change the assessment of what a reasonable charge is (PwC expert report for O2, paragraphs 144 & 145).

³Second expert report of Dr Mike Walker for T-Mobile, paragraph 8.

⁴ibid, paragraph 9.

⁵H3G plenary session, transcript, p76.

⁶T-Mobile bilateral, pp66&67; T-Mobile bilateral slide 1.

⁷Second expert report of Dr Mike Walker for T-Mobile, paragraph 7; T-Mobile emphasized that competition in the market was for individuals, and that all the analysis it carried out was on an individual customer basis (T-Mobile bilateral hearing, pp7&11).

⁸Vodafone bilateral hearing on H3G appeal, transcript, p20.

MNOs to H3G.¹ Vodafone also took issue with H3G's description of the other MNOs 'benefiting' from the charge controls, arguing that it would be more accurate to see them as unwinding the pre-existing distortion of H3G being free to subsidize its retail activities with MCT revenues paid for by other networks.²

5.5.19 Orange, like the other 2G/3G MNOs, submitted that the balance of termination payments between MNOs was not in itself relevant to the determination of a cost-based charge controls,³ but it did seem to accept that if the underlying traffic imbalance could be attached in some way to a persistent competitive disadvantage, there might be reason to consider taking it into account.⁴

5.5.20 However, even then, Orange argued that applying asymmetric regulation to remedy the problem may actually exacerbate the imbalance.⁵ Similarly, T-Mobile cited the European Commission's view that increasing asymmetries could actually end up making the traffic imbalance worse by further raising the cost of calling an MNO and thus reducing call volumes to it,⁶ and O2 argued that if traffic imbalances were taken into account in setting MCT charges, that would distort MNOs' incentives, who may induce such imbalances safe in the knowledge that the regulator would compensate them. This would incentivize the generation of outgoing traffic and lead to inefficient market outcomes.⁷

Assessment

The impact of the charge controls on H3G's termination revenues

5.5.21 We would generally expect price controls to have an impact on the revenues earned by a firm from the service that is being regulated. It is unsurprising therefore that H3G's MCT revenues will be reduced over the price control period.

5.5.22 The particular reduction in MCT revenues that is experienced, however, cannot tell a regulator at what level the price control should be set. The size of the reduction will be dependent on the price that was being charged prior to regulation, which may have been (as it was found to be by Ofcom in this case) well above cost. It cannot be right that the price control should deviate from cost in the case of a firm that had previously been charging highly excessive prices, but not in the case of one that was already charging prices that were more in line with costs.

5.5.23 Furthermore, as the discussion of asymmetry above sets out, we consider that H3G has not provided a convincing argument that further non-cost-based asymmetry would be justified in this case. For these reasons, we do not think that the reduction in H3G's termination revenues is relevant to the question of the level at which the price controls should be set.

¹First witness statement of Philip Barden de Lacroix for T-Mobile, paragraphs 26–31; H3G's 'We Pay' tariff, described above in paragraph 5.4.17, was cited as one effect of this cross-subsidy.

²First witness statement of Craig Tillotson for Vodafone, paragraph 78.

³Orange Sol on H3G appeal, paragraph 4.4.

⁴Orange bilateral hearing on H3G appeal, transcript, p32.

⁵Orange letter of 15 October 2008.

⁶First expert report of Dr Mike Walker for T-Mobile, paragraphs 2.10–2.17.

⁷PwC expert report for O2, paragraphs 144 & 145.

The relevance of H3G's net interconnection position

- 5.5.24 Both H3G and Ofcom calculations indicate that the reduction in H3G's termination rates will lead to an increase in its net interconnection payments during the price control period. The exact size of these payments is unclear due to the sensitivity of the NIP calculations to the assumptions regarding the relative incoming and outgoing traffic flows between operators as well as their termination rates.¹
- 5.5.25 Critical to H3G's argument is the contention that the net outflow of interconnection payments distorts retail competition. Its reasoning appears to be that the net interconnection payments that are made by H3G can be used by the recipient MNOs to directly support their retail activities and, in parallel, reduce H3G's ability to offer low retail prices.²
- 5.5.26 Ofcom and a number of the Interveners have submitted that H3G's NIP-based argument is misconceived because it fails to take account of the fact that the payment of an MCT charge between one MNO and another is not an arbitrary means of transferring resources between them but rather a cost-reflective charge recognizing that in providing termination services an MNO will incur costs, that it is appropriate and desirable from a static and dynamic efficiency perspective for those costs to be reimbursed, and that termination payments and termination receipts relate to two different services in different markets and do not necessarily need to balance out for an MNO to be competitive.
- 5.5.27 We consider that although the reduction in H3G's MCT rate is likely to increase its net termination payments, an appropriate measure of the effect that the price control may have on H3G's and other MNOs' incentives to compete should include the costs that an efficient operator would incur in providing the termination service. We are therefore not persuaded by H3G's argument that it will be disadvantaged based on its negative NIP position with other MNOs, or that the latter will be advantaged.³
- 5.5.28 Regarding Ofcom's and some of the Interveners' more specific argument that the revenue flowing from H3G to the other MNOs would merely allow these MNOs to recoup the costs that they have efficiently incurred in providing termination services to H3G's customers, we think that argument holds only if MCT rates are strictly cost oriented. If that were the case, there would seem little competitive advantage that the

¹H3G's £[X] million only takes into account the (undiscounted) termination payments and revenues received from other MNOs while Ofcom's £[X] million figure includes the (discounted) termination revenues received by both MNOs and FNOs, and only accounts for the payments made by H3G to other MNOs. As for the MCT rates in the counterfactual scenario (ie no-regulation) H3G assumed that the MCT rates of all MNOs would remain as at March 2007 levels over the price control period, while Ofcom assumed that the rates of all MNOs would fall through time but at a lower rate than the one in the glide path. In the 'regulated' scenario, H3G assumed that its MCT rates would follow a smooth glide path until they converged to Ofcom's TAC in 2010 to 2011 whilst Ofcom assumed that, in line with the MCT Statement, there would be a one-off reduction in H3G MCT rates during the first year of the price control and then a smooth path to the TAC. The traffic forecasts also differ and, while H3G assumed that its traffic would be imbalanced, Ofcom assumed that all MNOs' traffic would be balanced (Annex to H3G's letter of 25 July 2008 and Annex to Ofcom's letter of 25 July 2008).

²This argument is distinct from the argument that the imposition of regulation on H3G will reduce its MCT revenues and undermine its financial position, as H3G's NIP position is not merely a function of its MCT charge level but also of the levels of incoming and outgoing traffic and the MCT rates of the other MNOs.

³The reduction in H3G's MCT rate should have no effect (other than indirectly through the waterbed effect) on the gross amounts that it will pay to the other MNOs over the charge control period. In fact, the charge controls as a whole, by reducing the MCT rates that the 2G/3G MNOs are permitted to charge, will reduce the amount that H3G will pay out over the regulatory period.

2G/3G MNOs gain from being recipients of these payments,¹ nor could they be properly characterized as a cross-subsidy.²

5.5.29 However, as set out above, because of the glide paths that have been set, Ofcom's MCT charges are likely, to some degree, to be in excess of the underlying efficient cost benchmarks for all MNOs, at least for the first three years of the price control. There is therefore the potential for the regulated MCT rates to cause competitive distortions in the retail market. If every minute that an MNO terminates results in that MNO receiving more than the costs that it incurred in providing that termination service then these 'excess' per minute revenues could be recycled at the retail level—through, for example, lower outgoing call prices, lower handset prices, or greater marketing activity. If one MNO receives substantially more of these per-minute revenues than the other MNOs, then it is plausible that it will be advantaged when it comes to competition at the retail level.

5.5.30 Under the glide paths that have actually been set, however, it is not clear that H3G is disadvantaged by the existence of the differentials between MCT rates and cost. Given that the starting point of its glide path was the level of its unregulated MCT rates, the glide path is likely to allow it a higher margin over termination costs for each minute of MCT than will be earned by the 2G/3G MNOs. It is not possible to determine the exact size of this difference because of Ofcom's scenario-based approach for choosing the efficient cost benchmarks. However, Ofcom seems to recognize that, at least in the case of H3G, its MCT rates in the first three years of the charge control period are likely to be in excess of the efficient level of costs.³

5.5.31 The differential in costs can also be considered on an individual customer basis. Several MNOs have told us that the analysis of what retail offers can profitably be made is carried out on a CLV basis. H3G's evidence also highlighted the effect that the charge controls would have on CLV,⁴ and it agreed that the CLV approach could be a useful way of looking at some of the impacts of traffic imbalances.⁵

5.5.32 Given that the gap between the per-minute MCT charge set and the efficient cost benchmark is likely to be greater for H3G than for the 2G/3G MNOs (at least in the early years of the price control), any given customer is likely to be more valuable to H3G than it will be to any of the other MNOs, all else being equal. This is because H3G will receive a greater margin on any minutes terminated on its network than will any of the other MNOs.⁶ As a result, holding everything else constant, H3G is likely

¹There may be circumstances in which this may not be the case. However, our analysis is necessarily confined to the arguments that H3G has advanced in this appeal, as determined by the Admissibility Ruling.

²We note that Dr Stephen Littlechild, in his first expert report for H3G, acknowledged that there may be circumstances in which a large transfer payment for certain parties is not inappropriate as a concomitant part of a regulatory decision, for example if the aim is to align all prices more closely with costs when the previous prices were systematically misaligned with costs (paragraph 54).

³CC calculations using Ofcom's model indicate that [



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⁴First witness statement of David Dyson for H3G.

⁵H3G's letter of 29 October 2008 responding to points at bilateral hearings, pp6&7; H3G has argued that, because of its traffic balance, and H3G's lower reciprocity ratio of incoming calls to outgoing calls, a given customer will have a lower CLV as an H3G customer than as a customer of one of the other MNOs. We do not accept that reasoning. H3G has argued that certain factors in the retail market, in particular the current MNP arrangements, disadvantage it. One of the alleged disadvantages is that H3G attracts customers who tend to make more calls than they receive. However, the focus on this analysis is on the CLV of any particular customer. We do not see why, even if H3G's arguments about the disadvantages it faces are made out, a given customer would exhibit different behaviour on H3G's network than on any other.

⁶In its response to our provisional determinations, H3G argued that we had been inconsistent in our use of the CLV concept, using it to refer to the relationship between MCT rates and marginal cost in some places, but using it to refer to the relationship between MCT rates and Ofcom's estimates of efficient cost here (H3G response to provisional determinations, paragraph 7.8). For the avoidance of doubt, the point made in paragraph 5.5.32 will be true, using the CLV concept to refer to the relationship between MCT rates and marginal costs, so long as H3G's marginal costs of terminating an additional minute of voice traffic on its network are not substantially greater than those of the 2G/3G MNOs.

to have an incentive to offer a more attractive retail offering to a potential new subscriber than will any of the other MNOs.

- 5.5.33 It may also be relevant to consider the total gap between MCT revenues and MCT costs experienced by each of the MNOs. An understanding of the size of this metric might reflect, for instance, the ability of an MNO to undertake an across-the-board improvement in its retail offerings or undertake greater CARS activity. This is a somewhat different measure than the NIP because it takes account of the costs incurred in providing termination services.
- 5.5.34 It is not possible to calculate with certainty the total gap between MCT revenues and MCT costs for each MNO because of Ofcom's scenario-based approach, and its consideration of a range of cost benchmarks. It is therefore not clear that H3G is disadvantaged on this basis either, although we acknowledge that there is a possibility that it is.
- 5.5.35 We therefore do not accept H3G's arguments about the financial impact of the price controls on its relative competitive position. We do not consider that its negative NIP would necessarily put it at a competitive disadvantage or give its competitors an unfair competitive advantage. The alternative cost-related measures that have been put forward as relevant indicate that, on a CLV basis, H3G is likely to retain a relative advantage in all but the final year of the price control and that, on an aggregate level, it is possible that H3G could be disadvantaged. However, even if it were the case that H3G was disadvantaged on an aggregate level, for the reasons set out in subsection 5.4 above we consider that H3G has not demonstrated that further non-cost-based asymmetry would be justified in this case.

Should Ofcom have investigated further H3G's traffic imbalance?

- 5.5.36 Because of our conclusions above, we do not think that H3G's traffic imbalance is, in itself, a relevant factor to be taken into account in the setting of its charge control levels.
- 5.5.37 H3G cited the ARCEP and ANACOM Decisions, as well as the ERG Common Position, in support of its case that the traffic imbalance was relevant and was something that Ofcom should have investigated further. However, the traffic imbalance was only considered relevant by those regulators and the ERG in the context of on-net/off-net cost differentials, and network effects. Such considerations do not fall within the scope of this appeal. We also note that those decisions and materials all post-date Ofcom's MCT Statement. Moreover:
- (a) the ERG considered that traffic imbalances per se were not necessarily a problem to be corrected;
 - (b) non-cost-based asymmetry was seen by ARCEP and ANACOM as a transitional remedy;¹

¹In its response to our provisional determination, H3G argued that we had misread its case by assuming that it was asking for permanent rather than temporary asymmetry (H3G responses to provisional determinations, paragraph 10.6). For the avoidance of doubt, we have not assumed that H3G was asking for permanent asymmetry—although whether asymmetry can properly be classed as 'temporary' depends on how long it is expected to persist, a point on which H3G has not been entirely clear—nor have we distinguished the ARCEP and ANACOM decisions on that basis. The point here is rather that Ofcom's charge controls already allow a degree of non-cost-based asymmetry that is greater than was allowed by the regulatory precedents that H3G cites (see paragraph 5.5.38(d) below).

- (c) it was recognized by the two regulators and the ERG that asymmetry could make the traffic imbalance more severe;
- (d) ARCEP considered that price differentials had effects on FNOs so that traffic imbalances should only partially be taken into account; and
- (e) similarly, the ERG considered that there were many potential downsides in addressing problems that manifested themselves in traffic imbalances through asymmetric MCT rates, and recognized that the potential disadvantages the problems caused, and the benefits of addressing them, would be greater in relatively concentrated markets.

5.5.38 More fundamentally, market reviews of the kind that Ofcom carried out in this case are lengthy and complex. Ofcom's duties under the 2003 Act are bounded by the duty to act proportionately.¹ In considering whether Ofcom should have engaged in an investigation of H3G's traffic imbalance, we think it is relevant that:

- (a) None of the materials that have been cited suggest that traffic imbalances are in themselves problems to be remedied.
- (b) Ofcom's MCT Statement was preceded by a lengthy consultation process, in which a number of well-resourced interested parties, including H3G, participated. During that process H3G put forward two specific causes of its traffic imbalance—the current MNP arrangements and its position as a new entrant in a saturated market. However, it focused very much on the former, suggesting that the strategy it had to adopt as a new entrant was not the most significant factor in creating its traffic imbalance.²
- (c) Given the circumstances of the UK market and the detrimental effects of asymmetric regulation, finding that the traffic imbalance had been caused by a competitive distortion outside the control of H3G would not necessarily have led to further deviation from cost-based charges.³
- (d) Ofcom's charge controls already allow a degree of non-cost-based asymmetry that is greater than was allowed by the regulatory precedents that H3G cites.

5.5.39 Given those factors, we think that it was sufficient in this case for Ofcom to take account of the arguments that H3G put forward and, upon rejecting them, not to go further and look to see if there were any distortions in the market that had not been identified. We do not accept that Ofcom was obliged, in this market review, to satisfy itself that there were no distortions in markets connected to the one it was dealing with that it needed to take into account (and which had not been identified in the consultation process) in order to come to a view on the appropriate level of the price controls.

¹Section 3(3) of the 2003 Act.

²H3G's November 2006 Response, Annex 3:

One potential argument is that H3G's traffic imbalance results from H3G's retail tariff structure and level, which is within the control of H3G. H3G does not believe this is relevant for two main reasons. First, as a new entrant in a saturated market H3G has had no choice but to compete extremely competitively. Second, even if this was a factor, recent evidence does not seem to suggest that it has been the most significant factor in creating the traffic imbalance. During 2006 a number of other mobile operators have introduced increasingly competitive tariffs in response to the competitive pressure of H3G. H3G believes that it still retains a position of price leadership in the UK, but this competitive force is forcing other operators to become more competitive as well. The existence of such tariffs has not had a significant effect on H3G's traffic imbalance.

³H3G recognized that there was an element of asymmetric pricing that had weakened its competitive position already in terms of incoming traffic from fixed lines (H3G bilateral hearing on its appeal, transcript, p47).

5.6. The causes of H3G's traffic imbalance

5.6.1 Notwithstanding our conclusions above, we have considered whether the factors put forward by H3G as causative of its traffic imbalance (the current MNP arrangements in the UK and H3G's position as a new entrant in a saturated market) were wrongly rejected by Ofcom, and should have led to the traffic imbalance and its financial consequences being taken into account.

H3G's arguments

5.6.2 H3G argued that the traffic imbalance that it experienced had been caused by a combination of the MNP system in the UK and its position as a new entrant in a saturated market. MNP is the process whereby a subscriber on one network can join another network without changing their number. Under the current arrangements, the process is initiated by the network the subscriber is already on, which must be approached for a porting authorization code. There can then be a time delay of up to five days before the number becomes operative on the new network.

5.6.3 H3G summarized its case as follows in its Amended Price Control Appendix:¹

- (a) The current MNP process gives the donor MNOs the chance to 'win back' customers who are considering porting.
- (b) One effect is that some customers do not port but keep their old number on a PAYG basis. These customers have two handsets, receive incoming calls on their old handsets and use their H3G handset to make outgoing calls.
- (c) Customers who move to H3G and do not port their number exhibit much lower incoming call minutes on average than customers who do port.
- (d) In short, the absence of an adequate MNP solution is a barrier to switching. Many customers would rather stay with their existing operator than change their number or wait for a cumbersome and time-consuming process to be completed.
- (e) In entering and competing in a saturated market, H3G had to grow by acquiring customers from its competitors. It has offered competitive tariffs as a function of the market circumstances it faced as a new entrant. H3G tariffs in other jurisdictions show a similar approach but this has not led to such a sharp imbalance.

5.6.4 H3G stated that the reasons for the imbalance are because H3G's customers both receive fewer calls (because of the MNP system) and generate more outgoing calls (because of the strategy H3G had to adopt as a new entrant).²

5.6.5 As to the MNP arrangements, H3G submitted that they were out of step with international best practice because they were donor led and took too long. The deficiencies in the MNP process were said to have had three significant effects. First, they represented a barrier to bringing customers on to its network. Second, H3G had achieved a substantially lower proportion of customers who have ported their

¹H3G's Amended Price Control Appendix, paragraph 3.6.

²ibid, paragraph 3.7.

numbers compared with H3G businesses in other jurisdictions. Third, there was unusually high second handset behaviour among H3G's customer base.¹

- 5.6.6 H3G argued that the MNP arrangements contributed to its traffic imbalance in two different ways. First, it reduced the addressable market for H3G, forcing it to focus on customer types that make more calls than they receive, who were said to be less valuable. Second, as fewer customers ported their numbers, second handset behaviour occurred.² H3G provided market research evidence showing that [] of its customers have another handset or SIM in addition to H3G's.³ It also provided evidence that showed, based on the usage patterns of a sample of customers that joined H3G's network in the last quarter of 2005, on average, customers who had ported their numbers received more incoming call minutes than those who had not.⁴
- 5.6.7 As to being a new entrant, H3G argued that traffic imbalances were recurring features internationally for MNOs that entered saturated markets. The entrant had to offer more aggressive outbound prices to establish itself, and those prices tended to attract customers who were likely to make more outbound calls.⁵ H3G's retail strategy when it entered the market was one which, according to H3G, it was constrained to adopt given the market conditions and the need for it to increase market share (ie it was faced with a 'Hobson's choice' between being unable to grow market share and generating a traffic imbalance).⁶ H3G provided us with evidence showing that four Hutchison Whampoa Limited (HWL) owned MNOs in other countries that launched in 2003 had some degree of traffic imbalance,⁷ and that four other operators, who had launched between 1994 and 2007 in other jurisdictions, also had traffic imbalances.⁸

Ofcom's arguments

- 5.6.8 Ofcom did not accept that the MNP system was the cause of H3G's traffic imbalance. Its consumer research did not support H3G's second handset theory, indicating instead that a substantial majority (84 per cent) of H3G customers did not hold an active SIM with another MNO. Of the 16 per cent that did, the most likely reason for holding two subscriptions was said to be the desire to separate personal and business calls. Further, the research did not indicate that there was any preference to avoid incoming traffic on H3G handsets. It indicated the opposite: only 22 per cent of those respondents who held more than one SIM believed that they received fewer calls on their H3G handset than their non-H3G handset, and 48 per cent believed that they received more calls on their H3G handset.⁹
- 5.6.9 Ofcom provided data in its Price Control Defence (reproduced as Figure 5.1 below) showing a comparison of per subscriber incoming and outgoing traffic across networks, which it said demonstrated that H3G's traffic imbalance was not caused by a deficit of incoming calls per subscriber, as would be the case if the current MNP

¹First witness statement of Kevin Russell for H3G, paragraphs 18–20, 24; Exhibit KSR-1.

²H3G's Amended Schedule of Evidence, paragraphs 2.26 & 2.27.

³H3G's Response dated 30 August 2005 to Ofcom's *Preliminary consultation on future regulation*, p31; and May 2006 Response to Ofcom's March 2006 *Mobile Call Termination Consultation*, Annex 3, Figure 1.

⁴Second witness statement of David Dyson for H3G, paragraphs 6 & 7.

⁵H3G bilateral hearing on its appeal, transcript, pp5,8&13.

⁶H3G's Reply, paragraph 4.11.

⁷H3G bilateral hearing slide 16; the entrant in Italy was shown as having a greater degree of imbalance than H3G.

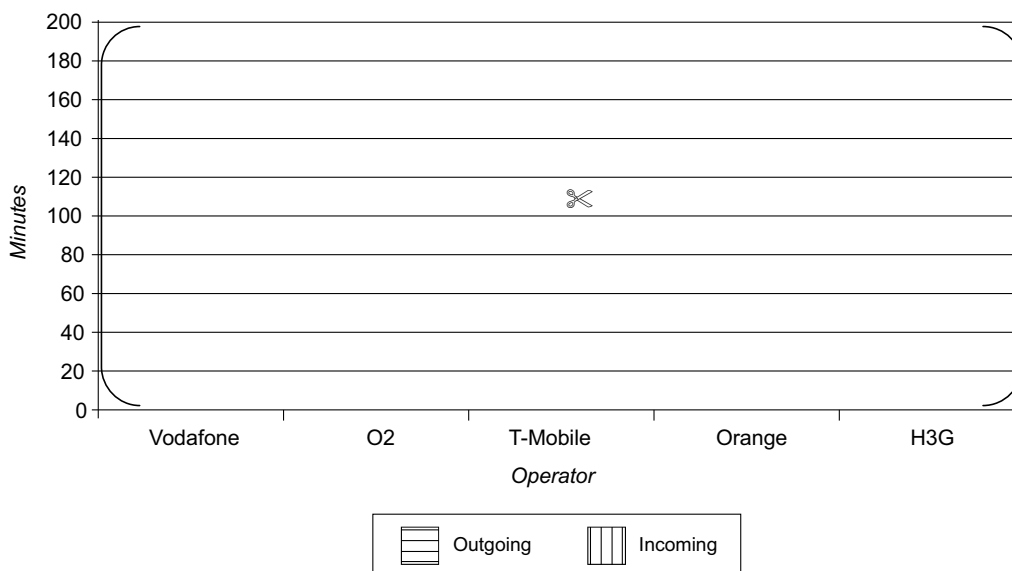
⁸H3G bilateral hearing slide 17; the most severe traffic imbalance was shown as being experienced by Bouygues, which launched in France in 1996.

⁹Ofcom's Price Control Defence, paragraphs 5.4.5 & 5.4.6; Ofcom's publications *Mobile call termination: research annex* (2007) and *Mobile call termination: market review* (2006).

arrangements were the cause, but was due to a significant surplus of outgoing calls per subscriber.¹

FIGURE 5.1

**Monthly incoming and outgoing traffic per subscriber
(reproduction of Ofcom's Figure 5.1 in its Price Control Defence)***



Source: Reproduction of Figure 5.1 of Ofcom's Price Control Defence.

*The incoming call data used to produce this figure does not include on-net calls for any of the MNOs whilst the outgoing call data for the 2G/3G MNOs does include on-net calls.

- 5.6.10 The evidence submitted by H3G showing that customers who had ported received more incoming calls than customers who had not was therefore said to have missed the point, because both types of customers received more incoming calls on average than customers of the other MNOs.²
- 5.6.11 In any case, Ofcom considered that even if it were demonstrated that the current MNP arrangements did disadvantage H3G in some way, the appropriate remedy would be to change them, and not use MCT rate asymmetries as a remedy because doing so would itself bring a number of drawbacks and detriments.³
- 5.6.12 As to H3G's second argument (that its traffic imbalance was caused by being a new entrant in a saturated market and the commercial strategy it had to adopt), Ofcom characterized H3G's case as a plea for entry assistance. Ofcom did not consider that using MCT rates to provide entry assistance was an appropriate policy.⁴
- 5.6.13 Ofcom also did not consider that the causes of H3G's traffic imbalance were outside of its control or an inevitable and unavoidable result of being a more recent entrant and a smaller competitor than the other MNOs. It argued that H3G's focus on contract rather than pre-pay customers was an entirely plausible explanation of H3G's traffic imbalance, contract customers generally being more likely to make more calls

¹Ofcom's Price Control Defence, paragraphs 5.4.7 & 5.4.8. See note to Figure 5.1 about the inclusion of off-net calls; they are included in the outgoing call data but not in the incoming call data.

²Ofcom's Response, paragraph 3.7.

³ibid, paragraphs 2.29 & 2.30.

⁴ibid, paragraphs 2.21 & 2.25; see also Ofcom's arguments on asymmetry in paragraphs 5.4.7–5.4.12 above.

than they receive.¹ It pointed out that previous entrants, including MVNOs, had entered the market and targeted price-sensitive and pre-pay customers and as a result were net receivers of termination.² It also noted that H3G's own evidence showed how making changes to its retail offerings had made a positive impact on its traffic imbalance.³

Interveners' arguments

5.6.14 The Interveners all disputed H3G's claim that the MNP system caused its traffic imbalance (or indeed disadvantaged it in any other way):

- (a) O2, Orange and T-Mobile argued that since H3G's traffic imbalance was caused by a relatively high level of outgoing traffic, rather than a relatively low level of incoming traffic, it could not be the MNP system that was causing it.⁴
- (b) All the 2G/3G MNOs argued that H3G's second handset theory was implausible, unsupported, and inconsistent with Ofcom's consumer research evidence, that research having shown that (i) H3G customers were not significantly more likely to retain an alternative subscription than the customers of other MNOs; (ii) only 16 per cent of H3G's customers had active second SIMs (whereas the market average was 12 per cent); and (iii) the most common reason for having a second SIM was to separate business and personal calls, followed by a desire to have a back-up phone.⁵ Orange also argued that the MNP system was the same for all MNOs and that customers were constantly switching networks, so if the MNP system encouraged second handset behaviour one would expect it to be exhibited on all networks, which was not the case.⁶
- (c) Vodafone said the fact that the MNP process was 'donor led' was simply not the issue, as all MNOs and MVNOs engaged in customer retention activity and did not limit this activity to those wishing to port. Vodafone said that its retention success rates are broadly similar for porting as well as non-porting customers. It also said that there was no reason why H3G should be any more likely to be affected by customer retention activity than any other network.⁷
- (d) Vodafone cited evidence which suggested that the porting process was not seen as a barrier to switching by consumers. It relied on Ofcom's July 2007 MNP consultation document, in which Ofcom did not agree with H3G that present arrangements for routing calls to ported numbers necessarily resulted in significant unmet demand for porting, attributing any unmet demand instead to a lack of customer awareness.⁸ It also said that Ofcom's survey evidence, a BMRB survey from September 2006 and a TNS survey in February 2007, suggested that people were not deterred from porting by the process and that those that did

¹Ofcom's Price Control Defence, paragraph 5.4.11; Ofcom's MCT Statement, paragraph 9.211.

²ibid, paragraphs 5.4.3 & 5.4.4.

³ibid, paragraph 5.4.9, referring to the second witness statement of Kevin Russell for H3G and his description of the effect that the introduction and withdrawal of H3G's 'Double Minutes, Double Texts' offer had on its traffic balance.

⁴PwC expert report for O2, paragraph 149; Orange Sol, paragraph 4.6; Second expert report of Dr Mike Walker for T-Mobile, paragraphs 35–37.

⁵Orange Sol, paragraph 4.6; PwC expert report, paragraph 148; Second expert report of Dr Mike Walker for T-Mobile, paragraph 34; First witness statement of Craig Tillotson for Vodafone, paragraphs 42–46. The research referred to is Ofcom's survey cited in Ofcom's Price Control Defence, paragraph 5.4.6; Ofcom's publications *Mobile call termination: research annex (2007)* and *Mobile call termination: market review (2006)*.

⁶Orange Sol, paragraph 4.6.

⁷First witness statement of Craig Tillotson for Vodafone, paragraphs 39 & 40.

⁸First witness statement of Craig Tillotson for Vodafone, paragraphs 23 & 24; *Arrangements for porting phone numbers when customers switch suppliers—a review of General Condition 18 (2007)*, paragraph 4.30.

port were generally satisfied with the system.¹ The surveys also indicated that the speed of the process was not an important factor for customers. Vodafone also said that there seemed to be no clear link between the speed of porting and the propensity to port or the observed levels of switching or churn in the market.² T-Mobile, similarly, cited Ofcom's 2006 survey, which had shown that 95 per cent of customers who had switched believed that it was easy or very easy and that only 3 out of 1,167 respondents who had not switched said that it was because of the time taken to transfer their number to a new network, which did not support the argument that MNP was a significant barrier to switching.³

- (e) All the 2G/3G MNOs said that H3G's MNP-based argument was at odds with the level of switching in the market. Vodafone said that it experienced a higher level of churn in the UK than in any other European market.⁴ T-Mobile told us that switching was higher in the UK than in Austria and Ireland (jurisdictions H3G cited as having desirable MNP systems).⁵ T-Mobile also disputed that the market was saturated, stating that there had been around 100 million new connections and a total increase in subscriptions of 17 million (more than 30 per cent) since H3G's entry into the market.⁶
- (f) Vodafone submitted that H3G had achieved very high growth until 2005, when growth tailed off, but that since the MNP system remained the same over this period, it could not have been the cause of the drop in growth.⁷
- (g) Further, the 2G/3G MNOs submitted evidence which they argued strongly suggested that it was not the MNP system, but H3G's lack of success in the retail market for other reasons, that was the cause of its problems. Orange told us that [].⁸ T-Mobile also said that in the year to September 2006, only 14 per cent of customers who ported away from T-Mobile ported to H3G. It said the fact that H3G was winning a lower share of those who did port than other MNOs could not be explained by the MNP system as the other MNOs were subject to it as well.⁹ Vodafone similarly gave evidence that, in the 12 months from April 2006 to March 2007, approximately [] per cent of the total number of Vodafone subscribers who ported their number did so to H3G, which was significantly less than the numbers porting to the other MNOs.¹⁰ O2 made a similar point.¹¹ Vodafone also argued that if MNP was a barrier to switching, one would expect H3G's churn rates to be low, but that in fact, H3G had reported a churn rate of 4.9 per cent monthly, or nearly 60 per cent annually, for 2006. Vodafone's churn rate was

¹First witness statement of Craig Tillotson for Vodafone, paragraphs 28–31; *Review of General Condition 18—Number Portability* (2006), Annex 8 and *Arrangements for porting phone numbers when customers switch suppliers—a review of General Condition 18* (2007), Annex 6.

²First witness statement of Craig Tillotson for Vodafone, paragraphs 41, 47–51.

³First witness statement of Philip Barden de Lacroix for T-Mobile, paragraphs 52 and 53; Second expert report of Dr Mike Walker for T-Mobile, paragraphs 25 & 26; *Review of General Condition 18—Number Portability* (2006), Annex 8.

⁴First witness statement of Craig Tillotson for Vodafone, paragraphs 25–27.

⁵T-Mobile Sol, paragraph 14.3. In our provisional determination, we said that T-Mobile had also told us that the level of porting was higher in the UK than in any other country in Europe. In its response to our provisional determination, H3G pointed out that T-Mobile had not substantiated this claim and that it believed it to be incorrect (H3G response to provisional determinations, paragraph 10.5). T-Mobile subsequently clarified that its use of the word 'porting' in this context was intended to mean 'churn' rather than number porting (T-Mobile letter of 18 December 2008).

⁶First witness statement of Philip Barden de Lacroix for T-Mobile, paragraphs 56–58.

⁷Third witness statement of Craig Tillotson for Vodafone, paragraph 32.

⁸Orange bilateral hearing on H3G appeal, transcript, p51.

⁹First witness statement of Philip Barden de Lacroix for T-Mobile, paragraphs 54 & 55.

¹⁰First witness statement of Craig Tillotson for Vodafone, paragraph 54.

¹¹PwC expert report for O2, paragraphs 136–138.

lower, at 33.8 per cent a year. Vodafone said that H3G's own customers were clearly not deterred by the MNP arrangements from leaving H3G.¹

5.6.15 O2 and T-Mobile also argued that in any event, any inadequacies in the MNP system would not justify the manipulation of MCT rates. If a problem existed in the retail market, it should be dealt with directly (and indeed the MNP system was being addressed by Ofcom directly), and not by creating distortions in another market through further asymmetric regulation which would not in any event address the problem.²

5.6.16 As to H3G's argument that its traffic imbalance was caused by its status as a new entrant in a saturated market:

- (a) Vodafone argued that H3G had been inconsistent in its appeal, first arguing that the MNP system, and not its status as a new entrant, was the cause of its traffic imbalance, and then shifting its position to argue that a traffic imbalance was an inevitable result of being a late entrant.³
- (b) The contention that the retail market was saturated when H3G entered it was disputed by all the Interveners. The level of churn in the market and the size of market growth since H3G's entry, as set out above in paragraph 5.6.14(e), were cited as evidence that the market was not saturated.
- (c) T-Mobile and O2 submitted that H3G was a member of a substantial group of companies with considerable experience of penetrating the market and, since its parent company was the owner of Orange until 1999, could never properly have been regarded as a new entrant.⁴
- (d) O2 argued that H3G's argument was simply one for entry assistance, which would be inappropriate and would perpetuate distortions in the retail market.⁵ T-Mobile said that H3G had in fact grown considerably since it entered the market, having captured a share of over 10 per cent of total voice traffic and over 9 per cent of revenue. It also argued that H3G had already benefited from significant advantages, including the requirement for others to provide it with national roaming.⁶
- (e) All the 2G/3G MNOs told us that H3G's commercial strategy was the cause of its traffic imbalance, and that therefore the imbalance should not be taken into account as it was within H3G's control. Its choice to focus on contract, rather than pre-pay, customers and its propensity to offer large bundles of minutes might bring it benefits in terms of higher retail revenues, but would predictably lead to a traffic imbalance as contract customers generally make relatively more calls and pre-pay customers tend to receive more calls than they make.⁷ A number of the MNOs cited H3G's own evidence, in which Mr Russell discusses the impact that

¹First witness statement of Craig Tillotson for Vodafone, paragraphs 52–54.

²PwC expert report for O2, paragraph 135; T-Mobile Sol, paragraph 14.3.

³Vodafone bilateral hearing, pp27&28.

⁴O2 Sol, paragraphs 10(f), 48; First witness statement of Nicholas Blades for O2, paragraph 11; T-Mobile Sol, paragraph 9.1.

⁵O2 Sol, paragraph 48.

⁶T-Mobile Sol, paragraphs 9.2–9.4.

⁷Orange Sol, paragraph 4.4; Orange bilateral hearing, transcript, pp5–11; O2 Sol, paragraph 38; First witness statement of Nicholas Blades for O2, paragraphs 29, 30, 38–42; First witness statement of Philip Barden de Lacroix for T-Mobile, paragraphs 69–75; Vodafone Sol, paragraph 4.4(ii); First witness statement of Craig Tillotson for Vodafone, paragraph 46.

the introduction and withdrawal of H3G's 'Double Minutes, Double Texts' offer had on the balance of traffic.¹

- (f) This was not, it was argued, the only strategy available to H3G. Many of the MNOs cited their own strategies of targeting pre-pay as well as contract customers,² and Orange and O2 also cited the strategies of the MVNOs, who had also entered the retail market, and tended to terminate more calls than they originated.³
- (g) Orange said that H3G's evidence about traffic imbalances being experienced by other late entrant MNOs was of limited value because the data was limited, ignoring the vast majority of new entrants, and showed that MNOs that entered their markets over 12 years ago also had traffic imbalances.⁴ Vodafone said that its networks in the Czech Republic and Hungary, launched in 2000 and 1999 respectively, did not experience traffic imbalances.⁵
- (h) O2 argued that MCT rate asymmetries, by allowing H3G to subsidize its retail offerings, may in fact be the cause of the traffic imbalance, and that it would be counterproductive to increase the differential.⁶

5.6.17 T-Mobile also submitted that it was dangerous to get drawn into a subjective analysis of whether different strategies might or might not have been available to a particular operator and to make adjustments to the price controls on that basis. It was said to be simply beyond the scope of what could sensibly be decided.⁷

Assessment

5.6.18 Figures 5.2(a) and (b) show the incoming and outgoing per active subscriber traffic for H3G and the 2G/3G MNOs for 2006. Figure 5.2(a) includes off-net traffic only (relevant because only this generates termination revenues and payments) while Figure 5.2(b) includes both off-net and on-net traffic (and therefore facilitates comparison to identify underlying differences between the MNOs other than those due to market shares).

5.6.19 The figures show that H3G's traffic imbalance is larger than that of other MNOs mainly as a result of the greater outflow of calls compared with the amount of incoming calls. The average monthly off-net traffic for the 2G/3G MNOs ranged between 46 and 87 outgoing minutes and 43 and 71 incoming minutes per active subscriber. As a result, an average active subscriber made between 30 per cent ([30%]) and 3 per cent ([3%]) more calls than they received each month. In contrast, H3G's average active subscriber made nearly [30%] as many calls as they received—off-net traffic was [30%] outgoing minutes per active subscriber and [30%] incoming minutes per active subscriber. H3G's traffic imbalance is less pronounced when on-net calls are included, mainly as a result of the larger proportional increase in incoming calls.

¹Orange bilateral hearing, p12; First witness statement of Nicholas Blades for O2, paragraph 31; Vodafone Sol, paragraph 4.4(ii).

²T-Mobile bilateral hearing, transcript, p14.

³Orange Sol, paragraph 4.8; Orange letter of 15 October 2008; PwC expert report for O2, paragraph 147.

⁴Orange letter of 15 October 2008.

⁵Vodafone letter of 21 October 2008.

⁶PwC expert report for O2, paragraphs 150–156.

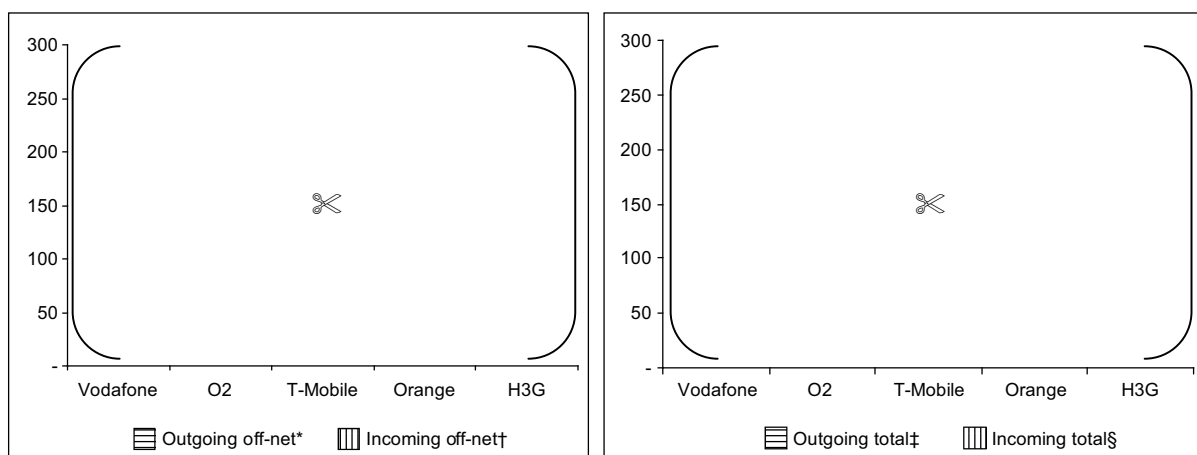
⁷T-Mobile bilateral hearing, transcript, pp14&15.

FIGURE 5.2

Monthly incoming and outgoing traffic per active subscriber

FIGURE 5.2(a) Off-net traffic

FIGURE 5.2(b) Total traffic



Source: CC figures based on data provided by Ofcom.

*Monthly off-net outgoing minutes per active subscriber for the 2G/3G MNOs were obtained by dividing the difference between 'All Calls' volumes¹ and 'on-net' traffic² for 2006 by 12 times each MNO's Q2 number of active subscribers.³ For H3G, monthly outgoing off-net figures were obtained by dividing the 'outgoing minutes excluding on-net calls' in 2006 by 12 times the number of active subscribers in July 2006.⁴

†Monthly incoming off-net traffic per subscriber for 2G/3G MNOs were obtained by dividing total interconnection call volumes received by each MNO⁵ in 2006 by 12 times each MNO's Q2 number of active subscribers. The figure for H3G is equal to the calls received by H3G's subscribers in 2006⁶ divided by 12 times the number of active subscribers in July 2006.

‡Monthly outgoing minutes per active subscriber for the 2G/3G MNOs were obtained by dividing the 'All Calls' volumes for 2006 by 12 times each MNO's Q2 number of active subscribers. H3G's figures were obtained by dividing the 'Total outgoing minutes'⁷ in 2006 by 12 times the number of active subscribers in July 2006.

§Monthly incoming minutes per active subscriber for the 2G/3G MNOs were obtained by dividing the interconnection volumes received by each network plus the 'on-net' traffic for 2006 by 12 times each MNO's Q2 number of active subscribers. For H3G, the total incoming figures were obtained by adding on-net traffic to the interconnection figures, where on-net traffic is the difference between 'total outgoing minutes' and the 'outgoing minutes excluding on-net calls'.⁸

MNP⁹

5.6.20 H3G put forward a number of arguments as to why the current MNP arrangements in the UK may have caused, or contributed to, the relatively low inflow of calls (compared with outgoing calls) that its subscribers received.

¹Ofcom's Telecommunications Market Data Tables Q12007, Table 2 (p18).

²'Call volumes' worksheet of Annex to 5 November letter from Ofcom.

³Ofcom's Telecommunications Market Data Tables Q12007, Table 4 (p19).

⁴Response to the CC's information request of 4 July 2008, responses to questions 3.c and 3.d, respectively. In a letter sent to the CC on 29 September 2008, H3G noted that from November 2005 to May 2007, H3G's outgoing traffic figures are between 3 and 8 per cent higher than they should be. The over-estimation results from the double counting of minutes originated by H3G subscriber roaming on O2's network. In a letter sent to the CC on 7 November, H3G said that the over-estimation of outgoing traffic of the original figures was lower, at 2 per cent. Given that the impact on outgoing off-net traffic volumes is marginal, we have not made any adjustments to the data.

⁵Ofcom's Telecommunications Market Data Tables Q12007, Table 6, p20.

⁶Response to the CC's information request of 4 July 2008, response to question 3.a.

⁷ibid, response to question 3.b.

⁸ibid, response to question 3.c.

⁹Our observations should be read in the light of the specific points that H3G has appealed. We do not intend to suggest that there may not be detrimental features of the current MNP system. It is possible that there are reasons why the MNP arrangements may disadvantage H3G or be undesirable for other reasons, but in so far as they fall outside the scope of this appeal we say nothing about them.

5.6.21 First, H3G argued that the MNP system discourages porting and therefore leads to 'second handset behaviour' whereby H3G customers keep their previous subscription for the purpose of receiving calls. However:

- (a) Survey evidence submitted by H3G to Ofcom¹ and to us suggests that between [30%] and [35%] of its subscribers hold another SIM or handset with another MNO.^{2,3} These figures suggest that the incidence on H3G of second handset behaviour (with another MNO) is higher than suggested by Ofcom's own market research (16 per cent). However, H3G has not provided evidence linking second handset/SIM ownership to the current MNP arrangements. A survey of H3G UK customers commissioned by H3G Ireland in early 2006 shows that most consumers who had more than one phone did so for reasons other than a desire to split incoming and outgoing calls.⁴ This is in line with Ofcom's own survey evidence.
- (b) We therefore consider that the evidence that H3G has provided us does not support its argument that the UK MNP system explains the incidence of second handset behaviour among its subscribers and that this explains the relatively low level of incoming traffic H3G apparently receives.
- (c) We have also considered whether subscribers who have not ported their number (customers with handsets or SIMs with another MNO will form part of this group) receive disproportionately less incoming traffic than those who have ported their number (see Figure 5.3 below). Although the outgoing to incoming ratio was more than [1.5] for subscribers who had not ported their number to H3G than for those who had done so in August 2006, the gap has fallen. This has occurred mainly as a result of the narrowing of the traffic imbalances of subscribers who had not ported their number, caused largely by an increase in incoming calls.⁵ This has happened despite the fact that there have been no changes to the MNP system. We consider this to be a further indication that the imbalance is not caused by the second handset issue.

¹Response dated 30 August 2005 to Ofcom's *Preliminary consultation on future regulation*, p31; and May 2006 Response to Ofcom's March 2006 *Mobile Call Termination Consultation*, Annex 3, Figure 1.

²According to H3G, a TNS survey of a sample of H3G subscribers showed that [30%] per cent had at least one phone with H3G only while approximately [35%] per cent had another phone with another MNO (H3G's Response to the CC's Information Request of 4 July 2008, reply to Question 6). Another survey conducted by Network Research Data on H3G's behalf showed that [30%] per cent of respondents only held one SIM or phone [35%] per cent had another SIM or phone (H3G's Response to the CC's Information Request of 4 July 2008, reply to Question 6). There is no information on the proportion of respondents who had another SIM with an operator other than H3G in this survey.

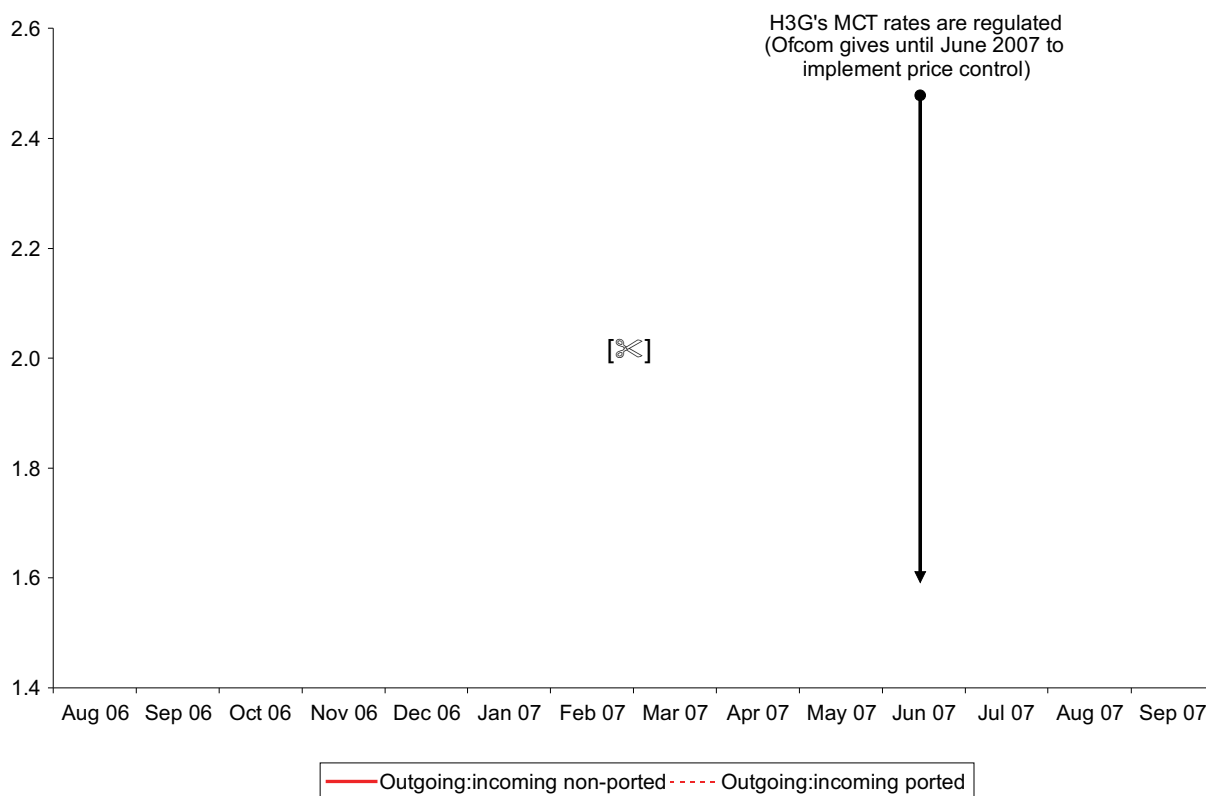
³It is unclear whether the figures include people that not only have but also use the handset/SIM they have with another network.

⁴H3G's May 2006 Response to Ofcom's March 2006 MCT Consultation, Annex 3, Table 2.

⁵There was [1.5] in the number of incoming calls to non-ported numbers of [1.5] per cent between August 2006 and September 2007 (CC calculations based on H3G's Response to the CC's Information Request of 4 July 2008, Question 5).

FIGURE 5.3

Outgoing:incoming ratio for subscribers who have ported and who have not ported their numbers to H3G (excluding on-net calls)*



Source: CC calculations based on H3G's Response to the CC's Information Request of 4 July 2008, Question 5.
 *Outgoing traffic figures correspond to active subscribers. Both incoming and outgoing traffic exclude on-net data.

5.6.22 Second, H3G argued that the MNP system reduced its addressable market forcing it to focus even more on customers who make more calls than they receive and are thus less valuable. However:

- (a) We do not think that H3G has clearly articulated this argument nor presented any compelling evidence showing that the current porting arrangements are deterring significant numbers of consumers from switching networks or porting their numbers. The data put forward by the Interveners shows that churn is higher in the UK than in any other European jurisdiction, including those in which H3G considers a preferable MNP system to be in place (see paragraphs 5.4.24, 5.6.14(e) and 5.6.14(g) above).¹
- (b) Even if H3G had demonstrated that the MNP arrangements constituted an important barrier to switching, in our view it has not provided any (admissible) explanation as to why the customers that end up joining its network receive a relatively low volume of calls because of the MNP system. Furthermore, once a customer has switched to H3G, it is not clear how the MNP arrangements could have any depressive effect on the calls that a subscriber would receive—other than through second handset behaviour, which we have already discussed.

¹In our provisional determination we also said that the data put forward by the Interveners showed that porting was higher in the UK than in any other jurisdiction in Europe. As pointed out by H3G, the Interveners had not substantiated this claim (H3G response to provisional determinations, paragraph 10.5). We therefore do not rely on it in this determination.

5.6.23 During the course of the appeal we asked for information on the traffic balances of H3G operations in other jurisdictions. The information provided by H3G is set out in Table 5.2.

TABLE 5.2 MNP arrangements and mobile traffic patterns for a sample of jurisdictions where H3G is active—2006 data

Country	Date recipient led MNP implemented	% ported	Mobile outgoing mins/incoming mins	Fixed outgoing mins/incoming mins	Total outgoing mins/incoming mins
Australia	Sep 01	[X]	[X]	[X]	[X]
Hong Kong	Mar 99	[X]	[X]	[X]	[X]
Sweden	Sep 01	[X]	[X]	[X]	[X]
Denmark	Jul 01	[X]	[X]	[X]	[X]
Ireland	Jul 03	[X]	[X]	[X]	[X]
Italy	Feb 02	[X]	[X]	[X]	[X]
Austria	Oct 04	[X]	[X]	[X]	[X]
UK			[X]	[X]	[X]

Source: CC calculations based on H3G's Response to the CC's Information Request of 4 July 2008, Question 4.

5.6.24 Although in aggregate there appears to be some positive relationship between the date when recipient-led MNP was put in place, the percentage of customers who have ported and the degree of traffic imbalances, such a correlation is not clear when the information is disaggregated between fixed and mobile traffic. Indeed, as far as mobile-to-mobile traffic is concerned, we noted in our provisional determination that H3G appeared to experience the most severe traffic imbalance in Ireland, despite an MNP system which H3G considered to be more appropriate than that in the UK having been implemented in 2003.¹ This data did not, in our view, support H3G's argument that its traffic imbalance in the UK² is caused by the current MNP system.

5.6.25 In its response to our provisional determination, H3G told us that the data it had provided to us for Ireland was incorrect. It stated that in fact, H3G terminated more minutes from just two of the three mobile operators in the last three months of 2006 than it previously said had been terminated from all mobile operators in the full calendar year, and that mobile-to-mobile traffic was much better balanced than previously indicated.³ H3G did not provide us with the correct updated figures.

5.6.26 Whilst we acknowledge H3G's clarification that the mobile-to-mobile traffic imbalance in Ireland was less severe than previously indicated, the clarification does not suggest that it was not the most severe out of the jurisdictions included in the dataset, including the UK (we note that it would remain so even if the number of incoming mobile-to-mobile calls originally reported were doubled or even tripled). The point made in paragraph 5.6.24 above therefore still stands.

5.6.27 For the above reasons, we do not accept that the MNP system in the UK causes H3G's traffic imbalance for the reasons and in the manner that it suggests.⁴ Furthermore, we agree with Ofcom that, even if the MNP system did cause H3G disadvantages for the reasons it alleges (or other reasons), the appropriate response

¹In most countries H3G's outgoing mobile traffic is larger than the traffic it receives by [X] per cent despite the fact that recipient-led MNP arrangements have been in place since at least one year before H3G entered the market (except in Austria). The Irish case is the most extreme: although an MNP-led system was introduced in July 2003, the traffic imbalances in mobile telephony are still very large. However, the UK's traffic imbalance is the second highest in this sample of countries (after Ireland) and is well above the average outgoing:incoming ratio ([X]).

²And, significantly, the financial flows to its rival MNOs that result.

³H3G response to provisional determinations, paragraphs 10.8–10.10.

⁴We emphasize again that we have not considered whether the MNP system may be undesirable for reasons other than those argued by H3G in this appeal.

would be to remedy the problem directly rather than attempt to address it by increasing the differential between H3G's MCT rate and those of the other MNOs.

New entrant

- 5.6.28 Before assessing H3G's argument in detail, we note that H3G's position appears to have shifted during the course of this appeal. In its Amended Price Control Appendix, it set out a number of the disadvantages that it alleged were caused by the MNP system, and then stated that it had offered competitive tariffs as a function of the market circumstances that it faced as a new entrant, and had taken a similar approach in other jurisdictions but that this had not led to such a sharp imbalance.¹ Mr Russell gave evidence that H3G had not experienced the same level of traffic imbalance in any of the other jurisdictions in which it had 3G operations, and that in each of those jurisdictions an effective, recipient-led MNP system had been implemented.²
- 5.6.29 Similar statements were made in H3G's Amended Schedule of Evidence³ and further evidence given by Mr Russell.⁴ H3G's position at that stage was also consistent with its November 2006 Response, in which it told Ofcom that its status as a new entrant, and therefore the type of strategy it had no choice but to adopt, had not been the most significant factor in creating the traffic imbalance, the key reason being the alleged inadequacy of the MNP system.⁵
- 5.6.30 We think that on a fair reading of those materials, one would be left with the impression that the argument being made was that the severity of H3G's traffic imbalance could not be explained by its status as a new entrant, and so must be down to other factors, such as MNP.
- 5.6.31 However, at a relatively late stage of the appeal, H3G told us that traffic imbalances were recurrent features for MNOs that entered saturated markets and gave us evidence which appeared to be intended to make good that proposition.⁶ Whilst we acknowledge that these arguments may not be logically inconsistent with the statements made earlier on, they clearly signalled a change in emphasis, as H3G acknowledged.⁷ We do not think it was at all clear, on a reading of H3G's Amended Price Control Appendix, or the materials it submitted along with it, that H3G was intending to argue that greater non-cost-based asymmetry should be allowed to overcome a traffic imbalance which was experienced generally by entrants.
- 5.6.32 Nonetheless, we have considered H3G's argument that the traffic imbalance is caused by its status as a new entrant in a saturated market and the commercial strategy it had no choice but to adopt.
- 5.6.33 We have paid careful attention to the arguments made by all the parties as to what viable commercial strategies may or may not have been available to an MNO in the position of H3G. However, we agree with T-Mobile that these are not issues that can

¹H3G's Amended Price Control Appendix, paragraph 3.6(e).

²First witness statement of Kevin Russell for H3G, paragraph 26.

³H3G's Amended Schedule of Evidence, paragraph 2.35.

⁴Second witness statement of Kevin Russell witness statement for H3G, paragraph 28.

⁵H3G's November 2006 Response to Ofcom, Annex 3.

⁶H3G bilateral hearing, transcript, pp5,8&13; H3G slide 16 for its bilateral hearing ; the entrant in Italy was shown as having a greater degree of imbalance than H3G; H3G slide 17 for its bilateral hearing; the most severe traffic imbalance was shown as being experienced by Bouygues, which launched in France in 1996.

⁷H3G bilateral hearing, transcript, p43.

sensibly be determined by us. There may well have been alternative strategies available to H3G. They may have been viable. We do not take a view either way.

- 5.6.34 We think it is more productive to approach the question from the point of principle: if it were true that a new entrant had to adopt a particular strategy that would generate a traffic imbalance, would that justify granting it a higher mark-up on MCT charges? In our judgement, unless it were demonstrated that the further asymmetric treatment would allow the operator to overcome an unavoidable barrier to entry and growth, we find it difficult to see why a traffic imbalance would, in itself, justify further asymmetric treatment.
- 5.6.35 We recognize the arguments that late entry might justify cost-based asymmetries in MCT rates due to the time it will take the later entrant to gain market share and reach scale. However, Ofcom has already allowed for this in its cost modelling (H3G's criticisms of Ofcom's market share assumptions, and the approach Ofcom took to the path of cost recovery, are addressed in Sections 15 and 7 of this determination).
- 5.6.36 We also think it is relevant that H3G chose to enter the UK market after bidding for a 3G licence and had a choice about how much it was willing to pay.¹ In so far as successful entry required the adoption of a strategy that would lead to a traffic imbalance, the financial impact of that could have been reflected in the price H3G was willing to pay. Furthermore, H3G has not put forward any arguments² that, other than the MNP system, unavoidable barriers to growth in the UK market are the cause of its traffic imbalance.
- 5.6.37 Therefore we do not think that Ofcom was wrong to reject H3G's argument that its traffic imbalance should be taken into account in setting the MNOs' price control levels on the basis of the causes that H3G put forward.

5.7. The impact on competition

H3G's arguments

- 5.7.1 H3G argued that the effect of the financial impact of the charge controls on its business (as a result of its traffic imbalance) would be detrimental to the level of competition given its role as the 'maverick competitor'. It said that, since entry, it had impacted on the market in terms of both price and innovation. Conversely, it argued that the payments it would have to make to the other MNOs could be used by them in the retail market, and overall H3G submitted that the situation would be unlikely to result in significantly lower retail prices or other consumer benefits.³
- 5.7.2 H3G relied on the Oxera Report to make good its claims. It also provided us with data indicating that it had increased certain prices and withdrawn certain offers in response to the charge controls, and headlines indicating that others had raised their prices as well (so as to demonstrate that H3G could no longer act as a competitive constraint on the other MNOs to the same extent as it had done previously).⁴ Further, it submitted that it had been a market leader with low prices in mobile

¹And indeed benefited from that licence being reserved for a new entrant.

²ie any admissible arguments.

³H3G's Amended Price Control Appendix, paragraphs 3.8–3.12.

⁴Second witness statement of Kevin Russell for H3G, paragraphs 51–73; H3G's slides 8–11 for bilateral hearing on its appeal.

broadband, and gave examples of the innovations it had been introducing into the market.¹

The Oxera Report

- 5.7.3 Oxera noted that although in principle a fifth operator may improve competition, the question of whether this actually is the case is an empirical matter.² It conducted two types of empirical analysis: first, a 'micro-level' comparison of H3G's calling prices against those of other MNOs—this analysis is based on a comparison of the prices offered by H3G and other MNOs for 12-month and 18-month contracts—and second, to complement the 'micro-level' analysis, a 'macro-level' analysis based on the evolution of the average revenue per minute (RPM) of the different MNOs. It also attempted to assess the level of innovation that H3G was bringing to the market.
- 5.7.4 In its 'micro-level' analysis, Oxera noted that, given the complexity in the prices charged by MNOs, it had combined three approaches to provide a picture of the price movements in 12-month and 18-month contracts:
- (a) A 'monthly ranking of prices' generated by the independent agency 'Pure Pricing' of the contracts offered by the MNOs in four price brackets between July 2005 and August 2006 (£20.00–£29.99, £30.00–£39.99, £40.00–£49.99 and £50+). A ranking of '1' means that the MNO offers the 'best value for money' for a package of texts, minutes and other features of a bundle (including handset costs) in a given price bracket. According to Oxera, the main disadvantage of the Pure Pricing approach is the limited transparency about the assumptions and method of calculation of the ranking.
 - (b) An 'option value' analysis, whereby Oxera first calculated an average ppm for contracts offered by H3G on the one hand and for all other MNOs (collectively) on the other in a given price bracket, and then calculated the percentage by which H3G's prices are lower than the average non-H3G price. Oxera also calculated a weighted average ppm for H3G and non-H3G MNOs according to the popularity of each price bracket. Oxera assumed that all operators had a similar distribution of contracts. The average ppm and the weighted average ppm were calculated for six points in time: September 2004, June and December 2005 and 2006, and June 2007. The calculation included any network/any time contracts and excludes handset costs, minutes not included in a bundle, and non-voice services.
 - (c) A 'customer profile analysis' which estimated the price of the cheapest contract available from H3G and combined the offers from other MNOs to calculate the cheapest price offered by a non-H3G MNO. Prices were adjusted for consumers' 'calling patterns'. The analysis did not include handset costs.
- 5.7.5 Regarding 12-month contracts, Oxera concluded that H3G's prices have been consistently lower than other MNOs', stating that the Pure Pricing ranking of offers shows that H3G has, in general, offered cheaper 12-month any network, any time contracts. That conclusion was confirmed by Oxera's 'option value' (particularly weighted average prices) and 'customer profile' analyses.³ Oxera also noted that over the period analysed, there appears to be a clear decline in the prices charged

¹H3G's slides 10–13 for plenary session on its appeal.

²Oxera Report, pp3&4.

³ibid, pp10–14.

by the other MNOs, which provides some evidence consistent with H3G's comparatively low prices exerting competitive pressure on the prices that the other operators are able to charge, and with competitors responding to the prices offered by H3G.¹ In effect, while the weighted average price of H3G remained relatively 'constant' over time, that of other MNOs presented a decreasing trend—although such a trend reversed in mid-2006 (said to be due to a handful of contracts introduced by O2 and Orange).² The customer profile analysis also shows that the price difference between H3G and other firms has been falling over time, which was, according to Oxera, due to price reductions by the other firms.³

- 5.7.6 Oxera noted that the results of its analysis of 18-month contracts are less clear-cut. The Pure Pricing information shows that between December 2005 and August 2006, H3G offered lower prices for relatively cheap contracts (those in the £20.00 to £29.99 per month price bracket) but from the end of 2005 other MNOs provided cheaper calls in the other price brackets (especially in the more expensive packages, ie £40.00 to £49.99 and £50+ per month brackets). Oxera concluded that nevertheless, overall, H3G appeared to be consistently offering prices below the average level of its competitors.⁴
- 5.7.7 In its 'macro-level' analysis, Oxera analysed the evolution of RPM over the period 1999 to 2007 to put the 'micro-level' analysis into context. Figure 5.4, which is a reproduction of Oxera's Figure 3.9, shows the RPM for each MNO (excluding H3G) and the weighted average RPM against the number of H3G subscribers.

¹ibid, p14.

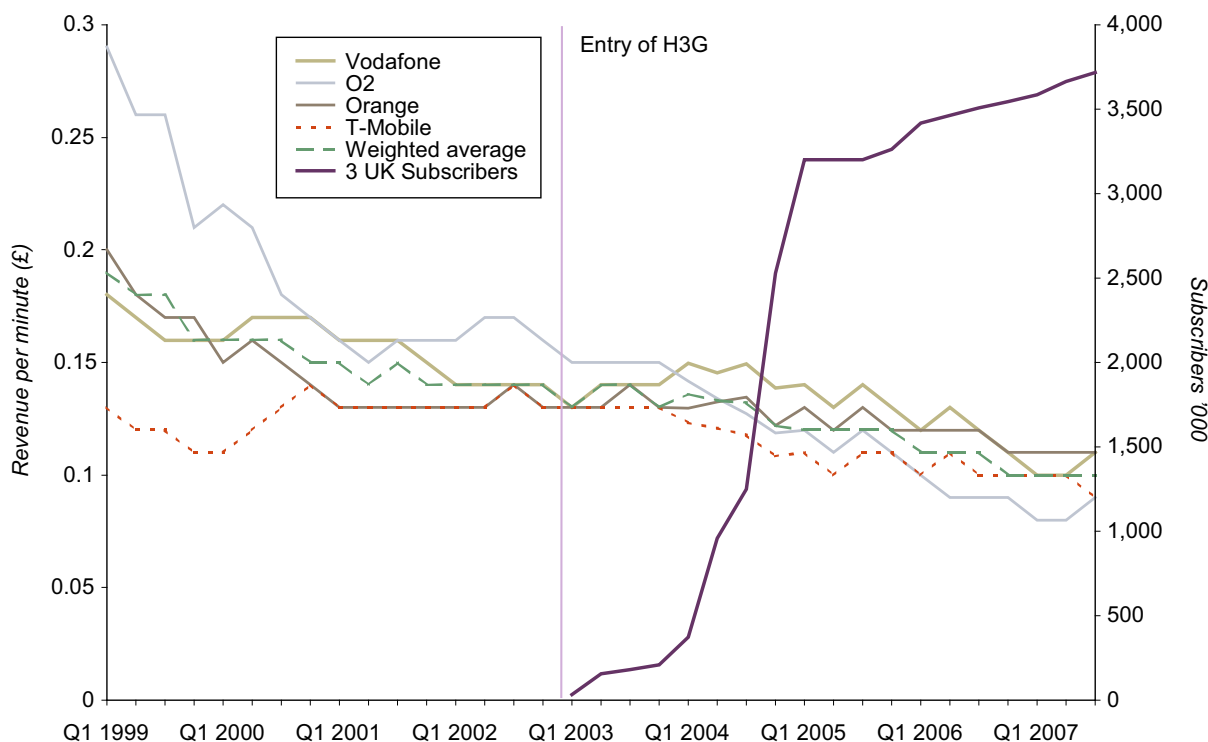
²ibid, p11.

³ibid, p13.

⁴ibid, p19.

FIGURE 5.4

RPM for each MNO against number of subscribers



Source: Reproduction of Figure 3.9 of Oxera report.

5.7.8 Oxera noted that the average RPM showed a long-run decreasing trend but appeared to stabilize in the years before H3G's entry and sped up in the years thereafter.¹ Oxera suggested that price variations may be explained by the change in the number of firms in the market. It said that the price reductions observed during the 1999 to 2001 period may be explained by the entry of MVNOs such as Virgin Mobile in 1999, the acquisition of One-2-One by T-Mobile in 1999, and the formation of O2 when it demerged from BT Cellnet in 2001. Some of these were one-off events and therefore influenced prices in the period in which they occurred and not the following years 'when there was a relative stability particularly in terms of MNO entry acquisition/demerger until the entry of H3G'.²

5.7.9 Oxera stated that the decrease in prices between 2004 and 2007 occurred about one year after H3G started operating in the market and coincided with a period of strong growth in the proportion of traffic accounted for by H3G's customers. However, Oxera acknowledged that a further, more complex, analysis of the data would be required to attempt to conclude with more certainty that the reduction in average RPM was caused by H3G with lower retail tariffs. There was also the possibility that the apparent restoration after Q1 2004 of the downward trend of average RPM could have been driven by factors other than the entrance of H3G.³

5.7.10 Finally, Oxera attempted to measure the impact H3G had had on innovation by comparing the average revenue per user (ARPU) that H3G earned on non-voice services

¹ibid, p29.

²ibid, pp20&21.

³ibid, p21.

against that earned by rival operators as an indicator of the importance of innovative services for the overall business. [

] Oxera noted that the increase had been driven by messaging and content. In contrast, rival MNOs' non-voice ARPUs were found to have remained relatively constant. Oxera said that these results should be treated with some caution, given that the division of revenues was complex and may be sensitive to the methodology used.¹ Oxera also highlighted the fact that H3G was the first operator to launch 3G services and listed a number of awards that H3G had won for innovation.²

Ofcom's arguments

- 5.7.11 Whilst Ofcom had not assessed retail competition in detail, it considered that it was likely to be significant. It did not accept that H3G was the only material source of competition in the retail market, characterizing the claim that H3G was a maverick competitor as unproven and speculative.³
- 5.7.12 Ofcom also disputed H3G's characterization of the impact of the charge controls. By regulating H3G more lightly on the basis that it was a maverick competitor, Ofcom considered that it would be allowing H3G to earn profits on MCT that could be passed on through lower retail prices relative to other MNOs. Ofcom considered that this would lead to a distortion of competition, rather than competition on the merits, because H3G would be at an advantage not because of greater efficiency or superior performance but as a result of asymmetric regulation. Ofcom did not accept that increasing competition in retail markets founded on the unique ability of one MNO to set MCT charges without regulatory constraints should be pursued as a regulatory objective.⁴
- 5.7.13 Ofcom had determined that prior to regulation H3G's MCT rates had been well above cost. For that reason, Ofcom submitted that the impact of the charge controls on H3G's competitive position was not a detriment, but a benefit of its regulation, representing a move towards undistorted retail competition.⁵ The fact that other operators would benefit from H3G's reduction in MCT rates towards cost was also not, according to Ofcom, the creation of a distortion, as H3G had alleged, but a beneficial result of the charge controls.⁶

Interveners' arguments

- 5.7.14 Vodafone, O2 and T-Mobile submitted that the proper way to look at the impact of the charge controls was as the removal of a distortion (being H3G's ability to use high MCT charges, ultimately paid for by its competitors and their customers, to subsidize customer acquisition).⁷ T-Mobile said that to look at the charge controls as creating a cross-subsidy by H3G of the other MNOs was wrong, as they were in fact the removal of a cross-subsidy from the other MNOs to H3G.⁸

¹ *ibid*, p24.

² *ibid*, pp21&23.

³ Ofcom's Price Control Defence, paragraphs 5.5.1, 5.5.2, 5.5.8.

⁴ *ibid*, paragraphs 5.5.1 & 5.5.6.

⁵ *ibid*, paragraph 5.5.6.


⁶ *ibid*, paragraph 5.5.9.

⁷ First witness statement of Craig Tillotson for Vodafone, paragraph 78; O2 Sol, paragraph 7; T-Mobile bilateral hearing, transcript, p24.

⁸ First witness statement of Philip Barden de Lacroix for T-Mobile, paragraphs 26–31.

5.7.15 The Interveners all disputed H3G's characterization of itself as a maverick competitor. As to the Oxera Report:

- (a) O2 argued that H3G's claimed competitiveness in the 12-month contract segment was unlikely to have a significant impact on the competitiveness of the mobile market because the segment was in steep decline, and that Oxera's analysis had shown that H3G was not particularly competitive in the 18-month market, competing only at limited price points.¹
- (b) Vodafone and O2 argued that Oxera's 'micro-level' analysis was flawed because it did not include information on:
 - (i) *The pre-pay market:* Vodafone and O2 submitted that Oxera's analysis is entirely focused in the contract market. However, the majority of the UK retail mobile market (approximately 65 per cent in terms of subscribers and 25 per cent of total traffic) is made up of pre-pay customers. O2 said that omitting pre-pay customers from the analysis simply because H3G does not target these customers is a serious limitation of Oxera's analysis given that the Report was aimed at assessing H3G's competitive impact on the overall market.³
 - (ii) *Business customers:* Vodafone said that Oxera's analysis appears to be focused on tariffs aimed at residential customers, rather than tariffs aimed at business customers. The latter represent approximately 30 per cent of the contract market, and H3G has a minimal presence in the market for business customers.
 - (iii) *Data for the period September 2006 to September 2007:* [



].

- (c) O2 noted that Oxera only concluded that there 'is evidence that is not inconsistent with the entry of H3G increasing competitive pressure in the market and including a response from other operators', which was not a strong statement supporting H3G's claimed competitive influence.⁴ Furthermore, it told us that pricing at or marginally below the market rate is basic competitive practice and cannot be described as maverick.⁵ Similarly, Vodafone said that Oxera did not conclude that H3G's presence in the market had resulted in more effective retail competition but, at most, that it had contributed to such competition.⁶
- (d) O2 said that Oxera's figures showed that H3G's share of subscribers had been flat from 2005, but the market had continued to grow, implying that H3G was not growing in line with the market which indicated, if anything, an absence of competitive impact. It gave us evidence that in 2006 there were 20 million gross

¹O2 Sol, paragraph 40; First witness statement of Nicholas Blades for O2, paragraphs 54–58.

²Third witness statement of Craig Tillotson for Vodafone, paragraphs 16–20.

³PwC expert report for O2, paragraph 189.

⁴ibid, paragraphs 169–171; First witness statement of Nicholas Blades for O2, paragraphs 43–47.

⁵First witness statement of Nicholas Blades for O2, paragraph 58.

⁶Vodafone Sol, paragraph 7.3(i).

additions to the market (customers who were either new to the mobile market or who switched networks), of which O2 acquired around 22 per cent and H3G acquired just 7 per cent.¹

- 5.7.16 Furthermore, all the 2G/3G MNOs argued that the retail market was competitive, and would still be competitive even without the presence of H3G. Orange said that H3G's characterization of itself as the maverick ignored the role of MVNOs, which had over 6.5 million customers, as a competitive force.² T-Mobile and Vodafone also cited competition with MVNOs as a significant factor in the market.³
- 5.7.17 Vodafone also argued that even if H3G had been a maverick presence, that was probably due to the competitive advantage it enjoyed through being free to charge higher MCT rates than other MNOs.⁴ It also said that H3G's citation of headlines suggesting that the 2G/3G MNOs had increased certain prices was unconvincing, and presented us with Pure Pricing data which appeared to show that value continued to increase for consumers through 2007 and 2008.⁵ It also said that, in so far as prices had gone up following tighter regulation of MCT, that was simply the water-bed at work and not an indication of any competitive problem.⁶
- 5.7.18 Vodafone and O2 also disputed that H3G should be seen as particularly innovative. O2 said that retail competition had been driven mainly not by H3G but by innovative pricing packages offered by the other MNOs. It gave the example of cross-network bundled minutes, which O2 introduced before H3G entered the market.⁷ Vodafone submitted that relatively few of the changes in products, services and tariff structures over the years had been led or driven by H3G.⁸ It gave us, as did T-Mobile, a list of a number of innovative product launches in the market in the recent past that had not originated from H3G.⁹
- 5.7.19 As to Oxera's non-voice ARPU measure of innovation, O2 argued that it was unclear whether H3G revenues earned on 'innovative services' relative to traditional services was a good overall indicator for the value of innovation.¹⁰ In addition, Vodafone said that H3G's ARPU figures may have been overestimated for various methodological reasons.¹¹

Assessment

- 5.7.20 The question to be addressed is whether H3G has demonstrated that the impact it is having, or will have, on competition in the market is significant enough to lead to the conclusion that Ofcom's failure to allow it a greater MCT rate differential was wrong. We begin with an assessment of the evidence that H3G has provided.

¹First witness statement of Nicholas Blades for O2, paragraphs 48–52.

²Orange Sol, paragraph 4.8.

³First witness statement of Philip Barden de Lacroix for T-Mobile, paragraphs 7–9; Vodafone bilateral hearing, transcript, pp29&30; Vodafone letter of 21 October 2008.

⁴Vodafone Sol, paragraph 7.3(iii).

⁵Vodafone bilateral hearing, transcript, pp35&36; Vodafone bilateral hearing, slides 3–7.

⁶Vodafone bilateral hearing, transcript, p36.

⁷O2 Sol, paragraph 40.

⁸First witness statement of Craig Tillotson for Vodafone, paragraphs 66 & 67.

⁹Vodafone slide 8 for bilateral hearing on H3G appeal; T-Mobile slide 7 for plenary session on H3G appeal.

¹⁰PwC expert report for O2, paragraphs 207 & 208.

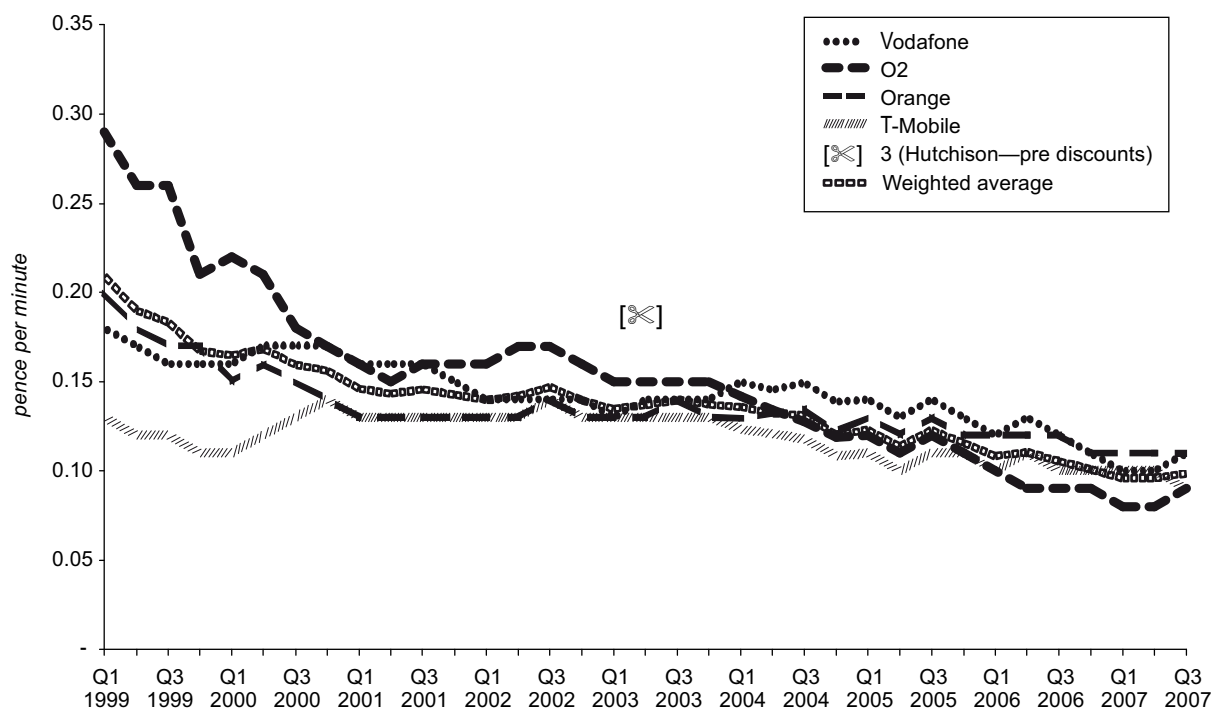
¹¹Third witness statement of Craig Tillotson for Vodafone, paragraph 22.

- 5.7.21 Oxera's pricing analysis can be understood as consisting of two elements: an analysis of whether H3G's retail prices have been lower than those of its rivals, and an analysis of whether other MNOs have reduced their prices in response to H3G's entry (convergence).
- 5.7.22 Oxera's 'micro-level' analysis suggests that, until the third quarter of 2006, H3G offered relatively low prices to post-pay subscribers. This was particularly true in the case of 12-month contracts but, as Oxera itself recognized,¹ these account for only 20 per cent of post-pay customers. The remainder of the post-pay market is represented by 18-month contracts.
- 5.7.23 We consider that the evidence in relation to 18-month contracts is not clear-cut. Oxera initially noted this but it seemed to consider that, overall, the evidence showed that H3G had offered lower prices than the other MNOs. The indicators that Oxera used for reaching this conclusion for the other MNOs are averages across networks so differences in their pricing behaviour are smoothed. For instance, if a 2G/3G MNO offered low prices for, say, 18-month contracts in the most popular price brackets, this would be lost in the analysis because its prices will be averaged with those offered by others. Moreover, Oxera made a number of assumptions to calculate these indicators and it is unclear how sensitive the results are to such assumptions. For example, the weighted average calculations ignore differences in the distribution of consumers in different price brackets across networks. So, if a 2G/3G MNO is the cheapest provider of, say, 18-month contracts in the £30 to £39.99 bracket and a higher-than-average proportion of its subscribers is in this bracket, the impact of its low prices on the non-H3G MNOs' average will be lost.
- 5.7.24 Oxera also suggested that other MNOs' tariffs have been falling while H3G's have remained relatively stable leading to increasing convergence in both 12- and 18-month contracts. Oxera argued that such convergence could be explained by H3G's pricing practices and, hence, indicate that H3G has had a wider impact on competition in the market. We think that the indicators that Oxera used for reaching this conclusion suffer from the same limitations mentioned above. Furthermore, the results as presented for 12-month and 18-month contracts did not support a claim of convergence.
- 5.7.25 We therefore consider that although the evidence in Oxera's micro-level analysis suggests that H3G offered relatively low prices for 12-month contracts, it does not support H3G's claim that its pricing has had a wide impact across the market. Not only is the 12-month contract segment declining as a proportion of the overall contract market but, as a number of Interveners have pointed out, Oxera's analysis is also limited in that it only looks at the contract market, whereas the majority of subscribers are pre-pay, and does not include business customers.
- 5.7.26 As to Oxera's 'macro-level' analysis, this suggests that RPMs have been on a long-term decreasing trend. However, since this analysis does not include H3G's RPM information, it does not allow a clear view to be formed on how H3G's prices compare with other MNOs and whether prices are effectively converging. H3G provided us with a graph including its RPM data and recalculated the weighted average RPM accounting for H3G's pricing information. This graph is reproduced as Figure 5.5.

¹Oxera Report, Figure 3.1.

FIGURE 5.5

Revenue per minute by operator



Source: Annex to H3G's Response to the Competition Commission's Information Request of 4 July 2008, Tab 8.b.

Note: Weighted average RPM includes H3G's figures.

5.7.27 H3G told us that it could not say whether its own figures and those for the 2G/3G MNOs were comparable because there may have been differences in the ways that the RPM figures were defined and calculated.¹ In addition to that methodological problem, in our view the data needs to be interpreted with care. For example, differences in the customer mix are not accounted for and we would expect an MNO's RPM to be influenced by the proportion of customers it had on contract and the proportion that were pre-pay.

5.7.28 We also think that to come to a view on whether the decreases in other MNOs' RPM were attributable to H3G's entry and pricing behaviour visual inspection would need to be complemented, with factors other than H3G's entry² at least being mentioned and, if possible, discounted from the analysis.

5.7.29 Finally, we note that Oxera's overall conclusions in relation to its macro-level analysis are not particularly strong. It stated in its conclusion that there was evidence that was 'not inconsistent with the entry of H3G increasing competitive pressure and inducing a response from other operators'.³

5.7.30 As to Oxera's analysis of H3G's innovativeness, we share the concerns of Vodafone and O2 that the non-voice ARPU measure of innovation may not be a useful indi-

¹H3G letter in response to the CC information request of 4 July 2008.

²For example, increases in overall mobile traffic and possible resulting economies of scale, the shift towards longer-term contracts, and the impact of MVNOs.

³Oxera Report, p29.

cator. For example, we do not think that ARPU earned from text messages should be included in the analysis. It is also not clear to us whether Oxera's comparison compared like with like.¹

5.7.31 More broadly, we do not accept that H3G has been the only source of innovation in the market. The Interveners have given us evidence of a number of new products and pricing structures that they have introduced, demonstrating that the innovator's role is not exclusive to H3G.²

Other evidence

5.7.32 We did not find the other evidence that H3G gave us to support this aspect of its case compelling. The fact that it increased certain prices and withdrew certain offers in response to the charge controls is not, in our view, particularly probative, since those prices and offers may have been dependent on excess revenues being earned from MCT. If so, we agree with Ofcom that the actions H3G has taken are consistent with a response to a removal of a competitive distortion rather than a detriment to competition.

5.7.33 As to the evidence that other MNOs' prices had increased, we do not think that picking a number of headlines and presenting them to us was sufficient to demonstrate H3G's apparent argument that the MNOs were increasing prices in response to the blunting of the competitive threat from H3G as a result of its regulation. The Pure Pricing data provided to us by Vodafone, at the least, made it unclear whether prices had gone up across the industry. Furthermore, price rises following tighter regulation of MCT rates do not necessarily indicate any competitive problem, as they may simply be reflective of the waterbed in effect.

5.7.34 H3G also argued that it was a market leader in mobile broadband and an innovative presence in the market. As set out above, we do not accept that H3G is the only source of innovation in the market.

Conclusion on the impact on competition

5.7.35 H3G has characterized the impact of the charge controls on its competitive position as a problem to be addressed through further non-cost-based asymmetries. Ofcom and the Interveners have characterized it, conversely, as one manifestation of the correction of a problem (a distortion caused by H3G's previous ability to charge unregulated MCT rates that were substantially above efficient costs).

5.7.36 We consider that if an MNO is able to charge unregulated MCT rates, it will generate significant above-cost MCT revenues. This may result in a distortion of retail competition if the MNO is able to subsidize its retail activities and undercut its rivals by virtue of its regulatory advantage.

¹Indeed, Oxera stated that its comparison should be treated with some caution, as the division of revenues is complex and might be sensitive to the methodology used (Oxera Report, p24, footnote 28).

²In its response to our provisional determination, H3G argued that we had misinterpreted the relevant economic literature if we were suggesting that a competitor was required to show that it was an exclusive source of innovation in order to successfully argue that it was a maverick competitor (H3G response to provisional determinations, paragraph 10.7). We had not intended to make that suggestion. Rather, our point here is that a claim for non-cost-based asymmetry on the basis of a firm's alleged maverick role in the market will inevitably be weakened if the other firms in the market could equally make the same claim on the basis of their competitive influence.

5.7.37 There may be circumstances in which such a distortion may be justified by the creation of some wider benefit. But, in our view, although the Oxera Report indicates that H3G has had some impact on competition, Oxera's own conclusions are tentative and the report does not demonstrate that H3G's competitive impact has been or will be significant enough so as to justify greater regulatory asymmetry. We have also found H3G's other evidence unpersuasive. Furthermore, as some parties have argued, even if there was strong evidence showing that H3G's pricing strategy has had a substantial impact on price competition, this could have been the result of the above-cost MCT margins that it was able to make when its rates were unregulated. If so, there would be no reason to widen the asymmetric treatment that H3G will benefit from under Ofcom's approach.

5.7.38 We also do not accept H3G's argument that the benefit the charge controls will give to the other MNOs is somehow unfair. We do not consider that increasing alignment of H3G's MCT rates with the costs incurred in providing the MCT service, resulting in the other MNOs paying a price that is more cost reflective, is properly to be regarded as a negative consequence of the charge controls.

5.7.39 For all those reasons, we do not accept H3G's arguments that the impact of the charge controls on its competitive position was something that Ofcom should have responded to by increasing the difference between H3G's MCT rate and those of the other MNOs.

5.8. Determination

5.8.1 For the reasons given above, we have determined that the price controls imposed on H3G were not too low relative to the price controls imposed on the 2G/3G MNOs because Ofcom erred in failing to take account, or sufficient account, of the financial impact of the price controls on H3G's business and on the adverse effect of that impact on competition, for the reasons set out in paragraphs 3.3 to 3.12 of the H3G Amended Price Control Appendix. We have determined that Ofcom did not so err.

6. Welfare analysis determination: Reference question 3(i)

- 6.1. This section sets out the CC's conclusions as to whether the price controls imposed on H3G have been set at a level which is inappropriate because Ofcom's welfare analysis was flawed for the reasons set out in paragraphs 3.13 to 3.15 of H3G's Amended Price Control Appendix.
- 6.2. For the reasons given below, our determination is that the price controls imposed on H3G have not been set at a level which is inappropriate because Ofcom's welfare analysis was flawed for the reasons set out in paragraphs 3.13 to 3.15 of H3G's Amended Price Control Appendix.

Ofcom's welfare analysis

- 6.3. In its MCT Statement Ofcom assessed the potential detriments and benefits of regulation of the MNOs' MCT charges. Ofcom identified five possible detriments which could be avoided by regulation: excessive prices overall, an inefficient structure of prices, distortion of consumer choice, inequitable distributional effects and risk of anti-competitive behaviour. In relation to one of these detriments, an inefficient structure of prices, Ofcom constructed a model which compared consumer welfare in two scenarios: one in which there was no regulation of MCT rates (and no threat of regulation), and one in which the MCT charges of all the MNOs were regulated as proposed by Ofcom under the price control.¹
- 6.4. Ofcom emphasized that the purpose of its welfare analysis was only to derive an order-of-magnitude quantification or estimate of the benefits of a more efficient structure of prices and did not include quantification of the benefits to consumers from addressing the other detriments of excessive MCT charges that it had identified.²
- 6.5. Ofcom concluded, overall, that there would be significant benefits from its proposed regulation.

H3G's grounds of appeal

- 6.6. H3G argued that Ofcom's reliance on a welfare analysis in making a finding that a price control would have a beneficial effect (and hence be a proportionate remedy) was flawed because:³
- (a) it did not consider the effect of the price controls on the level of competition in the retail markets;
 - (b) the model used by Ofcom was a welfare analysis for the market as a whole (and therefore did not consider the costs and benefits of regulating H3G in particular), and used unrealistic hypothetical unregulated MCT rates; and
 - (c) a proper analysis showed that a price reduction from H3G's (then) unregulated rate to Ofcom's TAC resulted in a welfare gain of no more than £24 million over the price control period as a whole.

¹Ofcom's MCT Statement, Section 7 and Annex 13.

²*ibid*, paragraphs 7.49 & 7.50.

³H3G's Amended Price Control Appendix, paragraph 3.13.

Ofcom's arguments

- 6.7. Ofcom's overall objection to H3G's arguments was that it had not used its welfare analysis to determine the particular levels of the price controls, but rather to assess the broader question of whether regulation was better than no regulation. It submitted that H3G's criticisms might therefore be relevant to the question of whether it was appropriate and proportionate to impose a price control remedy of any kind, which was a matter for the Tribunal, but that it was difficult to understand their relevance when considering the appropriate levels of the price control.¹

Assessment

- 6.8. Ofcom's welfare analysis was undertaken in order to decide whether regulation should be imposed at all. It was not used to determine the precise levels of the price controls, which were set by reference to efficient cost benchmarks. H3G's criticisms of Ofcom's welfare analysis were dealt with and dismissed by the Tribunal as non-price control matters.² As such, we do not consider Ofcom's welfare analysis to be relevant to the levels at which the price controls have been set.³

Determination

- 6.9. For the reasons set out above, our determination is that the price controls imposed on H3G have not been set at a level which is inappropriate because Ofcom's welfare analysis was flawed for the reasons set out in paragraphs 3.13 to 3.15 of H3G's Amended Price Control Appendix.

¹Ofcom's Price Control Defence, paragraph 5.6.2; Ofcom also responded to H3G's specific criticisms (Price Control Defence, paragraph 5.6.3).

²[2008] CAT 11, judgment on non-price control matters, paragraphs 187–200.

³It appears that H3G accepted this point, at least in relation to its glide path (H3G's Reply, paragraph 15.7).

7. Path of unit cost recovery determination: Reference question 3(ii)

- 7.1. This section sets out the CC's conclusion on whether the price controls imposed on H3G have been set at an inappropriate level because Ofcom erred in basing its modelling of costs on Economic Depreciation (ED) methodology for the reasons set out in paragraphs 5.1 to 5.15 of the H3G Amended Price Control Appendix.
- 7.2. For the reasons given below, our conclusion is that Ofcom did not err in basing its modelling of costs on ED methodology for the reasons given by H3G.

Background: the path of unit cost recovery

- 7.3. Ofcom's MCT cost model included a methodology for determining the rate at which the costs of network assets and operating expenses should be recovered by the MNOs through their MCT charges over the lifetime of those networks. Ofcom adopted a methodology which it referred to as Economic Depreciation.
- 7.4. For each of the scenarios Ofcom modelled, the methodology generates a charge for each year, per unit of network output,¹ that over the life of the network would recover exactly in present value terms a network operator's efficiently incurred network costs. We refer to this amount as the unit charge.
- 7.5. In its report on MCT in 2003, the CC also chose an economic depreciation methodology.² What is meant by the term 'economic depreciation' in this case is discussed below. The CC said that economic depreciation matched the cost of equipment to its actual and forecast usage over the long term, and as a consequence, there is relatively little depreciation in years where utilization is low and relatively high depreciation in years of full equipment utilization. The CC considered that this was the appropriate method to use because it most accurately matches the costs incurred in order to carry traffic to the periods in which that traffic is carried. H3G argued that its proposal, and not Ofcom's ED methodology, is consistent with the methodology adopted by the CC in 2003 (see paragraph 7.40 below).

Summary of Ofcom's methodology

- 7.6. Ofcom consulted on various options for determining the unit charge, including historic and current cost accounting approaches and an additional form of economic depreciation that it called 'Simplified ED'.³
- 7.7. In its MCT Statement,⁴ Ofcom said that it had two objectives in determining the appropriate path of cost recovery:
- (a) the profile of cost recovery should provide efficient signals for consumption and investment (which implies that in general the profile of cost recovery should be consistent with the path of prices which would occur in a competitive market); and
 - (b) regulation should avoid denying operators the opportunity to recover their efficiently incurred costs, including a reasonable return on investment.

¹In the case of MCT, the unit of output is each minute of a call that a network terminates.

²2003 CC report, *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*, paragraph 2.283.

³Ofcom's MCT Statement, paragraphs A5.204–A5.215.

⁴*ibid*, paragraph A5.196.

- 7.8. Ofcom chose to use what it called 'Original ED',¹ a form of economic depreciation methodology which seeks to set an optimal path of cost recovery over time by mimicking the outcomes of a hypothetical competitive market² (a market which Ofcom has defined as one in which firms are constrained by competition to operate efficiently and set prices equal to costs³).
- 7.9. Ofcom said that to implement its ED methodology it was necessary for it to specify the competitive constraints faced by incumbents in this hypothetical competitive market. Ofcom said that its methodology was based on a hypothetical market with two types of competitor constraint: actual competition between incumbents and potential competition from new entrants.⁴ Competition between incumbents is sufficiently strong to ensure no excessive pricing, and new entrants impose constraints on incumbents that reflect the new entrants' (potentially lower) investment and operating costs and also the time new entrants would take to achieve the same level of asset utilization as the incumbents.⁵ Ofcom said that its model presumed that it would take new entrants the same time to build up asset utilization as it took the incumbents.⁶
- 7.10. To derive a unique path of cost recovery over time, Ofcom set the unit cost as constant over time in real terms in the absence of any changes in Modern Equivalent Asset (MEA) prices or operating costs. Ofcom said that the unit costs generated under an ED approach did not depend on the level of utilization at a given point in time, but on the level of utilization achieved over the lifetime of the network. Consequently, the total costs recovered in a year are directly proportional to output in that year.⁷ Changes in input cost levels change the shape of the profile of cost recovery determined under an ED approach.⁸
- 7.11. For each of its traffic and spectrum cost scenarios, Ofcom's approach is implemented in three steps:⁹
- (a) a theoretical level of constant unit charge is calculated as if the final year utilization and input costs (based on Ofcom's forecasts) applied over the entire lifetime of the network;
 - (b) a second constant unit component is added to the cost recovery profile to recover the additional costs caused by lower levels of utilization in the early years of the network (compared with the level of utilization in the final year); and
 - (c) a third unit component is added to recover the additional costs caused by higher input costs in the early years of the network (compared with the input costs in the final year).
- 7.12. Ofcom rejected accounting cost approaches, such as historical cost accounting and current cost accounting, as these would result in an inverse relationship between unit costs and utilization. Ofcom said that in the context of MCT, where traffic was grow-

¹In its MCT Statement, Ofcom said that it did not believe that the potential advantages of adopting the Simplified ED approach were sufficient to merit changing the economic depreciation calculation, especially given the use of Original ED to determine the previous charge controls (MCT Statement, paragraphs A5.204 & A5.215).

²Ofcom's MCT Statement, paragraph A5.197.

³Ofcom's Price Control Defence, paragraph A1.4.5.

⁴Ofcom's MCT Statement, paragraph A5.198.

⁵Ofcom's Price Control Defence, paragraph A1.3.7.

⁶Ofcom's MCT Statement, paragraph A5.198.

⁷ibid, paragraph A5.199.

⁸ibid, paragraph A5.200.

⁹ibid, paragraphs A5.201 & A5.202.

ing sharply, such a relationship was particularly unattractive because it resulted in large changes in unit costs between years. In contrast, in more mature industries, the fact that demand and utilization were more stable meant that accounting methods did not result in the same level of unit cost variation and might therefore be more appropriate. Ofcom also noted that many new businesses tended to show accounting losses during their early years of operation. Ofcom considered that this was often a reflection of accounting approaches to cost allocation that failed accurately to reflect economic costs. Ofcom noted that were one to believe that accounting approaches were the appropriate way to derive unit costs and therefore prices, it would imply that new businesses should set prices far higher than they do in practice.¹

Summary of H3G's arguments

7.13. H3G argued that Ofcom erred in using its ED methodology because it:²

- (a) does not satisfy Ofcom's criterion of mimicking the path of prices in a competitive market and so is likely to result in an allocatively inefficient path of prices over time, distorting long-run price signals for consumption and investment;
- (b) is heavily and unduly reliant on extremely long-run forecasts of demand and other market conditions, and does not necessarily allow for the recovery of asset costs during asset lifetimes;
- (c) places MNOs at considerable risk of not fully recovering their efficiently incurred costs should Ofcom's long-run forecasts turn out to be incorrect; and
- (d) creates specific disadvantages for H3G as the late market entrant because the 2G networks are further into the investment cycle and so the 2G/3G MNOs are more likely to recover their total costs compared with H3G; and as a new technology, 3G is subject to greater risk of large future demand variations and more vulnerable to future new entry by, for example, various kinds of wireless broadband.

7.14. H3G submitted that it would be more appropriate to determine the path of cost recovery by reference to the long-run average cost (LRAC) of serving the actual levels of demand realized in each year. Further explanation provided by H3G on how its approach would be implemented is set out below. We note that to propose an approach based on LRAC leaves some ambiguity because the term does not have a uniquely recognized interpretation in a multi-product multi-time period context.

7.15. H3G argued that an LRAC-based path of cost recovery would result from using perfect contestability (PC) as the competitive benchmark for setting the path of prices over time. Perfectly contestable markets are ones in which new entrants provide the competitive constraint. PC markets are said to have highly desirable welfare properties, and to be often proposed as a benchmark for natural monopoly industries.³

7.16. Figure 7.1 is taken from H3G's Commentary that accompanied its Amended Price Control Appendix and shows H3G's estimates of the charges generated by its approach compared with Ofcom's ED methodology and an accounting cost approach.

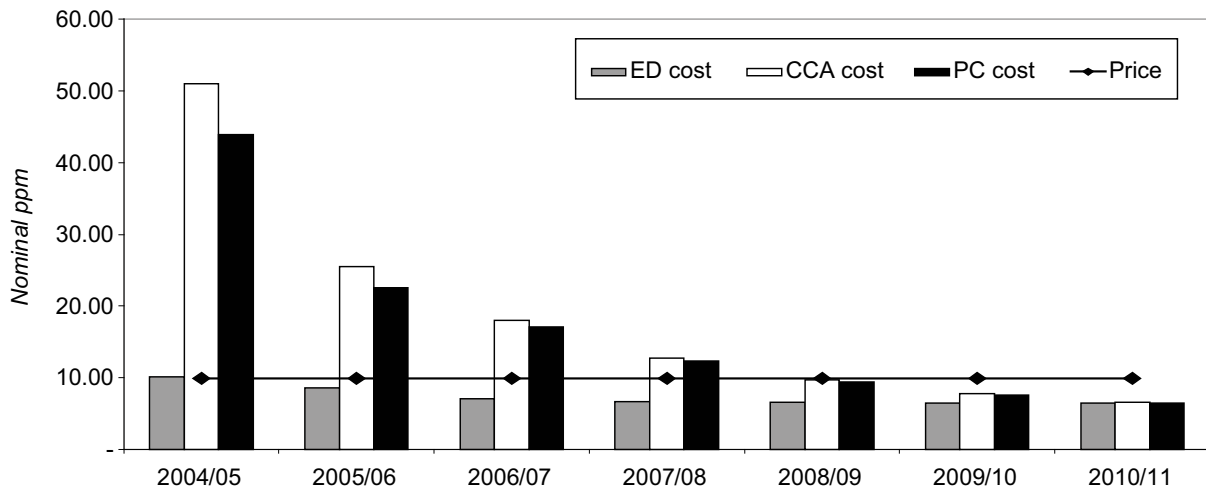
¹ibid, paragraphs A5.245 & A5.246.

²H3G's Amended Price Control Appendix, paragraphs 5.1–5.15, 11.1–11.6; H3G's Commentary, pp2–16; H3G's Amended Schedule of Evidence, paragraphs 4.1–4.3.

³H3G's Amended Price Control Appendix, paragraph 5.7.

FIGURE 7.1

Reproduction of H3G's Figure 3 from Commentary to its Amended Price Control Appendix: comparison of different cost benchmarks with current rate



Source: H3G's Commentary to its Amended Price Control Appendix, Figure 3.

H3G note: This figure is reproduced from H3G's November submission (p17, section 2), and is based on Ofcom's September 2006 Release 3 version of its model. Updating the calculations for the changed assumptions in Ofcom's March 2007 Release 4 version would change the results slightly but would not change the essential relationship between the different cost benchmarks.

CC note: The price line seems to be the termination rate charged by H3G in 2006/07.

7.17. H3G had also initially argued that LRAC could be proxied by current cost accounting methods.¹ However, during the course of the appeal it told us that its intention was only to propose one alternative to Ofcom's ED methodology, and that was the PC approach, which it argued would lead to pricing at the level of LRAC.²

7.18. H3G further explained its proposed LRAC approach at the plenary session³ and at its bilateral hearing.⁴ H3G's proposal is that price controls would continue to be calculated using Ofcom's MCT cost model. For each year of a price control period, the unit charge would be calculated by setting traffic volumes in the model, for each and every year, at the actual traffic volumes expected in the year for which the unit charge is being determined.⁵ The demand volumes would be total traffic across all mobile networks and traffic for the 3G-only network would be determined by Ofcom's market share assumptions.⁶

7.19. The essential characteristic of H3G's LRAC approach, compared with Ofcom's ED methodology, is that unit charges fall as the levels of capacity utilization and demand increase, and fall sharply from high levels in the early years of the operation of the 3G networks. The effect is to accelerate the recovery of lifetime network costs.

7.20. H3G provided a more detailed worked example using Ofcom's models comparing the results of its LRAC approach with Ofcom's ED approach for 3G-only network operator for one category of network costs (3G Macrocell equipment) in preparation for its

¹Commentary, p11.

²H3G plenary session, 11 July, transcript, p33.

³ibid, pp32&33.

⁴H3G's bilateral hearing, 12 September, transcript, pp100-116.

⁵ibid, p101. Asset prices and the cost of capital, conversely, would be treated as they are under Ofcom's methodology, so would be modelled as changing over time (H3G's bilateral hearing, 12 September, transcript, pp101-102).

⁶Implied by H3G's worked example sent to the CC on 10 September.

bilateral hearing.¹ This worked example² shows that its proposals would imply considerably higher unit charges than Ofcom's methodology for traffic carried on 3G networks in the years before the end of this price control period and lower charges from around 2010/11. This profile is calculated assuming that future traffic volumes follow Ofcom's medium traffic projection.

7.21. The worked example spreadsheet and its covering note proposed a 'Rental Charge' approach as another way of estimating LRAC. H3G had not previously referred to this approach. Ofcom subsequently submitted that this was a new method of calculating the path of unit costs and that if H3G wished to rely on it, it should make an application to the Tribunal.³ We agree with Ofcom's submission and therefore we have not considered this approach.⁴

7.22. H3G also provided estimates of charges per minute terminated (before any allowance for administration costs and the glide path) for this price control period, assuming medium-demand projections and £3.34 billion 3G spectrum costs.⁵ These are shown in Table 7.1 (we have included the TACs set by Ofcom for comparison).

TABLE 7.1 H3G's estimates of the price control under Ofcom's ED approach and H3G's LRAC approach, with the TACs set by Ofcom

	<i>ppm</i>			
	2007/08	2008/09	2009/10	2010/11
<i>Ofcom model, ED (medium demand, £3.34bn 3G spectrum)</i>				
2G/3G operator (1800 MHz)	5.0	5.0	5.1	5.1
3G-only operator	6.5	6.2	6.0	5.9
<i>Adjusted for LRAC (Ofcom model approach)</i>				
2G/3G operator (1800 MHz)	7.3	6.1	5.1	4.5
3G-only operator	14.5	9.8	6.6	4.8
<i>TACs determined by Ofcom</i>				
2G/3G operator (1800 MHz)	6.0	5.7	5.4	5.1
2G/3G operator (900/1800 MHz)	5.5	5.4	5.2	5.1
3G-only operator	8.5	7.5	6.7	5.9

Source: H3G's letter to the CC dated 16 September 2008 and Ofcom MCT Statement section 9, Figures 9.4 and 9.5.

7.23. H3G has not said whether its intention is that MCT rates implied by its proposals should apply for all years of the price control. Ofcom's approach has been to determine the appropriate level of charges for 2010/11 using its cost benchmarks and then use a glide path to determine the price controls that will apply in the other years of the price control period. It is not clear to us whether it is H3G's intention that its proposals would apply only for 2010/11 (or what the consequential implications for the glide path would be). We note that if Ofcom's overall methodology were retained (of setting a TAC for 2010/11 and then using a glide path to determine the TACs in the earlier years of the price control), the rates implied by H3G's proposals would be lower than the TACs set by Ofcom.

¹Illustrative numbers were originally provided in section 9 of H3G's Commentary to its Amended Price Control Appendix.

²The worked example spreadsheet with a covering note was sent to the CC by H3G on 10 September.

³Ofcom letter of 9 October 2008.

⁴And we indicated as such in our provisional determination.

⁵H3G letter of 16 September 2008.

Ofcom's four reasons for rejecting H3G's arguments for the perfect contestability approach

7.24. H3G made many of the arguments it is now making in this appeal in relation to Ofcom's ED methodology during the consultation period preceding the MCT Statement of March 2007. In the MCT Statement, Ofcom rejected H3G's arguments¹ that a perfectly contestable market is the appropriate competitive benchmark for specifying the path of unit cost recovery for MCT.² Ofcom acknowledged that there are a number of approaches that would mimic the path of cost recovery in a market that could reasonably be described as competitive and gave four reasons³ as to why, in this case, ED was more appropriate:

- (a) The nature of competition underlying its original ED methodology is more realistic than that in a perfectly contestable market as it is not plausible to assume that a new entrant can immediately match the incumbents' utilization or that the competitive constraints are determined solely by those imposed by potential new entrants. Competition between incumbent MNOs is an important feature of the competition they face in their retail markets. Ofcom noted that elsewhere H3G argued that as a new entrant it is at a disadvantage because of difficulties it faces in attracting customers.
- (b) H3G's approach is likely to result in a very steep unit charge profile when utilization is growing.
- (c) Changing its approach in this price control review could result in undesirable windfall gains and/or losses and so there must be compelling reason for a change.
- (d) It is unclear how H3G proposed that its approach would be implemented, and implementing H3G's approach would be particularly challenging as it would require 'backward induction'.

7.25. In its Commentary H3G responded to three of these four arguments as follows (it did not comment on Ofcom's third concern):

- (a) It is both incorrect and irrelevant to argue that the competitive constraint underlying Ofcom's ED methodology is more realistic than that implied by a model of a perfect contestable market. It is incorrect as Ofcom's ED methodology assumes that entry into an MNO's 'termination market' is possible when it is not,⁴ and it is irrelevant because models of PC are ideal constructs which regulatory policy seeks to mimic because of their desirable welfare properties.⁵
- (b) Ofcom found it convenient to set a unit charge which is relatively constant over time in preference to a price path which is likely to be allocatively efficient. In H3G's view, Ofcom's objection to PC on the grounds that it results in unit costs being inversely proportional to utilization is arbitrary and inconsistent with the CC's 2003 findings, which explicitly endorsed that very characteristic. H3G said

¹The arguments in relation to PC made by H3G during the consultation were much the same as those made in the appeal.

²Ofcom's MCT Statement, paragraphs A5.221–A5.229. The arguments in the MCT Statement reflected Ofcom's understanding of H3G's position as of March 2007. However, as explained below, this (apparent) position differed from the methodology that H3G ultimately advocated in this appeal.

³ibid, paragraph A5.222; Ofcom's Price Control Defence, paragraph A1.4.6.

⁴H3G's Commentary, section 6, pp6&7.

⁵ibid, section 6, p7.

that an inverse relationship may well be an essential feature of a perfectly contestable market that has high fixed costs.¹

- (c) Under constant input cost conditions the LRAC price path suggested by PC is less complex to implement than Ofcom's ED price path. In particular, the LRAC calculation does not require long-term traffic forecasts.²

7.26. In its Reply, H3G made the following additional points:

- (a) It said, in response to Ofcom's third concern—that changing its approach could lead to undesirable gains and/or losses—that avoiding discontinuities was not necessarily a good reason for continuing with an inappropriate approach to cost recovery when a better approach exists, and that, even if it was, such discontinuities could be avoided by confining the application of PC/LRAC either to the 3G-only operator or to 3G costs, neither of which had been subject to previous price controls.³
- (b) It accepted that PC was to some degree a theoretical construct which could imply high prices during the very early stages of the market and that taken to an extreme could suggest prices that were implausibly high, and that some spreading of cost over the early years might be reasonable.⁴
- (c) It said that Ofcom's ED methodology was fundamentally inconsistent with a forward-looking approach to setting regulated prices as unit charges applying in later years would be higher than those implied by the levels of demand and capacity utilization at the time because the unit charges would have been increased to make up for the under-recovery of costs in earlier years when networks were operating at less efficient scale.⁵
- (d) It said that new businesses (but not new entrants to an established market) frequently charged high prices in their early years when demand was low and economies of scale were yet to be reached. It said that the fall in retail prices of mobile calls over time was a good example of this phenomenon.⁶

Assessment

7.27. Our approach has been to consider first H3G's argument that Ofcom should as a matter of principle have adopted PC as the model of competition that would inform the efficient profile of charges.

7.28. Second, we consider issues relating to the implementation of H3G's LRAC approach.

7.29. Third, we consider H3G's argument that its LRAC approach would recover much the same quantum of costs as Ofcom's original ED methodology⁷ but in avoiding the use of long-term traffic forecast reduces the risk to MNOs of under-recovery of costs if Ofcom's long-run forecasts turn out to be incorrect.⁸

¹ibid, section 6, p7.

²ibid, pp7&8.

³H3G's Reply, paragraph 11.42.

⁴ibid, paragraph 11.29.

⁵ibid, paragraph 11.4.

⁶ibid, paragraph 11.35.

⁷H3G's note covering its worked example of the calculation of LRAC provided on 10 September, p2.

⁸H3G's Amended Price Control Appendix, paragraph 5.5.

- 7.30. Fourth, we consider H3G's argument regarding the economic efficiency of the profile of charges that would result from LRAC and in particular that it would give more efficient long-run signals to investment and consumption.¹
- 7.31. Finally, we consider H3G's arguments that Ofcom's approach creates a specific disadvantage for H3G.

Should Ofcom adopt perfect contestability as its model of competition?

- 7.32. H3G argued that Ofcom's approach was flawed because it did not satisfy its criterion of mimicking the outcome in a competitive market as it was not based on any recognized competitive standard. H3G said that Ofcom should have used a model of PC as the competitive benchmark for determining the path of charges over time. The properties of contestable markets are said to be highly desirable by standards of traditional welfare economics and the theory is said to be often proposed as a competitive benchmark for monopoly industries.² H3G stated that its LRAC-based proposals were a result of using PC as the competitive benchmark.
- 7.33. Ofcom said that it was not aware of any UK regulators which determined unit cost profiles over time by reference to a model of perfect contestable markets.³ Ofcom questioned whether the models of contestable markets to which H3G referred, which are based on static models of competition,⁴ could provide any insights into how asset costs may be recovered over time. Ofcom did not therefore accept that application of a model of PC would in this case have desirable welfare properties.⁵
- 7.34. O2 said that, where possible, it was appropriate for regulated prices to attempt to reproduce those that would occur in a competitive market. The decision on whether to use Ofcom's or H3G's approach should depend on which competitive market benchmark provides the most reasonable approach and best characterizes competitive mobile markets in the UK, such as the retail market. O2 considered that PC was fundamentally at odds with the nature of competition in telecommunications and that Ofcom's ED method more accurately reflected the way in which operators recovered costs in mobile markets.⁶
- 7.35. T-Mobile did not think it helpful to assess the merits of either approach by discussing whether or not the method leads to an allocation that mimics prices in a competitive market. T-Mobile's view was that if one or other model is to be preferred because it mimics a competitive market, it should be because it reflects relevant entry decisions in a competitive market more accurately than the other. T-Mobile considered that Ofcom's ED approach more closely reflected how a new entrant would view the economics of entry. T-Mobile said that the key point from an economic perspective was which approach was the more economically efficient.⁷
- 7.36. We do not agree with H3G that a model of PC is generally or widely accepted among regulators as the model of competition that they should seek to mimic in their regulatory decisions. Regulators often seek to mimic the incentives that exist in competitive markets or seek in other ways to achieve the outcomes of competitive markets through their interventions. In doing so, however, they tend to consider the properties

¹ibid, paragraph 5.5.

²ibid, paragraph 5.7.

³Ofcom's Price Control Defence, paragraph A1.5.11.

⁴ibid, paragraph A1.5.3.

⁵ibid, paragraph A1.5.7.

⁶PwC expert report for O2, paragraphs 89–122.

⁷Paul Muysert expert report for T-Mobile, section IV.

of competitive markets more generally and not the properties of a specific theoretical model of competition. H3G said that PC was a good competitive benchmark because it had the desirable welfare properties of zero economic profits and productive efficiency.¹ These are features of many economic models of competitive markets, and in particular are not exclusive to a model of PC. The importance of a desirable property of a given model to a specific context of course depends on the relevance of the specific model to the market context under consideration.

- 7.37. Furthermore, we understand that ED methodologies are used by telecommunications regulators in a number of other jurisdictions.² They are also recognized as valid methodologies by the European Regulators' Group.³
- 7.38. The characteristics of mobile telecommunications markets are very far removed from those of markets that might be described as perfectly contestable. In particular, investment in telecommunication networks will involve a high proportion of sunk costs. H3G argued that PC is the appropriate benchmark for Ofcom to use because it has desirable welfare properties. However, our view is that the application of a PC model to telecommunications markets cannot be expected to necessarily result in outcomes that would be economically desirable precisely because the features of telecommunications markets are so different from those of a static perfectly contestable market for a single good.
- 7.39. We do not accept H3G's argument in relation to Ofcom's claim that the competitive constraint underlying its ED methodology is more plausible than PC. For the reasons given above, we do not accept H3G's argument that Ofcom should, as a matter of regulatory principle, have adopted a PC approach to determine the path of cost recovery. Furthermore, the appropriate question to be asking is which approach would in this context give a better outcome for consumers. We therefore agree with T-Mobile that the key point is which approach results in a more economically efficient outcome.
- 7.40. H3G also argued that the CC in 2003 endorsed an approach whereby MCT rates were inversely related to traffic volume and, in particular, whereby H3G's TAC would be adjusted to take account of its current low market share. Ofcom argued that H3G has misinterpreted the CC. The CC's 2003 report is, of course, not binding on us. However, it has been cited by H3G and we have considered whether it can provide useful guidance on this aspect of the appeal.
- 7.41. In its 2003 report the CC endorsed economic depreciation as the appropriate methodology because the CC thought that it most accurately matched the cost incurred in order to carry traffic to the periods in which that traffic was carried. It did so after noting that it implied relatively little depreciation in years where utilization was low and relatively high depreciation in years of full equipment utilization.⁴ The passage that H3G refers to seems to be concerned with an adjustment to take account of the fact that certain operators had lower market shares.⁵
- 7.42. However, the overall approach to market shares and the specific issue that the CC was dealing with appears to us to be very different to those we are faced with on this appeal. First, the CC was dealing with a recommendation that costs be modelled on

¹H3G's Commentary, section 5.

²Including Belgium, Denmark, Greece, Holland, Israel, Norway and Sweden (Ofcom's Price Control Defence, paragraph A1.5.11; PwC expert report for Q2, paragraph 123, footnote 56).

³ERG's Common Position on symmetry of fixed and mobile call termination rates, adopted on 28 February 2008, p89.

⁴2003 CC report, paragraphs 2.282 & 2.283.

⁵ibid, paragraphs 2.275–2.280.

the basis of an average operator with a 25 per cent market share of call minutes in 2001, declining to 20 per cent in 2010 with the entrance of H3G. However, it was not the case that each of the MNOs which would be subject to the charge controls had a 25 per cent market share, and a short-term adjustment was considered appropriate to reflect that.¹ In this case, Ofcom has incorporated market share projections for each type of operator directly into its cost modelling.

- 7.43. Second, the CC stated that, in the short term, a market share adjustment was appropriate, but that after a period of two to three years an MNO with a lower than average market share would have the opportunity to capture at least an average share of the market, that by 2006 it expected there to be no need for any extra cost due to low market share, and that the extent to which any extra cost would be relevant in the earlier years of any price control would depend on decisions taken on the glide path between current prices and the cost projection for 2006.² Furthermore, it stated that it would be wrong to penalize an MNO with a greater than average traffic market share for its success in winning customers, so that the appropriate cost, for all operators, should be based on a 20 per cent market share in 2002.³
- 7.44. It is not at all clear that the position that the CC took in 2003 can be taken to imply a preference for H3G's proposals over Ofcom's ED methodology.
- 7.45. We therefore reject H3G's arguments that as a matter of regulatory principle Ofcom should have determined the path of unit charges by reference to a model of PC.

Implementation issues

- 7.46. During this appeal there have been persistent questions about precisely what H3G's LRAC approach was and practical questions regarding its implementation. Many of the questions about how the charges would be calculated under H3G's LRAC approach have now been resolved by further explanation provided by H3G.⁴ However, there remain questions about how in practice the results of this approach would be implemented.
- 7.47. Ofcom has questioned whether in practice prices could be set at the levels implied by H3G's approach in the early years of the operation of the 3G networks.⁵ In particular, Ofcom argued that LRAC generated very high unit charges in the early years and that MNOs might not be able profitably to charge these rates.⁶
- 7.48. We looked at the results of the worked example (which relates only to the costs of 3G Macrocell equipment for a 3G-only network operator) provided by H3G. These results seem to confirm that H3G's LRAC approach would result in relatively high rates in the early years and a steep decline. Figure 7.2 shows the results for the unit charge generated using Ofcom's ED methodology and H3G's LRAC (excluding results for 2003/04 as the LRAC figure is 70 times higher than the ED figure). For 2004/05, 2005/06 and 2006/07, the unit charges with H3G's proposals are 5.1, 2.7 and 2.4 times higher respectively than those generated by Ofcom's ED model.

¹ibid, paragraphs 2.275–2.280.

²ibid, paragraph 2.277.

³ibid, paragraph 2.278.

⁴H3G's clarification of its proposal at a very late stage in the reference has meant that much of the work undertaken by Ofcom in response to H3G's initial, partially-explained methodology has been superseded. We consider the fact that H3G's proposals were only clarified so late to have been an unsatisfactory aspect of this appeal.

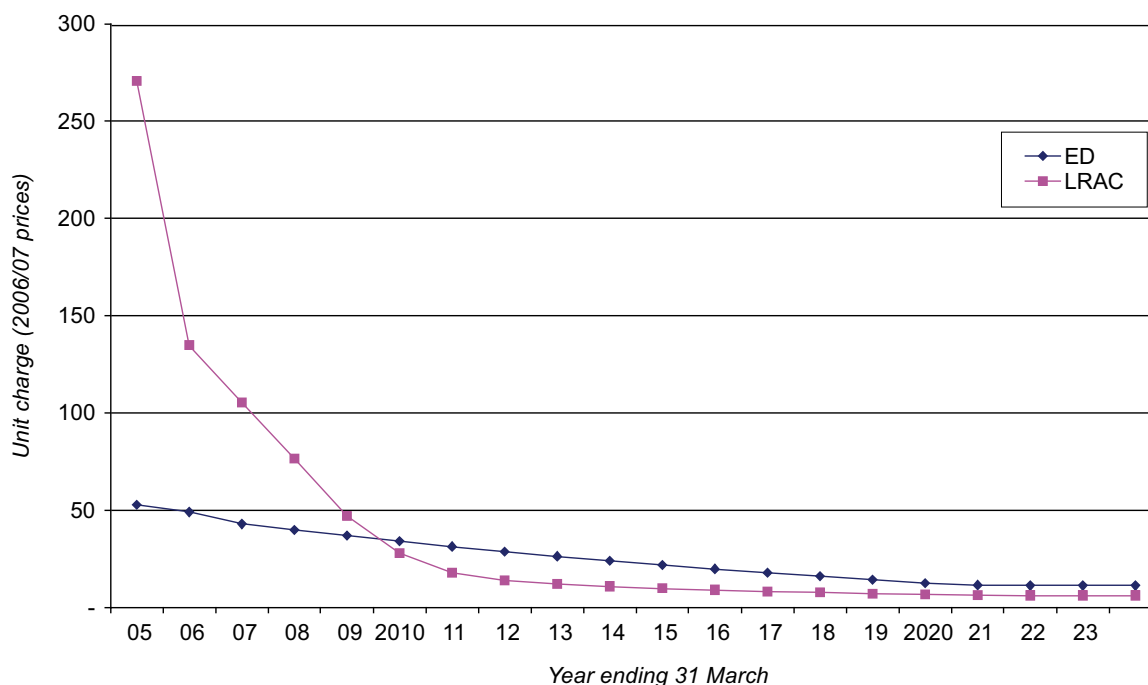
⁵Ofcom's Price Control Defence, paragraphs A1.4.6(ii) and (iv).

⁶ibid, paragraph A1.4.6(ii).

- 7.49. H3G has not provided estimates of what its approach would imply for unit charges in these years. However, using H3G's estimate of the LRAC-based unit charge in 2007/08 (see Table 7.1 and paragraph 7.22 above) and looking at how the results for unit costs in its worked example (albeit for only one category of cost) for early years compare with that for 2007/08, we estimate that H3G's proposals would imply termination rates in the years 2003/04 to 2006/07 in the region of 750ppm, 50ppm, 25ppm and 20ppm respectively for the 3G-only network (we would expect that the corresponding figures may be lower for a 2G/3G network operator).
- 7.50. Before March 2007, termination rates on 3G networks were not regulated. Figures provided by H3G suggest that between September 2004 and March 2007, termination rates for the 3G networks were in the range of 8 to 18ppm. We conclude from this that H3G and other MNOs have not therefore been charging termination rates that would be consistent with H3G's LRAC approach.¹

FIGURE 7.2

Profile of unit cost benchmarks



Source: H3G's worked example sent to the CC on 10 September.

Note: In response to our provisional determination, Ofcom pointed out that it was not clear what units the vertical axis of this figure were expressed in (Ofcom response to provisional determinations, paragraph A2.13(v)). H3G has confirmed that the units of output in its spreadsheet are the same as those used by Ofcom in the economic cost module of its MCT model as the volume of output in any year is taken from Ofcom's model. In paragraph A5.93 of its MCT Statement, Ofcom explains that a common measure of traffic output is required so that demand from multiple services can be aggregated and traffic on each service is therefore converted into busy-hour Mbit/s.

- 7.51. These early years are important in considering the implications of H3G's approach. The effect of H3G's proposals is to accelerate the recovery of costs. H3G's worked example suggests that by March 2007 the MNOs would have recovered 45 per cent of their efficiently incurred costs compared with 10 per cent under Ofcom's ED

¹Exhibit 13 to the second witness statement of Kevin Russell for H3G.

methodology.¹ If MNOs had not charged the rates implied by H3G proposals over this period, MNOs could not then expect to recover their efficiently incurred costs if termination rates for this price control period and later years were set in accordance with H3G's proposals (if H3G is correct when it says that its proposal would be expected to generate an income stream the present value of which is close to the present value of efficiently incurred costs).²

- 7.52. H3G recognized that PC can imply implausibly high prices in the early years but said that this was not a good reason for not applying LRAC as costs can be spread over a longer period for the early years.³ H3G has not commented on how this 'spreading' of costs would be done and what the implication would be for the level of charges in other years or for the profile of charges.
- 7.53. For these reasons, we are of the view that important questions remain as to how H3G's proposals would in practice be implemented and what they would imply for charges for this price control period and beyond. Given that H3G has put forward an alternative methodology and based an appeal on the fact that Ofcom wrongly did not adopt it, it would appear to be incumbent on H3G to ensure that its proposals are fully and properly explained.
- 7.54. Nonetheless, on the basis of the information provided and our understanding of H3G's methodology, we have considered and taken a view on the questions discussed below.

Does Ofcom's approach place MNOs at considerable risk of under cost recovery?

- 7.55. H3G said that its LRAC approach would recover much the same quantum of costs as Ofcom's Original ED methodology⁴ but that Ofcom should have adopted its LRAC approach because it was not dependent on long-run forecasts of demand. H3G argued that this reduced the risk to MNOs of under-recovery of costs as Ofcom's long-run forecasts may turn out to be incorrect.⁵ We have considered each of these claims.

Quantum of cost recovered

- 7.56. H3G stated that 'in principle, both ED- and LRAC-based pricing (derived from the PC benchmark) can result in total costs being recovered in the long run'.⁶ In the covering note to the worked example,⁷ H3G said that both LRAC and economic depreciation 'recover essentially the same amounts in present value terms over the long run'.

¹These figures have been calculated using the figures in the summary sheet of H3G's worked example, in particular, the rows under the ED and LRAC headings for the 'present value of cost recovered'. We have summed the 'present value of cost recovered' for all years to March 2007 and divided this by the total for the row.

²We are here dealing with the question of which path of cost recovery is preferable. In Section 2 of this determination on 3G spectrum costs we found that Ofcom did not err in focusing on providing appropriate price signals for efficient consumption (rather than cost recovery) as the main pricing objective in relation to 3G spectrum for the purposes of setting regulated MCT charges (see paragraph 2.3.71). In the case of network costs, this issue does not arise in the same way as the quantum of efficiently incurred costs will be driven by actual levels of traffic. Furthermore, the question of which path of cost recovery is appropriate is one that relates to how a given level of costs should be recovered over time, the calculation of the quantum of those costs being a separate issue.

³H3G's Reply, paragraph 11.29.

⁴H3G's note covering its worked example of the calculation of LRAC provided on 10 September, p2.

⁵H3G's Amended Price Control Appendix, paragraph 5.5.

⁶*ibid*, paragraph 5.10.

⁷Covering note to H3G's worked example, p2.

- 7.57. H3G's worked example suggests that LRAC would result in over-recovery of the efficiently incurred network costs implied by Ofcom's medium traffic projections of 3.5 per cent.¹ H3G said that this was a 'second order' effect due to detailed modelling assumptions such as the look-ahead period and initial roll out of coverage which appear in Ofcom's model.²
- 7.58. Vodafone said that the extent of over- or under-recovery of costs could be higher under different assumptions.³ We note, however, that Vodafone considered, in particular, circumstances where input prices are flat or increasing. We would expect falling input prices to be a more reasonable assumption in the telecommunications sector.
- 7.59. Nonetheless, it is our view that, in practice, the two approaches (Ofcom's ED and H3G's LRAC) would not necessarily result in the same quantum of cost being recovered for any given demand projections. H3G's worked example (which is based on Ofcom's medium traffic projections) suggests that an MNO would recover under the LRAC approach a quantum of cost that would be close to the efficiently incurred costs consistent with the actual (industry) traffic volumes over the life of the network. H3G said that the small error was due to modelling issues. H3G has not, however, explained or demonstrated why we should expect this to be the case and in what circumstances this might not be the case. Unlike Ofcom's approach (within each scenario), the method does not force the quantum of cost recovered to be the same as efficiently incurred cost. In addition, as explained above (see paragraph 7.51), we remain unclear how H3G's proposals would address under-recovery of costs in earlier years if the unit charges implied by the model are higher than those that were actually charged.

Risk of under-recovery of costs

- 7.60. We agree with H3G that uncertainty about future traffic volumes and, in particular, the take-up of 3G data services has implications for Ofcom's ED approach precisely because the method smoothes the recovery of costs over time, which requires a view to be taken on future traffic volumes.
- 7.61. Ofcom accepted that its traffic forecasts were inherently uncertain. Ofcom also accepted that its ED methodology would not necessarily result in the total cost of an asset being recovered over its lifetime.⁴ However, it did not agree that H3G's proposal was an appropriate response to these issues.⁵ Ofcom considered that the waterbed effect significantly mitigates the risk of failure to recover costs overall.⁶ In addition, Ofcom said that even if, as a result of forecast error, a particular methodology underestimated unit charges, this did not necessarily imply that regulated prices over the course of the charge control period would lead to under-recovery of efficiently incurred costs because the charge controls incorporated a glide path⁷ and, in the event that inaccurate traffic forecasts were ultimately to lead to under-recovery of costs during the control period, at subsequent market reviews it would be approp-

¹Spreadsheet for H3G's worked example, summary sheet, results for LRAC.

²Covering note to H3G's worked example, p2.

³Vodafone's letter to the CC of 21 October 2008, p5.

⁴Ofcom's Price Control Defence, paragraph A1.3.11(iv).

⁵ibid, paragraph A1.5.22.

⁶ibid, paragraph A1.5.27.

⁷ibid, paragraph A1.5.22.

riate to consider whether or not there should be an adjustment to address that past under-recovery.¹

- 7.62. We have considered what this uncertainty about future traffic volumes would mean in practice with H3G's and Ofcom's approaches.
- 7.63. H3G's approach would require only forecasts of traffic volumes in the years for which price controls are being set and therefore a maximum of five years ahead. Having determined the price controls for each year of the price control period, MNOs would be exposed to risk associated with errors in forecasting traffic volumes in only the relevant price control period. Furthermore, and as mentioned above, Ofcom has argued that the waterbed effect would mitigate any risks of failure to recover costs overall associated with forecasting errors. This argument would also apply to any errors if H3G's proposals were to be adopted.
- 7.64. Ofcom's approach requires projections for total traffic volumes up to the year 2020/21. For any price control period, unit charges are determined by choosing a number within a range of charges for a hypothetically efficient operator generated by its low, medium and high traffic projections. The price controls set on this basis may then under- or over-recover efficiently incurred costs. This depends on how traffic volumes during the relevant price control period compare with those that would be consistent with the level at which the price controls are set.
- 7.65. At the start of the next price control period, historic traffic volumes and projections for future traffic volumes used in the network cost model and the economic model will be updated in light of new information. The unit charges generated for the next price control period will then reflect both the actual levels of traffic in the price control period just gone and any changes in expectations about future traffic volumes. As this exercise is repeated, charges set in future price control periods will reflect the actual evolution of traffic on the 3G networks and any consequences this may have for expectations about future traffic volumes. However, if the results suggest that historic charges should have been higher or lower than those set, Ofcom's approach will not automatically correct for this.
- 7.66. Ofcom has said that it would consider making 'off-model' adjustments if previous forecasting errors suggested that there were a risk of under-recovery of efficiently incurred costs (although it has not explained how it would do this), and that the waterbed effect should substantially mitigate the risk of overall under-recovery.
- 7.67. We therefore agree with H3G that the uncertainty about future traffic volumes and the implications this would have for MNOs' expectations with regard to the recovery of their efficiently incurred costs are greater with Ofcom's ED methodology than under H3G's proposals. However, we consider that this uncertainty, and, in particular, the risks associated with Ofcom's projections for future traffic volumes turning out to be over optimistic, are reduced by the periodic review of the price control and any 'off-model' adjustments.²
- 7.68. H3G also said that Ofcom's ED methodology does not necessarily allow for the recovery of asset costs during assets' lifetimes. Ofcom has accepted that this would be the case. Ofcom also told us that it was unlikely that H3G's LRAC approach would

¹ibid, paragraph A1.5.23.

²For the avoidance of doubt, the reference to 'off-model' adjustments is not a reference to the possibility of retrospective adjustments to the charge controls. Rather, it is a reference to the impact that any over- or under-recovery of efficiently incurred costs in one price control period may have on Ofcom's consideration of the price controls to set for subsequent periods.

recover the costs of an asset in its lifetime.¹ We agree with this. However, to the extent that the recovery of costs is front-loaded with H3G's approach, if this were a problem, it would be a smaller one. However, H3G has not adequately demonstrated that in this context this issue should be a primary consideration, particularly in the light of conclusions above (see paragraph 7.67) in relation to H3G's argument on the potential risks to MNOs under Ofcom's approach of not recovering their efficiently incurred costs.

- 7.69. Finally, and as already mentioned above (see paragraphs 7.47 to 7.53), H3G has not explained how its approach would deal with the likely under-recovery of costs in the earlier years. H3G's model suggests that by 2007, MNOs would have recovered a substantial proportion of their efficiently incurred 3G network costs. If this has not been the case, this would have serious implications for H3G's argument that its methodology would, compared with Ofcom's ED methodology, reduce the risks to MNOs that they will not recover their efficiently incurred costs. For H3G's approach to reduce these risks, it must be that MNOs could reasonably expect to be more likely to recover their efficiently incurred costs allocated to call termination if Ofcom were to adopt H3G's proposal.
- 7.70. We are therefore of the view that, whilst H3G is correct to say that Ofcom's approach exposes MNOs to risk related to uncertainty around future traffic volumes, we do not agree that the risk that MNOs will under-recover their efficiently incurred costs attributable to call termination under Ofcom's ED methodology are as substantial as H3G claims. Nor is it clear to us that these risks are reduced by H3G's proposals, primarily because of the issues related to the early years.

Economic efficiency of price signals to investment and consumption

- 7.71. Ofcom and H3G seem to agree that an objective in determining the profile of unit charges should be to give efficient price signals to investment and consumption.² Under either Ofcom's ED methodology or H3G's LRAC proposals, charges will fall with input prices (any reductions in the price of assets due to technological or other developments are reflected in lower MCT rates). What distinguishes H3G's approach from ED is how the recovery of costs is spread over time. With Ofcom's ED approach costs are spread so as to avoid higher charges when the volume of traffic on the networks is lower, whereas with H3G's approach charges fall as economies of scale are realized.
- 7.72. H3G argued that LRAC would be more likely to result in efficient long-run price signals to consumption and investment. H3G said that this was the case because Ofcom's ED methodology results in unit charges that are in the long run inefficiently high as they will include a premium to make up for the earlier under-recovery of costs when levels of utilization were lower. H3G said that this was incompatible with a forward-looking approach to determining prices and leads to inefficiently low levels of consumption.
- 7.73. Ofcom agreed at its bilateral hearing on 4 June that in the longer term its ED methodology will result in unit charges that are higher than those that would be generated by LRAC (H3G's worked example³ suggested that LRAC will result in lower charges from around the end of the current price control period); Ofcom had said in its Price

¹Ofcom's bilateral hearing, 29 August, transcript, p40.

²Ofcom's MCT Statement, paragraph A5.196; H3G's Amended Price Control Appendix, paragraph 5.15.

³H3G's worked example was not provided to us until 10 September.

Control Defence that to this extent unit charges with its path of cost recovery will be backward looking as they reflect levels of utilization in earlier years.¹ We agree with this. However, both Ofcom and H3G are considering how to spread costs over time including costs that have already been incurred. Both agree that the charges at any time should reflect current costs of the technology involved and that MNOs should therefore be permitted to front-load the recovery of costs to the extent that it is necessary to do so to recover the costs of having invested in networks at times when input prices were higher. The difference between their approaches is how to spread the remaining costs including historically incurred costs.

- 7.74. We consider below H3G's claim that LRAC would do this in a way that would result in a profile of charges that would provide more efficient price signals to both investment and consumption.

Price signals to investment

- 7.75. Decisions by MNOs on investment in long-lived assets will be driven by expectations over the long term of the potential returns from investment (typically assessed using net present values). What matters is the stream of revenue generated over time rather than prices in particular years.
- 7.76. To promote efficient investment in network capacity, charges should be set at levels at which MNOs can expect to recover their efficiently incurred costs. Rates set below cost will result in too little investment and rates that are set too high could lead to inefficient costs being incurred or excessive profits being made.
- 7.77. Ofcom and H3G agree that charges should be set by reference to estimates of the costs that would be incurred by a hypothetical efficient operator.
- 7.78. For the reasons given above, we consider that Ofcom's approach is unlikely exactly to recover (ie neither over- nor under-recover) efficiently incurred costs given realized quantities. Ofcom has argued that to the extent that there is under- or over-recovery, this would be mitigated by the waterbed effect.² We agree that because of the waterbed effect, setting MCT charges too high or too low may not have much impact on the overall profitability of the MNOs. However, as Ofcom argues in making its case for regulating MCT charges, this has the effect of distorting the structure of retail and wholesale prices resulting in inefficient outcomes.³ Furthermore, to the extent that the waterbed effect would mitigate these risks, this would also be the case with H3G's approach.
- 7.79. However, for the reasons also given above (see paragraphs 7.57 to 7.59), we are also not convinced that with H3G's approach it is more likely that MNOs could expect to recover from termination rates a quantum of revenue that is close to their efficiently incurred costs. For a given traffic projection, H3G's methodology does not force the exact recovery of costs. H3G has also not explained how its approach would deal with the possible under-recovery of costs in early years if MNOs have not or could not set charges at the levels implied by H3G proposals.
- 7.80. Because it is the implications for expectations about the quantum of cost that will be recovered over time that are important, we do not therefore have good reason to prefer LRAC to ED on the grounds that it would give more efficient signals for invest-

¹Bilateral session with Ofcom, 4 June, transcript, p12.

²Ofcom's Price Control Defence, paragraph A1.5.27.

³Ofcom's MCT Statement, paragraphs 7.41 & 7.42.

ment. Although MNOs could not necessarily expect to recover exactly their efficiently incurred costs with Ofcom's ED methodology, we are not convinced that MNOs could expect to recover a quantum of cost that would be closer to their efficiently incurred cost if H3G's approach were to be adopted.¹

Efficient signals to consumption

- 7.81. H3G argued that higher termination rates in the longer term would result in inefficient price signals to consumption and inefficiently low levels of consumption.² H3G thus implicitly makes a link between MCT rates paid by networks and the retail prices faced by consumers. In particular, H3G appears to be saying that it would expect lower MCT rates to result in lower retail prices. On this issue, Ofcom said that there was unlikely to be a one-to-one relationship between retail prices for making calls and MCT rates,³ but because MCT rates are a marginal cost to MNOs it would expect these to be factored into retail prices.⁴
- 7.82. There may be no dispute between H3G and Ofcom on this matter, but we think that it is difficult for H3G to make a case in relation to the efficiency of the price signals to consumption without discussing the relationship between MCT rates and retail price for voice calls. This relationship is in our view far from obvious in the presence of the waterbed effect. However, for the remaining discussion we have assumed that a positive relationship has been established.
- 7.83. We have no reason to believe that Ofcom's ED methodology as specified could be expected to generate a profile of unit charges that would maximize welfare. Ofcom has acknowledged that it did not consider in detail the welfare properties of its approach.⁵ However, we also have no reason to expect that H3G's proposals would be better in welfare terms. Setting prices equal to LRAC may be a welfare-maximizing solution in certain circumstances, in particular where demand and costs are independent between periods and there is a single good, but this does not correspond to the characteristics of telecommunications networks.
- 7.84. Ofcom said that to determine the profile of unit charges that would best allocate costs across different products and over time would be an extremely complex task.⁶ We accept that it would be complex. We consider that average costs are likely to fall over time as traffic volumes increase and MNOs are able to realize the economies of scale and scope that are a feature of the supply of telecommunications networks and that network asset costs are likely to fall with technological advancements. Economic efficiency requires that prices reflect the additional cost that would be incurred in providing additional unit or units of demand (ie marginal or incremental cost). Where a substantial proportion of costs are fixed and sunk, marginal cost pricing may not allow for the recovery of efficiently incurred costs, creating a tension between achieving cost recovery (which is important to efficient signals to consumption and investment in the long term) and efficient use of existing capacity. In these circumstances, the issue is how to structure prices so as to recover costs in a way that minimizes the

¹Ofcom submitted, in response to our provisional determination, that in so far as its methodology relied on forecasts of uncertain variables, so long as the effects of such error were symmetric it was likely to send appropriate signals for efficient investment (Ofcom response to provisional determinations, paragraphs A2.10 & A2.11). We found this argument difficult to assess but considered that an assessment was not necessary as it would not affect our overall determination. In addition, for such a submission to be made good, the extent to which the effects of errors in forecasting future traffic volumes on investment incentives are symmetric would need to be explored.

²H3G's Commentary, p8.

³Ofcom's Price Control Defence, paragraph A1.5.13(i).

⁴Ofcom's bilateral hearing, 4 June, transcript, pp126&127.

⁵Ofcom's price control Defence, paragraph A1.5.12.

⁶ibid, paragraphs A1.5.13 & A1.5.18.

loss in welfare associated with charges that exceed marginal costs. Solving this problem would require detailed information on demand including own-price and cross-price elasticities of demand across different products and over time.

- 7.85. Ultimately, however, Ofcom had to decide how to allocate costs over both products and time. What distinguishes its approach from that proposed by H3G is how it relates to levels of utilization. Ofcom proposed a flat profile of unit charges whereas H3G proposed that charges fall as economies of scale and scope are realized. We have considered whether this feature of H3G's proposals could be expected to result in a more efficient allocation of costs.
- 7.86. In its argument that its LRAC proposals would give better signals to consumption, H3G has focused on how the unit charges with its approach would compare with those under ED in the longer term. In particular, it has argued that in the longer term unit charges would be lower because they would not reflect levels of utilization in earlier years. However, these lower rates in later years would be achieved at the expense of higher rates in the earlier years. H3G does not discuss the consequences of these higher prices in the earlier years. A reasonable argument cannot be based on those years where rates are lower whilst ignoring those years where they are higher.
- 7.87. T-Mobile said that both Ofcom's and H3G's proposals resulted in charges that exceeded long-run marginal cost for which there would be a corresponding deadweight loss.¹ With H3G's proposals, the mark-up would be much greater in the early years and lower in the later years. T-Mobile said that a smoother profile of charges would be more efficient as the deadweight loss would increase exponentially with the margin over marginal cost and losses in later years would be more heavily discounted.²
- 7.88. We question whether higher retail prices when there is spare capacity could be expected to give more efficient signals to consumption. When utilization is lower, the additional costs to MNOs of handling more traffic will tend to be lower than when traffic volumes are closer to capacity. Higher MCT rates when there is spare capacity would result in even lower levels of traffic when the costs of carrying additional traffic would be relatively low.
- 7.89. Furthermore, if demand in each period is not independent and, in particular, if an MNO could, if it succeeds in increasing traffic volumes in one year, expect to be able to maintain higher traffic volumes in the following years, lower prices in early years may help MNOs to grow traffic volumes more quickly and exploit economies of scale and scope. Lower termination rates now could therefore encourage the take-up of 3G services resulting in more rapid growth in voice and data 3G traffic volumes than might otherwise be the case. This would, over the life of the network, have the effect of reducing average costs.
- 7.90. Vodafone supported Ofcom's approach stating that it would be more likely to encourage the take-up of mobile services in the early years of network deployment and is more consistent with the path of cost recovery that would be expected in a competitive market.³

¹Paul Muysert expert report for T-Mobile, paragraph 20.

²ibid, paragraph 25.

³Vodafone Sol, paragraph 3.12.

- 7.91. Ofcom has said that Ramsey pricing principles can provide some insights into how fixed and sunk costs of investment in the network might be efficiently recovered. Ramsey pricing may suggest relatively high prices in periods when demand is in-elastic and lower prices when demand is elastic. Ofcom also said that insights from peak load-pricing problems may be valuable, implying low prices when there is spare capacity. On this basis, Ofcom concluded that setting a welfare-maximizing path would be complex, but a relatively flat profile of unit charges is not unreasonable from a welfare perspective.¹ We agree with these points.
- 7.92. The variation in termination rates by time of day that we can observe now may be an example of these principles being applied by MNOs. MNOs charge lower rates for terminating calls at certain times of the day or week when we would expect that the volumes of traffic are lower. In considering the efficient profile of charges over time, the same principles apply.
- 7.93. We also agree with Ofcom that unless there were reason to expect that demand had become, and was going to become, more elastic over time, the application of Ramsey pricing principles would not be expected to result in a declining profile of charges. H3G argued that the growth of Voice over Internet Protocol (VoIP) was a reason for believing that in future there would be substitutes for the mobile networks and that demand would therefore become more elastic.² H3G's argument on this appears speculative with no supporting evidence provided. In addition, H3G has not shown that VoIP could be expected to result in change in elasticities that would give the profile of charges generated by the LRAC approach.
- 7.94. Furthermore, if we consider this problem from the perspective of cost causation, we cannot see any reason why callers in periods when utilization is lower should bear more of the costs of MNOs' investment in additional capacity than callers in periods when utilization is higher. MNOs' decisions on investment in capacity are not driven by those callers' behaviour, but rather by long-term expectations of the level of traffic and associated revenue streams.
- 7.95. For all these reasons, we conclude that H3G has not shown that its LRAC proposals would result in a profile of charges that could be expected to give more efficient signals to consumption than Ofcom's ED methodology in this context.

Does Ofcom's ED methodology put H3G at a competitive disadvantage?

- 7.96. H3G argued that one undesirable effect of ED was that it was at a greater risk than the other MNOs of not recovering its efficiently incurred costs. H3G said that as a result, it would suffer from a competitive disadvantage. H3G noted, first, that the 2G/3G MNOs were already in the later years of the investment cycle (unlike H3G) and so were more likely to recover their total costs compared with H3G; second, that the ED-generated profile of unit costs meant that H3G had to finance its current costs out of highly uncertain future revenues; and third, that as a new technology 3G was subject to greater risk of large future demand variations.³
- 7.97. For the reasons given above in paragraphs 7.60 to 7.66, we acknowledge that Ofcom's ED methodology requires long-term traffic projections, but do not accept

¹Ofcom's Price Control Defence, paragraphs A1.5.17– A1.5.19.

²H3G's Commentary, footnote 16 on p9.

³H3G's Amended Price Control Appendix, paragraph 5.1(d).

H3G's argument that Ofcom's ED methodology exposes MNOs to as great a degree of risk as H3G claims that they will not recover their costs.

- 7.98. We also do not accept that H3G has shown that Ofcom's ED approach puts H3G at a particular disadvantage. We are not persuaded that the 2G/3G MNOs are more likely to recover their total costs than H3G or that H3G is at a competitive disadvantage because it has to finance its current costs out of highly uncertain future revenues. All the other MNOs have invested in 3G networks just as H3G has done and the approach taken to the path of recovery of efficiently incurred costs is the same for all MNOs. Other MNOs are exposed to many of the same uncertainties as H3G and whatever risks may be inherent in 3G networks and future demand variations are borne by each of them. To the extent that there are economies of scope from operating 2G and 3G networks, these have been taken into account in Ofcom's network cost model.

Conclusions

- 7.99. We do not accept H3G's arguments that as a matter of regulatory practice Ofcom should have adopted a model of perfect contestability to determine the path of unit charges. We consider that the key question is whether H3G's approach could, in the context that it is being applied, be expected to result, as H3G argues, in more efficient signals to investment and consumption.
- 7.100. Adopting H3G's proposals would give rise to advantages and disadvantages. We accept that H3G's approach would reduce the risks associated with uncertainty about future traffic volumes, including in particular about the rate of take-up of data services. We also accept that in the longer term the unit charges generated by H3G proposals would be more consistent with the prevailing levels of scale efficiency.¹
- 7.101. However, H3G has not explained satisfactorily how its approach should be implemented and as a consequence we remain unclear how H3G would deal with the under-recovery of costs in the earlier years. H3G's model does not force the recovery of a certain quantum of costs, but H3G has not explained in what circumstances there might be a difference between the quantum of cost recovered and efficiently incurred costs or how large this difference might be. H3G argued that its LRAC proposals would give more efficient signals to consumption but without discussing the relationship between MCT rates in the wholesale market with the prices paid by

¹In response to our provisional determination, Ofcom said that the term 'economies of scale' needed to be applied carefully where assets acquired in one period were used to supply output in several periods and where unit costs in a particular year may depend on expectations about the future, and that it was not clear that there was a single 'correct' definition of economies of scale in such circumstances. It said that the approach it adopted and H3G's approach reflected economies of scale in different ways. Ofcom distinguished between two different properties that costs might exhibit. The first related to whether unit costs fell as output increased, given a particular profile of demand over time. It said that H3G's approach was likely to exhibit this property. The second related to whether unit costs in a particular year were affected by shifts in the profile of demand over time. Ofcom said that its approach exhibited this property—although it also considered it plausible that H3G's approach would exhibit it as well. Ofcom said that we had appeared to imply that methodologies that possessed the first property reflected economies of scale, but that arguably the second property was a more appropriate definition in the present context since it related to how the costs of the underlying technology scaled as demand changed, rather than being strongly influenced by how those costs were allocated over time. Ofcom did not, therefore, accept our point that one of the 'advantages' of H3G's approach was that it generated unit costs that were 'more consistent with the prevailing levels of scale efficiency' (Ofcom response to provisional determinations, paragraphs A2.3–A2.9). We agree with Ofcom that there may not be a single correct definition of 'economies of scale' in circumstances where assets acquired in one period are used to supply output over several periods. However, the key issue still remains one of how costs should be recovered over time, and we do not agree that it cannot be said that with H3G's approach the unit charges in the later years will be more consistent with the prevailing levels of scale efficiency. In particular, the level of unit charges will be closer to the unit costs that mobile networks would face looking forward of providing additional capacity to meet further growth in traffic volumes. Nor do we agree that this cannot be said to be an advantage of H3G's approach. However, for the reasons given above, we agree with Ofcom that there are also disadvantages associated with the profile of unit charges generated by H3G's approach and on balance we do not think that Ofcom erred in adopting ED.

consumers in the retail market or the trade-off between lower prices in the longer term and higher prices in the shorter term.

- 7.102. We are therefore of the view that H3G has not demonstrated that if Ofcom were to adopt H3G's approach the outcome could be expected to be for better for consumers.

Determination

- 7.103. For the reasons given above, we conclude that Ofcom did not err in basing its modelling of costs on ED methodology for the reasons set out in paragraphs 5.1 to 5.15 of the H3G Amended Price Control Appendix.

8. Customer acquisition retention and service costs determination: Reference question 3(iii)

- 8.1. This section sets out our conclusions as to whether the price controls imposed on H3G have been set at a level which is inappropriate because Ofcom erred in failing to make allowance for H3G's costs of CARS in setting the price cap for call termination for the reasons set out in paragraphs 8.1 to 8.46 of the H3G Amended Price Control Appendix.
- 8.2. For the reasons given below, we do not consider that the price controls imposed on H3G have been set at a level which is inappropriate because Ofcom erred in failing to make allowance for H3G's CARS costs.

Ofcom's treatment of CARS costs

- 8.3. CARS costs are one element of non-network costs, ie costs that are incurred by MNOs but which are not directly associated with the network infrastructure that allows calls to be made. CARS costs consist generally of advertising and marketing costs, handset costs, discounts and incentives, customer care, billing and bad debt. The other two categories of costs classified by Ofcom as non-network costs are administration costs and 'other costs' (which include interconnection charges, roaming charges and a number of other items).¹
- 8.4. Table 8.1 shows the total CARS costs as reported to Ofcom by the MNOs for the latest year for which information was available as well as the levels of these costs that Ofcom thought appropriate to consider as CARS costs. It can be seen that on either basis, these costs are considerable: all MNOs have CARS costs that are in [redacted].

TABLE 8.1 Reported CARS costs; and Ofcom's revision of these for the MCT Statement

	£ million	
	Reported	Revised by Ofcom for the MCT Statement*
O2 (annualization of 10-month figure)	[redacted]	[redacted]
Orange	[redacted]	[redacted]
T-Mobile	[redacted]	[redacted]
Vodafone	[redacted]	[redacted]
H3G	[redacted]	[redacted]
Average (all operators)	[redacted]	[redacted]
Average excluding H3G	[redacted]	[redacted]

Source: Ofcom information supplied to the CC.

*Ofcom described in the MCT Statement the adjustments made to the CARS costs reported by MNOs; the figures themselves were redacted even from the confidential version.

Note: [redacted].

- 8.5. We requested a more detailed breakdown of CARS expenditure using a consistent set of cost categories. These categories were:
- (a) *advertising and marketing*: expenditure by MNOs on marketing and advertising including customer retention programmes;

¹Ofcom's MCT Statement, paragraph A15.2.

- (b) *handset costs*: costs associated with the provision of handsets and SIM cards—these were requested both on a gross basis and on a net basis (ie less revenues received for these items);
- (c) *discounts and incentives*: reductions in the final sales price charged to subscribers for services;
- (d) *sales*: costs associated with sales of MNO products, including their own network of retail shops and commission payments made to third-party retailers for completing sales of MNO products;
- (e) *customer care*: costs associated with the provision of call centres etc;
- (f) *billing services*: costs associated with providing bills including printing and postage costs; and
- (g) *bad debts*: revenue which is due but which is not paid by customers.

The information we received in response to this request is provided in Table 8.2. It demonstrates that there are considerable discrepancies in the breakdown of CARS costs across the MNOs.

TABLE 8.2 Breakdown of revised CARS costs

	<i>£ million</i>				
	O2	Orange	T-Mobile	Vodafone	H3G
Advertising and marketing	[X]	[X]	[X]		[X]
Handset costs:					
Gross	[X]	[X]	[X]	[X]	[X]
Net	[X]	[X]	[X]	[X]	[X]
Discounts and incentives	[X]	[X]	[X]	[X]	[X]
Sales	[X]	[X]	[X]		[X]
Customer care	[X]	[X]	[X]		[X]
Billing	[X]	[X]	[X]		[X]
Bad debt	[X]	[X]	[X]		[X]
Reconciliation*	[X]	[X]	[X]		[X]
Ofcom CARS (with gross handset costs)	[X]	[X]	[X]	[X]	[X]
Ofcom CARS (with net handset costs)	[X]	[X]	[X]	[X]	[X]

Source: Information supplied by the MNOs to the CC.

*Reconciliation relates to CARS costs recognized by Ofcom but which subsequent information provided to us did not allow us to allocate to any of the categories in the table.

Notes:

1. [

X

2. [

X

]

8.6. In its MCT Statement, Ofcom determined that it was not appropriate for any MNO to recover any of its CARS costs from wholesale MCT charges. It reached this view on the basis that CARS costs:¹

- (a) are not incremental to call termination ‘since they are not caused by, or incurred in, the supply of MCT’; and

¹Ofcom’s MCT Statement, paragraphs A15.25 & A15.26.

(b) are not common between call termination and other services provided by MNOs.

- 8.7. Rather, Ofcom argued that MNOs provided three services—subscription, origination and termination—and that CARS costs were incremental to the provision of the MNOs' subscription product. Alternatively, Ofcom suggested that it was possible to think of MNOs as providing wholesale and retail services and that, under this approach, CARS costs should be thought of as incremental to the provision of retail services. On either basis, Ofcom concluded, CARS costs should not be thought of as part of the cost base of the regulated activity.¹
- 8.8. Ofcom also rejected the idea that H3G should be given a specific CARS allowance to reflect the higher level of CARS expenditure relative to the other MNOs that it might need to incur in order to reach the traffic forecasts used in Ofcom's cost modelling. Ofcom rejected this argument on the basis of its general view that CARS should not be recovered from MCT charges, an assessment that its traffic forecasts for H3G were reasonable, and because it considered that such an approach could be characterized as entry assistance.²

H3G's grounds of appeal

- 8.9. H3G put forward, broadly, three arguments as to why its MCT rate should include an allowance for the recovery of CARS costs:
- (a) A CARS allowance should be made to reflect the higher-than-average CARS expenditure it would need to spend to obtain the 20 per cent market share forecast used by Ofcom in its cost modelling.
 - (b) CARS costs are common costs to all the services H3G provides, including MCT.
 - (c) In other decisions, Ofcom had recognized that CARS costs should be treated as common costs and it provided 'no or insufficient justification'³ for treating them differently with respect to MCT.
- 8.10. We have considered each of these arguments. We consider that the argument which, in principle at least, relates to the nature and correct classification of CARS costs of all MNOs is of fundamental importance to this part of H3G's appeal, so we address this first. We then consider, in turn, whether the market share assumptions made by Ofcom for an efficient 3G-only operator necessitate a specific CARS allowance, and the precedents that have been cited.

The nature and correct classification of CARS costs

- 8.11. In assessing this issue, it is helpful to set out a number of terms that are used by all the parties in their arguments:
- (a) *Stand-alone cost (of a product/service)*: if a company providing multiple products were, instead, to provide only one of these goods or services, then the resulting costs would be the stand-alone costs of that product.

¹ibid, paragraphs A15.43, A15.47–50.

²ibid, paragraphs A15.57–64.

³H3G's Amended Price Control Appendix, paragraph 8.1(c).

(b) *Incremental cost (of a product)*: these are the costs that result only from the provision of the specific product such that, if that good or service were no longer supplied, these costs would, in the long run, no longer be incurred.

(c) *Common costs*: these are those costs that are incurred by a multi-product firm but which are not incremental to any one good or service provided by that firm.

H3G's arguments

- 8.12. H3G argued that CARS costs were common between call termination and the other services that it provided. Consequently, in the same way that Ofcom made an allowance within the MCT charges for some proportion of MNOs' administration costs because they were costs that were common between call termination and other services, H3G said that the same approach should be taken with regard to (its)¹ CARS costs.²
- 8.13. H3G justified its assertion that CARS costs are common by reference to the concept of a stand-alone wholesale-only termination business: that is, a business whose only activity was the provision of termination services to wholesale customers.³ It stated that an efficient stand-alone provider of call termination with the pattern of traffic assumed by Ofcom would have to incur a level of CARS costs in order to generate that pattern of call termination traffic.⁴
- 8.14. H3G also criticized the argument that Ofcom used to conclude that CARS costs are not common to termination and that, rather, they are costs that are incremental to the provision of a subscription service. H3G argued that it was illogical to define a service called subscription (separately from the services of origination and termination) because there would be no demand for such a service if it did not also allow calls to be made and received (originated and terminated).⁵

Ofcom's arguments

- 8.15. Ofcom argued in response that CARS costs were not part of the common costs of providing termination services⁶ and that, notwithstanding this conclusion, there were a number of other good reasons not to include an allowance for CARS costs within MCT charges.⁷
- 8.16. Ofcom argued that CARS costs were not common to the provision of termination services because they were incurred as a result of the retail customer relationships that an MNO enters into, and that since a stand-alone MCT provider does not have a retail relationship with subscribers, it does not incur CARS expenditure in the same way as an MNO which sells retail services.⁸
- 8.17. Ofcom also defended its identification of a subscription service. It argued that just because subscription would not be demanded if it was not accompanied by the ability

¹H3G deploys this argument in relation to the recovery of its own CARS costs. Considered in isolation, however, this argument would imply that it would be appropriate for all MNOs to recover a proportion of their CARS costs through their MCT charges.

²H3G's Amended Price Control Appendix, paragraph 8.1(b).

³The wholesale customers of such a business would be either MVNOs or an MNO that had insufficient capacity on its own network to terminate calls made to its retail customers.

⁴H3G's Reply of 14 July, paragraph 13.7.

⁵H3G's Amended Price Control Appendix, paragraph 8.22.

⁶Ofcom's Price Control Defence, paragraph A3.3.1.

⁷ibid, paragraphs A3.3.10–A3.3.12.

⁸ibid, paragraph A3.3.8.

to make or receive calls, this did not mean that the costs of providing subscription could not be distinguished from the costs of providing origination and termination.¹

- 8.18. In addition to its argument that CARS costs are not common to the provision of termination services, Ofcom also provided a number of other reasons why it considered that it would be inappropriate to allow the recovery of CARS costs through regulated MCT charges.
- 8.19. First, Ofcom considered that even if a stand-alone provider of wholesale termination services were to undertake CARS expenditure, it would be inappropriate to include these costs within the regulated charge. Ofcom argued that there are a set of customers for whom the MCT charge (based on the average cost of providing mobile termination services) will be greater than the marginal cost of supplying MCT. A stand-alone provider of wholesale termination charges may then undertake CARS to exploit this gap but only if the expectation of additional profits from undertaking such expenditure was greater than the costs. In other words, the CARS expenditure undertaken by a stand-alone provider of wholesale termination services would be 'self-financing'.²
- 8.20. In this context, Ofcom argued, it would be inappropriate to include an allowance for CARS expenditure within the regulated charge. As CARS expenditure is only incurred to the extent that termination charges are already in excess of termination costs (for some customers), to include these costs within the MCT charge will lead to excessive profits being made in the provision of termination services. As a result of the waterbed effect, there would consequently be inappropriately low prices for other services. This, Ofcom argued, was precisely the structure of prices that it was trying to avoid by regulating termination charges in the first place. Ofcom also argued that this was particularly important in the case of H3G where its observable CARS expenditure in the recent past will have reflected the excessive termination profits it earned while its MCT charges were unregulated.³
- 8.21. Second, Ofcom emphasized that CARS costs were incurred on a per-subscriber basis and that this should dictate how they were recovered. It told us that since CARS costs arose on a per-subscriber basis, and were incurred in relation to increasing the number of retail subscribers, that meant that they should be recovered on the retail side and not on the wholesale side of the market.⁴ Earlier in the appeal proceedings, Ofcom suggested that this argument implied that CARS costs were not common to wholesale termination services.⁵
- 8.22. Third, Ofcom argued that consideration should also be given to who realizes the benefits associated with CARS expenditure. Ofcom argued that most of the benefit from MNOs undertaking CARS expenditure accrued to mobile phone subscribers. Callers to mobiles—on whose behalf MCT services are purchased—by contrast, only benefit to the extent that CARS expenditure results in an expansion of the number of subscribers who can be called. As Ofcom considered that most CARS expenditure was focused on gaining market share, it thought that the perspective of benefits stood in its own right as an argument against including CARS costs in the regulated termination charges.⁶

¹ibid, paragraphs A3.3.15–A3.3.23.

²ibid, paragraph A3.3.10.

³ibid, paragraphs A3.3.11 & A3.3.12.

⁴Ofcom's bilateral hearing on H3G appeal, 29 August, transcript, p2.

⁵Annex 1 to Ofcom's letter to the CC of 14 July 2008, paragraph 4.

⁶ibid, paragraph 5.

H3G's response

- 8.23. As well as continuing to argue that the most important question is whether or not a stand-alone provider of wholesale termination services would undertake CARS costs, H3G has, in turn, responded to each of the three arguments made by Ofcom.
- 8.24. In terms of the argument that CARS costs would be self-financing, H3G argued that the traffic forecasts that Ofcom had adopted for an efficient 3G operator presupposed that any differences between average and marginal costs had already been exploited.¹ H3G also argued that Ofcom's claim that the inclusion of a CARS allowance within MCT charges would lead to excessive termination profits presumes that no such costs should be allowed for: an argument which it considered to be circular given that the issue at stake is whether the costs should be allowed for.² H3G argued that it was only the recovery of an inefficient level of CARS costs that would give rise to inefficient MCT charges.
- 8.25. In terms of Ofcom's argument that because CARS costs were incurred on a per-subscriber basis this should dictate how they were recovered, H3G argued that this was tantamount to Ofcom arguing that prices should be set to recover marginal or long-run incremental costs rather than to use an approach that allows for the recovery of common costs, which is contrary to the very basis of its MCT Statement.³ H3G told us that it was not entirely sure what Ofcom meant by its argument, and that as far as H3G did understand it, Ofcom was simply stating that CARS costs are not incremental to call termination, which H3G agreed with, but which did not mean that CARS costs were not common to termination and other services.⁴
- 8.26. Finally, in terms of who benefits from undertaking CARS costs, H3G submitted that a view on whether callers to mobiles benefit should be taken specifically in relation to an MNO's own market by reference to its own price control,⁵ and that in H3G's market CARS costs were necessary in order to build market share and exploit the economies of scale that ultimately reduced the price faced by those calling H3G's subscribers.

Interveners' arguments

- 8.27. Vodafone agreed with H3G's argument that CARS costs were not incremental to a service called subscription and that instead are incurred to induce consumers to take out and maintain a subscription to a mobile network and, to that extent, are necessarily incurred in order to enable third parties to call a mobile subscriber.⁶
- 8.28. O2 and Orange both offered support to Ofcom on this issue. Orange noted that the CC in 2003 had found that CARS costs were incremental to subscription and contended that H3G had advanced no compelling reason why the CC's view in 2003 should be displaced.⁷ Similarly, O2 supported Ofcom's response to H3G's arguments and also noted that Ofcom's methodology was consistent with the methodology set out in the 2003 CC report.⁸

¹H3G's Reply, paragraph 13.17.

²ibid, paragraph 13.22.

³ibid, paragraph 13.27.

⁴H3G's bilateral hearing on its appeal, transcript, p58.

⁵ibid, p57.

⁶Vodafone Sol on the H3G appeal, paragraph 3.17.

⁷Orange Sol on the H3G appeal, paragraph 6.6.

⁸O2 Sol on the H3G appeal, paragraphs 29 & 30.

- 8.29. BT argued against the inclusion of a CARS allowance in MCT charges on three principal grounds:
- (a) First, BT supported the view of Ofcom that CARS are incurred on a per-subscriber basis and that it is therefore inappropriate to allow the recovery of these costs through termination charges.¹
 - (b) Second, it supported Ofcom's argument that including an allowance within MCT charges would distort the incentives of MNOs in favour of expending higher levels of CARS costs.²
 - (c) Third, it argued that emphasis should be placed on who benefited from CARS expenditure. In BT's view, most CARS expenditure was focused on market share switching and hence that the benefits accrued to the mobile customer and not to the person who calls them.³
- 8.30. By contrast, T-Mobile supported the arguments put forward by H3G as to why CARS costs should be thought of as common costs. It also put forward counter-arguments to those arguments put forward by Ofcom as to why CARS should not be recovered through regulated charges regardless of whether or not they were common costs.
- 8.31. In terms of whether CARS costs are common costs, T-Mobile argued that CARS costs were costs associated with the subscription 'event' and that the subscription cost was a common cost, being simply an investment that had to be made to sell inbound and outbound calls, data, SMS and all the other services that the MNOs provided.⁴
- 8.32. T-Mobile rejected Ofcom's argument that CARS should be considered as costs that are incremental to the subscription service. It argued that if Ofcom accepted that subscription was a prerequisite for purchasing other services provided by an MNO, then the costs associated with the provision of subscription must be considered as common to these other services.⁵
- 8.33. T-Mobile also argued that the other problem associated with the identification of a separate subscription service to which CARS costs were incremental and from which such costs should therefore be recovered was that the majority of mobile users did not pay subscription-based charges to allow for recovery in this way. T-Mobile said that 65 per cent of customers were on pre-pay tariffs for which there was no fixed subscription fee and that the remaining customers on post-pay contracts were invariably on bundled consumption plans where a significant bundle of services are supplied for an agreed fee.⁶
- 8.34. T-Mobile also rejected many of the other arguments that Ofcom made for not recovering CARS costs through MCT charges. Specifically:
- (a) It rejected Ofcom's arguments that because CARS costs are incurred on a per-subscriber basis they should be recovered on a per-subscriber basis (see paragraph 8.21 above) as confusing the issue of whether or not CARS costs are common to MCT with the question of how costs, once they have been identified

¹BT Sol on H3G appeal, paragraph 40.

²ibid.

³BT's bilateral hearing on the H3G appeal, transcript, p20.

⁴T-Mobile's bilateral hearing on H3G appeal, transcript, p49.

⁵Expert witness report of Paul Muysert for T-Mobile, paragraph 32.

⁶ibid, paragraph 35.

as incremental to a particular service or common between two or more services, should be recovered.¹

- (b) It rejected Ofcom's argument about consideration of the benefits associated with CARS expenditure—in a context in which much CARS expenditure is largely focused on gaining market share from competing operators—on two grounds. First, it argued that callers to mobiles benefited from having more subscribers on the network.² Second, it argued that regardless of whether any customers were gained from other MNOs or were new mobile subscribers, all CARS expenditure should be thought of as part of the costs of doing business. It said that there was no fundamental principle in economics which said that when a firm was winning customers from other suppliers it should not get its retail costs.³
- (c) It rejected the argument that the inclusion of a CARS allowance within MCT charges would distort MNOs' incentives, as the argument rested on demonstrating that it is incorrect to include an allowance in the first place, which, in T-Mobile's view, Ofcom had not demonstrated.⁴ It also argued that there would be no excess profits resulting from providing an allowance for CARS costs within the MCT charge due to the existence of the waterbed effect.

Assessment

8.35. We have adopted a two-stage assessment to considering the issue of whether MCT charges should include an allowance for the recovery of some or all types of CARS costs:

- (a) First, we have considered the issue of whether a (hypothetical) stand-alone provider of wholesale termination services would have an incentive to undertake, or contribute to others undertaking, some or all categories of CARS expenditure.
- (b) Second, to the extent that we find that some or all of these categories of CARS expenditure are ones that a (hypothetical) stand-alone provider of wholesale termination services would have an incentive to undertake, or contribute to others undertaking, we then consider whether this means that it would be appropriate for the regulated MCT charge to include an allowance reflecting such expenditure.

Would a (hypothetical) stand-alone provider of wholesale termination services have an incentive to undertake, or contribute to others undertaking, some or all aspects of CARS expenditure?

8.36. The assessment of whether a stand-alone provider of wholesale termination services would have an incentive to undertake, or to contribute towards others undertaking, some or all aspects of CARS expenditure is, to a certain extent, speculative: there are no examples of companies that are involved only in the wholesaling of termination services. However, we have found it helpful to think about a hypothetical company that competes with other (integrated) companies to supply termination services

¹T-Mobile Sol on H3G appeal, paragraph 26.6.

²T-Mobile's bilateral hearing on H3G appeal, transcript, p49.

³ibid, p52.

⁴T-Mobile Sol on H3G appeal, paragraph 26.7.

to MVNOs or alternatively to supply an MNO that no longer has sufficient capacity to terminate the calls made to its retail subscribers.¹

8.37. There are two aspects of the way in which we have undertaken this assessment that we would highlight:

(a) First, we have undertaken this assessment in a disaggregated manner, considering each of the key elements of expenditure identified in Table 8.2: marketing and advertising, handset costs, discounts and incentives, sales, customer care and bad debts. This is appropriate given the possibility that the impact of undertaking these different types of expenditure may differ and hence the incentive for a stand-alone provider of wholesale termination services to incur these different types of expenditure may also differ.

(b) Second, we have considered the question in terms of the incentives faced by the stand-alone provider of wholesale termination services. This is because what is important is whether or not the stand-alone provider of wholesale termination services would wish to ensure that a certain quantity of the CARS activity took place rather than the precise way in which this was achieved.

8.38. We appreciate that a 'thought experiment' of this sort is a fairly abstract concept given that there is no company, nor any immediate prospect of any company, becoming a stand-alone provider of termination services. Nonetheless, as H3G has made this an important aspect of its appeal and one where (at least on occasion) there has been disagreement between H3G and Ofcom about the outcome of this thought experiment (see paragraph 8.16 above), we consider it appropriate for us to address this issue.

Marketing and advertising

8.39. It is our expectation that advertising and marketing expenditure incurred by an MNO will be almost exclusively focused on appealing to a dispersed base of retail customers: providing them with information about the output and prices of its retail products and establishing and reinforcing a particular brand.

8.40. We are not aware that very much or any of this expenditure is focused on appealing to an MVNO considering which MNO it should seek to establish a wholesale contractual relationship with. This is consistent with there being only a small number of well-informed actual and potential customers (MVNOs plus potentially MNOs with insufficient capacity on their own networks) who are interested in purchasing an MNO's MCT services, and with the nature of the MCT service being perceived as relatively homogenous. Therefore, we would expect that the incentive to undertake advertising and marketing associated with the sale of its own service would be minimal for a stand-alone provider of wholesale termination services.

8.41. However, we do think that it is likely that a stand-alone provider of wholesale termination services would have an incentive to share in the costs of some of the advertising and marketing campaigns that its wholesale customers would be likely to undertake. This is because an MVNO (for example), when deciding on the optimal amount to spend on advertising and marketing, would be expected to make its

¹In many ways, it is considerably more plausible to think about a company that offers both origination and termination wholesale services to either MVNOs or MNOs that have no spare capacity. Indeed, although this is not a strictly accurate approach to identifying the stand-alone costs of termination services, considering a company with this alternative business model would make no qualitative difference to the conclusions reached.

decision taking into account only the additional profits that it would make from successfully attracting/retaining customers as a result of this expenditure. The MVNO would fail to take into account any additional profits that its termination supplier would also generate from the success of an advertising or marketing campaign. To rectify this situation, the stand-alone termination business might, in principle, have an incentive to contribute towards such campaigns.

- 8.42. The strength of any incentive on the stand-alone provider of wholesale termination services would depend on the specifics of particular campaigns. Higher contributions might be expected for those campaigns which would be expected to deliver a more immediate increase in subscribers (and hence calls terminated to such subscribers), while longer-term, brand-building campaigns—the benefits of which might only be seen with a lag and potentially even after the MVNO's contract with its current termination provider had expired—would probably attract less interest from the termination provider.
- 8.43. Nonetheless, we recognize that a stand-alone provider of wholesale termination services would, in general, have an incentive to make contributions towards the costs associated with marketing and advertising.

Handset costs

- 8.44. Handset costs are incurred by MNOs in order to supply their customers with a handset so that they can make or receive calls. These costs can either be considered on a gross basis—the costs incurred by an MNO in sourcing handsets from handset manufacturers—or on a net basis, after deducting revenues associated with the subsequent sale of these handsets. Consequently, the net costs of handsets can also be thought of as the amount of subsidy provided to subscribers when acquiring a handset.
- 8.45. In the context of the regulation of wholesale termination charges, we consider that it is only appropriate to consider net handset costs. Were gross handset costs to be considered, then this would lead to the possibility of some costs being recovered twice: once from subscribers when taking out a subscription, and again, assuming various other conditions were met, from termination charges.¹ Given this, we consider only net handset costs, equivalent to the handset subsidies provided to subscribers.
- 8.46. Once again, we consider that a stand-alone provider of wholesale termination services would, in certain circumstances, have an incentive to contribute towards handset subsidies. The stand-alone provider of wholesale termination services would ultimately be interested in making the MVNO to which it was supplying termination services an attractive proposition to the MVNO's (potential) retail subscribers. For some retail subscribers, a key determinant of their choice of supplier will be the retail price of the handset. Recognizing this, and assuming that there are profits to be made from terminating the calls made to these subscribers, a stand-alone provider of wholesale termination services may be prepared to provide handset subsidies to its wholesale customers (incur net handset costs) with the expectation that these would be passed on to the final retail customers.

¹Specifically that it was an element of CARS expenditure that it would be expected a stand-alone provider of wholesale termination charges would have an incentive to undertake and that no further considerations suggested that such expenditure should not be recovered from termination charges.

Discounts and incentives

- 8.47. Discounts and incentives take the form of reduced retail prices provided by MNOs in order to attract or retain subscribers on to their networks.
- 8.48. We see force in the argument, made by H3G and acknowledged by Ofcom, that a stand-alone provider of termination services would have a desire to provide these incentives. Specifically, if for a given increase in termination minutes, termination revenues increase by more than termination costs, we would anticipate that a rational provider of wholesale termination services would offer various targeted incentives to make an MVNO more attractive to particular sets of customers.

Sales

- 8.49. A significant proportion of the sales costs incurred by MNOs relate to their branch network of shops and particularly the personnel, distribution and depreciation costs associated with this network. There are also similar costs, although typically much smaller in magnitude, relating to telesales and Internet sales. The other significant element within this category is contract commissions paid to third-party retailers for selling particular products.
- 8.50. The costs associated with running retail shops would not be directly incurred by a stand-alone provider of wholesale termination services. However, we can see that it is possible that such a provider would have an incentive to contribute towards the costs of any retail network established by its wholesale customer. This would take place were the stand-alone provider to consider that in making such contributions, its wholesale customer would become more popular with retail consumers and hence the number of minutes it would terminate would (profitably) increase.
- 8.51. In addition, we think that it is likely that a stand-alone provider of wholesale services would continue to offer retail commissions. Following the same logic as with discounts and incentives, the stand-alone provider would gain termination profits from subscribers signing up to the MVNO to which it was providing termination services. It would therefore have an interest in designing a package of incentives to third-party retailers that would increase the number of such subscribers and hence its profit levels.

Customer care

- 8.52. Customer care costs primarily relate to the running of customer call centres.
- 8.53. There may be some such costs that a stand-alone provider of wholesale termination services would expend so that it had the ability to register and deal with problems regarding incoming calls. However, we have seen no evidence to suggest that these costs are material.
- 8.54. In addition, were a stand-alone provider of wholesale termination services to consider that final retail consumers made their decision in part on the basis on the after-sales care that they expected to receive, then this would create an incentive on the wholesale termination provider to ensure that its wholesale customers were providing a level of customer care that ensured that the overall retail offer remained competitive. Although we think that, in many cases, the interests of the wholesale termination provider in this aspect of its retail business is likely to be limited, especially bearing in mind the incentive that the MVNO would already have to provide a level of customer

care, we nonetheless recognize that in certain circumstances such an incentive could exist.

Billing

- 8.55. From the evidence seen from those MNOs that provided disaggregated information, billing costs primarily relate to the posting of bills as well as associated personnel costs and receipts processing costs.
- 8.56. There may be a very small proportion of billing costs that would still have to be incurred by a stand-alone termination provider, ie to collect payments from the other MNOs/MVNOs. We consider that these are sufficiently small that, for practical purposes, they can be considered as negligible.
- 8.57. However, we have also considered the extent to which the stand-alone provider of wholesale termination services would wish to incentivize its wholesale customer financially to provide a higher quality of billing services than its customer would without the provision of such incentives. This would depend on the extent to which the MVNO already had an incentive to provide billing services as well as the sensitivity of termination minutes to the quality of the billing service offered by the MVNO. Bearing in mind the strong incentive that the wholesale customer will have to provide accurate and timely bills so as to ensure payment, we think it unlikely that a stand-alone provider of wholesale termination services would have much incentive to contribute to this aspect of its wholesale customers' activities. However, there may be some rare situations in which this might take place.

Bad debts

- 8.58. Write-offs for bad debts and the costs associated with the collection of bad debts are costs that result largely from the interaction between MNOs and their retail consumers. We would not anticipate that a stand-alone provider of wholesale termination services would have an incentive to contribute to these costs in most situations. The only exception may be in a situation in which it agreed to share in any increase in bad debts experienced by its wholesale customer resulting from other aspects of CARS expenditure that it had also incentivized its customer to undertake.

Provisional conclusion

- 8.59. In our provisional determination, as a result of this analysis we recognized that a stand-alone provider of wholesale termination services would have an incentive to undertake, or contribute to others undertaking, various aspects of CARS expenditure. We said that those categories where the incentive would be strongest were those which would have the greatest impact on the number of minutes that are received by the retail customers of its wholesale customer. We anticipated that this would be greatest in the case of handset subsidies, discounts and incentives, sales commissions and advertising and marketing.
- 8.60. Despite reaching this conclusion, we noted that there were properties of these elements of expenditure which distinguished them from what we would normally think of as common costs. In particular, we stated that typically we would expect common costs to be costs where the integration of activities previously undertaken by stand-alone entities would allow economies of scope to be exploited or, analogously, that splitting an integrated company into various stand-alone entities would lead to an increase in the incidence of such costs. We noted that this is the case, for example,

with respect to administration costs, where, if an integrated MNO were to split into a stand-alone provider of wholesale termination services and a residual company containing all other activities, then overall administration costs would be expected to increase. By contrast, it appeared that CARS costs were different. We considered that the reason a stand-alone provider of wholesale termination services would have an incentive to see CARS expenditure undertaken was that its wholesale customer would only undertake CARS expenditure taking into account the impact it would have on its profits. Without intervention by the stand-alone provider of termination services, the impact of CARS activity on termination profits would be ignored and so less CARS activity would be undertaken than if the companies were integrated. We said that the contribution made by the stand-alone provider of termination services would be to attempt to remedy this.

- 8.61. Thus, whereas with conventional examples of common costs, the split of an integrated business into two stand-alone businesses would lead to some duplication of such costs, we considered that the impact of a hypothetical separation of an MNO into a wholesale termination business and a business containing all other activities undertaken by the MNO on the level of actually incurred CARS costs was considerably less clear-cut.
- 8.62. Given the above, we decided that whilst it may be arguable that certain elements of CARS costs could be considered as common costs, we did not think that would necessarily imply that they should be treated in the same way that other categories of common costs might be. In any event, we noted that our decision as to whether it would be appropriate to include an allowance for CARS costs within regulated MCT charges did not rest on the precise classification of CARS costs as common or otherwise, so we had not found it necessary to come to a final decision on whether they should be so classified.

Should these elements of expenditure be recovered from regulated termination services?

- 8.63. The second part of our assessment has been to consider whether it is appropriate for an allowance to be made in regulated MCT charges for any CARS expenditure which a stand-alone provider would have an incentive to undertake or an incentive to encourage others to undertake. In our provisional determination, we said that we were not persuaded that it would be appropriate to increase termination rates to reflect these expenditure elements. This was for three reasons.
- 8.64. First, we considered that CARS expenditure would be undertaken by a rational MNO on the expectation that the benefit from acquiring/retaining a subscriber or increasing the usage of their phone would be greater than the cost of the CARS expenditure plus any additional costs that the attraction/retention/increased usage of the network would cause the MNO to incur. In other words, after taking account of the CARS expenditure, the customer lifetime value (CLV) of each customer group would remain above zero.
- 8.65. The same would also be true for a stand-alone provider of wholesale termination services: the incentive to undertake the expenditure is derived from the expectation that it would be profitable to expand demand for termination and that any increase in termination profits would not be taken into account by its wholesale customer.
- 8.66. Given that CARS expenditure is typically undertaken on the expectation that it will profitably expand demand, we were not persuaded that it is also appropriate to recover this expenditure through termination charges. Ofcom's position was that

MCT rates should be related to the network cost of providing termination services. It then considered whether it was appropriate to allow MNOs to charge higher rates in relation to non-network costs. We did not consider it necessary for the MCT rate to be increased to also make a contribution to CARS costs as any such expenditure incurred would typically be incurred only if it was more than covered by the additional revenue it generates. We said that to also provide for some of this expenditure to be recovered from MCT rates may lead to inappropriate overcompensation in relation to these costs.

- 8.67. In response to (in part) similar arguments by Ofcom that it was inappropriate for CARS costs to be recovered through MCT charges, H3G argued that this ignored the fact that Ofcom's traffic forecasts presupposed that any self-financing expenditure to increase traffic had already been made (see paragraph 8.24 above).¹ We stated that to the extent that this was true, we were not persuaded that this invalidated the conclusion that to allow for recovery of such self-financing costs would create undesirable distortions.
- 8.68. Second, we considered that the impact of increasing the MCT rates to include an allowance for CARS expenditure would be to increase the attractiveness of each customer, and as such would create a stronger incentive for MNOs to undertake further CARS expenditure.
- 8.69. In the absence of any compelling evidence presented to us that there was currently an inefficiently low level of CARS activity in the sector, we were not convinced that providing incentives for further CARS expenditure would be desirable. We said that the negative consequences of excessive CARS activity would depend on the precise form that it took. For instance, the provision of additional discounts on handsets to (further) reduce these prices below resource costs would encourage excessive churn, while additional expenditure on advertising and marketing, given current mobile phone penetration levels, is likely to be focused on acquiring market share from other MNOs with little or no expansion in total output.²
- 8.70. We stated that a further consequence of this argument was that there would be a risk of a ratchet effect. Following the logic set out above, the impact of including a CARS allowance with regulated charges to reflect these costs would be to create an incentive to undertake further levels of CARS expenditure in the future. If this higher level of CARS expenditure were to inform the CARS allowance at a future regulatory review, then the outcome could potentially be an ever-increasing amount of discounts and incentives offered to subscribers and ever-higher MCT charges.
- 8.71. Third, a consideration of who benefits from the CARS costs undertaken by MNOs also led us to conclude that it was inappropriate for CARS to be recovered through MCT rates. In the case of CARS costs, our view was that the principal beneficiaries were mobile subscribers who received, for example, lower prices, better customer care or more information about the product that they have purchased. We therefore thought it appropriate that these were the people from whom any costs should be recovered.
- 8.72. By contrast, we noted that the inclusion of an allowance for some element of CARS costs within the MCT rate would mean that a significant proportion of these costs would be covered by fixed-line operators and, ultimately, their customers. The only

¹H3G's Reply, paragraph 13.17.

²Some of the undesirable consequences of excessive CARS expenditure are noted in Section 4 of our determination on the NES.

benefit (in aggregate) that these callers would receive would be to the extent that the greater CARS expenditure that would be anticipated as a result of the higher MCT charge would result in greater mobile phone penetration (or prevent its decline) and hence widen (or preserve) the number of people who could be called by FNOs' customers. As was discussed in relation to the BT's appeal on the NES, we thought it unlikely that a significant proportion of any additional CARS expenditure would be directed to this purpose.

- 8.73. Furthermore, not only did we think that callers to mobiles would not receive many benefits as a result of this expenditure, we also considered that there would be a number of detriments, especially for fixed-line operators. In particular, the effect of including an allowance for CARS costs would not simply be to increase the revenues of (some or all) MNOs but also to do this through an increase in the costs of competitor fixed-line networks. Moreover, the increase in costs faced by competitor fixed-line networks would be due to a regulatory allowance for the recovery of expenditure associated with—and would have the effect of incentivizing further expenditure on—activities that make MNOs more compelling competitors to fixed-line networks.
- 8.74. For these reasons, we concluded in our provisional determination that we did not consider that H3G's argument as to why Ofcom erred in failing to provide an allowance for the recovery of its CARS costs—because these are costs that are common between termination services and other services provided by MNOs—was compelling. We recognized that a stand-alone provider of wholesale termination services would have an incentive to undertake some or all of the different aspects of CARS expenditure. However, we did not think that this was sufficient justification to increase termination revenues in respect of CARS costs, for all three of the reasons outlined above.

Responses to our provisional determination

The categorization of CARS costs

- 8.75. In its response to our provisional determination, H3G argued that our reasoning in relation to whether CARS costs were common costs led to the conclusion that CARS costs were partly incremental to termination.¹ H3G submitted that if we believed that CARS costs were partly incremental to termination, then under the logic of Ofcom's LRIC approach, Ofcom erred in not allocating a proportion of them to termination. If we did not believe that CARS costs were partly incremental to termination, then this invalidated our conclusion that CARS costs were distinguishable from costs that were normally thought to be common and that such distinction provided support for a different treatment compared with other common costs.²
- 8.76. T-Mobile, similarly, argued in its response that our logic implied that some CARS costs were incremental to termination, and that if this were correct then the CARS costs that were incremental to termination should be recovered from termination charges.³
- 8.77. We do not accept that our analysis of CARS costs implies that CARS costs should be considered as costs that are partly incremental to the provision of termination. Our analysis does not suggest that a stand-alone provider of termination services would

¹H3G's response to provisional determinations, paragraph 8.4

²ibid, paragraph 8.5.

³T-Mobile's response to the provisional determination on CARS costs, p3.

need to incur CARS costs in order for it to be able to deliver termination services, but that a stand-alone provider of termination services would incur CARS costs only if, and to the extent that, it expected that this expenditure would generate additional profits. In our view, this is a key distinction between CARS costs and network and administration costs. CARS costs are not costs that an MNO would have to incur in order for it to be able to deliver a certain level of output, but an expense it has an incentive to incur because of the profits to be gained from delivering greater levels of output. These are essentially the points made by Ofcom that are set out in paragraphs 8.19 and 8.20 above.

- 8.78. Furthermore, the CARS costs that an MNO will have an incentive to spend will depend on the competitive conditions in the market and the level of CARS expenditure by other MNOs. This implies that if a CARS allowance were to be included within the MCT charge controls for each MNO, that may lead to higher CARS expenditure by all (as the higher termination revenues were dissipated in part in competition for customers via the waterbed effect) without any substantive change in market outcomes. This is unlike the situation that prevails with network and administration costs—one MNO choosing to spend more on its network should not make it more expensive for another MNO to construct its network.
- 8.79. With regard to the particular point made by H3G on the implications of the logic of Ofcom's LRIC approach, Ofcom's approach has been to estimate the costs that an average efficient network operator would need to incur in order to be able to deliver a given volume of output under its low-, medium- and high-volume traffic projections. As we have already stated, in our view CARS costs do not fall into this category.
- 8.80. Furthermore, Ofcom's approach was to consider the costs that would be incurred by an average efficient operator. In the case of network costs this was achieved by adopting a combined bottom-up and top-down approach based on engineering data. With regard to administration costs, Ofcom took the view that competition in the retail markets was sufficient to ensure that MNOs do not incur excessive administration costs and that therefore the actual observed administration costs of the MNOs could form the basis of the administration costs allowance.
- 8.81. By contrast, the level of CARS costs incurred by MNOs will be driven by the additional profits that they would expect to gain from retaining or attracting additional subscribers. If Ofcom were to allow MNOs to increase the rates they charged to terminate calls above the levels justified by reference to the costs incurred in providing the termination service to their wholesale customers, and in so doing made certain subscribers more profitable, MNOs would have an incentive to spend more to attract these customers. As there has been no dispute that the waterbed effect is strong (even if not complete), we do not think that a CARS allowance can be justified on the basis that it would allow for the recovery of efficiently incurred costs in the same way that the network and administration elements of the MCT charge can be.¹
- 8.82. Finally, as Ofcom has argued, its approach was to set termination rates by reference to the costs that would be efficiently incurred in providing termination services including a contribution towards efficiently incurred common costs. To permit MNOs to charge termination rates in excess of this cost would lead to excessive profits being made in the provision of termination which, through the waterbed effect, would lead to lower prices for other services. This was precisely the structure of prices that

¹An allowance for CARS costs could only be seen as allowing for the recovery of efficiently incurred costs to the extent that the waterbed was not effective.

Ofcom was seeking to avoid by regulating termination charges in the first place (see paragraph 8.20 above).

- 8.83. T-Mobile submitted in its response that our refusal to accept that CARS costs were common and should not be treated in the same way as other common costs was not sustainable because our analysis of the incentives to incur CARS costs did not accord with the reality of why they were incurred. T-Mobile said that CARS costs were incurred by MNOs to win customers because of the multiple revenue streams these customers then provided and that this was the sense in which they were common costs which should be recovered across the multiple services.¹
- 8.84. Whilst we acknowledge that £1 of CARS costs when incurred will generate for MNOs a number of revenue streams—including revenue from terminating calls to customers won—we do not accept T-Mobile’s argument that CARS costs should therefore be regarded as common costs. An MNO’s decisions on the amounts that it is willing to spend in acquiring and retaining customers and on which individual customers, or groups of customers, it wants to target will be determined by the contribution that the individual income streams will make to the overall profitability of those customers and the competitive conditions in the retail market including the level of CARS expenditure of other MNOs.
- 8.85. We therefore remain of the view that whilst it may be arguable that certain elements of CARS costs could be considered as common costs, we do not think that necessarily implies that they should be treated in the same way as other categories of common costs.

Incentives and efficiency

- 8.86. In its response to our provisional determination, H3G agreed with us that CARS expenditure would only be incurred if it was exceeded by expected incremental revenue, but said that this was true of each and every item of expenditure incurred by an efficient operator. H3G gave as an example spend by MNOs on base stations to provide coverage beyond the minimum required by their licences and noted that neither Ofcom nor we had suggested that these costs should not be recovered through MCT rates.²
- 8.87. T-Mobile, similarly, said that it was erroneous to argue that no allowance should be included for CARS costs because CARS expenditure would be incurred only if it was more than covered by the additional revenue it generates. T-Mobile submitted that no firm would incur costs unless it was profitable for it to do so, but that this did not mean that all regulated prices should be set at zero.³
- 8.88. Whilst we agree that MNOs would not generally be prepared to undertake unprofitable investment in their networks, we consider that comparison of an MNO’s incentives to incur CARS costs with those to invest in its network is unhelpful because the nature of the incentives in each case is very different. In the case of investment in network capacity or coverage, a stand-alone provider of termination services would have an incentive to invest if the revenue received from terminating more traffic exceeded the costs of the investment. A stand-alone provider must therefore have an expectation that it will be able to recover its costs (including a reasonable rate of

¹T-Mobile’s response to the provisional determination on CARS costs, p3.

²H3G’s response to provisional determinations, paragraph 8.7.

³T-Mobile’s response to provisional determination on CARS costs, p3.

return) for it to be willing to make the necessary investment in the network. By contrast, the incentives to incur CARS costs are largely driven by competition between network operators for the profits to be earned from terminating more traffic (among other things).¹ How much a stand-alone provider would be willing to incur would depend on the level of profits to be gained.

- 8.89. H3G, as part of this argument, stated that the observation that an item of expenditure was exceeded by expected incremental net revenues only confirmed that the expenditure was efficient.² However, in our view the fact that an expense would be profitably incurred is not sufficient to conclude that the level of expenditure is efficient or that it is efficient for the expense to be incurred at all. For example, if a regulator were to permit a regulated business to charge higher prices than would be justified by reference to the costs of an efficient operator, it is possible that an inefficient business may still find investment in additional capacity profitable even if the costs it incurs are higher than those that would be incurred by an efficient operator. Allowing a regulated business to charge excessive rates can encourage investment that would not otherwise be profitable.
- 8.90. H3G also argued that our logic that CARS expenditure should not be recovered from MCT rates because the expenditure would be covered by additional net revenue would, if followed, mean that no efficient expenditure should be recovered from MCT rates. H3G said that we concluded that a stand-alone termination provider would incur efficient CARS expenditure and that if MCT rates are its only source of income, and those rates did not allow for efficient CARS expenditure, it must inevitably follow that the provider under-recovers its total efficient costs.³
- 8.91. T-Mobile similarly argued that if we consider the stand-alone termination provider and then set its prices equal to only its network costs, then it would have no revenue with which to cover CARS costs and so it would not be able profitably to incur any CARS costs or therefore win customers.⁴
- 8.92. We do not accept these arguments. We did not conclude that CARS costs that a stand-alone termination provider would have the incentive to incur should necessarily be considered efficient; rather, we concluded only that a stand-alone provider would have an incentive to incur CARS costs.
- 8.93. Furthermore, as set out above, we think that there is a fundamental difference between network costs and CARS costs, which both H3G and T-Mobile's arguments fail to recognize. Network costs are costs that an operator must incur for it to be able to deliver termination services. CARS costs are, conversely, not costs that MNOs have to incur in order to be able to deliver a certain volume of traffic. Rather CARS costs will be incurred only if there is potential for an MNO to increase its profits by doing so.
- 8.94. Consider an example where a stand-alone termination provider would expect without any allowance for CARS costs to terminate 2,000 minutes of calls at a total cost of £100 and where the regulated charge was set at 5ppm. If the additional costs incurred in terminating one more minute were less than 5ppm, the stand-alone provider would have an incentive to use this difference to attract additional traffic. As

¹In paragraphs 8.93 to 8.96 below we respond to arguments made by T-Mobile and H3G that unless an allowance is made for CARS costs, a stand-alone provider of call termination services could not expect to recover total costs or to have the funds required to win customers.

²H3G's response to provisional determinations, paragraph 8.8.

³*ibid*, paragraphs 8.9 & 8.10.

⁴T-Mobile's response to provisional determination on CARS costs, p3.

long as the provider did not incur more in contribution to CARS costs than the margin earned on additional traffic, it would not fail to recover its costs. Under Ofcom's cost modelling methodology, the possibility of under-recovery occurs only if the regulated charges had been set with reference to traffic volumes that were too high (because unit costs in any particular year are affected by total network lifetime traffic volumes).

- 8.95. We also do not accept that without an allowance for CARS costs a stand-alone termination provider would not have the ability to win customers. This argument seems to be based on the proposition that without a CARS allowance a provider would be at a competitive disadvantage or that CARS expenditure would be necessary to generate demand to terminate calls. Ofcom's approach has been to not allow any network an allowance for CARS in termination rates and so all networks are in the same position in competing for termination business. Even if a stand-alone termination provider were not to incur CARS expenditure, there would continue to be demand to terminate calls. Finally, as explained above, a stand-alone provider would still have an incentive to compete for additional termination traffic to the extent that there was a margin between regulated MCT rates and additional costs incurred.
- 8.96. Moreover, in relation to all these arguments, it is important to not allow hypothetical analyses obscure relevant real-world factors. Whilst consideration of a stand-alone termination provider can be useful as part of a thought experiment, one cannot ignore the fact that when it comes to MNOs which also operate in the retail market, there is a waterbed effect. The waterbed implies that a large proportion of any revenues generated by a CARS allowance within termination charges will not be retained so as to cover particular CARS costs, but will be dissipated in competition leading to an increase in CARS costs. Therefore we do not think it is helpful to talk about 'recovery' of CARS costs from MCT rates. We refer to the points made by Ofcom as set out in paragraphs 8.19 and 8.20 above and our discussion in paragraphs 8.78, 8.80 and 8.81 above.
- 8.97. Finally H3G argued that we had implicitly assumed that the network component of unit MCT rates was in some sense fixed, and that an increase in lifetime subscriber and traffic would allow more units to be sold at the fixed rate which would lead to incremental profits on those rates since economies of scale would mean that unit network costs would fall. H3G submitted that this was not true as under Ofcom's approach the network component of unit costs falls as subscribers and volumes rise and operators recover only total costs from this component. H3G acknowledged that it might be that CARS expenditure required to achieve a level of traffic higher than that assumed by Ofcom in its model might be self-financing to a degree because the MCT rates were fixed from one period to the next, but that the CARS expenditure required to achieve the level of traffic assumed by Ofcom in its model was not self-financing.¹
- 8.98. It is not entirely clear to us what point H3G is making here. There seem to us to be two possible interpretations. One is that the traffic projections used by Ofcom in its network cost model would not be achieved without MNOs incurring a certain level of CARS expenditure and that MNOs must be allowed to recover this in part from MCT rates if they are to recover their total costs. If this is the correct interpretation, we do not accept it because we do not think that an allowance for CARS expenditure can properly be characterized as allowing for cost recovery (see paragraphs 8.20, 8.78, 8.80, 8.81 and 8.96 above).

¹H3G's response to provisional determinations, paragraphs 8.11 & 8.12.

8.99. Another possible interpretation is that if an MNO is successful in attracting additional termination traffic, because the unit charges generated by Ofcom's model fall with increases in the volume of lifetime traffic, the result will be a reduction in unit charges and as a consequence CARS expenditure may not be self-financing. Whilst we agree with H3G that in Ofcom's model the MCT rate will fall if the lifetime volume of traffic increases, it is important to recognize that this model applies only to the benchmark average efficient operator. MCT rates will therefore be a function of the volume of traffic across all networks and over the lifetime of these networks. If an individual MNO succeeds in gaining market share at the expense of its rivals, the result would not be a reduction in its MCT rate.

The implication of falling MCT rates

8.100. H3G accepted that MCT rates can affect the level of CARS expenditure and that, if everything else is held constant, the inclusion of an allowance for CARS costs in MCT rates would cause a greater excess over marginal cost which would in turn increase the level of CARS expenditure. H3G argued, however, that everything else is not being held constant and, in particular, that MCT rates would be falling which would result in lower CARS activity. H3G submitted that even if we were correct that an increase in CARS activity from current levels might not be desirable, it would not follow that no allowance should be made for CARS.¹

8.101. The implication of this argument is that current levels of CARS expenditure are desirable and that it would therefore be undesirable for the levels of CARS expenditure to fall as a consequence of Ofcom's decision (or our determination) on MCT rates. It is not clear to us why this should be the case. Furthermore, the reasons given in the provisional determination for not including an allowance for CARS were not dependent on any view or assumption regarding the desirability of the current levels of CARS expenditure.

Circularity

8.102. H3G questioned what it considered to be our suggestion that the mere presence of circularity was a reason for not recovering a cost category at all through MCT rates. H3G noted that circularity also existed as regards the inclusion of 3G spectrum costs in MCT rates in that it would tend to affect future behaviour in spectrum acquisition and trading yet that had not led us to conclude that MCT rates should not include any allowance for the recovery of 3G spectrum. H3G said that the relevant issue was to avoid inefficient levels of expenditure, which could be achieved by allowing the recovery of only an efficient level of CARS costs from MCT rates.²

8.103. Leaving aside whether it would in fact have been open to us to decide that MCT rates should not include any allowance for the recovery of 3G spectrum, the presence of circularity was not the only reason for our conclusion that it was not appropriate to include an allowance for CARS costs within the MCT rate. H3G's argument also seems to rest on the idea that the effect of an allowance for CARS costs within the MCT rate would be to allow for the recovery of a given level of CARS costs. For the reasons given above, we do not think that is the case.

¹ibid, paragraph 8.14.

²ibid, paragraph 8.16.

Efficient structure of prices

- 8.104. In its response to our provisional determination, T-Mobile submitted that given that the waterbed effect implies that any increased revenues from termination will be wholly or substantially competed away in the retail markets, the question as to the efficient level of CARS costs relates to the optimal structure of prices, with lower retail prices as a result of some CARS costs being recovered from termination being more economically efficient. T-Mobile said that we had presented no evidence to support the assertion that the amount of CARS expenditure that would occur with no CARS costs being allowed in the termination rates was optimal, nor that allowing for some CARS costs in termination rates would lead to an increase in CARS expenditure. T-Mobile said that the experience over the last few years in which MCT rates have declined suggested, as the waterbed effect implies, that changes in MCT rates do not change the amount of CARS expenditure incurred. Thus the key issue was the need to optimize the structure of prices. If CARS costs were common costs, then as a matter of policy the optimal structure of prices would require CARS to be reflected in termination charges.¹
- 8.105. T-Mobile does not explain, when it talks about an optimal structure of retail prices and termination rates, which prices for products and service provided to its subscribers should be regarded as retail prices. T-Mobile's argument may imply that increases in termination rates will be balanced out by decreases in outgoing retail call prices only.²
- 8.106. However, it seems to us that T-Mobile is trying to make an artificial distinction between the costs incurred in its CARS activities and the prices at which retail services are offered to its subscribers. We consider that CARS costs are inextricably linked with the terms on which MNOs offer services to their customers. As Table 8.2 above shows, a number of MNOs include in CARS expenditure a category of expenditure labelled 'Discounts and incentives' and/or a category labelled 'Sales' and/or a category labelled 'Handset costs', which will include the costs of offering certain subscribers handsets or services at prices below what might be considered 'normal' (ie unsubsidized) retail prices.³ We do not therefore see how T-Mobile can maintain the position that increased revenues will be competed away in the retail markets but that this will not mean any increase in CARS expenditure. Almost by definition, we consider that the dissipation of those revenues in the retail markets will mean an increase in CARS expenditure.
- 8.107. On T-Mobile's more general point on the optimal structure of prices, for the reasons given above we consider that there are properties of CARS costs which would distinguish them from what we normally think of as common costs and we do not think, to the extent that they might be considered common, that they should be treated in the same way as other common costs.

Benefits to fixed-line customers

- 8.108. T-Mobile argued that our provisional conclusion that fixed-line customers did not benefit from CARS costs so should not have to pay for them missed the point, and

¹T-Mobile's response to provisional determination on CARS costs, p4.

²The issue is complex, but given that increased termination rates would imply increased marginal costs for the origination of off-net calls, it is not clear to us even from a theoretical viewpoint why this would be an expected result. Furthermore, from a practical perspective, competition in the retail market to attract subscribers is not based solely on the retail price of making calls.

³See paragraph 8.5(c) above.

that our statement that there should be no regulatory allowance for CARS costs since it would assist MNOs in competing against BT had no economic basis. T-Mobile said that so long as the allowance for CARS costs leads to an efficient structure of prices, there is no basis for the contention that it would distort competition.¹

- 8.109. There is a distinction to be made between, first, a consideration of who benefits from CARS expenditure and, second, the effect that a CARS allowance would have on competition. On the question of benefits, we do not consider the question of who benefits from CARS expenditure to be irrelevant to the question of whether an allowance should be made for it within termination charges. Mobile subscribers benefit directly from CARS expenditure, whereas callers to mobiles do not. That is a factor that we think is appropriate to take into account in deciding whether it is appropriate for termination rates to make a contribution to CARS costs.²
- 8.110. On the question of competition, for the avoidance of doubt, if we had considered it appropriate for termination rates to make a contribution to CARS costs, then (by implication) we would have agreed that it would also have been appropriate for customers of fixed-line operators to make the same contribution as other callers to mobiles, because they are a subset of the population of callers to mobiles. However, for the reasons given above, we do not think that this is appropriate and, having come to this conclusion, we consider that if an allowance to reflect CARS costs were to be included, it would have the further disadvantage of potentially distorting competition between fixed and mobile operators to the extent that fixed operators and customers would be required to make a contribution to costs which are largely incurred by MNOs in competition for subscriber market share. Not only will these costs not benefit users of fixed-line services, but by making mobile services more attractive to certain customers and making calls to mobiles more expensive, an allowance for CARS costs will have the potential to distort the choices people make between using mobile and fixed-line services at the margin.
- 8.111. In relation to fixed-line users, T-Mobile submitted that the vast majority of fixed-line customers are also mobile customer so they do benefit from lower retail prices that would result from some CARS costs being recovered from termination, and that fixed-line customers also benefit from the increased competitive pressure that would be imposed on fixed-line prices by lower mobile prices.³
- 8.112. In relation to the first point, we do not dispute that this may be the case. However, if MNOs are permitted to charge higher termination rates this would increase the marginal costs to fixed-line operators of their customers making calls to mobile networks, and we would expect these costs to be passed on to fixed-line users in higher retail prices. The effect would therefore be a welfare redistribution that would be arbitrary and any distortion of relative prices would still have the potential to distort the behaviour of customers in their use of fixed-line and mobile services.
- 8.113. On T-Mobile's second point, we agree with Ofcom that allowing MNOs to exploit market power in the provision of termination services is not an appropriate mechanism for constraining any alleged fixed line dominance.⁴

¹T-Mobile's response to the provisional determination on CARS costs, p4.

²We note that the CC in its 2003 report appears to have considered the question of whether callers to mobiles benefit from CARS expenditure to be relevant (2003 CC report, paragraphs 2.337 & 2.338).

³T-Mobile's response to the provisional determination on CARS costs, p5.

⁴Ofcom's MCT Statement, paragraph 7.54.

8.114. T-Mobile also said that no explanation has been provided as to why it was any more legitimate to disallow CARS costs on the basis that fixed-line customers do not benefit from them than it would be to do so because BT customers do not benefit from the fact that T-Mobile's general management requires to be paid rather than doing their jobs for free.¹ We do not consider this point to have merit. Ofcom took the view that competition in the retail markets was sufficient to provide incentives for the MNOs not to incur inefficient levels of administration costs. To the extent that T-Mobile's managers are engaged in activities directly related to the provision of termination services, these will be of benefit to callers to mobiles and they are captured by Ofcom's network model. To the extent that general corporate functions are also required for the provision of termination services, they will also be of benefit to callers to mobiles and the allowance for administration costs will mean that BT's customers will also be making a contribution to them. However, for the reasons given above, we do not think that CARS costs are directly comparable to administration costs (see, in particular, paragraph 8.81).

Conclusion

8.115. After due consideration of the responses to our provisional determination, we remain of the view expressed in paragraph 8.74 above. We do not consider that H3G's argument as to why Ofcom erred in failing to providing an allowance for the recovery of its CARS costs—because these are costs that are common between termination services and other services provided by MNOs—is compelling. We recognize that a stand-alone provider of wholesale termination services would have an incentive to undertake some or all of the different aspects of CARS expenditure. However, we do not think that this is sufficient justification to increase termination revenues in respect of CARS costs, for all of the reasons outlined above.

Should a CARS allowance be allowed to reflect the higher-than-average CARS expenditure H3G would need to undertake to obtain the 20 per cent market share forecast used by OFCOM in its cost modelling?

H3G's arguments

8.116. The second argument made by H3G in support of an allowance for CARS costs within its MCT charge was that the failure to include such an allowance was inconsistent with the assumption Ofcom made that it could attain a 20 per cent market share.²

8.117. H3G claimed that because it was a new entrant in a saturated market it would need to undertake a higher-than-average level of CARS expenditure, and that this 'efficient but higher' level should be included in its cost allowance.³

8.118. In contrast to the argument discussed above—which would logically apply as much to the CARS costs of the 2G/3G operators as to that of an efficient 3G-only operator—this is an argument developed by H3G exclusively in relation to its market position.

¹T-Mobile's response to the provisional determination on CARS costs, p4.

²H3G's Amended Price Control Appendix, paragraph 8.1(a).

³ibid.

Ofcom's arguments

- 8.119. Ofcom's substantive response consisted of two arguments: first, that its market share forecasts are reasonable; and second, that it would be inappropriate to make an allowance for CARS costs in the MCT rates of one operator but not in those of the others.
- 8.120. In terms of the former argument, Ofcom argued that although its market share forecast for H3G was more optimistic than the forecast used by H3G in its own business plans, the absolute volume of total lifetime traffic (which is the key metric) that it modelled H3G as having was in fact lower than under H3G's forecasts. This is because, Ofcom claimed, H3G assumed a much higher forecast of traffic per subscriber than Ofcom used in its own modelling. As it is total lifetime traffic that is important in driving the appropriate charge controls for H3G, Ofcom argued that its traffic assumptions for an efficient 3G operator were sound.¹
- 8.121. In terms of the second argument, Ofcom characterized H3G's request for an allowance for CARS when no other operator would have an equivalent allowance as one for entry assistance.² Moreover, Ofcom argued that what needs to be considered is lifetime CARS expenditure, and that any additional CARS expenditure that H3G has to undertake due to its entry into a more mature market could be offset by the CARS expenditure that the 2G/3G operators needed to undertake when the mobile market was nascent and the demand for mobile telephony needed to be established.³

Interveners' arguments

- 8.122. All the interveners objected to H3G's argument that an allowance should be made within its MCT charge for CARS costs that was not replicated across all of the MNOs.
- 8.123. Vodafone argued that such an outcome would distort competition and also referred to the Tribunal's judgment on non-price-control issues in which it had found that H3G should no longer be regarded as a new entrant.⁴ It also argued that any additional CARS spend that H3G needed to undertake was irrelevant as the MCT allowance should only allow for the recovery of efficient costs, whereas H3G's suggestion focused on the difficulties allegedly facing one MNO in a market which is already effectively competitive.⁵ Linked to this, it also suggested that any additional CARS costs that H3G faced as a result of being a later entrant were perfectly foreseeable and should have been factored in to the price paid for its 3G licence.⁶
- 8.124. O2 supported Ofcom's arguments, noting that an H3G-only CARS allowance would amount to inappropriate entry assistance and that it was necessary to take account of the CARS expenditure undertaken by the 2G/3G operators when the market was nascent. O2 also argued that in the event that an allowance was made for H3G's CARS costs it would be inappropriate to use H3G's actual CARS costs as this would be unlikely to represent the CARS costs of an average efficient operator.⁷

¹Ofcom's Price Control Defence, paragraph A3.3.43. These issues are dealt with in more detail in Section 15 of this determination on the market share forecast for an efficient 3G-only operator.

²ibid, paragraph A3.3.44.

³ibid, paragraph A3.3.45.

⁴Vodafone Sol on the H3G appeal, paragraph 3.17(i); [2008] CAT 11, paragraph 233.

⁵ibid, paragraph 3.17(ii).

⁶Vodafone's bilateral hearing on the H3G appeal, transcript, pp59&60.

⁷PwC expert report for O2, paragraph 129.

- 8.125. Orange emphasized the distortion to competition in the retail market that would result from the asymmetric inclusion of a CARS allowance for H3G and also noted (like Vodafone) that the Tribunal had stated that it was not convinced that in 2007 H3G could properly be regarded as a new entrant.¹
- 8.126. T-Mobile also argued that it would be inappropriate to include a specific allowance for H3G's CARS costs and supported Ofcom's argumentation in this regard.² In addition, it argued that the 'very large part' of CARS costs were customer specific, being handset subsidies and incentives to retailers. As these would be incurred on a 'per customer won' basis, there was no basis for thinking that H3G's CARS costs would be any greater than those of the other operators.³
- 8.127. BT also noted the findings of the Tribunal regarding the appropriate status of H3G in 2007.⁴

Our provisional conclusion

- 8.128. In our provisional determination we said that a decision on whether or not to include an allowance for CARS for H3G so as to allow it to reach Ofcom's market share assumptions could not be taken in isolation from our more general views on the undesirability of including an allowance for CARS costs within regulated termination charges. We stated that these prior considerations, in themselves, made the recovery of CARS costs from H3G's regulated termination charges undesirable.
- 8.129. Moreover, we considered that the unilateral provision of a CARS allowance for H3G was a heavily interventionist approach and one which had a significant risk of being distortionary, and possibly discriminatory, giving it an advantage over its rival MNOs in the retail market through different regulatory treatment.⁵
- 8.130. We also agreed with Ofcom that in order to justify a unique CARS allowance, H3G would have to provide a compelling explanation as to why, in order to reach the market share assumptions embodied in Ofcom's forecasts, its life-cycle CARS expenditure will necessarily be higher than that of the other operators that entered the market earlier and who, in some cases, needed to generate demand in a nascent market.
- 8.131. Consequently, rather than provide an asymmetric allowance for the CARS costs of H3G, we considered it is more appropriate to understand whether or not the current market share forecasts embodied within Ofcom's modelling—without any CARS allowance—represented a reasonable target for a newer entrant into the mobile market. This question is addressed separately in Section 15 on the market share forecast for an efficient 3G-only operator.

Response to our provisional determination

- 8.132. In its response to our provisional determination, H3G questioned our judgement that further efforts towards acquiring market share from other MNOs was in some way inefficient if they did not expand total output. H3G said that the 3G-only operator's price

¹Orange Sol on the H3G appeal, paragraphs 6.8–6.10.

²T-Mobile Sol, paragraph 25.1.

³T-Mobile's bilateral hearing on H3G appeal, transcript, pp53&54.

⁴BT Sol on the H3G appeal, paragraph 38.

⁵Our views on asymmetric regulation generally are set out in Section 5 of this determination on Reference question 2.

control was fundamentally based on an assumption that the 3G-only operator would make vigorous efforts to acquire market share from other MNOs in a largely static market. If we believed that these efforts were inherently inefficient, H3G said that we should reflect this belief in our determination on the market share achievable for an efficient operator.¹

8.133. We explained in our provisional determination that to allow H3G an allowance for CARS had the potential to distort competition between MNOs. We therefore considered that the more appropriate response to H3G's concerns was to consider whether Ofcom's assumptions on the rate at which an efficient 3G-only operator could be expected to gain market share are reasonable (see paragraphs 8.128 to 8.131 above). We remain of that view, which does not depend on H3G's efforts to gain market share being inefficient in any way.

8.134. H3G also said in its response that it did not agree with us that callers to mobiles do not benefit from CARS expenditure. H3G explained that from the perspective of a 3G-only operator, CARS costs are necessary to grow market share and achieve scale, allowing the realization of economies of scale and lower MCT rates from which callers to mobiles directly benefit.²

8.135. We accept that if the 3G-only operator is able to grow its traffic volumes more quickly, that would under Ofcom's methodology result in lower MCT rates. We do not, however, accept that this observation is sufficient to conclude that callers using fixed-line services would benefit from allowing H3G only to charge higher termination rates. Apart from the fact that these customers will in the short term pay higher termination charges, the increase in H3G's market share would be achieved at the expense of other network operators.³

Conclusion

8.136. After considering H3G's response, we remain of the view that it would not be appropriate to provide an asymmetric allowance for the CARS costs of H3G, and we therefore do not consider that Ofcom erred in taking the same position.

Has Ofcom adopted an approach to CARS costs which is in conflict with wider precedent?

H3G's arguments

8.137. The third aspect of H3G's appeal on this issue was that the approach adopted by Ofcom was contrary to precedents that have been established on the issue of CARS costs. H3G based its argument on competition law cases as well as a number of Ofcom consultations and decisions.⁴

8.138. As regards competition law cases, H3G cites the examples of *Wanadoo Interactive*,⁵ *BSkyB*,⁶ *Aberdeen Journals*⁷ and *Genzyme*.⁸ In each of these cases, it considered

¹H3G's response to provisional determinations, paragraph 8.15.

²*ibid*, paragraph 8.18.

³The increase in market share at the expense of its competitors would also be, at least in part, due to asymmetric regulatory treatment.

⁴H3G's Amended Price Control Appendix, paragraphs 8.1(c), 8.13–15, 8.28–35.

⁵*Comp/38.23*.

⁶*BSkyB investigation: alleged infringement of the Chapter II prohibition, No CA98/20/2002*.

⁷*Aberdeen Journals (No 2) [2003] CAT 11*.

⁸*Genzyme v OFT (Judgment on Remedy) [2005] CAT 32*.

that the equivalent to CARS costs was treated as a common cost. H3G drew particular attention to *BSkyB* where, despite the recognition that CARS costs were being driven by subscriber numbers, CARS were treated as a common cost. H3G also argued that the need to take account of these decisions was a new requirement on Ofcom arising from an explicit requirement to impose a remedy only when there is SMP (equivalent to the competition law notion of dominance) and that as a result of this requirement, the findings in the 2003 CC report (that CARS costs were not common to MCT) should be distinguished.¹

- 8.139. As regards the precedents established by Ofcom, H3G referred us to the Number Translation Services (NTS) retail uplift charge control decision² and to a consultation document on Sky's provision of technical platform services (TPS).³
- 8.140. NTS calls are calls used for the provision of value-added services. When a call using the NTS service is made, BT charges the caller the retail price and passes on the charge to the network hosting the relevant service provider, after making a deduction for the costs that it incurs. The amount of this reduction or, alternatively, the size of the 'retail uplift' applied by BT to get the final retail price is regulated by Ofcom. Ofcom included an allowance for the costs incurred by BT in relation to the acquisition and retention of its customers.
- 8.141. TPS are a number of services used by a broadcaster to make their content available on Sky's digital platform, including the ability to encrypt a broadcast, restrict it to a geographic region and to reference it in Sky's Electronic Programme Guide. Sky's customer acquisition marketing costs, customer retention marketing costs and customer equipment subsidies to encourage consumers to take up the platform are all classed by Ofcom as platform common costs that are incurred directly in operating the platform. They are then recovered in the charges levied by Sky for its TPS.

Ofcom's arguments

- 8.142. Ofcom submitted that the precedents cited by H3G relating to other Ofcom decisions were not directly applicable to the MCT context, although it considered the principles applied in each case to be consistent.⁴ Furthermore, Ofcom argued that, although in principle the treatment of CARS costs in the Competition Act cases cited by H3G may be informative, the cases were also not directly translatable into the MCT context.⁵
- 8.143. As to the NTS retail uplift decision, Ofcom argued that in this decision a price control was being set for an operator for whom retail activities, such as billing, were part of the activities for which a price control was being set.⁶
- 8.144. As to the TPS case, Ofcom argued that the purchaser of TPS services benefited directly from the CARS costs incurred by *BSkyB*, as this expanded the viewing audience for the broadcaster. By contrast, Ofcom argued, callers to mobiles did not

¹H3G's Amended Price Control Appendix, paragraphs 8.13 & 8.14.

²*Charges between Communications providers: Number Translation Services Retail Uplift charge control and Premium Rate Services bad debt surcharge: A Statement and Notification of an SMP Condition and modification of an SMP condition*, Ofcom, 28 September 2005.

³*Provision of Technical Platform Services: A consultation on proposed guidance as to how Ofcom may interpret the meaning of 'fair, reasonable and non-discriminatory' and other regulatory conditions when assessing charges and terms offered by regulated providers of Technical Platform Services*, Ofcom, 2 November 2005.

⁴Ofcom's Price Control Defence, paragraph A3.3.25.

⁵*ibid*, paragraphs A3.3.2–A3.3.6.

⁶*ibid*, paragraph A3.3.26.

benefit from MNOs incurring CARS except to the extent that the number of subscribers was expanded.¹

- 8.145. As regards the Competition Act cases, Ofcom argued that, to the extent that it is possible to identify how CARS were treated in these cases, the cases were very different to the situation Ofcom was dealing with. In particular, in both *Wanadoo* and *BSkyB*, a decision was being made about the allocation of subscription-related costs to subscription services purchased by retail consumers. Ofcom argued that this distinguished these cases from the wholesale MCT context.²
- 8.146. Ofcom told us that its exclusion of CARS costs from MCT charges was consistent with both the view adopted by regulators in the UK and, to its knowledge, by regulators throughout Europe.³ We asked Ofcom and the MNOs to provide more specific detail on the treatment of CARS costs throughout Europe. Ofcom approached each of the European National Regulatory Authorities (NRAs) on this issue. At the time of issuing the provisional determination, Ofcom had received replies from 15 relevant⁴ countries. Of these, Spain was the only country that made an allowance for CARS costs, and it appears that this allowance is relatively modest. Subsequently Ofcom received further replies (see paragraph 8.156 below).

Interveners' arguments

- 8.147. Orange argued that there was no precise analogy between competition case law on abusive pricing practices and determining costs for the purposes of setting price controls. Notwithstanding this, it submitted that the cases cited demonstrated only that common costs may (not must) be taken into account in determining a dominant undertaking's cost base, and did not in any sense require costs that are properly incremental to one service or another to be treated as common costs.⁵
- 8.148. T-Mobile supported H3G's arguments that there was an inconsistency between Ofcom's approach in the NTS retail uplift decision and the TPS consultation document and its approach in relation to MCT. It also argued that Ofcom's rejection of the relevance of the competition law cases was incorrect.
- 8.149. As to the NTS retail uplift decision, T-Mobile argued that there was a direct analogy between Ofcom's recognition that BT should be allowed to recover retail costs from wholesale charges because it is necessary for BT to have a retail relationship with the end-user to provide the wholesale service, and the arguments of H3G and T-Mobile that in order for an MNO to offer wholesale MCT, it must have retail customers.⁶
- 8.150. As to the TPS decision, T-Mobile argued that Ofcom's analysis that it was appropriate to allow for CARS costs in the TPS decision because both retail and wholesale customers benefit from the acquisition of the subscriber base applied equally to the MCT context: as well as the subscriber benefiting from the CARS expenditure of the MNOs, the wholesale purchaser of MCT derives benefit from the CARS expenditure

¹ibid, paragraph A3.3.7.

²ibid, A3.3.6.

³Ofcom's slides presented at its H3G bilateral hearing, slide 34.

⁴Countries which set MCT charges by reference to costs rather than through international benchmarking.

⁵Orange Sol on the H3G appeal, paragraph 6.7.

⁶Expert report of Paul Muysert for T-Mobile, paragraphs 38–43.

of the MCT supplier as without the CARS costs of the terminating carrier there would be no customer to call.¹

8.151. Finally, in terms of the competition law precedents, T-Mobile argued that Ofcom's argument that these cases do not apply to the MCT context is contradicted by its statement that the allocation of costs should be undertaken by reference to a supply-side analysis of cost drivers. It submitted that by Ofcom's own logic, cost drivers are supply-side factors and are quite indifferent² to the nature of the competition law case.

Assessment

8.152. The appropriateness of including an allowance for CARS costs within MCT charges should be determined on the merits of the specifics of this case. Consequently, although the approaches taken in other cases may inform this judgement, we do not think that they should necessarily be determinative. Different circumstances and considerations may impact on the economic (and policy) analyses and positions taken in different cases in different ways.

8.153. In any event, as regards the competition law cases, we agree with Ofcom that the contexts of these cases are different and, in particular, that the treatment of CARS costs in a context in which subscription to retail products and services is being considered would, prima facie, warrant a different approach to the treatment of CARS costs when setting wholesale price controls for MCT services. We also do not agree with T-Mobile's apparent position that analysis of cost drivers can or should be undertaken independently of the market in which those costs are being incurred.

8.154. As regards other Ofcom decisions and consultations cited by H3G, we have a degree of sympathy with the arguments that there are some parallels between these cases and the MCT context. Nonetheless, we consider that there are sufficient differences to justify the apparent difference in approach adopted by Ofcom. In the NTS retail uplift decision, retail services represented part of the services being price regulated by Ofcom; this is not the case in the termination context. In the TPS decision, we consider that it is much easier to see that purchasers of TPS services benefit from the CARS activities undertaken by BSKyB; by contrast, as discussed in paragraph 8.71 above, we do not think that, in most cases, callers to mobiles benefit from CARS expenditure undertaken by the call recipient's network operator.

8.155. We also note the near-universal position across European NRAs that an allowance for CARS costs is not included within regulated MCT rates. We consider that to be at least as relevant, if not more so, as the precedents dealing with other markets that H3G has cited. The implication of H3G's argument that Ofcom's approach to CARS costs was in conflict with legal precedent would be that the vast majority of European NRAs were treating CARS costs in a way which was inconsistent with established competition law principles.

8.156. In response to the provisional determination, Ofcom provided a further update on the situation in 26 other European territories. Ofcom stated that for countries that set price controls based on an assessment of costs, Spain is the only country it is aware

¹ibid, paragraphs 44–48.

²ibid, paragraph 52.

of that includes an allowance for CARS costs. Ofcom added that in practice, that allowance is negligible.¹

8.157. We therefore do not accept the argument that Ofcom's treatment of CARS costs in this case conflicted with wider precedent.

Practical issues²

8.158. Finally, we note that there may be practical problems surrounding the introduction of a CARS allowance (for H3G or for all MNOs). There would be a need to consider what an efficient level of CARS expenditure might be and this would be difficult in a context where CARS costs vary widely across the different operators. Even if we thought that it was appropriate to include an allowance for certain categories or elements of CARS costs within MCT charges (which we do not), it is clear from Tables 8.1 and 8.2 that these elements vary widely across the different MNOs and that, indeed, some MNOs have not been able to provide a detailed breakdown of their CARS costs.

8.159. On a related point, we note that a number of the elements that a stand-alone wholesale provider of termination might have an incentive to incur are subsidies or reductions in the price that would otherwise be charged. In accounting for such costs, it is possible to treat them as costs with a corresponding revenue entry reflecting the 'full' price or, alternatively, the reduction in price can be directly reflected in reduced revenues. If an allowance for such costs was made in the MCT charge, there would be an incentive for MNOs to always follow the former approach even if this would otherwise be considered less appropriate from an accounting perspective. Moreover, there would be an incentive for MNOs to inflate the 'full' price so as to increase the size of the subsidy/'cost'.

8.160. It is likely that these concerns could only be fully addressed by establishing detailed regulatory accounting guidelines and more detailed regulatory auditing.

8.161. In its response to our provisional determination, T-Mobile argued that these practical issues were not sufficient for disallow an allowance which was otherwise justified by economic theory and that it did not therefore understand why we had advanced them.³

8.162. As stated above, we have not relied on these matters in coming to our decision. However, we consider that for completeness it is appropriate to comment on the implications of accepting arguments put forward for including an allowance for CARS costs in MCT rates.

Determination

8.163. In the light of the above considerations, and in particular, our views that:

- (a) notwithstanding the possibility that a stand-alone provider of wholesale termination services would have an incentive to undertake, or contribute to others undertaking, some types of CARS expenditure, there would be a number of

¹Ofcom's response to provisional determination, paragraph A3.3.

²For the avoidance of doubt, our conclusions do not depend on the existence of the practical issues identified in this section.

³T-Mobile's response to the provisional determination on CARS costs, p5.

undesirable consequences from including an allowance for CARS costs within the regulated MCT charge (as outlined in paragraphs 8.63 to 8.74 above);

- (b) the inclusion of a CARS allowance for H3G and not for the other MNOs would amount to further asymmetric treatment which we do not consider to be justified, and there is a significant risk of it being distortionary and potentially discriminatory; and
- (c) Ofcom's treatment of CARS costs does not conflict with the treatment of analogous categories of costs in competition cases and other regulatory decisions and consultations;

we do not consider that Ofcom erred in failing to make allowance for H3G's costs of CARS.¹

¹In its response to our provisional determination, H3G argued that we had erred in requiring H3G not only to establish that Ofcom's reasoning was wrong, but also to establish what the correct reasoning or outcome should have been. It said that we had (or should be taken to have) accepted that H3G had shown Ofcom's reasoning to be wrong because we agreed with it that CARS costs were common costs but went on to uphold Ofcom's decision on other grounds (H3G's response to provisional determinations, paragraphs 2.1, 2.8 & 2.9). We do not consider this to be accurate. First, we have not required H3G to do any more than demonstrate that Ofcom's decision was wrong. Second, although our reasoning has differed somewhat from that of Ofcom, we have reached the same conclusion that it did largely for reasons that it shared, and we do not consider that the difference in reasoning between us and Ofcom is serious enough to vitiate its decision. Furthermore, as set out above, we do not consider that H3G is correct in suggesting that we agreed that CARS costs were common costs.

9. Ported numbers determination: Reference question 3(iv)

- 9.1. This section sets out the CC's conclusions on whether the price controls imposed on H3G have been set at an inappropriate level because Ofcom erred in failing to take account of the distortion created by the arrangements for ported numbers for the reasons set out in paragraphs 9.1 and 9.2 of the H3G Amended Price Control Appendix to its Notice of Appeal.
- 9.2. For the reasons given below, our conclusion is that the price controls imposed on H3G have not been set at an inappropriate level because Ofcom erred in failing to take account of the distortion created by the arrangements for ported numbers for the reasons given by H3G.

The charging arrangements for calls to ported numbers

- 9.3. Under the current MNP arrangements, when a subscriber moves network and retains their mobile phone number, calls to that subscriber are still routed through the old 'donor' network, and then redirected to the new 'recipient' network. The donor network charges the network of the subscriber making the call its own MCT charge, not the charge set by the recipient network. The recipient network receives that charge, less a conveyance fee, from the donor network. To illustrate: if, say, an Orange subscriber moves to H3G and ports their phone number, H3G will only receive the Orange MCT charge for calls made from other networks to that subscriber (less the Orange donor conveyance fee), not the higher H3G MCT charge.

Ofcom's MCT Statement

- 9.4. In its MCT Statement Ofcom stated that the price controls which it set did not take the charging arrangements for calls to ported numbers into account. Ofcom noted that it had also not taken them into account in the last market review, or in the September 2006 consultation document¹ relating to the present review. That was because Ofcom considered that these charging arrangements were unlikely to have a material impact on effective charges (namely, the average RPM terminated on an MNO's network for calls to both ported and non-porting numbers). Ofcom noted that H3G had argued during the consultation that the current MNP arrangements could result in H3G failing to recover its efficiently incurred costs of providing MCT for the price control period, and that this should be taken into account in setting appropriate price controls. Ofcom said that H3G had also argued that the existing MNP arrangements gave other MNOs an incentive to focus their customer acquisition strategies on H3G's customers, in order to benefit from the higher termination rate they would receive when an H3G customer ports their number to their network.²
- 9.5. Ofcom stated that it was currently considering responses to a consultation³ on possible changes to the MNP arrangements, including a change to a direct routing system. In the meantime, it decided that it might be appropriate to introduce an interim measure, in relation to the price controls, that would address the revenue impact of the current charging arrangements for calls to ported numbers under the existing MNP arrangements. One option mentioned was to amend the definition of the average interconnection charge (AIC) contained in the relevant significant market power (SMP) conditions imposing the price controls so that it would be calculated on

¹Ofcom, *Mobile Call Termination—Proposals for Consultation*, September 2006.

²Ofcom's MCT Statement, paragraphs 9.229–9.231.

³Ofcom consultation document, November 2006: *Review of General Condition 18—Number Portability*.

a basis which took into account the charges actually levied for terminating calls on ported numbers.¹

- 9.6. Since Ofcom considered that such a measure would be a material change to the proposals set out in its September 2006 consultation document, it decided that it would be appropriate to consult on the matter (but not appropriate to postpone the implementation of the new price controls in the meantime). Ofcom therefore published simultaneously with its MCT Statement a consultation document entitled *Amendment to charge control on Mobile Network Operators: proposals for consultation* (the Proposed Amendment Consultation).² Ofcom said in that document that it intended to publish a statement on the issue in summer 2007.³

Subsequent events

- 9.7. Ofcom received a number of responses to its Proposed Amendment Consultation. However, that consultation, including Ofcom's consideration of responses, was put on hold because the effects of MNP became an active issue in H3G's MCT appeal. Moreover, Ofcom considered that further consideration would also be required in the light of the Tribunal's July 2007 Order in O2's appeal⁴ (which related to market definition). Ofcom stated that once the MCT appeals had been concluded, it would be able to take forward the Proposed Amendment Consultation. If it were to be concluded that an adjustment were needed, Ofcom said that this process would allow for a targeted and accurate adjustment to the charge controls, which Ofcom considered to be preferable to H3G's suggestion of an adjustment to the MCT glide path.⁵
- 9.8. Subsequent to the MCT Statement, on 29 November 2007 Ofcom published a document entitled *Telephone number portability for consumers switching suppliers: concluding statement* (the MNP Decision). The MNP Decision specified the timing of a move to a central database for direct routing, recipient-led porting and a near-instant porting process. It required all MNOs to route directly all calls to ported mobile numbers as soon as reasonably practicable and, in any event, no later than 1 September 2009. All other calls to ported numbers (fixed and mobile) had to be routed directly as soon as reasonably practicable and, in any event, no later than 31 December 2012.⁶
- 9.9. Vodafone successfully appealed the MNP Decision, and it was set aside by the Tribunal on 18 September 2008.⁷ It is therefore currently unclear whether, and if so when, direct routing will be introduced so as to alter the charging arrangements for ported numbers.

H3G's arguments

- 9.10. H3G argued that Ofcom failed properly to address the distortion that arises out of the current arrangements for MCT rates, whereby competitors receive H3G's rate for calls to numbers ported to them from H3G, and H3G receives the (lower) rates set by its competitors for numbers ported to it, and that Ofcom's cost modelling did not take into account the fact that there is a proportion of minutes for which H3G does not set

¹Ofcom's MCT Statement, paragraphs 9.232 & 9.233.

²ibid, paragraphs 9.234 & 9.235.

³Ofcom's *Amendment to Charge Control on Mobile Network Operators*, paragraph A1.11.

⁴Case 1084/3/3/07.

⁵Ofcom's Price Control Defence, paragraph 4.3.37.

⁶ibid, paragraph 4.3.34, footnote 82.

⁷[2008] CAT 22.

the relevant MCT charge. H3G stated that it had raised this on a number of occasions during the market review, including in its May 2006 response, and that Ofcom had been aware of the issue in 2004.¹

9.11. H3G asserted that, given the distortion, it was impossible for it to recover, in aggregate, Ofcom's own estimate of its efficiently incurred costs of voice termination. H3G argued that although Ofcom, recognizing its error, issued a consultation on the same date as its decision on the price controls, that was too late to save the contested decision.²

9.12. In more detailed argumentation provided subsequently, H3G submitted that:

(a) The MNP arrangements were relevant to the glide path set by Ofcom.³

(b) The average effective charge it achieves is reduced by the order of 1p a minute under the current MNP arrangements.⁴

(c) In its Proposed Amendment Consultation document, Ofcom had noted that the differences between the effective termination rates that MNOs receive relative to their TACs have the potential to distort incentives in the retail market, and that, in the first year of the charge control, H3G could receive between £20 million and £30 million less termination revenue as a result of the current charging arrangements if the mechanics of the charge control were not changed.⁵

(d) Ofcom had acknowledged that the ported numbers regime, combined with a price control on H3G, distorted competition between H3G and the 2G/3G MNOs. Even if, as the Tribunal had suggested at one point, the price control on H3G eventually reduced one aspect of the distortion, namely the attractiveness of H3G customers carrying high MCT charges to the other MNOs, the price control would do nothing to reduce the other aspect of distortion resulting from the ported numbers regime, namely the fact that H3G is treated as receiving higher termination rates in respect of its ported customers than it in fact does. By preventing H3G from raising its MCT rates to offset the effect of this distortion, it said that this particular price control exacerbated it.⁶

(e) The fact that Ofcom had launched a consultation into the ported numbers issue on the same day as it published the MCT Statement showed that Ofcom was aware of the distortion and the extent of its effect on H3G. There was no justification, therefore, for Ofcom's failing to take this issue into account in determining the level of the price control on H3G.⁷

Ofcom's arguments

9.13. Ofcom submitted that H3G had provided no evidence that it would be impossible for it to recover its efficiently incurred costs via Ofcom's glide path as a result of the treatment of ported-in minutes. For H3G's costs to be unrecoverable, in aggregate,

¹H3G's Amended Price Control Appendix, paragraph 9.1, which refers to paragraph 5.17 of Ofcom's *Assessment of whether H3G holds a position of SMP in the market for wholesale mobile voice call termination on its network*, 27 March 2007; H3G's Amended Schedule of Evidence, paragraph 7.

²H3G's Price Control Appendix, paragraph 9.2.

³H3G's Reply, paragraph 15.8.

⁴H3G's Amended Schedule of Evidence, paragraph 5.20(e); Reply, paragraph 5.8.

⁵ibid, paragraph 5.20(e)(ii), referring to Ofcom's Proposed Amendment Consultation.

⁶H3G's Reply, paragraph 15.8(c).

⁷ibid, paragraph 15.8(d).

the effect of the treatment of ported-in minutes would have to be significant enough to outweigh H3G's over-recovery of costs allowed by the glide path. Ofcom believed that H3G's proportion of ported-in minutes was unlikely to be significant enough that under-recovery of costs, in aggregate, would become an issue in any year other than the final year of the charge control.¹

- 9.14. Ofcom said that if direct routing were in place for at least mobile-to-mobile calls by the final year of the charge control, it estimated that the maximum likely under-recovery against the TAC in the final year of the control would be less than 0.1ppm. Over the charge control period as a whole, Ofcom believed that its proposed glide path allowed such over-recovery of costs to H3G as to comfortably outweigh the effect of ported-in minutes. (We note, however, that this submission was made before Vodafone's successful appeal of September 2008.)
- 9.15. Ofcom reiterated that the underlying cause of this issue was the current donor network MNP routing arrangements, which were being addressed separately, but that it had also recognized that the current arrangements might be an issue in the short term and so had launched its Proposed Amendment Consultation.²
- 9.16. In the Proposed Amendment Consultation document Ofcom recognized that there were advantages and disadvantages associated with the approach taken in the MCT Statement. It also recognized that there were advantages and disadvantages to H3G's proposal to change its TAC in order to remedy the porting issue. The document further stated that the advantage of setting an 'adjusted TAC' based on accurate forecasts of the volume of ported-in minutes would be that the effective MCT rate received by an MNO would equal the original, unadjusted TACs in the MCT Statement. However, disadvantages were that retail incentives might be further distorted and that this option was subject to forecast error.³
- 9.17. Ofcom set out four options that might be chosen to address the issue: do nothing (option 1); a self-regulated financial settlement system (option 2); change the levels of the TACs imposed on each MNO by the charge controls (option 3); or change the method for calculating the AIC (option 4). Ofcom's favoured option was option 4. Ofcom considered the advantages of such an amendment to be that it would ensure that the average effective termination rate received by MNOs was aligned with the level of the charge controls in the MCT Statement and it would avoid the need for forecasting, which would be needed under option 3. Ofcom also recognized disadvantages: less efficient price signals and a slight increase in the regulatory burden on the MNOs.⁴
- 9.18. Ofcom has put its Proposed Amendment Consultation on hold until the present appeal is concluded.⁵ It has also accepted that there might be problems with its preferred approach of modifying the AIC, but considered that these problems could be addressed. Ofcom emphasized to us that the views set out in its Proposed Amendment Consultation document were its views in March 2007 and noted that responses to that consultation had raised additional points which it had not yet considered.⁶

¹Ofcom's Price Control Defence, paragraph 4.3.31.

²ibid, paragraphs 4.3.33 & 4.3.34.

³ibid, paragraphs 4.3.34 & 4.3.35.

⁴Ofcom's *Proposals for Consultation* document 27 March 2007, paragraphs 1.8&1.9; Price Control Defence, paragraph 4.3.36.

⁵Ofcom's Response, paragraph 2.29, footnote 16.

⁶Ofcom's bilateral hearing on the H3G appeal, 29 August 2008, transcript, pp88–92.

Interveners' arguments

- 9.19. T-Mobile said that H3G would be able to recover its efficiently incurred costs over the course of the price control. In addition, it considered it appropriate to address this issue separately as part of the consultation initiated by Ofcom, telling us that it would cut across that process to attempt to modify the charge control to accommodate H3G's concerns.¹
- 9.20. T-Mobile noted that we had to determine whether the price control imposed on H3G had been set at an inappropriate level. T-Mobile said that Ofcom had noted in its Proposed Amendment Consultation that there were several different ways to address the issue of the charging arrangements for calls to ported numbers and that Ofcom's preferred approach was not to change the level of the price control, but rather to change the mechanism used to calculate the AIC. T-Mobile considered that we would be usurping Ofcom's discretion if we came to our own conclusion on how best to deal with the issue. It suggested that if we considered that there was an issue with the charging arrangements we should note that, but leave it to Ofcom to come to a view on whether there was a better means of dealing with it than altering the MCT rates—otherwise we might impose a suboptimal solution.²
- 9.21. Vodafone told us that, according to its calculations, any disadvantage to H3G was adequately recompensed by the net present value of the additional revenues available to H3G by virtue of its glide path. Vodafone also endorsed the Tribunal's comment in paragraph 218 of its judgment on the non-price control issues that it was for H3G to make representations to Ofcom in the context of the Proposed Amendment Consultation, which would be resumed after this appeal, if it considered that the MCT charge controls should be amended to take account of the fact that H3G receives lower MCT revenues from calls to ported-in numbers.³
- 9.22. Vodafone also told us that there has been no valid or continuing SMP finding in respect of calls to ported numbers, so that it was not open to us to impose a charge control on ported numbers. The question for us, therefore, was whether we should adjust the charge control that applies to calls to non-ported numbers to compensate for the alleged disadvantage to H3G that arises from the fact that some of the incoming calls to ported numbers on H3G's network do not secure the full intended allowance. Vodafone considered that it would be wrong for us to do this because the amount H3G recovers for calls to ported numbers is governed by contractual inter-connection arrangements between the donor networks and H3G. There is a separate statutory mechanism for disputes about those arrangements to be resolved through a determination process. Vodafone noted that H3G had already raised a dispute with Ofcom on this issue. Given that there was a separate legal mechanism and H3G had actually invoked it, Vodafone considered that it would be wrong for us to prejudge that.⁴
- 9.23. Orange said that it would be contrary to the requirements of transparency and non-discrimination in section 47 of the 2003 Act for Ofcom to introduce deliberate distortions in one policy tool, namely the charge controls, to ameliorate an alleged disadvantage suffered by one market participant as a result of another policy tool,

¹T-Mobile Sol on H3G appeal, paragraphs 38 & 39.

²T-Mobile's bilateral hearing on the H3G appeal, 1 October 2008, transcript, pp62–64.

³Vodafone Sol on H3G appeal, paragraph 4.4(iii); Tribunal's judgment on non-price control matters of 20 May 2008 ([2008] CAT 11), paragraphs 214–218; O2 also cited the Tribunal's comments in this context (O2 Sol on H3G appeal, paragraph 43).

⁴Vodafone's bilateral hearing on the H3G appeal, 24 September 2008, transcript, pp60–66.

namely the MNP system. Orange also relied on the fact that the Tribunal had ruled that the MNP arrangements do not create distortions in the market.¹

Assessment

Has Ofcom's model taken into account the lower termination rate received by H3G for calls to ported numbers?

9.24. Ofcom has accepted that its model did not take the charging arrangements for ported numbers and their effect on H3G into account. We note that Ofcom has identified four ways in which these arrangements and their effect could be taken into account. These include amending levels at which the TACs are set and amending the definition of the AIC. Amending the definition of the AIC would not require the charging arrangements for ported numbers to be reflected in Ofcom's cost modelling or require any amendment to the level at which the price controls are set. Without prejudging the Proposed Amendment Consultation, we simply note that therefore it is not strictly necessary for Ofcom's model or the levels at which the TACs are set to be amended for the charging arrangements and their effects to be taken into account.

What is the 'distortionary effect'?

9.25. H3G submitted that by 'distortionary effect' it meant that for a significant amount of its calls, H3G receives the lower MCT rate charged by one of the other MNOs.²

9.26. There is no dispute that for all calls to ported numbers on its network H3G will receive a termination rate that is lower than the rate which would apply to other calls. H3G submitted that [X] per cent of minutes terminated on its network are terminated on ported numbers.³ Ofcom has said that around 20 per cent of total mobile terminated minutes are terminated on mobile numbers that have been ported, but that this proportion varies significantly between the MNOs.⁴ We note that the figure for H3G may be higher, rather than lower, than [X] per cent (because it may have a higher proportion of subscribers with ported numbers than other MNOs⁵ and on average H3G subscribers receive more calls than subscribers to other networks⁶).

9.27. However, the impact on H3G will also depend on how large the difference is between its MCT rates (which apply to calls to numbers that are not ported) and the average rate received for calls to ported numbers.

9.28. Table 9.1 gives Ofcom's estimates in its MCT Statement of effective rates (average RPM terminated for calls to ported and non-porting numbers) for all MNOs in September 2006. This shows that H3G's effective rate was [X]ppm compared with a headline average charge of [X]ppm. This is a reduction of [X] per cent.⁷ Ofcom also estimated that the charging arrangements for calls to ported numbers would cost H3G £20–£30 million in 2007/08 (in 2007/08 prices)⁸ compared with a

¹Orange Sol on H3G appeal, paragraphs 7.2 & 7.3; Orange's bilateral hearing, 17 September 2008, transcript, pp46&49.

²H3G's amended Price Control Appendix, paragraph 9.2.

³Spreadsheet accompanying H3G's letter of 29 May 2008.

⁴Ofcom's MCT Statement, paragraph 2.32.

⁵H3G has reported that [X] per cent of its customers were on ported numbers in January 2007, [X] per cent in September 2007 (spreadsheet accompanying H3G's letter of 16 June 2008). Ofcom in its Proposed Amendment Consultation in paragraph 2.24 cited a report by Analysys consultants which suggested that in January 2007 10 per cent of all numbers had been ported.

⁶See Section 5 of this determination on Reference question 2, Figure 5.2.

⁷Ofcom's MCT Statement, Figure 2.2.

⁸Ofcom's response to provisional determination, paragraph A4.4.

situation where it received its own rate for all calls.¹ We estimate that this range would be £19–£29 million in 2006/07 prices.² Ofcom did not give estimates for other years.

TABLE 9.1 Impact of MNP arrangements in September 2006

	Vodafone	O2	Orange	T-Mobile	H3G*
Effective rate incl ported numbers	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Headline regulated average charge	5.63	5.63	6.31	6.31	[redacted]
Difference	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Source: Figure 2.2 in Ofcom's MCT Statement.

*H3G was not regulated in September 2006. However, [redacted]ppm is the equivalent value.

9.29. Using information provided by H3G and reproduced in Table 9.2, we estimate that the current MNP arrangements would have the effect of reducing H3G's MCT revenue by around £[redacted] million (in 2006/07 prices) ([redacted] per cent) in 2007/08 falling to £[redacted] million in 2006/07 prices ([redacted] per cent) in 2010/11.³ These estimates are based on information provided by H3G and we note that the figure for 2007/08 is less than that estimated by Ofcom.

TABLE 9.2 Information provided by H3G on termination rates and revenues, with H3G's TAC (in 2006/07 prices)

	2007/08*	2008/09	2009/10	2010/11
H3G's TAC (ppm) (from Ofcom Statement)	8.5	7.5	6.7	5.9
Average rate received for ported in numbers (ppm)	[redacted]	[redacted]	[redacted]	[redacted]
Total MCT revenue (£m)	[redacted]	[redacted]	[redacted]	[redacted]
MCT revenue from ported in numbers (£m)	[redacted]	[redacted]	[redacted]	[redacted]

Source: H3G reply dated 25 July to CC information request of 4 July, Annex, Tab 2b.

*The figures for 2007/08 do not allow for adjustments made by Ofcom to the charge controls to account for the fact that the MCT Statement was not published 60 days before the date on which the new controls were to come into force (see paragraphs 9.181, 9.182 and 9.192 of the MCT Statement).

9.30. Ofcom said in response to the provisional determination that in calculating the impact on MNP arrangements on H3G we should have used the following figures for the average rate received by H3G on ported numbers: 5.7 in 2007/08; 5.5 for 2008/09; 5.3 for 2009/10 and 5.1 for 2010/11. We intentionally used only information provided by H3G in calculating the impact of the MNP arrangements on H3G. We note that Ofcom's estimates of the average rate that H3G would receive on calls to ported numbers are lower than H3G's and suggest that this may explain why Ofcom's estimates of the impact of current MNP charging arrangements on H3G are higher than that implied by the information H3G provided.

9.31. Ofcom also estimated that the current MNP charging arrangements will benefit Vodafone and O2 by £10–£15 million each in 2007/08 (£10–£14 million in 2006/07

¹Ofcom stated in its Proposals for Consultation document of 27 March 2007, p18, footnote 17, that these figures were calculated by taking the difference between actual revenue received by each MNO on ported-in minutes compared with the revenue it would have received had the minutes been terminated directly. Ofcom, in calculating these figures, used information supplied by MNOs on the total terminated minutes and the proportion of those minutes for each MNO terminated on ported-in numbers from each donor operator.

²Estimated using all items RPI index.

³This is estimated by calculating how much MCT revenue from ported in numbers would increase if H3G received its termination rate. For 2007/08 the calculation is $((8.5 - 6.2)/6.2) * 40 = 14.8$ and for 2010/11 the calculation is $((5.9 - 5.3)/5.3) * 48 = 5.4$. The 2007/08 figure is adjusted to allow for the fact that the price control applied for only ten months of this year.

prices).¹ Their effective rates will be higher than their TACs because all the other MNOs are allowed to charge higher MCT rates which Vodafone and O2 will receive on calls terminated on ported numbers. As the TACs converge over the price control period, we would expect this benefit to reduce. T-Mobile and Orange could be better or worse off as they will receive higher rates when H3G is the donor network and lower rates when Vodafone or O2 are the donor networks. We have not, however, been asked whether Ofcom erred in setting the price controls for other MNOs at a level which is inappropriate because it failed to take into account the arrangements for ported numbers.

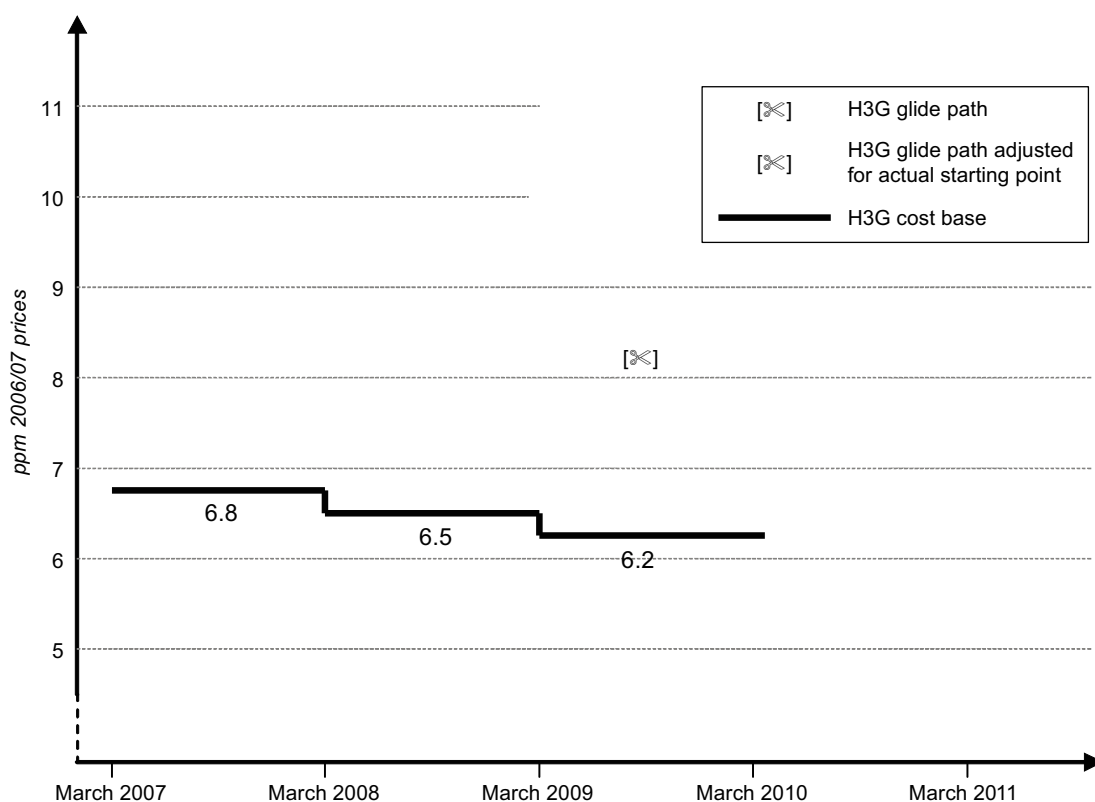
Interaction with the glide path

- 9.32. In considering the magnitude of the distortionary effect of the MNP charging arrangements on H3G, we think it is relevant that in setting the glide path for H3G, Ofcom took as its starting point H3G's average termination rate in 2006/07 for calls to non-ported numbers rather than H3G's effective rate. The consequence of this, as explained below, is that the ported numbers issue is less material than it otherwise might have been.
- 9.33. Figure 9.1 shows for each year of the price control Ofcom's estimate of the cost benchmark for H3G and the TAC determined by the glide path, with a CC calculation of the H3G glide path adjustment. Ofcom decided that there should be a one-off reduction in H3G's charge of 2.2ppm followed by a more gradual reduction in each of the following three years.

¹Ofcom's *Proposals for consultation* document, 27 March 2007, paragraph 4.47.

FIGURE 9.1

Ofcom estimates of cost benchmark for H3G and TAC determined by glide path, with CC calculation of H3G glide path adjustment



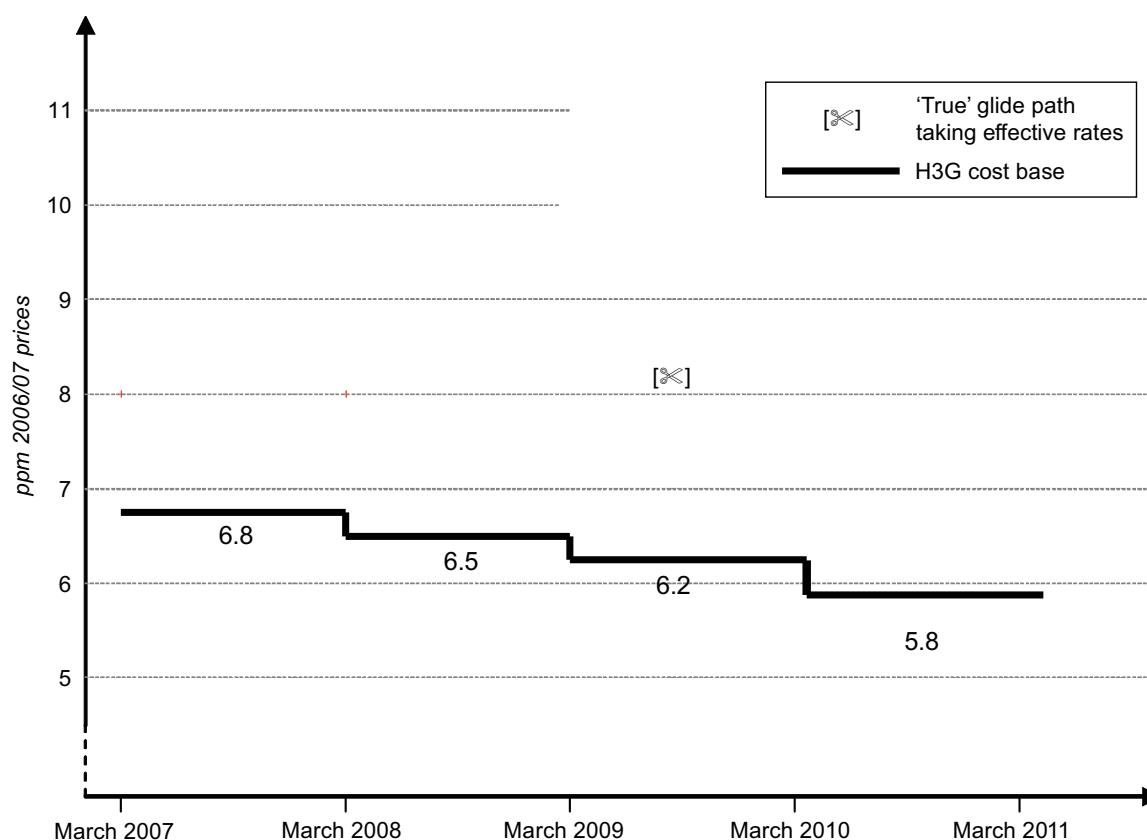
Source: Ofcom MCT Statement; CC calculations.

- 9.34. In determining this glide path, Ofcom took as its starting point the rate H3G was charging on calls to non-ported numbers of [X]ppm. In practice, H3G's effective rate would have been [X] and Ofcom estimated that it was about [X]ppm.
- 9.35. One effect of the above is that, in starting the glide path at H3G's 'headline' MCT rate rather than its effective MCT rate (taking into account the lower rates from ported numbers), the ported numbers issue has, in practice, already been taken into account, at least for the early years of the price control.
- 9.36. Figure 9.2 shows the path of prices determined by H3G's effective rate in 2006/07 and its effective rates over the period of the price control assuming that no adjustments are made to the TACs or to the definition of the AIC to take account of charging arrangements for calls to ported numbers.¹ We observe that the shape of the glide path is much the same as Ofcom intended, ie a one-off larger drop in rates followed by a smoother reduction.

¹We have calculated the effective rate by taking a weighted average of the TAC and H3G estimates of the average rate applying to calls to ported-in numbers, weighted by H3G's estimates of revenue from calls to ported and non-ported numbers.

FIGURE 9.2

Path of H3G's effective rate over the price control period



Source: CC calculations (see footnote to paragraph 9.29).

Note: Estimates of effective rates for 2007/08 and 2008/09 amended since provisional determination due to rounding errors.

9.37. To summarize, whilst we accept that H3G will receive lower rates for around [X] per cent of the minutes it terminates, we note that the effect on its effective rate will fall over the price control period as the gap between its TACs and those of the other networks narrows. Furthermore, the fact that Ofcom determined H3G's glide path by reference to its 'headline' rate rather than its effective rate mutes the impact of the lower revenues that H3G will receive because of the ported numbers issue.

9.38. However, for the final year of the price control period the effective rate is below the cost benchmark. Although the difference is small, we consider that given Ofcom's approach it is inappropriate that MNOs should be required to set rates below cost in any year. We recognize that this is a potential problem. We also note that the current arrangements may disadvantage H3G to the extent that the effective charge for Vodafone and O2 will be higher than their TACs.

Does this 'distortion' make it impossible for H3G to recover its efficiently incurred costs of termination?

9.39. Ofcom suggested that, for H3G's costs to be unrecoverable, in aggregate, the effect of the charging arrangements for ported numbers would have to be significant

enough to outweigh H3G's over-recovery of costs allowed by Ofcom's glide path.¹ Ofcom estimated that only in 2010/11 will there be likely under-recovery against H3G's TAC, and that even then it will be less than 0.1ppm (although its estimate was dependent on direct routing being in place for at least mobile-to-mobile calls).

- 9.40. Using the information provided by H3G and presented in Table 9.1, we estimated H3G's effective termination rate for each year of the price control period and compared this with the price control benchmarks estimated by Ofcom (including the allowances for the NES and for administration costs). The results suggest that H3G's effective rate would exceed the cost-based benchmark for all but the final year of the price control. In this final year the difference will be small.
- 9.41. Ofcom stated that the glide path was necessary to preserve efficient investment incentives for existing and prospective network operators by allowing a sufficient period of time for operators and customers to adjust to new levels and structures of mobile charges.² The determination of the glide path involved qualitative judgement rather than quantitative analysis. However, H3G's statement that it would be impossible for it to recover its efficiently incurred costs at its effective rates is a strong statement that is not supported by analysis. On balance, we conclude that H3G has not demonstrated that over the price control period as a whole, the glide path would not allow it to recover its efficiently incurred MCT costs.³

Was Ofcom's Proposed Amendment Consultation 'too late to save the decision'?

- 9.42. Ofcom recognized before it issued the MCT Statement that the current charging arrangements for calls to ported numbers had certain effects. For the reasons set out above, Ofcom considered that it would be appropriate to consult on this issue and so published its MCT Statement and launched the Proposed Amendment Consultation on how to address this problem at the same time.
- 9.43. The Tribunal has said that, if H3G considered that Ofcom's costs model had not fully taken account of the current practices regarding MCT for ported numbers, this was a matter which should be raised in Ofcom's Proposed Amendment Consultation and that that consultation must be allowed to take its course, once it is resumed following the disposal of this appeal.⁴ We have come to the same conclusion.
- 9.44. We do not think it could properly be said that Ofcom had not recognized, or failed to take into account, the ported numbers issue. It recognized it explicitly, but did not think, at the time of the MCT Statement, that the appropriate response was to amend the level of the TACs. Instead, it set in motion a process which would have allowed for an informed and targeted response to the issue.
- 9.45. In the circumstances, we do not consider that Ofcom's decision to issue its MCT Statement and at the same time start its Proposed Amendment Consultation was an inadequate response to the ported numbers issue.

¹Ofcom's Price Control Defence, paragraphs 4.3.32 & 4.3.33.

²Ofcom's MCT Statement, paragraph 9.145.

³In its response to our provisional determination, H3G questioned whether these conclusions could stand given our provisional determinations in the BT appeal (H3G's response to provisional determinations, paragraph 7.3(b)). We consider that they do still stand. Our determination will result in new TACs being set for 2010/11, but (a) the glide paths will remain, and although the gradient of H3G's glide path will be affected, the underlying cost benchmark for each of the four years of the charge control period will fall (thus maintaining or even increasing the gap between H3G's effective rate and its cost benchmark over the period) and (b) with a reduced level of asymmetry at the end of the charge control period, the effect of the ported numbers issue will reduce in magnitude.

⁴Tribunal's judgment on non-price control matters, paragraphs 214–218.

Were the price controls imposed on H3G set at a level which is inappropriate because Ofcom failed to take into account the distortion created by current MNP arrangements?

- 9.46. We agree with H3G that because of the current MNP arrangements its effective rate will be less than its TACs over the price control period. We have also noted that Vodafone and O2 may benefit from these arrangements.
- 9.47. However, we do not agree that this necessarily means that the TACs set by Ofcom were set at inappropriate levels. We have already noted that Ofcom determined H3G's glide path by reference to its headline rather than effective rate, with the effect that the ported numbers issue has, in practice, been taken into account at least for the early years of the price control. We also do not accept that the failure to address the ported numbers issue by amending the glide path will make it impossible for H3G to recover its efficiently incurred MCT costs over the price control period as a whole. In addition, and as explained in the Proposed Amendment Consultation, one alternative to adjusting the TACs would be to amend the definition of the AIC. At the time of the Proposed Amendment Consultation, this was Ofcom's preferred option.
- 9.48. Ofcom and the Interveners have identified various advantages and disadvantages associated with changing the levels of the TACs imposed on each MNO by the charge controls, and with changing the method for calculating the AIC. We agree that for practical reasons adjusting the calculation of the AIC may be preferable to revising the TACs. Whilst we think it would be inappropriate for us to prejudge the outcome of Ofcom's consultation by suggesting that one method for dealing with the charging arrangements for calls to ported numbers is better than another, it is our view that H3G has not shown in this appeal that Ofcom should have taken the charging arrangements into account by adjusting the level of the price controls. H3G has not shown that that would have been or is the most appropriate response to the issues regarding charges for calls to ported numbers.
- 9.49. We do recognize that there is a risk of under-recovery in the final year of the price control period, and that this is a potential problem. However, we think that it is appropriate for the Proposed Amendment Consultation to run its course, and for Ofcom to consider the whole range of options, and all the submissions before it (including, potentially, from persons not party to this appeal), and then come to an informed view in light of its statutory duties.

Determination

- 9.50. For the reasons set out above, our determination is that the price controls imposed on H3G have not been set at a level which is inappropriate because Ofcom erred in failing to take account of distortion created by arrangements for ported numbers for the reasons set out in paragraphs 9.1 and 9.2 of the H3G Amended Price Control Appendix.

10. Scenarios determination: Reference question 3(v)

- 10.1. This section sets out the CC's conclusion on whether the price controls imposed on H3G have been set at a level which is inappropriate because Ofcom erred in selecting the charge to be imposed from the values generated by the scenarios it used for the reasons set out in paragraphs 10.1 to 10.4 of the H3G Amended Price Control Appendix.
- 10.2. For the reasons given below, we do not consider that the price controls imposed on H3G have been set at an inappropriate level because Ofcom erred in selecting the charge to be imposed from the values generated by the scenarios for the reasons given by H3G.

Ofcom's methodology

- 10.3. In its March 2007 MCT Statement, Ofcom set charge controls that were to apply to all MNOs for four years, from 2007/08 to 2010/11. Ofcom's methodology, broadly, was to select a TAC for 2010/11 that was based on an assessment of the efficient cost of providing MCT in that year. The TAC was to apply as a cap on what the MNOs could charge for MCT, on average, in that year. Ofcom then set a glide path for each MNO. The function of the glide path was to determine how, over the period of the charge controls, the MCT charges of the various MNOs were to decrease until they converged with the TAC in 2010/11.
- 10.4. In the MCT Statement Ofcom noted that there was a significant degree of uncertainty in forecasting critical variables which influenced the level of efficient charges (ie the TACs for 2010/11) which made identifying a specific benchmark intrinsically difficult. Ofcom said that it had undertaken considerable analysis and cost modelling in order to examine these uncertainties and their impact on the efficient charge levels. It focused in particular on a number of assumptions for three key variables:¹
 - (a) traffic demand forecasts: including demand for voice and data services;
 - (b) network economies of scale and scope between voice and data; and
 - (c) the treatment of 3G spectrum costs: incorporating both the magnitude of costs to be recovered and the proportion recovered from voice termination services.
- 10.5. Ofcom considered that, given the uncertainty, it was undesirable to seek to derive efficient charge levels from a single scenario and set of assumptions. Instead, it used a range of scenarios in order to inform a judgement on efficient charge levels.² The scenarios that it used in its final assessment are set out in Table 10.1 below.

¹Ofcom's MCT Statement, paragraph 9.152.

²ibid, paragraph 9.153.

TABLE 10.1 Efficient charge benchmarks in 2010/11

Benchmark	ppm		
	2G/3G (900 MHz/1800 MHz combined)	2G/3G (1800 MHz only)	3G-only
Low-demand, £1.9bn	5.4	5.8	7.0
Low-demand, £1.4bn	5.1	5.5	6.4
Voice-only, £4bn	5.5	5.8	7.0
Voice-only, £3.3bn	5.2	5.5	6.6
Voice-only, £1.9bn	4.6	4.9	5.6
Medium-demand, £4.4bn	5.3	5.6	6.6
Medium-demand, £4bn	5.2	5.4	6.3
Medium-demand, £3.3bn	4.9	5.1	5.8
Medium-demand, £1.9bn	4.2	4.5	4.9
Medium-demand, £1.4bn	4.0	4.3	4.6
High-demand, £4.4bn	3.3	3.4	3.4
High-demand, £4bn	3.2	3.3	3.4

Source: Reproduction of Ofcom's Figure A13.9 of MCT Statement.

- 10.6. Ofcom then considered, in a qualitative fashion, the weight that should be attached to different benchmarks. Ofcom stated that it might be thought that a reasonable starting point for the determination of a single final charge control level in 2010/11 would be the midpoint of the range benchmarks, but considered that choosing the midpoint would mean that the only benchmarks which ultimately determined the final charge outcome would be those that lay at the extremities of the selected range, which were the ones that were less likely to be realized.¹
- 10.7. Ofcom decided to give relatively more weight to medium-demand and voice-only scenarios (eight in total) than to low- and high-demand scenarios (four in total). Within those eight benchmarks, Ofcom considered that the voice-only scenarios were useful because they represented an upper bound in relation to the corresponding medium-demand scenarios, but that less weight should be placed on them because they did not allow for economies of scope with the data services.²
- 10.8. Ofcom noted that the benchmarks for the eight scenarios that did not derive from either the high-demand or the low-demand cases tended to be on the higher side of the range, and that six of the eight scenarios lay above the midpoint. In Ofcom's view, an implication of this was that the charge control should be set at the level above the midpoint of the full range of benchmarks for the 12 scenarios.³
- 10.9. Ofcom further justified this by noting that there was a potential asymmetry in the risks and impacts of setting charges that turn out to be too low. According to Ofcom, charge controls which, in practice, failed to enable the recovery of efficiently incurred costs might have an adverse impact on investment, which would be detrimental to consumers generally. On the other hand, Ofcom considered that although the waterbed effect was unlikely to be complete, even an incomplete waterbed effect would ameliorate the impact of the level of termination charges on MNOs' profitability and thus reduce the risk that MNOs would fail to recover their efficiently incurred costs overall. Ofcom believed that the presence of this asymmetric risk also supported a charge control level that was above the midpoint of its range of benchmarks.⁴

¹ibid, paragraphs 9.162 & 9.163.

²ibid, paragraphs 9.163 & 9.164.

³ibid, paragraphs 9.163 & 9.166.

⁴ibid, paragraph 9.168.

- 10.10. Similarly, Ofcom noted that H3G had argued that the size of the range of benchmarks was an indicator of investment risk, and that selection of the midpoint meant that the magnitude of this risk did not have any bearing on the final charge control outcome. Ofcom considered this point to also imply that selecting the midpoint of a range of benchmarks may not take sufficient account of the risks involved in setting a charge control level.¹
- 10.11. Taking into account these factors, Ofcom's judgement was that reasonable efficient charge levels at the end of the price control period in 2010/11 would be 5.1ppm for the 2G/3G operators² and 5.9ppm for the 3G-only operator in 2006/07 prices.³
- 10.12. Ofcom noted that it had considered adopting alternative approaches to address the uncertainty it faced, including probabilistic methods, but considered that this would introduce further complexity and, rather than illuminating the problem further, would be likely to generate spurious degrees of 'accuracy' and result in less rather than more transparency, as the judgments would be embedded in the particular probabilities assigned to each of the different cost scenarios.⁴

The September 2006 Consultation

- 10.13. The MCT Statement was the product of a lengthy consultation period, and was preceded by, among other things, Ofcom's September 2006 Consultation document.⁵ In that consultation document, Ofcom presented the results, in the form of ranges, of the cost modelling that it had undertaken at that point. There are set out in Table 10.2 below.

TABLE 10.2 **Ofcom's September 2006 cost modelling results: ranges for unit charge levels in 2010/11 in real 2006/07 prices**

<i>Unit cost range</i>	<i>MNOs with 900/1800 MHz 2G networks plus 3G networks</i>	<i>MNOs with 1800 MHz 2G networks plus 3G networks</i>	<i>ppm</i>
			<i>3G-only MNOs</i>
High	5.9–6.9	6.2–7.2	8.0–9.3
Medium	4.5–5.5	4.8–5.8	5.4–6.7
Low	3.2–4.2	3.4–4.4	3.0–4.3

Source: Ofcom's September 2006 Consultation document, reproduction of Figure 9.1.

- 10.14. The specific scenarios and benchmarks which created these ranges were set out by Ofcom in Annex 13 of the September 2006 consultation document, and are reproduced in Figure 10.1 below.

¹ibid, paragraph 9.167.

²Ofcom based the 2G/3G operators' allowance on the costs of an 1800 MHz operator.

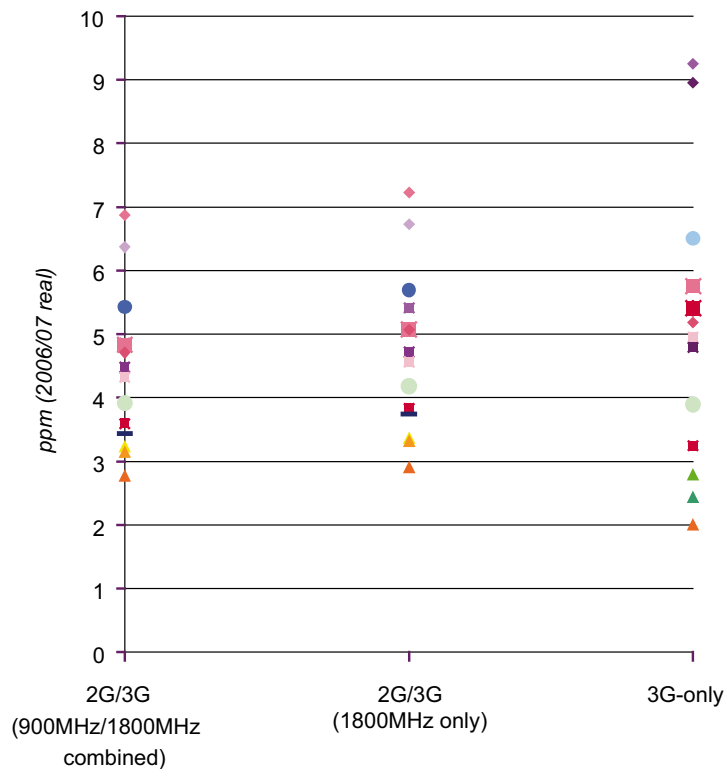
³Ofcom's MCT Statement, paragraph 9.169.

⁴ibid, paragraph 9.154.

⁵*Mobile call termination: proposals for consultation*, Ofcom, 13 September 2006.

FIGURE 10.1

Efficient charge benchmarks in 2010/11 used in the September 2006 Consultation document



- ◆ Low demand, £4bn fee, 2 carriers, radio traffic
- ◆ Low demand, £4.4bn fee, 3 carriers, radio traffic
- ◆ Low demand, £3.3bn fee, 2 carriers, all traffic
- ◆ Low demand, £4.4bn fee, 3 carriers, all traffic
- Voice only, £4bn fee, 2 carriers, radio traffic
- Voice only, £4.4bn fee, 3 carriers, radio traffic
- Medium demand, £3.3bn fee, 2 carriers, radio traffic
- Medium demand, £4bn fee, 2 carriers, radio traffic
- Medium demand, £4.4bn fee, 3 carriers, radio traffic
- ◆ Low demand, no fee, 2/3 carriers, radio traffic
- Medium demand, £4bn fee, 2 carriers, all traffic
- Medium demand, £3.3bn fee, 2 carriers, all traffic
- Voice only, no fee, 2/3 carriers, radio traffic
- Medium demand, no fee, 2/3 carriers, radio traffic
- Medium demand, 2G only 'as-if' scenario
- ▲ High demand, £4bn fee, 2 carriers, radio traffic
- ▲ High demand, £4.4bn fee, 3 carriers, radio traffic
- ▲ High demand, £3.3bn fee, 2 carriers, all traffic
- ▲ High demand, £4.4bn fee, 3 carriers, all traffic
- ▲ High demand, no fee, 2/3 carriers, radio traffic

Source: Reproduction of Ofcom's Figure A13.13 in the September 2006 Consultation document.

10.15. Ofcom stated in its September 2006 Consultation document that its present view was to set the charge controls for 2010/11 at the midpoint of the applicable cost range (which was the medium range).¹ These midpoints are set out in Table 10.3.

¹Ofcom's September 2006 Consultation document, paragraph 9.79.

TABLE 10.3 Ofcom's 2006 proposed ranges for unit charge levels in 2010/11 (real 2006/07 prices)

	<i>MNOs with 900/1800 MHz 2G networks plus 3G networks</i>	<i>MNOs with 1800 MHz 2G networks plus 3G networks</i>	<i>3G-only MNOs</i>
Unit cost range	4.8–5.8ppm		5.4–6.7ppm
Midpoint	5.3ppm		6.0ppm

Source: Reproduction of Figure 9.2 from Ofcom's September 2006 Consultation document.

10.16. Ofcom noted that the ranges had been set on a conservative basis and that it would consider carefully any evidence that may indicate that the controls for any or all of the MNOs should be set at a different level.¹ It also noted that the medium range 'placed weight' on medium voice and data and conservative voice-only demand forecasts, and reflected scenarios that allowed a 'significant' contribution to the recovery of 3G spectrum costs.²

10.17. Ofcom also stated explicitly that the proposed figure of 6ppm for H3G might be varied after considering responses to the consultation, and that its present view was that the final charge control level should be within plus or minus 0.65ppm of 6ppm.³

10.18. In the MCT Statement, Ofcom noted that in the September 2006 Consultation it had proposed that the efficient charge level for H3G should lie within the range 5.4 to 6.7ppm, which range had a midpoint of 6ppm.⁴ Ofcom said that it had carefully considered H3G's responses, as well as those of other stakeholders, to the consultation.⁵ It also noted that, in comparison to the modelling results it had presented in September 2006, the final set of benchmarks had been refined in certain ways (see Table 10.1 above).⁶

H3G's grounds of appeal

10.19. H3G argued that Ofcom's choice of charge within the various cost benchmark scenarios constituted an error of assessment and that Ofcom had failed to provide adequate or sufficient reasons for its decision.⁷

10.20. In particular, H3G submitted that Ofcom was vague in its explanation of the link between the values generated by its scenarios and its chosen charging levels, which created regulatory uncertainty about how the MNOs could expect to be regulated in future. H3G argued that:⁸

(a) Ofcom had stated that its decision was based primarily on the values generated by its medium-demand and voice-only demand scenarios.

(b) In its September 2006 Consultation, Ofcom's medium scenarios ranged from 3.2 to 5.8ppm, with an average of 4.8ppm; and its voice-only scenarios ranged from 3.9 to 6.8ppm, with an average of 5.9ppm. Ofcom chose a midpoint of 6.0ppm

¹ibid, paragraph 9.79.

²ibid, paragraph 9.55.

³ibid, paragraph 9.112.

⁴Ofcom's MCT Statement, paragraph 9.144.

⁵ibid, paragraphs 9.145–9.150.

⁶ibid, paragraph A13.59.

⁷H3G's Amended Price Control Appendix, paragraph 10.1.

⁸ibid, paragraphs 10.2 & 10.3.

which was (i) above the top of the medium-demand range and (ii) marginally above the average of the voice-only range.

(c) In the MCT Statement the medium-demand scenarios ranged from 4.6 to 6.6ppm with an average of 5.6ppm; and the voice-only scenarios ranged from 5.6 to 7.0ppm, with an average of 6.4ppm. H3G submitted that if Ofcom had applied the same methodology as it had in the September 2006 Consultation, it would have arrived at a TAC of at least 6.5ppm. Instead, it reached a level of 5.9ppm.

(d) That is, Ofcom moved down the range in picking its midpoint, whereas a more rational approach would have been to pick the medium scenario and apply a premium to take account of risk—as was previously argued for by H3G in its November Response to the September 2006 Consultation. H3G also argued that its risk premium should have been higher, as a 3G-only late entrant operator.

10.21. H3G argued that the effect of this adjustment was that Ofcom effectively removed 0.6ppm of risk allowance without any reason being given since the September Consultation. H3G said that the decision on this point lacked transparency and sufficient reasoning, and also failed to take into account the specific risks that H3G faced as a 3G-only operator and a late entrant in a competitive market.¹

10.22. H3G subsequently elaborated its case by explaining that it was not clear why Ofcom's qualitative weightings of different scenarios had produced either a different range or had identified a different appropriate point within that range between the September 2006 Consultation and the MCT Statement. H3G said that, while Ofcom had accepted several arguments which had the effect of increasing the cost figures for the two key medium and voice-only scenarios identified by Ofcom, it nevertheless chose a lower figure.²

10.23. At its bilateral hearing, H3G emphasized that its main point was that there was a lack of transparency in that Ofcom had identified scenarios on which it had qualitatively put the most weight (the medium and voice-only scenarios), the ranges of those scenarios had moved up between the September 2006 Consultation and the MCT Statement, and yet the number chosen for H3G's TAC had gone down. Despite Ofcom's attempts to explain what it had done in its Price Control Defence and at its bilateral hearing, in H3G's view it remained unclear how Ofcom actually had taken H3G's different risk profile into account.³

Ofcom's arguments

10.24. Ofcom noted that H3G had highlighted Ofcom's estimate of 6.0ppm from the September 2006 Consultation and characterized it as bearing a specific relationship with the efficient unit cost estimates produced by the medium and voice-only scenarios. Ofcom said that H3G had then attempted to apply a similar relationship to the efficient unit cost estimates produced by the medium and voice-only scenarios in the MCT Statement to suggest that Ofcom had erred in selecting the number it did.⁴

10.25. However, Ofcom said that the 6.0ppm figure was not a relevant benchmark—it was a figure which Ofcom consulted on in the September 2006 Consultation and was a midpoint of a range of benchmarks, but it was superseded by the set of efficient unit

¹ibid, paragraph 10.4.

²H3G's Reply, paragraphs 14.7 & 14.8.

³H3G's bilateral hearing of 12 September 2008, transcript, pp73&74.

⁴Ofcom's Price Control Defence, paragraph 3.9.46.

cost estimates reported in the decision, which represented the results of updated analysis reflecting comments received in response to the September 2006 Consultation. Ofcom noted that H3G had not suggested that the range of benchmarks chosen by Ofcom in the MCT Statement was inappropriate.¹

- 10.26. Ofcom submitted H3G's attempt to identify the proposed charge control levels as the output of a process which relied exclusively on the midpoint of the medium-demand scenarios and the midpoint of the voice-only scenarios was misplaced because such an approach did not reflect Ofcom's methodology. The approach which was adopted in the MCT Statement (set out above in paragraphs 10.3 to 10.12) explicitly involved placing weight on benchmarks arising from the high-demand and low-demand scenarios as well as the medium-demand and voice-only scenarios.²
- 10.27. Ofcom stated that it had been concerned to take into account responses to the September 2006 Consultation in relation to risk, and chose a level above the midpoint of the range in part to take account of this concern. Ofcom agreed with H3G's point that the size of the range was an indicator of investment risk, and that the selection of the midpoint would have meant that the magnitude of this risk did not have any bearing on the final charge control outcome. However, Ofcom pointed out that the final levels of the charge control for H3G and for the 2G/3G MNOs was significantly above the midpoint of the ranges. Further, whilst it did not believe that it was appropriate to attach any specific emphasis to the midpoints of the ranges, Ofcom pointed out that the final charge level for the 3G-only operator was 0.7ppm above the midpoint of the 3G-only operator range, in comparison with 0.5ppm above the midpoint for the 2G/3G operators, consistent with the greater overall uncertainty experienced by the 3G-only operator.³
- 10.28. Ofcom disagreed with H3G's contention that a different approach for selecting a charge control level within the range of benchmarks should have been used for the 3G-only operator. Ofcom considered that all the operators had incurred 3G investments, which Ofcom treated in the same way in its cost modelling. Ofcom said that the consistent application of the same approach to all operators already resulted in a higher benchmark for the 3G-only operator.⁴
- 10.29. At its bilateral hearing, Ofcom further explained how refinements had been made to the cost modelling after the September 2006 Consultation to reflect comments received from stakeholders and the latest available information on traffic forecasts. This had resulted in the levels of the benchmarks changing, and in Ofcom considering that some benchmarks were more relevant than others.⁵
- 10.30. Ofcom also presented us at the bilateral hearing with illustrations of how its cost benchmarks had changed from its September 2006 Consultation to its MCT Statement. These are set out in Figures 10.2 and 10.3 below.

¹ibid, paragraph 3.9.47.

²ibid, paragraph 3.9.48.

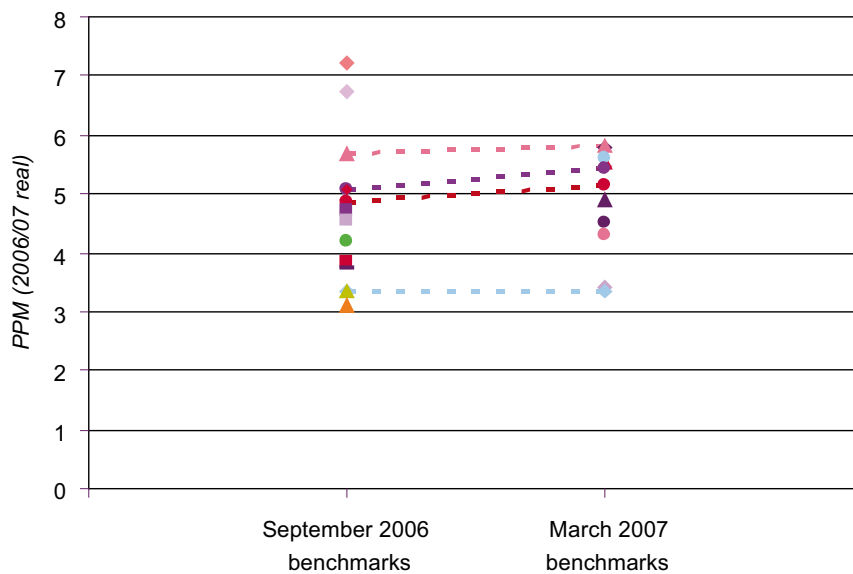
³ibid, paragraph 3.9.50.

⁴ibid, paragraphs 3.9.51 & 3.9.52.

⁵Ofcom's bilateral hearing of 29 August 2008, transcript, pp92–98.

FIGURE 10.2

Efficient charge benchmarks in 2010/11 for 1800-MHz-only 2G/3G operators in the September 2006 Consultation and the MCT Statement



- | | |
|---------------------------------|--|
| ◆ Low demand, £1.9 billion | —◆— High demand, £4 billion |
| ◆ Low demand, £1.4 billion | ◆ Low demand, £4 billion fee, 2 carriers, radio traffic |
| —▲— Voice only, £4 billion | ◆ Low demand, £3.3 billion fee, 2 carriers, all traffic |
| ▲ Voice only, £3.3 billion | ◆ Low demand, no fee, 2/3 carriers, radio traffic |
| ▲ Voice only, £1.9 billion | ■ Medium demand, £4 billion fee, 2 carriers, all traffic |
| ● Medium demand, £4.4 billion | ■ Medium demand, £3.3 billion fee, 2 carriers, all traffic |
| —■— Medium demand, £4 billion | ● Voice only, no fee, 2/3 carriers, radio traffic |
| —■— Medium demand, £3.3 billion | ■ Medium demand, no fee, 2/3 carriers, radio traffic |
| ● Medium demand, £1.9 billion | —■— Medium demand, 2G only 'as-if' scenario |
| ● Medium demand, £1.4 billion | ▲ High demand, £4 billion, 2 carriers, radio traffic |
| ◆ High demand, £4.4 billion | ▲ High demand, £3.3 billion fee, 2 carriers, all traffic |

Source: Slide 37 from Ofcom's bilateral hearing on the H3G appeal, 29 August 2008.

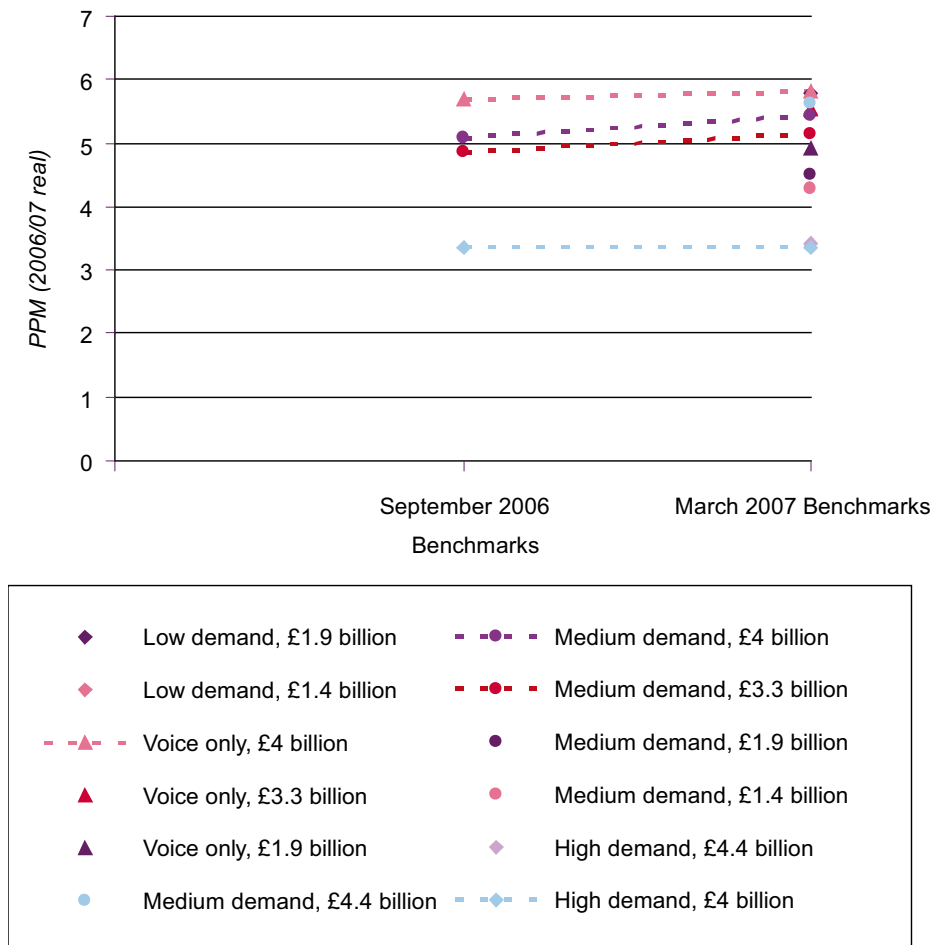
10.31. As can be seen from Figure 10.2, some benchmarks from the September 2006 Consultation that Ofcom did not, in the end, consider relevant were not included in the final MCT Statement benchmarks. For example, the highest two benchmarks used in September 2006 were dropped. In addition, Ofcom chose some new scenarios and benchmarks.¹

10.32. Ofcom also told us that the precise level of each retained benchmark had also changed, as a result of adjustments to the cost model in response to stakeholder comments. This is shown in Figure 10.3.

¹Ofcom's bilateral hearing of 29 August 2008, transcript, pp92–98.

FIGURE 10.3

Selected efficient charge benchmarks in 2010/11 for 1800-MHz-only 2G/3G operators in the September 2006 Consultation and the MCT Statement



Source: Slide 36 from Ofcom's bilateral hearing on the H3G appeal, 29 August 2008.

10.33. On the question of risk, Ofcom said that it had handled this primarily through its choice of scenarios. It said it had noted that the range of benchmarks was smaller for the 2G/3G MNOs than for the 3G-only MNO and that its decision to choose a number above the midpoint had had a different effect on the 2G/3G operators than on the 3G-only operator.¹

Intervenors' arguments

10.34. Vodafone submitted that Ofcom's scenarios provided an adequate basis for the selection of appropriate charge control levels. It argued that medium-demand scenarios constituted a central case, and sensitivity analyses around that base case showed that Ofcom's charge controls are well-founded and appropriate.²

¹ibid, pp96&97.

²Vodafone's Sol, paragraph 8.4(v).

- 10.35. BT submitted that there was no case for a risk premium being included in H3G's MCT charges.¹ It argued that H3G had mischaracterized the risks in respect of MCT services, and that only risks which were linked to that particular service were relevant, not an MNO's risks in general. BT argued that when the distinction between business risk and service risk was recognized, the case for any risk premium in MCT charges disappeared.²
- 10.36. BT submitted that risks arising from vigorous competition, such as those associated with fluctuations in market share and profitability, were business risks that a well-diversified shareholder could avoid (for example, by investing in more than one MNO). On the other hand, BT stated that there may be risks to profitability associated with demand for mobile services contracting or expanding with general economic conditions or input costs changing that even a well-diversified shareholder could not avoid. These systematic risks³ would be represented in the cost of capital that an MNO needs to pay. BT submitted that H3G's extra risks were not primarily of the systematic type, but were non-systematic risks associated with competing for mobile customers.⁴
- 10.37. BT argued that, regardless of how competitive the 3G market might be, and what risks H3G might face from other platforms that might deliver voice services, it was not the case that MCT was systematically more risky for H3G than for other MNOs. BT submitted that the revenue and cost risks associated with providing MCT were small once the supplier has won the customer relationship in the mobile market, that the systematic risk for which an extra allowance would be warranted (for example, of technological obsolescence or demand shocks) resided away from the regulated service and applied to all MNOs, and that these risks were captured by the cost of capital and thus should already be included in the allowed return on capital employed.⁵
- 10.38. Orange developed a similar line of argument, arguing that for regulatory purposes the appropriate notion of risk was that risk which could not be diversified in a well-spread portfolio, which should be reflected in a regulated firm's cost of capital, primarily through the beta⁶ attached to the firm's activities. Orange submitted that in the present case there was no evidence to suggest that the beta of a 3G-only operator should be different from that of a 2G/3G operator so a reasonable regulatory position to take would be that the cost of capital for those two different operator types should be assumed to be the same.⁷
- 10.39. Orange also argued that the 2G/3G MNOs in fact experienced additional risk, because they ran two networks (as opposed to one) and had to decide on the timing of the switching off of their 2G networks.⁸

Assessment

- 10.40. We first consider whether, for the specific reasons given by H3G, Ofcom's selection of H3G's TAC from the range of scenarios its modelling generated lacked trans-

¹As did T-Mobile (T-Mobile Sol, paragraphs 27–29).

²BT Sol, paragraphs 57–63.

³Systematic risk is risk that is common to all capital assets and hence not diversifiable; this type of risk (unlike diversifiable risk) is taken into account when estimating a cost of capital (using the Capital Asset Pricing Model and similar approaches).

⁴BT Sol, paragraphs 57–63.

⁵*ibid*, paragraph 63.

⁶A measure of the systematic risk associated with an asset or business.

⁷Orange's bilateral hearing of 17 September 2008, transcript, pp55–58.

⁸Orange Sol, paragraph 6.15.

parency.¹ We then consider whether Ofcom properly took account of the risks that H3G argued that it faces in its choice of the charge from within the range generated by the various scenarios.

Transparency

- 10.41. H3G argued that Ofcom was vague in its explanation of the link between the values generated by its scenarios and its chosen charging levels. In particular, H3G relied upon the example set out above in paragraph 10.20. It argued that if Ofcom had adopted the same approach in the MCT Statement as it did in the September 2006 Consultation, the result would have been a higher charge. H3G says that the effect of the adjustment was to remove 0.6ppm of risk allowance without any reason being given and that the MCT Statement on this point therefore lacked transparency and sufficient reasoning.
- 10.42. We do not agree with H3G's characterization of the approach taken by Ofcom to the selection of a point from within range of results generated by scenarios. Ofcom explained that although it attached relatively more weight to the medium-demand and voice-only scenarios than to the low-demand and high-demand scenarios, its views on an appropriate level for a charge were also informed by the low-demand and high-demand scenarios. Ofcom's views were not therefore informed solely by the medium-demand range and voice-only ranges.
- 10.43. With regard to the changes between the September 2006 Consultation and the MCT Statement, Ofcom explained that it had refined its scenario-based approach in the light of responses to the consultation and, in particular, that it had been very careful to select a range of benchmarks that most accurately represented the results of its analysis.² This led to Ofcom excluding from its analysis certain scenarios on which it had consulted, adding some, and to the levels of the retained benchmarks changing.
- 10.44. Thus the ranges within which Ofcom had to identify the efficient charge level had changed.³ This would have been apparent from comparison of the information provided in Figure A13.13 of the September 2006 Consultation and in Table A13.9 in the MCT Statement. We note in particular that these show that Ofcom excluded two scenarios which had combined low traffic projections with higher 3G spectrum values. Because the excluded scenarios were not medium-traffic or voice-only scenarios, we do not think H3G could reasonably have expected that the relationship of the final charge to the range generated by the medium-demand and voice-only scenarios would remain unchanged.
- 10.45. More fundamentally, in our view H3G has misunderstood or mischaracterized Ofcom's approach in the September 2006 Consultation. Ofcom did not come to the 6.0ppm benchmark that it consulted upon by a process of picking a point that was above the top of the medium-demand range and above the average of the voice-only range. It picked a midpoint of a range of 5.4 to 6.7ppm which it labelled 'medium', although it noted that the range was in certain respects a conservative one. Ofcom also stated, explicitly, that the 6.0ppm might be subject to change in the light of responses to the consultation, but that its present view was that the final level should be within 0.65ppm of that figure, either above or below. The figure chosen in the

¹We commented on the issue of transparency in Section 2 of this determination on 3G spectrum costs. The comments there focused primarily on the treatment of 3G spectrum costs and the voice-only scenarios. Our focus in this section, however, is on the specific grounds of appeal that H3G has raised.

²Ofcom's MCT Statement, paragraph 9.81.

³Ofcom's bilateral hearing of 29 August 2008, transcript, pp92–98, and slides (see above).

MCT Statement, 5.9ppm, was within that range (see paragraphs 10.13 to 10.18 above). In the light of that, in our view H3G's specific criticism is without merit.

- 10.46. We also do not accept that Ofcom did not give any reasons for taking a different view on the appropriate point within a range of cost benchmarks at which to set the charge. Ofcom gave its reasons for the approach it took to choosing the charge control levels in the MCT Statement. Moreover, as set out in paragraph 10.45 above, Ofcom's choice of charge control level was consistent with the position it took in the September 2006 Consultation.
- 10.47. For those reasons, we do not accept H3G's arguments that Ofcom's selection of H3G's TAC from the range of scenarios that its modelling generated lacked transparency or that Ofcom failed to provide sufficient reasons for its decision.

Risk

- 10.48. H3G argued that in selecting the appropriate level of the charge from the range generated by the scenarios Ofcom did not take adequate account of the specific and higher risks faced by H3G. H3G argued that it should have a higher risk premium because it was a 3G-only late entrant operator.
- 10.49. As a preliminary point, this argument is linked to the one that Ofcom, without reason, removed 0.6ppm of 'risk allowance' between the September 2006 Consultation and the MCT Statement. In so far as H3G's arguments on risk rest on that comparison, we do not think they are well founded for the reasons give above in paragraphs 10.41 to 10.47.
- 10.50. As to the substance, Ofcom acknowledged that for the 3G networks there was greater uncertainty around future traffic volumes compared with the 2G networks, primarily because of uncertainty about the rate of take-up of 3G data services. Ofcom stated that it took this risk into account in the selection of its scenarios. The range of cost benchmarks generated by the scenarios was wider for the 3G-only operator than for the 2G/3G operators. Ofcom agreed with H3G that the size of this range was an indicator of investment risk associated with 3G. Ofcom selected a higher TAC for H3G, and one that was further above the mid-point of the applicable range (0.7ppm above the midpoint compared with 0.5ppm above for the 2G/3G MNOs' TAC). H3G's appeal on this point rests on this approach being insufficient.
- 10.51. However, in our judgement H3G has not made a satisfactory case that it faces higher risks that Ofcom failed to take into account and that are, in particular, attributable to its position as a new entrant and a 3G-only operator. Nor has H3G explained what the nature of these risks is. Ofcom has in its cost model already allowed for cost asymmetries associated with H3G having a lower market share and being a 3G-only operator, and the economies of scope enjoyed by operators of both 2G and 3G networks.¹
- 10.52. Even if it were the case that H3G faced higher risks than other MNOs, H3G has not suggested how the greater risks it faced should be assessed, quantified or specifically taken into account in setting charges other than by arguing that Ofcom should have identified a level which was higher than the level which it did identify. H3G has also not explained why taking a different point in the range identified by Ofcom would

¹H3G has criticized Ofcom's market share forecasts and its depreciation methodology. These criticisms are dealt with in separate sections of our determination on those subjects.

have been an appropriate way of taking account of this risk. We note the Interveners' comments above (in paragraphs 10.35 to 10.38) on whether such risk should be reflected in H3G's cost of capital. The risks to profitability associated with demand for MCT services contracting or expanding are systematic risks and will be reflected in the cost of capital that H3G needs to pay. However, H3G has not demonstrated that MCT is more risky for H3G than for the 2G/3G MNOs in any way that is relevant to the cost of capital, and it has not argued that it should have a higher cost of capital than the other MNOs.

- 10.53. We also think that, in any consideration of the risks faced by H3G, account should be taken of the fact that it obtained a 3G licence that had been reserved for a new entrant, and that it paid less for its licence than was paid for an equivalent one that was not so reserved. Risk specific to a new entrant 3G-only operator might therefore have been reflected in the price it was willing to pay.
- 10.54. Furthermore, all operators of 3G networks face risks associated with uncertainty in relation to the growth in 3G traffic. A large part of this uncertainty is related to growth in data traffic. H3G has not provided a good reason why MNOs should be allowed to levy higher MCT charges to compensate them for risks which they face in the delivery of data services.¹
- 10.55. For those reasons, we do not accept H3G's argument that Ofcom failed properly to take the risks it faced into account when identifying H3G's TAC or that it should have selected a higher TAC to reflect a risk premium.

Determination

- 10.56. For the reasons set out above, our determination is that the price controls imposed on H3G have not been set at a level which was inappropriate because Ofcom erred in selecting the charge to be imposed from the values generated by the scenarios it used for the reasons set out in paragraphs 10.1 to 10.4 of the H3G Amended Price Control Appendix.

¹We recognize that there are economies of scope associated with the supply of voice and data services on 3G networks, but, as far as H3G's appeal is concerned, these are already reflected in Ofcom's consideration of voice-only scenarios and we are not persuaded that they justify selecting a higher TAC for H3G.

11. The 2G/3G target average charge: Reference question 4

- 11.1. This section sets out the CC's conclusions as to whether the level of TAC set for each of the 2G/3G MNOs, of 5.1ppm, is inappropriate because Ofcom erred in basing its modelling of costs on ED methodology, for the reasons set out in paragraphs 5.1 to 5.5 and 11.1 to 11.6 of the H3G Amended Price Control Appendix.
- 11.2. For the reasons given below, we do not consider that the level of TAC set for each of the 2G/3G MNOs is inappropriate because Ofcom erred in basing its modelling of costs on ED methodology, for the reasons set out in paragraphs 5.1 to 5.5 and 11.1 to 11.6 of the H3G Appendix.

Ofcom's methodology

- 11.3. In its March 2007 MCT Statement, Ofcom set charge controls that were to apply to all MNOs for four years, from 2007/08 to 2010/11. Ofcom's methodology, broadly, was to select a TAC for 2010/11 that was based on an assessment of the efficient cost of providing MCT in that year. The TAC was to apply as a cap on what the MNOs could charge for MCT, on average, in that year. Ofcom then set a glide path for each MNO. The function of the glide path was to determine how, over the period of the charge controls, the MCT charges of the various MNOs were to decrease until they converged with the TAC in 2010/11.
- 11.4. Ofcom set different charge controls for the 2G/3G MNOs (Orange, O2, T-Mobile and Vodafone) on the one hand and for the 3G-only MNO (H3G) on the other. The 2G/3G MNOs were set a TAC of 5.1ppm for 2010/11, and H3G was set a TAC of 5.9ppm for 2010/11 (in 2006/07 prices).

H3G's grounds of appeal

- 11.5. H3G's appeal focused primarily (other than in relation to its preferred net payment zero remedy) on the level of its own TAC and its glide path. However, it also argued that Ofcom erred in certain respects with the result that the 2G/3G MNOs' TACs were set at too high a level. In particular, H3G argued that:
- (a) Ofcom erred in using its ED methodology under which the 2G/3G MNOs, being in their 'later years' of operation, were over-recovering their costs, whilst H3G, being in its 'early years' of operation, was under-recovering its costs. This situation was said to be detrimental to competition.¹
 - (b) Ofcom's market share forecast for the 3G-only operator was over-optimistic, and consequently the market share forecasts for the 2G/3G MNOs were too low.²
 - (c) Ofcom failed to take into account the lower risk attaching to the forecasts around 2G investments compared with 3G investments, and should have taken a different approach to selecting the 2G/3G TACs on the one hand and the 3G-only TAC on the other.³

¹H3G's Amended Price Control Appendix, paragraphs 11.2–11.4.

²ibid, paragraph 11.5.

³ibid, paragraph 11.6.

Assessment

- 11.6. H3G's criticisms of the level of the 2G/3G MNOs' TACs are in substance the same as those advanced in relation to Reference questions 3(ii) (on Ofcom's choice of ED methodology) and 3(v) (on Ofcom's selection of the H3G charge from the values generated by the scenarios used), and the issue of market shares.
- 11.7. For the reasons given in Sections 7, 10 and 15 of this determination on those questions and issues, we do not accept H3G's arguments on the level of the 2G/3G MNOs' TACs.

Determination

- 11.8. For the reasons set out above, our determination is that the level of TAC set for each of the 2G/3G MNOs, of 5.1ppm, is not inappropriate because Ofcom erred in basing its modelling of costs on ED methodology, for the reasons set out in paragraphs 5.1 to 5.5 and 11.1 to 11.6 of the H3G Amended Price Control Appendix.

12. Blended charge determination: Reference question 5

- 12.1. This section sets out the CC's conclusions as to whether Ofcom erred in setting a blended TAC for the 2G/3G MNOs rather than specifying separate rates for termination on 2G and 3G networks for the reasons set out in paragraphs 12.1 to 12.8 of the H3G Amended Price Control Appendix.
- 12.2. For the reasons given below, our determination is that Ofcom did not err in setting a blended TAC for the 2G/3G MNOs.

Ofcom's methodology

- 12.3. Ofcom's approach to determining the appropriate levels for MCT charge controls for the 2G/3G MNOs was to set for each year one TAC that would apply to calls terminated on both their 2G and 3G networks. Ofcom stated that a single charge which applied without distinction to 2G and 3G MCT would tend to encourage MNOs to use the more efficient technology, subject to wider considerations concerning roll-out of 3G networks and services. Ofcom considered that the question of which technology was the most efficient might be complex, potentially involving considerations of long-run and short-run marginal costs, reversibility or irreversibility of traffic migration etc. Ofcom said that it might be the case, for example, that the marginal costs of 2G termination were currently below those of 3G termination but that this position might reverse as traffic migrated to the 3G networks, so that an MNO taking a long-term view would consider 3G the more efficient technology (even if 3G costs were above those of 2G in the short term). In Ofcom's view it was appropriate that regulatory decisions concerning charge controls should enable MNOs to make undistorted choices about the efficient technology and the timing of migration.¹
- 12.4. Ofcom also stated that there were practical reasons why separate controls applied on a call-by-call basis would be problematic, as whether a call was terminated on a 2G or a 3G network depended on the capability and location of the called phone, and furthermore, the calling party or their originating operator could not control on which network a call was terminated, and the network used to terminate the call might even change while a call was in progress.²

H3G's grounds of appeal

- 12.5. H3G argued that Ofcom erred in setting a blended TAC for the 2G/3G MNOs rather than regulating 2G and 3G MCT rates separately and, in particular, that Ofcom failed to consider properly the impact of this on the economic incentives to migrate from 2G to 3G.³ It elaborated on this basic point in a number of ways.
- 12.6. H3G submitted that Ofcom's attempt to explain its approach as being required by 'technology neutrality' was inadequate. It argued that a single undifferentiated charge control provided incentives for those that had not spent as significantly on a 3G network to slow migration to 3G to the disadvantage of consumers generally, and that setting a single price control, based on assumptions about migration which were fixed for the duration of the price control, would have an adverse impact on migration incentives. H3G explained that this was because combined operators would be able to earn a different actual margin from minutes on one technology compared with

¹Ofcom's MCT Statement, paragraphs 9.15–9.18.

²*ibid.*, paragraphs 9.18 & 9.19.

³H3G's Amended Price Control Appendix, paragraph 12.1.

another by choosing migration patterns different from those assumed in setting the price controls. In practice, H3G said that this meant combined operators would therefore have the incentive and ability to increase use of the technology which allowed the greater margin under the blended price control.¹

- 12.7. H3G argued that Ofcom was required to be technologically neutral² and that incentive effects on all relevant market participants needed to be taken into account to achieve that. H3G submitted that, in this case, the result should have been neutral in terms of the incentives to maintain customers on 2G; that the MCT Statement was weighted in favour of 2G technology; and that Ofcom did not make a proper analysis of this issue.³
- 12.8. Similarly, H3G argued that the blended TAC in providing a potential financial incentive for the combined 2G/3G MNOs to delay migration risked distorting the development of the 3G mobile communications sector in an adverse way, contrary to section 4 of the 2003 Act.⁴
- 12.9. H3G stated that, while Ofcom recognized that migration was a complex issue, it failed to address it properly, in effect assuming that the issue only arose if there were separate price controls for 2G and 3G. H3G said that Ofcom rejected H3G's concerns on the basis that avoiding a linkage between the 2G MNOs' actual migration behaviour and the level of the regulated charge avoided distortion of the 2G MNOs' incentives about optimal migration strategies. H3G disagreed with this on the basis that:
- (a) The level of a price control impacted on the level of profits arising from 2G call termination and this would affect migration incentives. Some customers at least would be more profitable as 2G customers as a result of the single TAC than they would otherwise have been. H3G said that Ofcom should have recognized this and addressed the issue head on.
 - (b) The regulatory price control might have an effect on migration, but the effect should not be distortive if the price control was based on costs derived from actual migration patterns. Under Ofcom's approach, however, that would only be the case if operators chose to migrate customers at the same rate as Ofcom's price cap calculations assumed.⁵
- 12.10. H3G argued that Ofcom could have negated any such disincentive to migrate by setting a TAC for 2G MCT at a suitable level compared with the 3G TAC. H3G said that a single charge would allow MNOs to earn excess profits in 2G call termination.⁶
- 12.11. H3G argued that Ofcom also ignored the fact that the relative balance of profitability of different types of customer was influenced by the regulatory price cap set. It said that in maximizing its profits and making a decision around the extent to which customers should be migrated, an individual operator needed to consider the difference in the profitability of a 2G and 3G customer compared with the cost of upgrading a customer to 3G. Changing the 2G call termination price cap would have an effect on the differential in average revenue per user between 2G and 3G and so, at the margin, influence the optimal rate of 3G migration for an individual operator. By

¹ibid, paragraph 12.2.

²Pursuant to section 4 of the 2003 Act, reflecting Recital 18 of the Framework Directive (Directive 2002/21/EC).

³H3G's Amended Price Control Appendix, paragraph 12.3.

⁴ibid, paragraph 12.4.

⁵ibid, paragraph 12.5.

⁶ibid, paragraph 12.6.

assuming a migration rate and then setting a blended rate, H3G argued that Ofcom had created an incentive for combined operators to use more of the (now) lower-cost 2G technology. This meant that their actual 2G per unit costs were lower than the price cap, increasing their margin.¹

12.12. Finally, H3G argued that Ofcom's approach:²

- (a) failed to appreciate that the efficiency of a technology was influenced by the speed at which it reached scale (the rate of migration): by reducing incentives to migrate, Ofcom was reducing the ability of 3G to reach scale and hence achieve its long-run efficiency;
- (b) failed to appreciate that 3G was a rapidly evolving technology: Ofcom's model assumed that all technologies remained at their current levels of efficiency; 2G was a stable mature technology and unlikely to achieve further efficiency gains, whereas 3G was still rapidly evolving and improving its efficiency; and
- (c) concentrated solely on one service delivered by the technology: consumers increasingly expected a range of mobile broadband services and the overall efficient solution in terms of technology was not likely to be a technology (such as 2G) which was focused on delivering voice services.

Ofcom's arguments

Incentives

12.13. Ofcom illustrated by reference to the following example that blended charges were more likely to incentivize efficient migration from 2G and 3G networks as they created an incentive to use whichever technology was the more efficient at the margin, which would depend on marginal costs and how these might vary with output or over time:³

- (a) Suppose that a supplier could use one of two alternative technologies (X and Y) to produce a particular service. Producing that service using technology X incurred a constant marginal cost of 4; producing it using technology Y incurred a constant marginal cost of 6. If the price of that service was charge controlled, the supplier's incentives to use technologies X and Y would be affected by the structure of the charge controls, ie by whether those controls are blended (with the same charge control level applied to both X and Y) or unblended (with different charge control levels applied to X and Y).
- (b) Under a blended charge control, the supplier would have an incentive to use the production technology with the lower marginal cost (ie technology X). Moreover, this incentive would arise irrespective of the actual level of the blended charge control. Rather, whether the blended charge control is set at 4 or 6 (or at some other level) would simply influence the profitability of providing the service.
- (c) Under an unblended charge control, the supplier's incentives to use technology X or Y would depend on the relative margin that it earned on each technology. For example, if the charge controls were set at 4 (when the service was produced

¹ibid, paragraph 12.7.

²ibid, paragraph 12.8.

³Ofcom's Price Control Defence, paragraph 2.3.1.

using technology X) and 6 (when the service was produced using technology Y), the supplier would be indifferent about which technology it used because the profit margin it earned on each service would be the same. In this case, the supplier would be indifferent about whether or not it produced the service using the technology with the lower marginal cost. Moreover, if the charge controls were set at 4 (in relation to technology X) and 6.1 (in relation to technology Y) then the supplier would be incentivized to use technology Y because it would earn a higher margin, even though it would be using the technology with the higher marginal cost. Unblended charge controls may thus increase the cost of supplying the service in question.

- 12.14. In response to H3G's argument that a blended charge would slow migration to 3G networks, Ofcom said that H3G was implicitly arguing that 3G technology was less efficient at the margin than 2G technology, and that it was not clear that this was the case. Ofcom submitted that which was the more efficient would depend upon the marginal costs, how these varied over time and whether short- or long-run costs were the more relevant to MNOs, as well as how spectrum costs would be taken into account. Ofcom concluded that these were all complex matters, but that one of the advantages of a blended charge was that the extent to which calls were terminated on 2G and 3G networks was left to the judgement of the MNOs facing undistorted incentives.¹
- 12.15. Ofcom argued that there were also practical reasons for setting a blended charge. In particular, it noted that MNOs had set one charge even when 3G services were not regulated and that MNOs could not currently control directly which network they used to terminate calls on a call-by-call basis. The termination network was determined by the call recipient's handset, with dual mode (2G/3G) phones programmed to default to 3G mode where 3G coverage existed. All calls to 2G-only phones and all calls to dual-mode phones which were outside a 3G coverage area were terminated using an MNO's 2G network. In addition, neither the originating operator nor the calling party would be aware of the identity of the network on which a call was terminated or be in a position to respond to any price signals if different prices were charged.²
- 12.16. In response to the particular arguments put forward by H3G, Ofcom argued the following:
- (a) An incentive to promote efficient use of technology at the margin was in consumers' interest, and H3G had failed to explain the basis for claiming that slower migration (than might be the case with separate charges) would be to the disadvantage of consumers.³
 - (b) It was unclear whether 3G was less efficient at the margin and whether migration would therefore be discouraged by a blended charge.⁴
 - (c) By setting a blended charge, Ofcom had acted in a manner consistent with its duties, as in setting a blended charge it was promoting efficient use of technology. Ofcom considered that its approach to setting charges was technology neutral as it did not distort incentives as to which technology to use.⁵

¹ibid, paragraph 2.3.2.

²ibid, paragraph 2.3.4, and Ofcom's MCT Statement, paragraph 3.156.

³ibid, paragraph 2.4.5.

⁴ibid, paragraph 2.4.6.

⁵ibid, paragraph 2.4.8.

(d) It did not accept H3G's interpretation of the most efficient technology being the technology with the lowest current cost under Ofcom calculations. Ofcom said that its approach was not to distort incentives and to leave it to the MNOs to determine their migration strategies, and that it would expect them in doing so to take into account all the factors cited by H3G (and set out in paragraph 12.12 above).¹

Profitability

12.17. Ofcom did not accept that additional profits from using the more efficient technology, at the margin, should be considered to be excess profits, but rather reflected a reward from outperforming the charge control by adopting a more efficient 2G/3G migration strategy.²

12.18. Ofcom added that, even if H3G were correct in asserting that the blended charge controls would encourage slower migration to 3G networks, Ofcom's modelling suggested that this might have no material impact on average ppm costs in the final year of the charge control and therefore would not affect the level at which the charge controls were set. This result suggested to Ofcom that 'any profitability effect might not be particularly large'.³

12.19. Ofcom also had a number of questions about how H3G proposed that the separate 2G and 3G charges would be calculated. In particular, Ofcom argued that H3G had not been clear on the basis that separate 2G and 3G charges would be set or on the objectives that H3G would be seeking to achieve in proposing that there should be separate charges.⁴ Ofcom also considered that separate charges would raise some practical difficulties.⁵

Assessment

12.20. We have considered H3G's arguments under three headings: the potential implications of the blended charge for the incentives MNOs have to encourage migration to 3G networks; whether the blended charge should be considered to be technologically neutral; and the potential implications of the blended charge for the profitability of the 2G/3G MNOs.

12.21. Our assessment of these arguments does not depend on any assumptions on the cost structures of the 2G and 3G networks or how they compare, but the fact that the service provided by MNOs in terminating calls on their 2G and 3G networks is essentially the same is important to our conclusions.

12.22. We also note that H3G and Ofcom agree that in considering the implications of the blended charge the key issue is the effect that this will have on the behaviour of MNOs and, in particular, the incentives to encourage the take-up of 3G services.

¹ibid, paragraph 2.4.10.

²ibid, paragraph 2.4.12.

³ibid, paragraph 2.4.15.

⁴ibid, paragraphs 2.4.16–2.4.19.

⁵ibid, paragraph 2.3.4.

Implications for migration

- 12.23. H3G argued that the blended charge would give the 2G/3G network operators a financial incentive to discourage migration to the detriment of consumers because the 2G networks are the lower-cost technology and that with a blended charge MNOs would earn a higher margin over cost when terminating traffic on their 2G, rather than 3G, networks.
- 12.24. H3G did not present evidence to support its statement that the 2G networks are the lower-cost technology. Nor did H3G explain on what measure of cost this would be the case. Ofcom's estimates of physical network costs per minute terminated¹ for the 2G networks are actually lower than those for the 3G networks, although we agree with Ofcom that marginal costs would also be relevant to this issue.
- 12.25. Ofcom argued that generally a blended charge would be preferable to separate cost-based charges as a single charge would promote efficiency by providing a profit incentive for MNOs to minimize the cost of termination services through the use of the technology that was the more efficient at the margin (see the example in paragraph 12.13 above). Ofcom also said that which technology is considered the more efficient would depend on marginal costs and how these might vary with output or over time. H3G did not provide any argument or evidence as to why that point is wrong.
- 12.26. H3G said that MNOs, in making a decision as to the extent to which they will encourage customers to take up 3G services, would consider the difference in the profitability of a 2G and 3G customer compared with the cost of upgrading a customer to 3G. We agree, and also consider that if the MCT rates received by MNOs are the same for terminating calls on 2G and 3G networks, an MNO's voice termination business would add to its incentives to encourage migration if terminating more calls on the 3G network would reduce its MCT costs. An MNO's incentives to maximize its profits will therefore be aligned, as Ofcom argues, with minimizing its MCT costs under a blended charge. Given that the service provided (MCT) is essentially the same on both 2G and 3G networks, a blended charge would therefore promote an efficient outcome.
- 12.27. We also agree with Ofcom that if there were separate charges for termination on 2G and 3G networks, MNOs would not necessarily have an incentive to minimize their termination costs. This is because an MNO may have an incentive to terminate more calls on a particular network, even if doing so would increase its termination costs, if it could charge more for terminating calls on that network.
- 12.28. H3G stated that Ofcom, in arguing the 'congruence between cost minimisation and profit maximisation', had not taken into account the benefits to be had from increasing the scale at which its 3G network would be operating and the expected developments in the 3G technology.² H3G also argued that Ofcom's analysis concentrated only on the MCT service.
- 12.29. We do not accept these arguments. H3G has argued that an MNO's incentives to encourage migration would depend on its assessment across of all its services of the additional profits to be had from encouraging subscription to its 3G services, and we agree that it is reasonable to expect that in making this assessment MNOs will con-

¹ie excluding 3G spectrum costs.

²H3G's Amended Price Control Appendix, paragraph 12.8.

sider all relevant factors listed by H3G.¹ However, Ofcom's approach has been to consider the contribution that the MCT service would make to these incentives and to ensure that price controls are not set in a way that would encourage an inefficient outcome.

12.30. We also reject H3G's argument that the blended charge would disadvantage consumers. Whilst we acknowledge that MNOs might have more incentive to encourage migration to 3G networks if there were a separate and higher 3G MCT rate, we do not consider that it would be in the interests of consumers to allow MNOs to charge these higher rates. This is because the increased incentives to encourage migration would be being driven by an ability to charge higher prices for a service that is essentially the same whether provided on a 2G or 3G network.

12.31. For all these reasons, we reject H3G's arguments that the blended charge could provide MNOs with an incentive to discourage migration that would be to the disadvantage of consumers.

Technological neutrality

12.32. H3G argued that Ofcom was required to be technologically neutral² and that charges should be neutral in terms of the incentives to maintain customers on 2G networks. H3G claimed that the MCT Statement was weighted in favour of 2G technology,³ and that the blended charge risked distorting the development of the 3G mobile communications sector in an adverse way, contrary to section 4 of the 2003 Act.⁴

12.33. It is not contested that section 4(6) of the 2003 Act requires Ofcom to take account of the desirability of carrying out its functions in a manner which, so far as practicable, does not favour one form of electronic communications network, service or facility over another.

12.34. The disagreement between the parties relates to the question of what constitutes a technologically-neutral charge. H3G argued that Ofcom could not avoid the fact that the regulation of termination rates would affect incentives, but that if the price controls were based on costs these should not be distortive. H3G said that under Ofcom's approach the blended charge would only not be distortive if operators chose to migrate customers at the same rate as Ofcom's price cap calculations assumed. Ofcom's view was that the charge controls would be technologically-neutral if they did not distort the incentives of MNOs to use whichever technology was the more efficient at the margin.⁵

12.35. In our judgement, H3G's position is the less reasonable of the two. Separate charges could not, in our view, properly be described as technologically neutral as they could lead to MNOs preferring one technology over another in the delivery of essentially the same service, at the margin, because of differences in the charges set rather than because the technology would allow the MNO to deliver the service more efficiently.

¹ibid, paragraph 12.8.

²Pursuant to section 4 of the 2003 Act, reflecting Recital 18 of the Framework Directive.

³H3G's Amended Price Control Appendix, paragraph 12.4.

⁴ibid, paragraph 12.2.

⁵Ofcom's Price Control Defence, paragraph 2.4.8.

Profitability

- 12.36. H3G argued that the blended charge would allow MNOs to earn excess profits in 2G call termination. Ofcom dismissed this argument on the basis that higher profits should not be regarded as excessive but a reward for achieving greater efficiency.¹
- 12.37. We accept that 2G/3G operators might be able to increase their profits from the provision of voice termination services by exploiting differences in costs, at the margin, between terminating calls on the 2G and 3G networks. However, the possibility for 2G/3G network operators to increase their profits would also exist with separate charges. This is because estimates of unit costs, upon which separate charges would presumably be based, would require assumptions to be made on migration rates and therefore the proportions of call minutes that are terminated on the 2G and 3G networks. The estimates of unit costs will therefore depend on assumptions on migration rates. An MNO may be able to increase its profits by seeking to terminate more or fewer voice calls on its 3G network than implied by these assumptions. Over time, the relative costs of termination on the different networks may also change, and unless the separate charge controls were constantly updated, this would create opportunities to increase profits by terminating more calls on one rather than another network as well.
- 12.38. Furthermore, with the blended charge, MNOs may have an opportunity to increase profits by cutting costs but this would not be achieved at the expense of consumers as MCT rates would remain the same. With separate charges, however, higher profits could be achieved to the detriment of consumers as the result could be higher termination costs and higher MCT rates overall.

Practicality

- 12.39. We have not found it necessary to take a view on points made by Ofcom in relation to the calculation or practicability of separate 2G and 3G charges.²

Determination

- 12.40. For the reasons set out above, our determination is that Ofcom did not err in setting a blended TAC for the 2G/3G MNOs rather than specifying separate rates for termination on 2G and 3G networks for the reasons set out in paragraphs 12.1 to 12.8 of the H3G Amended Price Control Appendix.

¹ibid, paragraph 2.4.8.

²ibid, paragraphs 2.4.16–2.4.19.

13. Glide path determination: Reference question 6

- 13.1. This section sets out the CC's conclusions as to whether Ofcom erred in setting H3G's glide path for the reasons set out in paragraphs 7.2 to 7.4 of the H3G Amended Price Control Appendix.
- 13.2. For the reasons given below, we do not consider that Ofcom erred in setting H3G's glide path for the reasons set out in paragraphs 7.2 to 7.4 of the H3G Amended Price Control Appendix.

Ofcom's methodology

- 13.3. In its March 2007 MCT Statement, Ofcom set charge controls that were to apply to all MNOs for four years, from 2007/08 to 2010/11. Ofcom's methodology, broadly, was to select a TAC for 2010/11 that was based on an assessment of the efficient cost of providing MCT in that year. The TAC was to apply as a cap on what the MNOs could charge for MCT, on average, in that year. Ofcom then set a glide path for each MNO. The function of the glide path was to determine how, over the period of the charge controls, the MCT charges of the various MNOs were to decrease until they converged with the TAC in 2010/11.
- 13.4. Ofcom considered that, in broad terms, the path of reductions in charges (ie the glide path) should give due consideration to balancing two objectives:¹
- (a) reductions should be achieved sufficiently quickly in order to deliver substantial benefits to consumers, including benefits to be derived by addressing possible competitive distortions; and
 - (b) reductions should allow sufficient time for operators and customers to adjust to new levels and structures of mobile charges and take these changes into account in their business plans and planned capital expenditure.
- 13.5. Ofcom characterized this balance as being between serving the short-term welfare of consumers (through lower prices and hence immediate reductions of prices to a level consistent with the underlying costs), and maintaining efficient investment incentives for existing and prospective network operators (which benefit consumers in the longer term).² Nevertheless, where a provider has significant market power (SMP) and, in the absence of regulatory controls, has set charges materially above cost, Ofcom stated that a smooth glide path which reduces charges over an extended period might be considered to allow that provider to continue to set excessive charges.³
- 13.6. Ofcom set different glide paths for each type of operator (2G/3G 1800-MHz-only, 2G/3G 900/1800 MHz, and 3G-only) that reflected the TACs that had been set for each operator type in 2010/11 and the starting points, being the MCT rates that were set immediately prior to the price control period. As H3G's MCT rates had previously been unregulated, whereas those of the 2G/3G MNOs had been, the difference between H3G's starting point and its 2010/11 TAC was relatively large and Ofcom therefore considered the approach to take to H3G's glide path separately.

¹Ofcom's MCT Statement, paragraph 9.172.

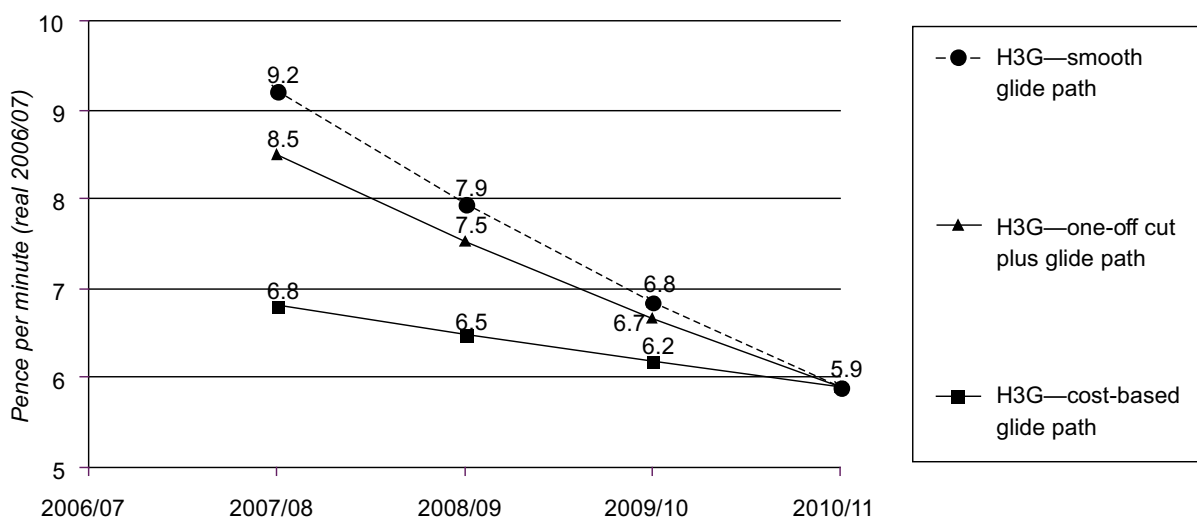
²ibid, paragraph 9.175.

³ibid, paragraphs 9.175 & 9.176.

13.7. Ofcom determined that H3G's charges were well in excess of the cost-based level to which they needed to fall by 2010/11, so in its September 2006 Consultation document Ofcom identified three possible options: a smooth glide path (option 1), an immediate reduction through a partial one-off cut followed by a less-steep smooth glide path (option 2), and an immediate reduction to cost (Option 3). The effects of these three options are illustrated in Figure 13.1.¹

FIGURE 13.1

Glide path options for H3G



Source: Reproduction of Figure 9.4 from Ofcom's MCT Statement.

13.8. Ofcom stated that to allow H3G to benefit from a smooth glide path from its high unregulated level of charges could perpetuate a situation where consumers faced a material detriment.² Ofcom also told us that in this case, the impact of charges well above cost potentially went beyond the straightforward detriment to consumers of higher prices. This is because it was likely that some of the excess revenue would be passed on to H3G's subscribers leading to distorted retail prices. Moreover, given that the 2G/3G MNOs' rates were much closer to their efficient 2010/11 levels, Ofcom considered that allowing only H3G to significantly subsidize its retail prices from high MCT charges would compound the adverse effect on competition and consumer choice.³ Ofcom also stated that H3G had been aware of the possibility of the charge control and the possible charge levels for some time, and therefore had had the opportunity to evaluate how to implement a charge control similar to that that Ofcom was proposing. Ofcom noted that, in effect, H3G's 2006 business plan assumed a reduction in its termination charges in 2007/08.⁴

13.9. Conversely, Ofcom stated that a sharp and immediate reduction to cost would go beyond regulatory precedent and might not be in the long-term interests of consumers if it presented a material risk to further investment in mobile services.⁵

¹ibid, paragraph 9.184.

²ibid, paragraph 9.185.

³Ofcom's Price Control Defence, paragraph 4.2.7.

⁴Ofcom's MCT Statement, paragraphs 151 & 9.191.

⁵ibid, paragraph 9.191.

13.10. Having considered responses to its September 2006 Consultation, Ofcom concluded that the second option of requiring a one-off cut and then a smooth glide path to H3G's TAC in 2010/11 would be the most appropriate glide path option. In Ofcom's view this option best struck the balance between the short-term and long-term consumer interest.¹

H3G's grounds of appeal

13.11. H3G submitted, broadly, that Ofcom's reasoning in respect of the glide path fails to give weight to a number of factors, which it listed in its Amended Price Control Appendix. It argued that in the light of those factors, at the very least, the glide path should not require a reduction in H3G's MCT rate until at least two years after an 'effective' and 'seamless' MNP system has been implemented.²

Assessment

Preliminary remarks

13.12. Before examining each factor that H3G cited, we would make the following preliminary remarks:

- (a) H3G supplemented its case on the glide path in its Amended Schedule of Evidence with a section on asymmetric regulation.³ H3G's arguments in this regard, and our general conclusions on asymmetry, are set out in Section 5 on Reference question 2 and are not repeated here.⁴
- (b) A number of the specific arguments H3G deployed in support of its case on the glide path have been dealt with at length in other sections of this determination. Where that is the case, the argumentation of each party, and our conclusions on the point, are not set out in detail in this section.
- (c) H3G's argument that the glide path should not require a reduction until at least two years after a new MNP system has been implemented would mean in practice that no reduction should be required in this price control period. The Tribunal has found that Ofcom did not err in imposing a price control on H3G.⁵ Although it has not been necessary for us to decide the point, we have doubts as to whether, in the light of the Tribunal's judgment, such a determination on the glide path would be open to us.

H3G's traffic imbalance, MNP and the competitive impact of these factors

13.13. H3G argued that Ofcom should have had regard, when setting the glide path, to the inadequate MNP system currently in place and the negative effect that reducing H3G's MCT rate whilst not reducing those of the other MNOs would have on competition. It argued that the MNP system contributed to its traffic imbalance and that the traffic imbalance resulted in it making net interconnection outpayments to its competi-

¹ibid, paragraph 9.190.

²H3G's Amended Price Control Appendix, paragraphs 7.2–7.4.

³H3G's Amended Schedule of Evidence, 6 June, paragraphs 5.1–5.19.

⁴In summary, we concluded that H3G had not made good its case that it should have been allowed to benefit from further non-cost-based asymmetric treatment (beyond that already allowed pursuant to its glide path).

⁵Judgment on non-price control matters [2008] CAT 11 (NPC Judgment).

tors, hampering its ability to act as a maverick competitor and allowing its competitors further to combat its competitive offerings.¹

13.14. These are the same arguments as were made in the context of Reference question 2, and we are not persuaded by them for the reasons set out in Section 5 of this determination on that reference question.

Welfare analysis

13.15. H3G argued that Ofcom should have had regard to the fact that the glide path was unlikely to lead to any significant short-term consumer benefit given H3G's 4 per cent market share of subscribers. It also argued that any benefits would likely be diluted at the retail level because of fixed-to-mobile retention (ie a failure by FNOs to pass on any reductions in wholesale MCT rates to their retail customers). From a long-term perspective, H3G submitted that the negative impacts of the glide path would be more significant, as the glide path would inevitably have a detrimental impact on H3G's investment incentives, its ability to compete, and on mobile pricing. H3G said that on a proper welfare analysis, the gain from reducing H3G's MCT rate would be marginal at best, but the detriments would be significant.²

13.16. As to this line of argument:

- (a) Ofcom's welfare analysis was undertaken in order to decide whether regulation should be imposed at all. It was not used to determine the precise levels of the price controls.³ H3G's criticisms of Ofcom's welfare analysis were dealt with and dismissed by the Tribunal as non-price control matters.⁴ As such, and as set out in Section 6 of this determination on Reference question 3(i), we do not consider Ofcom's welfare analysis to be relevant to the levels at which the price controls have been set, and therefore do not consider it to be relevant to H3G's glide path.⁵
- (b) We do not accept that the possibility of fixed-to-mobile retention provides sufficient justification for interfering with Ofcom's choice of glide path. Ofcom submitted that FNOs could be expected to have incentives to set an efficient structure of prices (and therefore that reductions in MCT rates could be expected to be passed through to fixed-line customers).⁶ We consider it plausible that some proportion of reductions in MCT rates will be passed through to fixed-line customers.⁷ In any event, we agree with Ofcom that if there is a retention problem, that would not provide a rationale for looser regulation of MCT, but rather for potential regulatory intervention in the fixed-line market.⁸
- (c) As set out in Section 5 of our determination on Reference question 2, we are not persuaded by H3G's characterization of the impact of the price controls on its competitive position as having a detrimental impact on retail competition generally, nor are we persuaded by H3G's argument that it should be permitted further

¹H3G's Amended Price Control Appendix, paragraph 7.3(a) & (b).

²ibid, paragraph 7.3(c) & (d).

³Ofcom's Price Control Defence, paragraph 5.6.2.

⁴NPC Judgment, paragraphs 187–200.

⁵It appears that H3G accepts this point (Reply of 14 July, paragraph 15.7).

⁶Ofcom's MCT Statement, paragraphs 7.46 & 7.47

⁷We note Ofcom's (unchallenged) statement that approximately two-thirds of cost savings generated by previous reductions in MCT charges has been passed through directly to retail prices (Ofcom's MCT Statement, paragraph 7.47).

⁸Ofcom's Price Control Defence, paragraph 4.3.4.

non-cost-based asymmetry in order to assist it in offering more competitive retail prices.

Ported numbers

- 13.17. H3G argued that Ofcom should have had regard to the fact that the current arrangement for ported numbers has a significant impact on the effective average charge that H3G achieves.¹ At present, when a number is ported from one mobile network to another, calls terminated on that number attract not the MCT rate of the terminating network but that of the network from which the number was ported, less a conveyance fee.
- 13.18. This is the same argument as was made in the context of Reference question 3(iv), and we are not persuaded by it for the reasons given in Section 9 of our determination on that reference question.

Market shares

- 13.19. H3G argued that since Ofcom's modelling assumed it would achieve a 20 per cent market share in 2016/17, even though it did not give H3G an allowance for its CARS costs, the glide path should reflect this timing and only require H3G to reach its long-run cost estimate in a similar timescale.² It submitted that requiring H3G's MCT rate to converge to its MCT cost benchmark in 2010/11 was arbitrary in that the timescale merely reflected Ofcom's decision as to how long the price control period should be.³
- 13.20. In support of this argument, H3G cited the European Regulators' Group Common Position on symmetry of fixed and mobile call termination rates which was adopted on 28 February 2008 (the ERG Common Position), telling us that the ERG stated that a factor which may be relevant to the length of transitory period to set a glide path was the fluidity of the market and the churn rate if the mobile market suffers from high switching costs, such as non-effective number portability.⁴
- 13.21. Ofcom responded to H3G's argument by submitting that since Ofcom's cost benchmarks (and therefore H3G's TAC in 2010/11) already incorporated market share assumptions for a 3G-only operator, to grant a further allowance in the form of a shallower glide path would be double counting.⁵ We agree with that point.⁶
- 13.22. We also think it is important to recognize that Ofcom's glide path is not a glide path to symmetry (ie a glide path to a point where each MNO's TAC is the same) but a glide path to a level of costs that an efficient 3G-only MNO would incur in the provision of the MCT service. At the end of the price control period H3G's MCT rate will still be above that of the 2G/3G MNOs under Ofcom's methodology.⁷

¹H3G's Amended Price Control Appendix, paragraph 7.3(e).

²ibid, paragraph 7.3(f).

³H3G's Reply, paragraph 15.11.

⁴H3G's Reply, paragraphs 15.4 & 15.5; H3G stated that its traffic imbalance was also relevant since it contributed to switching costs.

⁵Ofcom's Price Control Defence, paragraph 4.3.12.

⁶H3G's specific criticisms of Ofcom's market share forecasts and its economic depreciation methodology are dealt with in separate sections of our determination on those subjects.

⁷In its response to our provisional determination, H3G questioned whether this conclusion could stand given our determinations in the BT appeal (H3G response to provisional determinations, paragraph 7.3(c)). We consider that it does still stand. Our determination will result in new TACs being set, but (a) the glide paths will remain and (b) cost-based asymmetry is retained in the final year of the charge control period.

13.23. Furthermore, H3G's citation of the ERG Common Position appears to overlook the fact that the ERG uses the term 'glide path' in two contexts:

(a) First, when discussing justifications for asymmetry for a transitory period because of exogenous cost differences, the ERG Common Position states that temporary asymmetries reflecting the different starting points for different operators' glide paths can be legitimate, and that the instantaneous removal of asymmetries that had previously been permitted 'in view of reaching a limited asymmetry based only on exogenous cost differences' may disrupt an MNO's operations or undermine regulatory certainty.¹ That passage refers to glide paths to the level of efficient costs, and Ofcom's treatment of the 3G-only operator's glide path appears to be consistent with it.

(b) Second, the ERG discusses glide paths in the context of a significantly late entrant. One of the factors it identifies as relevant to determining when a late entrant can be expected to reach efficient scale is the fluidity of the market which, in turn, is a function of a number of factors including the effectiveness of number portability.² However, as set out above, Ofcom incorporated market share assumptions, including a period of lower scale of operation due to low market share, directly into its cost modelling through its economic depreciation methodology. This methodology is recognized by the ERG.³

13.24. We therefore do not think that H3G's argument that it should be allowed a glide path above the efficient cost benchmark that was modelled by Ofcom until 2016/17 is supported by the ERG Common Position.

13.25. Finally, the glide path was designed to get from the initial unregulated rate to the 2010/11 TAC. We do not consider that to be entirely arbitrary, given Ofcom's concern over potential disruption if MCT rates were required to come down to the level of efficient costs immediately (or too quickly). More fundamentally, H3G's argument on this point is that it should be permitted a degree of non-cost-based asymmetric regulation for a longer period, and as set out in our provisional determination on Reference question 2, H3G has not persuaded us that Ofcom was wrong not to allow further non-cost-based asymmetry in this case.

Timing of regulation

13.26. H3G argued that Ofcom should have had regard to the fact that an early reduction in its MCT rate (before it had reached scale) to the rate produced by Ofcom's methodology was unfavourable compared with the treatment of other operators, which were all at scale when price controls were imposed. H3G stated that it was being made to reduce its rate only four years after it launched, whereas the other operators were only subjected to regulation eight to ten years after they launched.⁴

13.27. Ofcom did not accept that the timing of regulation of the 2G/3G MNOs' MCT rates was relevant to H3G's glide path. Ofcom said that its decision as regards H3G was to be assessed on its own terms, and not constrained by the previous practice of another regulator acting pursuant to a different legislative framework. In any event, Ofcom submitted that the comparison H3G sought to make was incorrect, as both T-Mobile and Orange had been subject to 'informal regulatory pressure' to lower their

¹ERG Common Position, p85.

²ibid, pp93&94.

³ibid, p89.

⁴H3G's Amended Price Control Appendix, paragraph 7.3(g).

MCT rates within six years of commencement of operations, and because in their early years they set termination charges that were lower than other MNOs' whereas H3G's charges prior to March 2007 were much higher than the 2G/3G MNOs.¹

13.28. We accept Ofcom's submission that the decision to regulate H3G should be assessed on its own terms. We also consider that H3G's comparison is of limited validity because of the factors that Ofcom cites. Furthermore, H3G has not clearly explained why, from a welfare perspective, the fact that other MNOs might have been regulated a certain number of years after they commenced operations should have any impact on its glide path.

H3G's profitability

13.29. H3G argued that Ofcom should have had regard to the fact that H3G was not profitable and would have great difficulty achieving profitability under the current overall regulatory framework.²

13.30. This is an argument about the financial impact of the price controls on H3G, which was an issue dealt with in Section 5 of our determination on Reference question 2, and we are not persuaded by it for the reasons given in that section of our determination.

Regulatory uncertainty

13.31. H3G argued that Ofcom failed to give adequate reasons for its choice of charge within the various scenarios it modelled, and that the lack of explanation of the link between the values generated by the scenarios and the chosen charging levels, and the subsequent general regulatory uncertainty, had an impact on the choice of glide path.³ H3G submitted that, while Ofcom's approach accepted the uncertainty in coming to a view on the efficient cost benchmark, in setting the glide path the uncertainties involved in arriving at that figure are ignored.⁴

13.32. H3G also submitted that Ofcom had, without justification, removed 0.6ppm of 'risk allowance' since the September 2006 Consultation, and that the glide path similarly fails to take account of these risks.⁵

13.33. These are the same arguments as were made in the context of Reference question 3(v), and we are not persuaded by them for the reasons given in Section 10 of our determination on that reference question. Furthermore, we are not persuaded by H3G's logic of linking these issues to the glide path in this case. If there is uncertainty in arriving at an efficient cost benchmark for 2010/11, this uncertainty could be taken into account, if appropriate, when choosing the TAC for that year (ie in choosing the end point of the glide path). We do not accept H3G's argument that, once the choice of TAC has been made, the uncertainty should have a further impact on the glide path.

¹Ofcom also noted that the MCT rates charged by Vodafone and O2 to Mercury Communications were regulated five to six years after launch of their retail services but the charges paid by BT were left unregulated for a longer period (Ofcom's Price Control Defence, paragraphs 4.3.25–4.3.28, and footnote 76).

²H3G's Amended Price Control Appendix, paragraph 7.3(h).

³ibid, paragraph 7.3(i).

⁴H3G's Reply, paragraph 15.6.

⁵H3G's Amended Price Control Appendix, paragraph 7.3(i).

Entry into a saturated market

- 13.34. H3G argued that Ofcom should have had regard to the fact that it had to enter and expand into a saturated market. It submitted that Ofcom's view that H3G could have entered the market in an alternative fashion ignored the fact that T-Mobile and Orange entered a growing market and could acquire incremental customers whereas H3G entered a saturated market and had to win customers from other networks. H3G said that such comments were illustrative of Ofcom's flawed reasoning and failure to take account of the competitive impact.¹
- 13.35. This line of argument is one that was developed in the context of Reference question 2 and concerning Ofcom's market share assumptions, and we are not persuaded by it for the reasons given in the sections of this determination that deal with those questions (Sections 5 and 15).

Determination

- 13.36. For the reasons set out above, our determination is that Ofcom did not err in setting H3G's glide path for the reasons set out in paragraphs 7.2 to 7.4 of the H3G Amended Price Control Appendix.

¹ibid, paragraph 7.3(j).

14. Net payment zero determination: Reference question 7

- 14.1. This section sets out the CC's conclusions as to whether Ofcom should have exercised its powers in such a way that net wholesale payments between MNOs were zero, with suitable cost-based price controls retained for fixed-to-mobile calls, either (a) for the period of the price controls or (b) pending the introduction of revised arrangements for mobile number portability, for the reasons set out in paragraphs 4.1 to 4.7 of the H3G Amended Price Control Appendix.
- 14.2. For the reasons given below, we do not consider that Ofcom erred in not exercising its powers in such a way that net wholesale payments between MNOs were zero, with suitable cost-based price controls retained for fixed-to-mobile (F2M) calls, either (a) for the period of the price controls or (b) pending the introduction of revised arrangements for MNP, for the reasons set out in paragraphs 4.1 to 4.7 of the H3G Amended Price Control Appendix.

H3G's grounds of appeal

- 14.3. In its March 2007 MCT Statement, Ofcom set charge controls that were to apply to all MNOs for four years, from 2007/08 to 2010/11. Ofcom's methodology, broadly, was to select a TAC for 2010/11 that was based on an assessment of the efficient cost of providing MCT in that year. The TAC was to apply as a cap on what the MNOs could charge for MCT, on average, in that year. Ofcom then set a glide path for each MNO. The function of the glide path was to determine how, over the period of the charge controls, the MCT charges of the various MNOs were to decrease until they converged with the TAC in 2010/11.
- 14.4. For each MNO, separate price control conditions were imposed in respect of mobile-to-mobile (M2M) calls (calls originating on mobile networks) and F2M calls (calls originating on fixed networks). However, for each MNO, the price controls in respect of both types of call were set at the same level.
- 14.5. H3G submitted that this overall structure is flawed. It argued that an appropriate remedy would ensure that the payments made by H3G for the other MNOs (the 2G/3G MNOs) for call termination on their respective networks are wholly offset by the payments it receives from the 2G/3G MNOs for call termination on its network. The simplest way of achieving this, according to H3G, was to set MCT rates to zero.¹ This remedy has been referred to throughout these proceedings as net payment zero (NPZ). H3G considered NPZ to be the central issue in the specified price control matters that it had raised.²

H3G's 'substantive' argument

- 14.6. In its Amended Price Control Appendix, H3G set out the following reasons as to why an NPZ remedy should be preferred:³
- (a) H3G has a traffic imbalance (that is, it originates more calls than it terminates) which it said was the result of its status as a new entrant and the inadequacy of

¹H3G's Amended Price Control Appendix, paragraphs 4.2 & 4.3.

²H3G's Amended Supplementary Submission of 30 May 2008, paragraph 1.2(a).

³H3G's Amended Price Control Appendix, paragraph 4.5; many of these factors are dealt with in detail in other sections of our determination. Where that is the case, we do not set out the arguments that relate to them, or our conclusions on them, in detail in this section.

the current UK MNP system, which resulted in material net outpayments in respect of MCT being made to the other MNOs, and NPZ would be justifiable until such a position could be remedied.

- (b) Ofcom's cost modelling involves a number of uncertainties, and NPZ removes the potential for price controls which are based on forecasts that turn out to be wrong to damage competition and investment.
- (c) Ofcom did not model a central case but only a set of ranges with no explanation of how it has picked within them; its approach turns on the accuracy of long-term forecasts and NPZ presents a practical solution to these shortcomings.
- (d) NPZ does not require H3G to make material net outpayments to its competitors and hence does not reduce the ability of H3G to play the role of the maverick, and as such, it promotes competition generally in the mobile sector.
- (e) Ofcom should be reluctant to put in place a price control regime that worsens the competitive dynamics of the market. It should at the very least scrutinize the decision it has reached closely, and has not done so.
- (f) NPZ will eliminate the issue regarding the failure to date to address the arrangements regarding ported numbers¹ and will also mitigate the impact of H3G being regulated a number of years in advance of the point in their business life cycles that the 2G/3G MNOs were regulated.

14.7. Given those factors, H3G argued that Ofcom should have given more weight to an assessment of an appropriate remedy that reflected the special position of a new entrant and the actual impact on competition in relevant markets.² H3G said that the purpose of the NPZ remedy was to facilitate H3G's aim of being able to compete effectively with the 2G/3G MNOs despite its smaller scale and later entry.³ It also said that the remedy could be applicable indefinitely, or as part of a glide path approach while 'fit for purpose' MNP took effect in the UK.⁴

14.8. In support of its case for NPZ, H3G submitted a welfare model that it had commissioned to estimate the likely welfare benefits from its implementation.⁵ It also referred to a number of academic articles which it argued identified 'flaws' in the economic theory behind Ofcom's price controls.⁶ These materials are discussed, where appropriate, below.

14.9. H3G also said that its experience in Hong Kong supported the fact that a move to NPZ would be beneficial. It said that M2M interconnection in Hong Kong had been operated on a 'bill and keep' basis (where there are no interconnection payments between operators) for almost two decades, and that retail pricing there was very simple and consumer friendly.⁷

¹When a number is ported to a mobile network, calls terminated on that number attract not the MCT rate of the terminating network but that of the network from which the number was ported, less a conveyance fee.

²H3G's Amended Price Control Appendix, paragraph 4.6.

³H3G's Amended Supplementary Submission, paragraph 2.1.

⁴H3G's Amended Price Control Appendix, paragraph 4.4.

⁵H3G's Amended Supplementary Submission, paragraphs 2.15 & 2.16; Annex 6.

⁶*ibid*, paragraph 2.20; H3G's Amended Schedule of Evidence, paragraphs 3.3–3.10.

⁷Third witness statement of Kevin Russell for H3G, paragraphs 43–48.

14.10. Finally, H3G argued that NPZ would remove the distortions that the Director General of Telecommunications (DGT) had highlighted to the CC as reported in the CC's 2003 report.¹

H3G's 'process' argument

14.11. In addition to the above, H3G developed a line of argument that Ofcom had not satisfied its statutory obligations under the 2003 Act. This argument was based (primarily)² on section 88 of the 2003 Act, which provides, in part:

88 Conditions about network access pricing etc

(1) OFCOM are not to set an SMP condition falling within section 87(9) except where—

- (a) 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; and
- (b) it also appears to them that the setting of the condition is 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.

(2) In setting an SMP condition falling within section 87(9) OFCOM must take account of the extent of the investment in the matters to which the condition relates of the person to whom it is to apply.

14.12. H3G argued that the statutory framework created a high threshold for Ofcom in relation to price control conditions, and meant that any discretion that Ofcom had was very limited in scope. It submitted that Ofcom erred in giving 'little or no' consideration to a move to NPZ 'or a substantially similar remedy', so that it was not possible to conclude that section 88 had been complied with.³ In support of this position, H3G relied on statements made in Ofcom's skeleton argument of 18 April 2008 which was prepared for a case management conference in this appeal before the Tribunal to the effect that Ofcom would need to carry out a substantial amount of work to consider H3G's (attempted) introduction of a wider NPZ-type remedy into the appeal. H3G submitted on the basis of that material that the MCT Statement as a whole was indefensible and must be set aside.⁴

¹H3G's Amended Supplementary Submission, paragraph 2.19.

²H3G also referred to sections 3 and 6 of the 2003 Act.

³H3G's Amended Supplementary Submission, paragraphs 2.9 and 2.10; H3G's Reply of 14 July, paragraphs 2.8–2.11.

⁴H3G's Reply of 14 July, paragraphs 5.11–5.17.

H3G's evidence on implementation

14.13. During the course of the appeal, H3G recognized that an NPZ system where each MNO would need to have at least two MCT rates (one zero and another non-zero rate) would give rise to a number of potentially problematic practical issues:¹

- (a) Since it would be essential for an MNO and any transit operator to be able to identify the ultimate source of any call (so as to charge the correct MCT rate), the ability to undertake 'A-number' analysis (which enables an MNO to identify the network from which the call originated) and probably also 'trunk group' analysis (which enables an MNO to identify the network from which it received the call) would be needed. H3G said that implementing A-number analysis would take it some time and cost it approximately £[✂].²
- (b) There would be arbitrage risks, because operators that were not part of the zero rate group would have an incentive to take advantage of the zero rate of other operators. H3G said that the risk could be mitigated but that it was doubtful whether it could be fully eliminated. It said that the French telecommunications regulator, ARCEP, had found arbitrage to be a problem under the M2M bill-and-keep system that had operated in France.³
- (c) It was not clear whether zero MCT rates could work with the current MNP arrangements because an MNO would need to correctly identify the location of a ported number in order to know whether or not to apply a zero MCT rate, and, without a central database for MNP, A-number analysis would not be sufficient for this. H3G said that other solutions may require the agreement of new industry standards.⁴

14.14. H3G did not consider that these issues were likely to be insuperable, but said that addressing them would require at least some investment and consequent delay. It also recognized that changes to the existing commercial interconnection arrangements were likely to involve a degree of complexity, and therefore time, in order to address the necessary issues.⁵ It therefore proposed setting a single low MCT rate (suggesting a figure of 0.4ppm) for both M2M and F2M calls.

The Tribunal's ruling on admissibility

14.15. A number of parties objected to the proposal to set a single low MCT rate for all types of traffic, as well as a number of other arguments advanced by H3G, on the grounds that they were outside the scope of its appeal as pleaded in its original Notice of Appeal and Price Control Appendix. That led to a hearing before the Tribunal and a ruling on admissibility handed down on 20 May 2008 (the Admissibility Ruling).⁶ The Admissibility Ruling is relevant to a number of the questions that have been referred to us, but its impact is particularly significant on this one. Among other things, the Tribunal held that:

- (a) H3G must confine its arguments for NPZ to M2M calls only. That is, H3G's NPZ proposal could only be that M2M MCT rates should be set to zero whilst F2M

¹First witness statement of James Westby for H3G, paragraphs 6 & 7.

²ibid, paragraph 8.

³ibid, paragraph 10.

⁴ibid, paragraph 9.

⁵ibid, paragraph 11.

⁶[2008] CAT 10.

MCT rates should be adjusted to reflect one or more of the points made in section 5 onwards of H3G's Amended Price Control Appendix.¹

(b) A number of arguments that H3G sought to advance were inadmissible. These included arguments that Ofcom's cost allocation methodology was inappropriate or economically inefficient, arguments based on a consideration of what the marginal costs of MCT are, and the argument that the current MCT regime resulted in higher retail prices and artificial cost floors.²

14.16. H3G was, as a result of the Admissibility Ruling, confined to the arguments that it had made in favour of NPZ in its Appendix as determined by the Tribunal.

14.17. The Tribunal also held that:

(a) H3G was entitled to produce a welfare model to demonstrate or quantify the benefits alleged to flow from the adoption of the version of the NPZ remedy that was set out in the Appendix provided that those benefits are the ones that have been particularized in paragraph 4.5 of its Appendix, and that any welfare model that went outside those bounds was irrelevant.³

(b) It was entirely proper for H3G to cite academic articles in support of the arguments that it had raised in its pleadings in support of NPZ, but those articles could not be allowed informally to expand the scope of the appeal so the parts that went beyond H3G's arguments were not to be relied on.⁴

14.18. We have had regard to the Admissibility Ruling and have confined our considerations accordingly. We note, as did the Tribunal,⁵ that there may well be very powerful arguments in favour of a radically different way of approaching the question of MCT rates. However, in so far as they do not fall within the scope of H3G's appeal we could not and have not considered them.

Ofcom's arguments

H3G's reasons for advancing NPZ

14.19. Ofcom took issue with all of the arguments H3G made in support of NPZ:

(a) *H3G's traffic imbalance and net interconnection outpayments.* Ofcom's position was that that MCT charges should be cost based so that purchasers of MCT paid the efficient costs of supplying that service, and therefore both MNOs and consumers faced appropriate price signals which reflect the costs incurred when calls are made.⁶ According to Ofcom, cost-reflective termination charges implied that net purchasers of termination would have net outpayments and net receivers would have net receipts, so it was not clear that H3G was at any competitive disadvantage because of its traffic imbalance—customers who make more calls than they receive may not generate as high levels of wholesale revenue, but the

¹ibid, paragraph 57.

²ibid, paragraphs 70, 79–89.

³ibid, paragraph 91.

⁴ibid, paragraph 96.

⁵ibid, paragraph 54.

⁶Ofcom's Price Control Defence, paragraph 6.3.1.

MNOs to which they subscribe have the opportunity to benefit from higher retail revenues.¹

- (b) *Regulatory uncertainty.* Ofcom accepted that the efficient costs of MCT were inherently uncertain. However, it did not accept that the appropriate response to the issue was to move to NPZ.²
- (c) *Timing of regulation.* Ofcom did not accept that the timing of regulation of the 2G/3G MNOs' MCT rates was relevant to H3G's MCT rate. Ofcom's decision as regards H3G was to be assessed on its own terms, and not constrained by the previous practice of another regulator acting pursuant to a different legislative framework. In any event, Ofcom submitted that the comparison H3G sought to make was incorrect, as both T-Mobile and Orange had been subject to 'informal regulatory pressure' to lower their MCT rates within six years of commencement of operations, and because in their early years they set termination charges that were lower than other MNOs' whereas H3G's charges prior to March 2007 were much higher than those of the 2G/3G MNOs.³

Economic consequences of NPZ

- 14.20. In addition to disputing H3G's arguments in favour of H3G, Ofcom also submitted that there were reasons to reject NPZ because of the impact it would have on price signals and the distortions it would create.
- 14.21. Under a regime that combined wholesale NPZ with retail calling party pays (CPP), Ofcom argued that MNOs would not receive efficient price signals for termination on other mobile networks, and would have incentives to offer subscribers below-cost calls to other networks. The receiving operator, conversely, would incur all of the termination costs without receiving any corresponding revenue.⁴ MNOs would thus have incentives to respond to an NPZ regime in inefficient ways. They could set the retail price of calls to other mobile networks below the level that reflects an adequate contribution towards the costs of termination. This would encourage MNOs' existing customers to make more calls to other networks (increasing the individual operator's retail revenue without incurring additional wholesale termination costs), thereby generating an inefficiently high volume of outgoing calls between mobile networks. MNOs would also have increased incentives to attract and retain customers that make a large volume of calls to other mobiles and to avoid customers that receive a high volume of calls from other mobile networks.⁵
- 14.22. Ofcom also argued that it was possible that the introduction of NPZ may result in pressures on MNOs to move in whole or in part to a receiving party pays (RPP) system, which it considered would currently be to the detriment of consumers in the UK because of uncertainty as to the customer response in the context of an established market with a familiar and well-established charging structure, the short-term regulatory intrusion that would be required, the uncertainty of net benefits, and the associated costs. Ofcom noted that its position on RPP was consistent with that of the CC in its 2003 report. Further, it said that all the respondents to its consultation

¹ibid, paragraphs 6.3.2 & 6.3.4.

²ibid, paragraph 6.4.2.

³ibid, paragraphs 4.3.25–4.3.28.

⁴ibid, paragraph 6.4.3.

⁵ibid, paragraph 6.4.4

which led up to the MCT Statement, with the exception of BT's undecided view, opposed the introduction of RPP.¹

Differential treatment of M2M and F2M calls

- 14.23. Ofcom submitted that the different treatment of M2M and F2M traffic would cause further problems. Any differential would constitute a difference in termination charges for the same service, based only on where the call originates and, if the difference was significant, Ofcom considered that it might be expected to create a distortion which would be detrimental to efficient competition between fixed and mobile services.²
- 14.24. Ofcom said that under its methodology, the relative levels of fixed and mobile termination charges reflected the respective costs of the two types of network, derived in a consistent manner. H3G's proposal, on the other hand, would move mobile termination charges away from this. Ofcom argued that this would mean the price differential between fixed and mobile networks would be distorted, as it would not reflect the relevant cost differential.³
- 14.25. Ofcom told us that applying different rates to F2M and M2M calls, assuming the difference did not reflect underlying differences in cost, was likely to affect consumer choices, potentially placing some firms at a disadvantage, not because of differences in the underlying costs, but because the regulator has chosen to treat fixed and mobile originated calls differently. It said that different regulatory treatment would not necessarily constitute discrimination contrary to Ofcom's statutory duties, and that whether it did so would depend on whether the providers were in all relevant regards similarly situated and/or on whether the differential treatment was capable of justification as a proportionate method of advancing a legitimate public policy objective. Since Ofcom thought the NPZ proposal was likely to distort consumers' choices as mentioned, it said that there was a clear risk that it would be discriminatory. However, it did not give us a definitive final view on the matter.⁴

Implementation difficulties

- 14.26. Ofcom said that H3G's NPZ proposal would be unworkable. This was because of the different treatment of M2M and F2M traffic.⁵
- 14.27. First, Ofcom considered that incentive problems would arise for fixed operators, who, for example, in order to take advantage of below-cost MCT rates on mobile networks as a result of the distorted price signals, would face an incentive to convert outgoing off-net traffic into M2M traffic (for instance, by using GSM gateways) in order to avoid paying F2M MCT charges.⁶
- 14.28. Second, Ofcom noted that, to its knowledge, MNOs in the UK have never set different MCT charges for F2M and M2M termination, despite having explicitly been permitted to do so, and despite Ofcom having set separate charge controls for F2M and M2M termination for each MNO since 2003. It thought it would be unlikely that ter-

¹ibid, paragraphs 6.4.6 & 6.4.7.

²ibid, paragraph 6.4.8.

³ibid, paragraph 6.4.9.

⁴Ofcom letter of 18 September 2008.

⁵Ofcom's slide 3 for its bilateral hearing on the H3G appeal.

⁶Ofcom's Price Control Defence, paragraph 6.4.9.

minating operators would be able to distinguish accurately between F2M traffic and M2M traffic which is transited through BT, at least during the charge control period.¹

- 14.29. Furthermore, Ofcom said that NPZ would bring a risk of disruption and adverse effects on investment because of the need for large rapid decreases in M2M MCT rates. It also said that bill-and-keep would represent a fundamental change to the regulatory regime, and that a transition from a CPP regime to a bill-and-keep or RPP regime had never been successfully implemented.²

The extent of Ofcom's investigation

- 14.30. Ofcom strongly disputed the argument that it had failed to comply with its duties under section 88 or any other sections of the 2003 Act. It said that it had discussed and invited views on zero MCT charges and a move to RPP in all three consultations prior to the MCT Statement. All respondents, with the exception of BT's undecided view, opposed the introduction of RPP. Those respondents included H3G, which consistently argued against the introduction of bill-and-keep and RPP. Even when H3G did submit that MCT rates should be set so as to ensure net neutral payments between H3G and the 2G/3G MNOs, it suggested higher termination rates, not zero ones, to achieve this.³

Intervenors' arguments

H3G's reasons for advancing NPZ

- 14.31. The Intervenors, like Ofcom, submitted that H3G's arguments (and evidence) put forward in support of NPZ were unsound:

- (a) *H3G's traffic imbalance and net interconnection outpayments.* The 2G/3G MNOs all disputed the relevance and causes of H3G's traffic imbalance and net interconnection outpayments. The argumentation on these points is set out in Section 5 of this determination on Reference question 2 and is not repeated here. In addition, Vodafone argued that asymmetries, even if they existed, would not provide any economic rationale for NPZ or bill-and-keep.⁴
- (b) *Regulatory uncertainty.* Vodafone accepted that the estimation of what was an efficient MCT rate was uncertain, but argued that there could be no logical justification, simply because the process may lead to a less than perfect answer, to abandon the whole attempt to set an efficient MCT charge and instead to set charges to zero, which would be inefficient in the context of the UK market.⁵ Similarly, T-Mobile said that H3G was looking to replace a solution which may be approximately right with one that was precisely wrong.⁶ It argued that the regulatory certainty of setting MCT rates to zero was meaningless when setting them at any arbitrary non-zero number would achieve the same certainty.⁷ A number of Intervenors also said that in any event, the regulatory uncertainty would not be

¹ibid, paragraph 6.4.11.

²Ofcom's slides 3 and 8 for its bilateral hearing on the H3G appeal.

³ibid, slides 2–6.

⁴Vodafone's bilateral hearing on the H3G appeal, transcript, p67.

⁵Vodafone Sol, paragraph 6.3(i).

⁶Expert report of Paul Reynolds for T-Mobile, paragraph 21; see also PwC expert report for O2, paragraph 26; Orange Sol, paragraph 5.13.

⁷T-Mobile Sol, paragraph 37.3.

cured under NPZ because there would still be a need to set F2M MCT rates using Ofcom's overall methodology.¹

- (c) *International evidence.* T-Mobile argued that H3G had not provided any evidence to demonstrate that mobile tariffs in Hong Kong were more simple and transparent than those in the UK as H3G claimed. It gave us examples of Vodafone tariffs offered in Hong Kong which it said were not obviously simpler than those available in the UK.² More generally, Vodafone argued that the evidence cited by H3G from other countries where NPZ or RPP systems were used, without sufficient evidence of the market context in which they operated (which H3G had not provided), was not sufficient to allow us to infer that a similar system would produce an efficient and competitive outcome in the UK.³ Orange, likewise, cited the Tribunal's comments in its judgment on non-price-control matters (the NPC Judgment)⁴ that it was very difficult to draw any conclusions from disparate facts plucked out of the information about a wide range of international markets.⁵
- (d) *The DGT's comments.* Orange submitted that the comment made by the DGT to the CC as reported in its 2003 report related to the detriments of unregulated bilateral agreements, and therefore had no relevance to the issue of whether the current regulated MCT charges should be replaced with NPZ.⁶

Economic consequences of NPZ

14.32. The Interveners submitted detailed arguments as to why, in their view, NPZ would lead to economically inefficient outcomes.

14.33. Vodafone said that an NPZ system failed to take account of the fact that MNOs rely on pricing signals to manage the usage of network capacity and that an NPZ system would, under a CPP system, prevent them from doing so effectively.⁷ It gave us a concrete example of the sort of issues that could arise under an NPZ regime:⁸

- (a) In June 2006, Vodafone introduced a new pre-pay tariff called 'Free Weekends' which offered free calls and text messages for the whole weekend for customers who spent and used £5 of their top-up credit during the week. However, it told us that calls to other MNOs increased dramatically, thereby increasing Vodafone's costs, making the proposition unprofitable, and leading to significant capacity constraints on its network. Vodafone said that these issues were identified and the proposition was amended, making it profitable again.
- (b) If an NPZ system were introduced, Vodafone argued that each of the MNOs would be incentivized to encourage their subscribers to make more outgoing calls to other networks, as they would no longer have to make a net outpayment to other MNOs in respect of such calls. Vodafone said that this could lead to much more significant network congestion than it experienced with Free Weekends, thereby damaging service quality for customers, as there would be no direct pricing mechanism for the MNOs to respond to and moderate capacity demand.

¹Vodafone Sol, paragraph 1.11(i); PwC expert report for O2, paragraph 26; Orange Sol, paragraph 5.13.

²Expert report of Paul Reynolds for T-Mobile, paragraph 35.

³Vodafone Sol, paragraph 7.6(iii).

⁴[2008] CAT 11, paragraph 261.

⁵Orange Sol, paragraph 5.12.

⁶ibid, paragraph 5.8.

⁷Vodafone Sol, paragraph 6.3(iii).

⁸Third witness statement of Craig Tillotson for Vodafone, paragraphs 35–40.

(c) Under such a system, Vodafone said that there would be no reason to expect traffic to stay in balance, and that it was possible that a ‘mutually assured destruction’ scenario would come about, with each network overloading the others and receiving no corresponding price signals.¹

14.34. In addition, Vodafone said that MNOs would be required to recover from their own subscribers the costs of terminating incoming calls from H3G’s network either via an RPP system or by smearing the cost of termination across the prices levied for other services. Either of these possibilities would be detrimental. On the one hand, Ofcom has rightly rejected RPP as being inefficient. On the other, if MNOs were to have to smear the costs of terminating calls across the prices charged for other services, this would also be inefficient and would be liable to depress the consumption of such services below efficient levels.²

14.35. T-Mobile said that NPZ would not allow it to recover its efficiently incurred network costs from a key service which causes those costs to be incurred, which would have a significant impact on profitability which could not simply be written off. It said that the revenues it was denied under NPZ would have to be acquired from an alternative source.³ In circumstances where MCT charges were not even covering the incremental or variable costs of termination, it argued that operators would have the following choices, all of which would create significant market distortions:⁴

(a) *Impose charges on customers for receiving calls.* T-Mobile considered that this would lead to a growth in nuisance calls and a reluctance to answer calls. It also said that this would be unpopular with consumers and would seriously harm the pre-pay sector.⁵

(b) *Set retail prices for making calls so as also to recover the costs of calls made to the operator’s customers.* T-Mobile submitted that this would amount to the introduction of a system of cross-subsidies between calls, with the result that there could be too low a volume of certain services and too high a volume of off-net calls. The system could also affect different customers differently, with operators perhaps deciding not to serve customers who mainly receive calls.

(c) *Increase upfront charges.* T-Mobile argued that this would lead to distortions in relation to the demand for calls and the demand to be a subscriber, and that pre-paid plans might not be sustainable under this option.

14.36. If operators were unsuccessful in using these options to recover their costs, T-Mobile said that they would need to reduce their costs, leading to a poorer quality of service, less innovation and inefficient call-carrying arrangements.⁶

14.37. O2 argued that NPZ would incentivize MNOs to look for ways to shift traffic on to other MNOs’ networks (because they would not bear the cost of terminating such calls). MNOs would therefore have an incentive to acquire customers who make more off-net than on-net calls and to change the structure of their networks to take calls off-net as quickly as possible. It also said that it was likely that retail prices for

¹Vodafone bilateral hearing on H3G appeal, transcript, pp76&77.

²Vodafone’s Statement of Intervention in non-price control matters, paragraph 83(ii).

³Witness statement of James March for T-Mobile, paragraph 11.

⁴Expert report of Paul Reynolds for T-Mobile, paragraphs 26–31.

⁵Witness statement of James March for T-Mobile, paragraphs 13 & 14.

⁶Expert report of Paul Reynolds for T-Mobile, paragraph 32.

M2M calls would be reduced to a level which did not reflect the costs of termination, resulting in over-consumption of M2M calls and therefore allocative inefficiencies.¹

- 14.38. Conversely, O2 submitted, NPZ would lead to increases in other prices. MNOs would not receive revenues for terminating M2M calls but would obviously incur costs related to such calls, and because there would likely be a much greater volume of calls than in the welfare-maximizing outcome, there would be a significant increase in costs incurred. MNOs would either be obliged to make a sub-economic profit or to raise the price of other services. They might do this by increasing subscription charges, charges for receiving calls, or increasing charges for other services, such as outgoing calls. In all cases, O2 argued that this would lead to further allocative efficiencies.²
- 14.39. O2 said that NPZ could impact particularly on low-income pre-pay customers. It gave us examples of low-end pre-pay tariffs in the USA, where an RPP system operates, pointing out that they were significantly more expensive than in the UK. O2 argued that the relatively high price of low-end tariffs in the USA was likely to be a factor in penetration of SIM cards being much lower in the USA than in the UK.³
- 14.40. Orange argued that NPZ would remove efficient price signals to consumers so that MNOs would be incentivized to offer subscribers below-cost calls to other networks, generating an inefficiently high volume of outgoing calls. It also said that NPZ might result in pressure to move to an RPP system, which would be detrimental to consumers,⁴ and that MNOs would be less willing to serve pre-pay customers or would have to charge them more.⁵
- 14.41. It also said that the starting point for a regulator should be that setting prices at cost was the relevant benchmark, and that H3G was not advancing any factors that would lead to a conclusion that the optimal termination charge should be below cost (let alone zero).⁶

Differential treatment of F2M and M2M calls

- 14.42. BT submitted that the proposed distinction between F2M and M2M MCT rates would be highly detrimental to the interests of fixed phone users and fixed operators and that it would be inequitable and discriminatory if MNOs were not to be charged for terminating calls but FNOs were to be charged a fee which was considerably more than zero. It told us that H3G's NPZ proposal would have a devastating impact on the ability of FNOs to compete with MNOs in the marketplace generally.⁷
- 14.43. It said that such an outcome would self-evidently give rise to a significant distortion of competition and would be inconsistent with the 2003 Act (section 47(2)(b) of which provides that price control conditions must not be such as to discriminate unduly against particular persons or against a particular description of persons). BT also cited Ofcom's duty to not favour, in so far as practicable, one form of electronic communications network over another (section 4(6) of the 2003 Act).⁸

¹PwC expert report for O2, paragraphs 12–16.

²ibid, paragraphs 17–20.

³ibid, paragraphs 21–23.

⁴Orange Sol, paragraph 5.14.

⁵Orange's bilateral hearing on H3G appeal, transcript, p61.

⁶ibid, pp69–74.

⁷BT's bilateral hearing on H3G appeal, transcript, pp4,25&26.

⁸BT Sol, paragraphs 14–16.

- 14.44. BT said that no justification had been advanced by H3G for treating the two types of call differently, and that the only reason that such a result was proposed was the fact that the Tribunal did not permit it to advance the 0.4ppm argument it wished to. Given that, BT considered that the discrimination which H3G's case involves provided an insuperable objection to NPZ being adopted.¹
- 14.45. T-Mobile supported BT on this point, submitting that differential treatment which is not objectively justified would be discriminatory and that there was no objective justification for different MCT rates in this case.² Orange also saw force in the point,³ as did O2 which said that NPZ would lead to distortions of competition particularly between fixed and mobile networks.⁴

Implementation difficulties

- 14.46. All the Interveners submitted that H3G's NPZ proposal could not be implemented immediately or without difficulties because of the differentials between M2M and F2M calls. First, we were told that NPZ would require MNOs to invest in expensive systems to distinguish incoming calls according to their originating network (or to rely on transit operators to do so), so as to enable them to apply the correct charge to each incoming call, according to its origin.⁵ BT said that it too, as a transit operator, would have to develop an appropriate system to implement originating number analysis and change its wholesale billing system at significant cost.⁶
- 14.47. Second, even if an MNO installed equipment to identify the originating network of individual incoming calls, we were told that arbitrage would be a problem. Vodafone said that FNOs could readily find ways of effectively disguising calls originated on their network as mobile-originated calls—for example, by using mobile gateways. Such a reaction would lead to network congestion and the avoidance of lawfully levied F2M MCT charges. It told us that in France, where a bill-and-keep system (between MNOs) applied until the end of 2004, up to 80 to 90 per cent of F2M calls of alternative FNOs (other than the incumbent) were routed through GSM gateways which led ARCEP to withdraw the bill-and-keep system and introduce cost-based MCT rates.⁷ It also pointed out (as did a number of the other Interveners) that H3G had itself recognized this problem.⁸
- 14.48. T-Mobile said that arbitrage had been a significant problem for it and that creating a substantial difference in MCT rates between F2M and M2M calls would inevitably make the problem worse.⁹ It told us that the problem could not be avoided, because where an economic incentive was provided, people and businesses would find ways of exploiting it and of getting round any solutions that were developed to prevent them doing so.¹⁰
- 14.49. BT told us that there was a significant amount of fraud already that was exploiting relatively small differences in pricing, and that if differentials on the scale implied by

¹ *ibid*, paragraph 24.

² T-Mobile's bilateral hearing on H3G appeal, transcript, p74.

³ Orange's bilateral hearing on H3G appeal, transcript, pp59&60.

⁴ O2 Sol, paragraph 14.

⁵ Vodafone Sol, paragraph 6.3(iv).

⁶ BT Sol, paragraphs 17–20.

⁷ Third witness statement of Craig Tillotson for Vodafone, paragraph 34.

⁸ Vodafone Sol, paragraph 6.3(v); T-Mobile Sol, paragraph 37.1(a); O2 Sol, paragraph 13; PwC expert report for O2, paragraphs 6–8; Orange Sol, paragraph 5.15; BT Sol, paragraphs 17–20.

⁹ Witness statement of James March for T-Mobile, paragraphs 9 & 10.

¹⁰ T-Mobile bilateral hearing on H3G appeal, transcript, pp70–73.

H3G's appeal were put in place, the opportunity for fraud would be enormous. It also said that getting round these problems would be complex and extremely costly.¹

The extent of Ofcom's investigation

- 14.50. All the Interveners (except for O2 which did not make submissions on this subject) considered that Ofcom had satisfied its duties and had investigated NPZ, bill-and-keep and RPP options to an appropriate and proportionate extent:
- (a) T-Mobile said that sections 3 and 88 of the 2003 Act could give Ofcom a degree of discretion over the extent of the investigation it carried out. T-Mobile accepted that Ofcom could not simply rely on what it was told in consultation, but submitted that there could not be a requirement to engage in a never-ending search for a telecommunications utopia.²
 - (b) Orange submitted that Ofcom did have to investigate alternatives to the regulation that it was proposing but that it did so but had to draw the line somewhere. It said that securing the greatest possible benefit to end-users in section 88 of the 2003 Act could not possibly have the effect that Ofcom had to expend its finite resources on investigating every single possible avenue.³
 - (c) Orange and BT further emphasized that the remedies that H3G was now arguing that Ofcom should have investigated in more detail were actively opposed by respondents in the consultation. BT said that NPZ would be a very radical departure from regulation elsewhere in Europe, and that H3G had a very high burden to show that it was so obvious that the NPZ remedy conferred the greatest benefits on end-users that Ofcom erred in not looking at it.⁴
 - (d) Vodafone submitted that there would only be merit in an argument that Ofcom should have investigated more thoroughly whether NPZ would be the best regulatory option if there is a real possibility that further investigation would have led to that result. It argued that the theoretical analysis of the inefficiency implications of NPZ were so obvious that it is self-evident that it could not be the best regulatory option.⁵

Legality of NPZ

- 14.51. T-Mobile submitted that, quite aside from the question of discrimination between M2M and F2M calls, NPZ could not be imposed because such a system would constitute a breach of Article 13 of the Access Directive⁶ since it would not allow operators any return on the recognized service of providing MCT. It argued that the fact that operators might be able to make up for this deficit by charging above cost for the provision of other services did not cure the illegality.⁷
- 14.52. T-Mobile said that this conclusion was reinforced by section 88(2) of the 2003 Act, which provided that Ofcom needed to take account of the investment in the matters

¹BT's bilateral hearing on H3G appeal, transcript, pp27–29.

²T-Mobile's bilateral hearing on H3G appeal, transcript, pp18&19.

³Orange's bilateral hearing on H3G appeal, transcript, pp63&64.

⁴ibid, pp63&64; BT's bilateral hearing on H3G appeal, transcript, pp7&33.

⁵Vodafone's bilateral hearing on H3G appeal, transcript, p81.

⁶Directive 2002/19/EC.

⁷T-Mobile Sol, paragraphs 35 & 36; O2 and Orange also made the same point, albeit in a less-developed manner (O2 Sol, paragraph 14; Orange bilateral on H3G appeal, transcript, p60).

to which the price control condition related, because a regulator could not take investment into account and reasonably conclude that a zero MCT rate was appropriate.¹

Assessment

14.53. We begin our assessment with some preliminary remarks about the admissibility of the welfare model and the academic articles that H3G has provided in support of its case. We then assess whether the different treatment of F2M and M2M calls constitutes a legal or other barrier to the imposition of NPZ. Third, we consider whether the practical issues that have been raised present a barrier to accepting H3G's proposals. Fourth, we assess the specific arguments made in favour of NPZ and the economic arguments made against it. Finally, we assess H3G's argument that Ofcom breached its statutory duties by not investigating NPZ more thoroughly.

Admissibility

14.54. As noted above, the Tribunal held that H3G was entitled to produce a welfare model to demonstrate or quantify the benefits alleged to flow from the adoption of the version of the NPZ remedy that was set out in its Price Control Appendix provided that those benefits were the ones that have been particularized in paragraph 4.5 of its Amended Price Control Appendix, and that any welfare model that went outside those bounds was irrelevant.²

14.55. We have examined the welfare model provided by H3G. It quantifies the impact on producer and consumer surplus from adopting NPZ and that impact is determined by the difference between prices and marginal costs. It also incorporates call externalities. Those matters do not fall within the scope of H3G's appeal, nor do we think it can be said that the model quantifies the alleged benefits particularized in paragraph 4.5 of its Amended Price Control Appendix. Accordingly, our view is that we cannot consider the welfare model as being relevant to the appeal.

14.56. As to the academic articles referred to by H3G, the Tribunal held that those parts of any articles cited which went beyond H3G's pleaded arguments were not to be relied upon.³

14.57. H3G relied on three papers (or sets of papers). First, it cited a paper by Harbord and Pagnozzi.⁴ This paper makes two key points. The first is that, even absent strategic effects, it would be more appropriate for MCT rates to be set by reference to marginal costs than long-run incremental costs (LRIC). The second is that, in a strategic framework and in the presence of call externalities, LRIC-based price regulation leads to firms inefficiently price discriminating between on-net and off-net calls, leading to a competitive disadvantage for smaller firms. Both those points (relating to marginal costs and on-net/off-net price discrimination) have been ruled inadmissible and therefore this paper cannot be relied upon in this appeal.

¹T-Mobile's bilateral hearing on H3G appeal, transcript, p69.

²Admissibility Ruling, paragraph 91.

³ibid, paragraph 96.

⁴Harbord, D and Pagnozzi, M (2007), *On-Net/Off-Net Price Discrimination and 'Bill-and-Keep' vs. 'Cost-Based' Regulation of Mobile Termination Rates*.

- 14.58. Second, it cited two papers by Dr Peitz.¹ These two papers consider the implications of setting differential MCT rates for established networks as opposed to new entrants. Since H3G's NPZ proposal is to set M2M MCT rates for all MNOs to zero, the Peitz articles do not appear to be relevant to this reference question.²
- 14.59. Third, it cited a paper by Dr Littlechild.³ This paper mainly concentrates on the relative merits of CPP and RPP regimes. However, at the end of the paper, it is argued that bill-and-keep would avoid the problems of CPP while not necessarily mandating RPP—which is perceived to be unpopular with consumers. The paper argues that the key problem with CPP regimes is that they insulate the recovery of the costs of providing termination services from competitive pressures. Although Dr Littlechild recognizes that regulating the recovery of these costs might help reduce these problems, he argues that such regulation is no surrogate for competition. By contrast, the paper argues that an RPP regime, or bill-and-keep, subjects the recovery of termination costs to competitive pressures. The paper presents empirical evidence which suggests that in RPP regimes, average revenue per customer is lower than in CPP regimes. Although this is not an identical argument to any of those which have been explicitly ruled as inadmissible by the Tribunal, it is closely related to the argument that the current cost-based approach to MCT charges sets an artificial cost floor for retail prices (which has been ruled as inadmissible). Moreover, it is clear that it is not an argument that was explicitly advanced by H3G in its Price Control Appendix. As such, we consider that this paper cannot be relied upon in this appeal.
- 14.60. In any event, as far as the Littlechild paper is concerned, we are wary of placing too much weight on any broad international comparisons advanced in support of a move to an NPZ regime in the UK. As has been pointed out to us, Dr Littlechild considers the charging regimes in 47 countries, none of which moved from a CPP system to a system of bill-and-keep. No regulator, we were told, had actually imposed a bill-and-keep system. By contrast, ten countries considered by Dr Littlechild moved from an RPP system to a CPP system.⁴

The differential treatment of M2M and F2M calls

- 14.61. H3G's NPZ proposal, if accepted, would result in the imposition of a zero MCT rate for M2M calls and a positive MCT rate for F2M calls determined by Ofcom's cost modelling (as amended by the outcome of the H3G and BT appeals). There would therefore be a significant difference in the price to be paid for the same service, which incurs the same costs, based solely on the identity of the customer.
- 14.62. The 2003 Act placed upon Ofcom a duty to take account of the desirability of carrying out its functions in a manner which, so far as practicable, does not favour one form of electronic communications network over another.⁵ Ofcom also has a statutory duty not to set any price control conditions that would discriminate unduly against particular persons or against a particular description of persons.⁶

¹Dr Martin Peitz (2002), *Asymmetric access price regulation in telecommunications markets* and Peitz, M (2005), *Asymmetric regulation of access and price discrimination in telecommunications*, International University in Germany School of Business Administration Working Paper 28/2005.

²They are, however, relevant to Reference question 2, and are discussed in more detail in Section 5 of this determination which relates to that reference question.

³Littlechild, S (2006), *Mobile Termination Charges: Calling Party Pays vs Receiving Party Pays*, CWPE 0426.

⁴O2 Sol, paragraph 15; Ofcom's slide 8 for its bilateral hearing on the H3G appeal.

⁵Section 4(6) of the 2003 Act.

⁶Section 47(2)(b) of the 2003 Act.

- 14.63. There does not seem to be a dispute that NPZ would be a price control condition that discriminates between fixed and mobile networks. The question is whether that discrimination would be undue. BT in particular has argued that it would be undue because there is no objective justification for it (as the cost of providing the service is identical in each case and no reason for the differential, other than H3G's inability to advance its preferred case, has been put forward) and it would seriously impact on competition between fixed and mobile platforms. Ofcom also considered that the differential might be expected to distort consumer choice and would be detrimental to fixed and mobile competition.
- 14.64. In our judgement, if fixed networks face a charge for the termination element of calls to mobiles that mobile networks do not face, prima facie that will give mobile networks an advantage in competing for calls to mobiles.
- 14.65. It is plausible that that advantage will affect fixed and mobile competition more generally, although the effects of NPZ on competition between the platforms overall are likely to be complex. This is because whilst fixed operators would be disadvantaged in competing for calls to mobiles, as discussed in paragraph 14.79 below NPZ will result in MNOs incurring MCT costs for which they will receive no MCT revenue. This may result in other prices increasing. It is possible that too will affect competition between fixed and mobile networks.
- 14.66. Whilst the ultimate outcome cannot be predicted with accuracy, we consider that it would be distortionary to some extent because the relative costs of the different networks would not be set on a common basis by reference to a benchmark of efficient costs, and so the prices faced by consumers would not reflect the costs of the different platforms. Barring some compelling reason for bringing about such a situation, which, as set out below (see paragraphs 14.77 to 14.81), we do not think has been advanced, we would not expect this to lead to efficient outcomes or be in the interests of consumers.
- 14.67. H3G sought to counter the undue discrimination objection in two ways. First, it argued that F2M rates were also likely to fall substantially if its arguments in relation to M2M rates succeeded. It said that if zero rates for M2M calls were accepted, that would be a factor in considering the level of F2M rates for all operators.¹ We do not accept this argument. It is both inconsistent with the Admissibility Ruling and the pleaded arguments in H3G's own appeal. It is simply not open to us to decide that F2M MCT rates should be reduced other than for reasons advanced by H3G in its Amended Price Control Appendix (and BT in its own appeal), and a number of H3G's arguments in relation to F2M calls (or F2M calls and M2M calls if its NPZ case fails) would lead to an increase, not a decrease, in MCT rates if accepted.²
- 14.68. Second, H3G argued that the duty not to discriminate unduly had to be interpreted in the light of section 88 of the 2003 Act, and that 'undue' meant 'not justified by the external circumstances'. It cited the case of *South of Scotland Electricity Board v British Oxygen*³ and Ofcom's *Undue Discrimination* guidelines⁴ in support of its argument.⁵

¹H3G's Reply of 14 July, paragraphs 3.3(a) & 5.9.

²For example, the argument that an allowance should have been made for CARS costs.

³[1959] 1 WLR 587.

⁴*Undue discrimination by SMP providers—how Ofcom will investigate potential contraventions on competition grounds of requirements not to unduly discriminate imposed on SMP providers*, Ofcom, November 2005.

⁵H3G's letter of 1 October 2008.

- 14.69. Whilst we accept that the 2003 Act should be considered as a whole and interpreted consistently, we do not think that section 88 can assist H3G's case—a requirement to set a condition that is appropriate for the purposes of promoting efficiency, promoting competition and conferring the greatest possible benefit on end-users would, in our view, tend to preclude discriminatory remedies unless they could be objectively justified. A condition that discriminated without objective justification would be most unlikely to achieve the statutory objectives, so those objectives cannot, in our judgement, save a remedy which would otherwise be unduly discriminatory.
- 14.70. We also do not consider that H3G's case was assisted by the materials it cited. The *South of Scotland* case was concerned with whether prices that were not proportional to costs were unduly discriminatory. The different treatment of M2M and F2M calls in H3G's NPZ proposal has nothing to do with costs. As to the *Undue Discrimination* guidelines, the extract relied upon by H3G seems only to say that discrimination will be undue where relevant differences between (or similarities in) different customers are not reflected in transactions and where such behaviour could harm competition. It goes on to say that in most cases, competition tends to be restricted by differences in transaction conditions that do not reflect differences in customers' circumstances, unless those differences lead to a substantial expansion of demand or open up new market segments.
- 14.71. However, H3G has not argued that the differentials inherent in its NPZ proposal will lead to a substantial expansion of demand or open up new market segments. Its arguments in favour of NPZ are, broadly, that it will cure defects in Ofcom's methodology and will remedy certain disadvantages which H3G alleges it faces. Indeed, H3G puts forward no objective justification for the discrimination at all, merely arguing that a determination of whether the discrimination will be undue requires an examination of the impact on competition.¹ We do not think that such an argument is sufficient in circumstances where an appellant is seeking a remedy and that remedy is, on the face of it, discriminatory.
- 14.72. Therefore we think that there is force in BT's objection to H3G's NPZ proposal, and agree with Ofcom that there is a clear risk that it would be unduly discriminatory, contrary to section 47(2)(b) of the 2003 Act.² Furthermore, even if H3G's NPZ proposal were not contrary to section 47(2)(b) of the 2003 Act, H3G has not advanced a compelling case as to why the potential effects it may have on fixed and mobile competition (as set out in paragraphs 14.64 to 14.66 above) would be justified.³

Implementation difficulties

- 14.73. Notwithstanding our conclusion above, we have considered whether implementation difficulties would make it inappropriate to impose H3G's NPZ proposal.

¹ibid.

²We emphasize that there may be justifications for the differential treatment of F2M and M2M calls so as to make the discrimination involved not undue. However, our conclusions rest on the arguments that have been put to us, and in our judgement H3G has not presented a compelling case that what is acknowledged to be discrimination is not undue discrimination because of a relevant objective factor.

³In response to our provisional determination, H3G cited this paragraph as an example of us wrongly allowing the Interveners' submissions to add to Ofcom's reasoning (H3G response to provisional determinations, paragraphs 6.1–6.4). Leaving aside the issue of whether or not, or in what circumstances, it would be wrong for us to rely on points made by Interveners that were not made by Ofcom, the argument that H3G's NPZ proposal could distort competition between fixed and mobile operators and could constitute undue discrimination was advanced by Ofcom as well as by BT and others (see, for example, paragraphs 14.23–14.25 above).

- 14.74. This is another issue on which there is a measure of agreement. All the parties seemed to agree that changes will need to be made to number identification systems to enable the ultimate source of a call to be identified (so as to ensure that the right MCT charge is levied). All the parties also recognized the potential for arbitrage that the M2M and F2M MCT pricing differentials would create. H3G also said that having two MCT rates would cause problems with the current MNP system.
- 14.75. H3G argued that these problems were not 'insuperable'. It submitted that arbitrage could be prevented. It said that the use of GSM gateways could be addressed through more sophisticated monitoring systems which it estimated would cost each MNO £100,000 to £150,000 a year, and that 'number spoofing' could be avoided by implementing NPZ via direct M2M links and through the use of A-number analysis and certain 'probes'. It estimated the cost of these probes as £50,000 per link, said that 'significant capital investment' would be required to implement A-number analysis, and estimated a cost of up to £[X] for necessary upgrades to billing systems.¹ No further detail was provided on these measures or figures. H3G accepted that these implementation issues would require time (as well as investment) to address.²
- 14.76. We do not know whether, ultimately, H3G is correct in its contention that arbitrage can be successfully prevented and that implementing its NPZ proposals can be done at reasonable cost. The other parties all disputed this. However, we do not consider that it would be appropriate to mandate a move to NPZ at this point when all parties agree that, whether insuperable or not, significant practical problems exist.

Economic rationale for, and consequences of, NPZ

- 14.77. Notwithstanding our conclusions above, we have considered the substantive arguments that H3G has put forward in favour of NPZ. Taking each argument (or group of arguments) in turn:
- (a) *Regulatory uncertainty/risk of regulatory error.* H3G argued that NPZ was a practical solution because Ofcom's current methodology required long-term forecasts and was subject to uncertainty. We do not accept that argument. Ofcom's methodology is subject to uncertainty, as it has acknowledged, but we do not think that NPZ is the correct response. This is because, first, whilst Ofcom's MCT charges may not be precisely optimal, for the reasons given above and below, zero M2M MCT rates are likely to lead to significant distortions both within the mobile industry and to competition between mobile and fixed networks. Second, NPZ will not solve the issue that H3G relies upon, because Ofcom's methodology will still need to be used to set F2M rates.
- (b) *H3G's traffic imbalance, net interconnection payments and its status as a maverick competitor.* H3G argued that it is disadvantaged by a traffic imbalance, caused by the current MNP system and its status as a new entrant, and that the imbalance resulted in it making net interconnection payments to the other MNOs, thus reducing its ability to play the role of the maverick. We do not accept these arguments for a number of reasons:
- (i) As set out in detail in Section 5 of this determination on Reference question 2, we do not think that H3G has made good its case that its traffic imbalance is

¹H3G's Reply, Annex 2, p88, citing the witness statement of James Westby for H3G, paragraph 8.

²Witness statement of James Westby for H3G, paragraph 11.

caused by the current MNP system or by any other unavoidable competitive disadvantage.

- (ii) As also set out in detail in that section, we do not accept that the fact that H3G is a net outpayer of termination payments means that it is necessarily at a competitive disadvantage. If MCT rates are cost-reflective, net outpayments simply reflect the fact that an MNO is imposing greater termination costs on others than they are imposing on it.
 - (iii) As also set out in detail in that section, we have not been satisfied that H3G's impact on competition in the UK mobile market has been such as to justify (further) asymmetric treatment.
 - (iv) Notwithstanding those conclusions, even if H3G's traffic imbalance were the result of an unavoidable competitive disadvantage and H3G's net interconnection outpayments were distorting competition, we do not think that would lead to the conclusion that NPZ was the appropriate remedy. In those circumstances, a regulator may wish to consider bringing termination rates closer into alignment with termination costs to mitigate any distortions, but NPZ is a remedy that has been proposed independently of any analysis of costs, and, as set out above and below, it is likely to lead to a number of distortions both within the mobile industry and the communications industry more generally.
- (c) *The ported numbers issue.* H3G argued that NPZ would eliminate the issue regarding the failure to address the arrangements regarding ported numbers. However, we do not think that this issue justifies the imposition of NPZ. As set out in detail in Section 9 of this determination on Reference question 3(iv), we agree that the ported numbers issue is potentially distortive, but there are alternative (and far more direct) remedies and Ofcom has launched a consultation on them.¹
- (d) *Timing of regulation.* H3G argued that NPZ would mitigate the impact of its being regulated a number of years in advance of the point in their business cycles that the 2G/3G MNOs were regulated. However, even if this were factually correct, we do not see how this could justify the imposition of NPZ.
- (e) *Evidence from Hong Kong.* H3G argued that retail pricing in Hong Kong was very simple and consumer friendly. However, it provided little evidence to make good this claim, and others put forward examples of tariffs from Hong Kong which are not obviously simpler than those available in the UK. Furthermore, we are wary of relying on limited evidence and assertions about other markets in assessing the suitability of NPZ for the UK market. We also note that the NPZ proposal that has been put forward, where MNOs will charge a positive rate for F2M traffic and a zero rate for M2M traffic, is not the system that operates in Hong Kong, and indeed neither H3G nor any other party has put forward an example of a jurisdiction in which such a system does operate.
- (f) *The DGT's comments.* H3G argued that NPZ would remove the distortions that the DGT highlighted to the CC as reported in the CC's 2003 report. The relevant paragraph² states:

The DGT commented that, in his view, the argument that bilateral agreements would avoid the need to regulate mobile-to-mobile

¹Ofcom, *Amendment to charge control on mobile network operators: proposals for consultation*, 27 March 2007.

²CC 2003 report, paragraph 2.476.

termination charges was not robust, and noted that Vodafone itself (by proposing a safeguard cap) apparently recognized this. The MNOs' incentives were to set charges for mobile-to-mobile calls in a way that would act to weaken retail competition and this was not conducive to the public interest. Traffic imbalances would be likely to inhibit a downward movement of prices, because (as between two MNOs potentially entering into a bilateral agreement) the MNO with the balance of inbound traffic in its favour would prefer the status quo of high termination charges ...

As is evident, the DGT's comments related to bilateral agreements in the absence of MCT price regulation. They do not, in our view, provide support for a move to H3G's NPZ proposal.

- 14.78. In addition, we think that a move to NPZ would be likely to bring about a number of distortions in the market. Under NPZ, MNOs would face no marginal (termination) cost in respect of M2M calls to other networks. They would therefore have an incentive to set the retail price of off-net M2M calls below the level that reflects the costs of originating and terminating such calls, thus encouraging their customers to make more of them. MNOs would also be incentivized to acquire customers who made more calls than they received and who made more off-net calls than on-net calls. This is likely to give rise to inefficiencies in traffic flows.
- 14.79. At the same time, under NPZ MNOs would no longer receive any revenue from the caller's MNO to cover the cost of terminating M2M calls. This could have a number of detrimental consequences:
- (a) MNOs may become less willing to serve customers who receive more calls than they make because a CPP system combined with NPZ would make them less valuable. The impact on the pre-pay sector in particular could be significant.
 - (b) There may be pressure to move to an RPP system, where customers are charged for receiving calls by their own network, which Ofcom currently considers to be detrimental to consumers in the UK. Whilst we have not received evidence on this point (H3G arguing rather that NPZ will not lead to RPP), no argument has been advanced that Ofcom's assessment was incorrect in this respect. Again, we note that this is likely to have a significant effect on the pre-pay sector in particular.
 - (c) Alternatively, MNOs may increase the prices of other services or subscription fees. The former is likely to depress the consumption of such services below efficient levels, and the latter is likely to reduce demand for subscription, again with the pre-pay sector likely to be particularly affected.
- 14.80. There may be arguments as to why these distortionary effects, which result from setting the price for a service below the cost of providing it, are justified by some countervailing considerations.¹ However, no such compelling arguments have been made in this case.

¹We are aware that Ofcom has launched a wide-ranging consultation which encompasses how MCT rate regulation should evolve. We do not wish to prejudice that process or its outcome. There may be valid reasons for moving to a radically different regulatory system than the one that prevails at present. However, our task on this appeal is to assess the arguments put forward and we have confined our considerations accordingly.

14.81. Accordingly, we do not think that H3G has made a sound economic case for the imposition of NPZ. It has not provided any compelling reason why the distortions that NPZ would create would be justified, and it has not demonstrated that Ofcom erred in not imposing it.

The extent of Ofcom's investigation¹

14.82. H3G argued that Ofcom failed to comply with its statutory duties because it did not consider NPZ (or a substantially similar remedy) in sufficient detail before it issued the MCT Statement. H3G relied in particular on section 88 of the 2003 Act.

14.83. We do not accept H3G's assertion that section 88 gives Ofcom only a very limited discretion as to the nature of its investigation and the remedies it can impose. The section uses the words 'where it appears to them'. Price conditions can only be imposed in so far as it appears to Ofcom that they are appropriate for achieving the statutory objectives (although, of course, Ofcom must act reasonably and in accordance with its public law duties in coming to its views).

14.84. Furthermore, MCT regulation is a complex topic on which there are many conflicting views between academics, regulators and industry participants. Those views are also constantly developing. If H3G were right that there was very limited discretion and that Ofcom had to come to a somehow uniquely correct remedy (as determined, ultimately, by an appellate body), we are not confident that satisfying section 88 would be possible in practice. We do not think that Parliament could have intended to impose such a duty on Ofcom.

14.85. We also do not accept that section 88 requires Ofcom to investigate in detail every possible form of regulation, whether or not it is put forward in consultation and whether or not it is shown to have any merit. Ofcom clearly has to undertake an investigation and an assessment of regulatory options that is appropriate and proportionate and cannot, in every instance, simply rely on what it is told in consultation without further investigation. However, it could not sensibly expend its finite resources in the manner that H3G's argument suggests that it must.

14.86. The extent of the investigation that it will be appropriate to carry out will necessarily be dependent on the issue in question. If an alternative remedy is proposed by a stakeholder and it is supported by sound economic arguments, it may be appropriate for Ofcom to investigate further. However, in the case of a regulatory remedy which represents a radical departure from the practice of Ofcom and the other NRAs operating under the same regulatory framework, which has never before been imposed by any regulator, and which, on its face, would require services to be provided for a price that is less than cost, if the remedy is consulted on and no compelling reasons are put forward as to why it should be pursued, we do not think that Ofcom could be criticized for not looking at it in more detail.

14.87. In this case, it is clear that Ofcom did consult on a move to RPP or a bill-and-keep system and that H3G (along with all other respondents apart from BT) argued against

¹Ofcom submitted that H3G's argument that it (Ofcom) did not comply with its statutory duties and that the MCT Statement therefore needed to be set aside was not a question we had been asked to determine, not a point that had been raised in the H3G Amended Price Control Appendix, and not a price control matter. It argued that we should therefore not deal with this issue (Ofcom's letters of 9 October 2008 and 17 December 2008). In our view, it is arguable that the wording of H3G's Amended Price Control Appendix (paragraph 4.6 in particular) was wide enough to allow H3G to develop an argument of this type. We also think it is arguable that the issue is a price control matter. Given that, we considered it prudent to engage with the issue on its merits. If we were wrong to do so, our conclusions under this subheading will fall to be disregarded.

such a move.¹ Even when H3G did put forward what might be called an NPZ system, it did not suggest a zero MCT rate, but rather argued for a higher MCT rate for itself to offset the outpayments it was making to the other MNOs.² Given those responses, we think H3G's present criticism that Ofcom failed to consider NPZ (or a substantially similar remedy) in more detail is unmeritorious.

14.88. We also consider H3G's reliance on Ofcom's skeleton argument of 18 April 2008 to be misplaced. That skeleton argument was prepared for a case management conference before the Tribunal on whether H3G should be granted permission to expand its case. It contained statements to the effect that Ofcom (and the other parties) would need to carry out a substantial amount of work to properly prepare a defence to H3G's proposed case. That is not, in our view, evidence that Ofcom failed to comply with its statutory duties. It is merely evidence that Ofcom had not looked at the implications of the introduction of a bill-and-keep remedy in detail. For the reasons given above, in our view not doing so was not a breach of its statutory duties.

14.89. Therefore we do not accept H3G's argument that Ofcom failed in its statutory duties by not giving any or sufficient consideration to a move to NPZ or a substantially similar remedy.

Legality of NPZ

14.90. We have not found it necessary to decide whether Article 13 of the Access Directive and section 88(2) of the 2003 Act present a legal barrier to the introduction of NPZ.

Determination

14.91. For the reasons set out above, our determination is that Ofcom did not err in not exercising its powers in such a way that net wholesale payments between MNOs were zero, with suitable cost-based price controls retained for F2M calls, either (a) for the period of the price controls or (b) pending the introduction of revised arrangements for mobile number portability, for the reasons set out in paragraphs 4.1 to 4.7 of the H3G Amended Price Control Appendix.

¹Ofcom's MCT Statement, paragraphs 8.24–8.28.

²Ofcom's bilateral hearing on H3G appeal, slides 4–7; see also Ofcom's skeleton argument for the Tribunal of 18 April 2008, Annex A.

15. Market share forecast for an efficient 3G-only operator

- 15.1. This section sets out the CC's conclusions as to whether Ofcom erred in respect of its market share forecast for an efficient 3G-only operator.
- 15.2. There is no specific reference question that deals with this topic. Indeed, given the terms of the reference,¹ we have doubts as to whether we could reach a determination that would lead to an adjustment to the price control levels on the basis of errors relating solely to Ofcom's market share assumptions.
- 15.3. We raised this issue with H3G,² which in turn provided us with a submission on it.³ H3G argued that Reference questions 2, 6 and/or 3(iii) were wide enough to allow us to reach such a determination. We were not persuaded by those submissions.
- 15.4. Nonetheless, since the market share topic has featured prominently in the context of a number of other reference questions (in particular, questions 3(ii), 3(iii) and 4) and we have received submissions from the parties on it, and also in order to be of as much assistance as possible, we have considered it as a stand-alone issue.
- 15.5. For the reasons given below, we do not consider that Ofcom erred in respect of its market share forecast for an efficient 3G-only operator. Accordingly, the question of whether the opposite conclusion would allow an adjustment to be made to the price control levels does not arise.

Background: market share forecast for an efficient 3G-only operator

- 15.6. One of the key inputs into Ofcom's MCT cost model was the share of total market subscribers for each MNO. This share is an input into lifetime traffic levels for each operator which, in turn, affects the estimation of efficient unit costs for that operator. Because of economies of scale in the mobile networks, higher lifetime traffic forecasts will produce lower efficient unit cost estimates (and therefore lower regulated charges) and vice versa.
- 15.7. In Ofcom's MCT model, each of the four hypothetical efficient 2G/3G operators has an equal share of subscribers prior to the entry of the 3G-only operator (ie 25 per cent). In its MCT Statement, Ofcom assumed that the 3G-only operator would achieve market share parity with other MNOs in 2016/17. For 2G/3G operators, therefore, market shares were assumed to decline from 25 per cent prior to the entry of the 3G-only operator to 20 per cent by 2016/17. Ofcom's subscriber forecasts are shown in Figure 15.1.

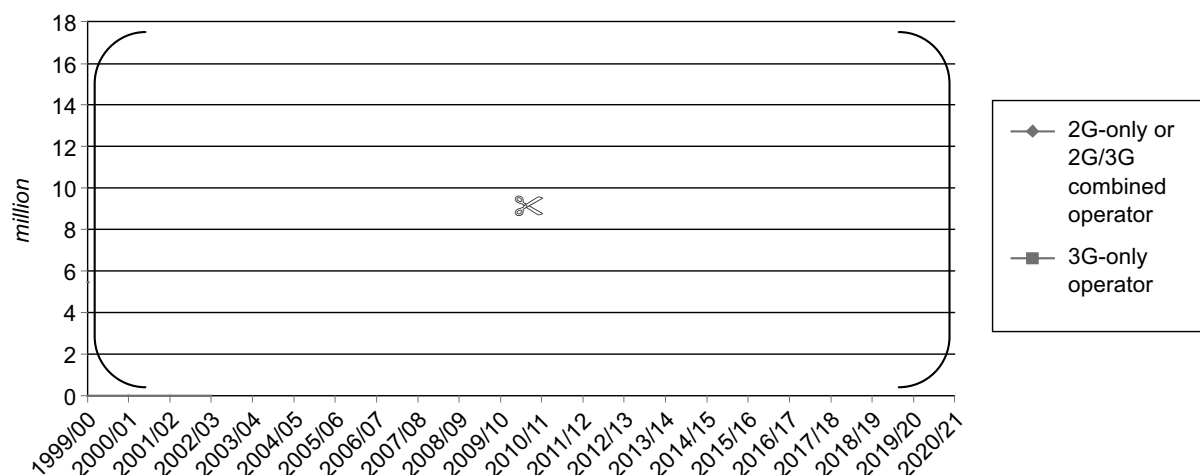
¹Reference by the Tribunal of specified price control matters to the CC of 18 March 2008, reproduced in Appendix A.

²H3G plenary hearing, transcript, pp34–36; CC letter to H3G of 31 July 2008.

³H3G's Submission of 11 August 2008.

FIGURE 15.1

Ofcom's subscriber forecasts



Source: Reproduction of Figure A5.3 of Ofcom's MCT Statement.

15.8. H3G argued that Ofcom's assumption of market share parity by 2016/17 was not appropriate. It submitted that this assumption was entirely hypothetical, rather than being based on any relevant theoretical or empirical evidence, and thereby extremely questionable. According to H3G, for reasons entirely unrelated to inefficiency, an entrant may never be able to achieve a market share approaching those of established large operators, despite spending more on customer acquisition by subsidizing entry prices.¹

Ofcom's methodology

15.9. For cost modelling purposes, Ofcom's objective was to establish a competitively neutral benchmark. That meant that no operator was assumed to derive any advantage or disadvantage from its particular business strategy, and market shares reflected a level of efficiency that was achievable by all operators in the market in the long run.²

15.10. According to Ofcom, this approach was consistent with that adopted in the previous MCT market review, where Ofcom established an average efficient operator benchmark based on forecasts that all operators would ultimately have equal shares of subscribers. Ofcom noted that this approach was also consistent with the approach taken by the CC in 2002 in its cost projections for 2005/06, the final year of the previous charge control, which was to apply an equal market share profile to all four MNOs that were subject to MCT charge controls.³

15.11. In its September 2006 Consultation document, Ofcom assumed that 14 years would be sufficient for an efficient 3G-only operator to increase its market share from 4 per cent in 2006 to 20 per cent in 2020/21 to achieve parity with the 2G/3G operators.⁴ In its final MCT Statement, Ofcom shortened the period of convergence and assumed that the 3G-only operator would be able to achieve parity in 2016/17.

¹H3G's Commentary to Amended Price Control Appendix, p13.

²Ofcom's Price Control Defence, paragraphs 3.4.9–3.4.12.

³ibid, paragraph 3.4.10.

⁴Ofcom's MCT Statement, paragraph A5.29.

15.12. In arriving at this assumption, Ofcom stated that it had considered a broad range of factors, including:¹

- (a) the performance of previous market entrants (Orange and T-Mobile);
- (b) H3G's own forecasts of May 2006 with a view to establishing whether the path chosen by Ofcom might lead to a risk of under-recovery of costs for H3G; and
- (c) a model presented by Vodafone for estimating the prospects of growth in the share of subscribers for an efficient 3G-only operator.

We briefly describe each of these below.

The performance of previous market entrants

15.13. Ofcom considered that 13 years should be sufficient for the 3G-only operator to reach parity with other operators, noting that this was a significantly longer period than that required by previous market entrants. Ofcom estimated that T-Mobile reached parity in nine years, while Orange took just seven years. Ofcom assumed that the 3G-only operator would take more time to achieve parity because the market was more developed with lower overall growth in new subscribers than in the period when T-Mobile and Orange entered the market.²

H3G's own forecast of May 2006

15.14. In developing its market share forecast for a 3G-only operator, Ofcom considered how it compared with the forecasts from H3G's own May 2006 business plan.³
[



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15.15. This is illustrated in Figure 15.2, which compares Ofcom's and H3G's forecasts of voice traffic.

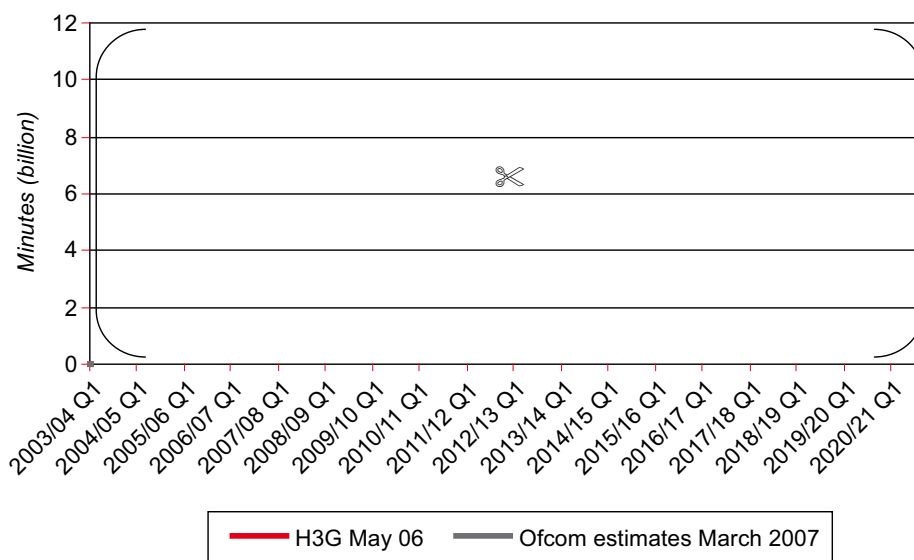
¹Ofcom's Price Control Defence, paragraph 3.4.13.

²ibid, paragraph 3.4.23.

³ibid, paragraph 3.4.18.

FIGURE 15.2

Comparison of Ofcom's and H3G's forecasts of voice traffic*



*Ofcom's forecast relates to its medium traffic scenario.
 Source: Reproduction of Figure 3.1 of Ofcom's Price Control Defence.

- 15.16. Ofcom argued that it would have been inconsistent to adopt H3G's forecast of number of subscribers, but ignore its forecast of traffic per subscriber.

Vodafone's churn model

- 15.17. In response to the September 2006 Consultation, Vodafone submitted a churn-based market share growth model as part of an argument questioning Ofcom's initial assumption that an efficient 3G-only operator would only achieve market share parity in 2020/21. Vodafone's model calculates the number of churning customers (customers who terminate their existing connection to a mobile network) and new subscribers in each year and the proportion of each of these that are drawn to the new entrant. The model assumes a constant churn rate of 35 per cent in line with the current market average. The entrant is assumed to acquire 1 in 5 of the new customers and 1 in 4 of the churning customers.¹
- 15.18. According to Ofcom, the basic logic of Vodafone's churn model was analytically reasonable, although the model was not comprehensive and Ofcom did not necessarily agree with the assumptions that underpinned Vodafone's stated results. However, on the basis of Vodafone's broader argument, and having considered a range of plausible churn parameters, Ofcom decided that an efficient 3G-only operator should be able to achieve market share parity with other operators by 2016/17 rather than by 2020/21 as assumed in the September 2006 Consultation document.²

¹Vodafone's response to Ofcom's September 2006 Consultation, p14, paragraph 33.
²Ofcom's Price Control Defence, paragraph 3.4.27.

- 15.19. Ofcom noted that its market share forecast for the 3G-only operator was consistent with an annual churn rate of approximately 28 per cent. This was lower than the churn rate used in Vodafone's churn model which was calibrated using actual market data. According to Ofcom, this provided confirmation that its forecast was not too aggressive, since a longer period of time would be necessary for the 3G-only operator to reach subscriber share parity under lower churn rate assumptions.¹

Ofcom's path of market share growth forecast


- 15.20. Having decided on the year in which the 3G-only operator should be able to reach market share parity, Ofcom then fitted a smooth 'S' curve of growth in the 3G-only operator's number of subscribers from H3G's market share at the time of the MCT Statement to a position of parity with other operators in 2016/17.²

H3G's grounds of appeal

- 15.21. H3G provided a detailed critique of each of the key planks supporting Ofcom's assessment that it was reasonable to assume that an efficient 3G-only entrant should be able to achieve market parity with the incumbent operators 13 years after entry.

H3G's critique of Ofcom's use of its own forecasts

- 15.22. H3G argued that the reasonableness of Ofcom's market share assumptions could not be defended by reference to H3G's own traffic forecasts in the way implied by Ofcom.³

- 15.23. [] H3G did not believe that its forecast of demand per subscriber formed a valid basis for extrapolation to the market as a whole, because the nature of H3G's subscriber base was not representative of the market as a whole. In particular, H3G had stated in its replies to Ofcom's September 2006 Consultation that:⁴
- (a) its forecast was a product of high levels of expenditure on CARS costs, including discounted levels of voice pricing, which would not be achievable by the hypothetical 3G-only operator modelled by Ofcom, which Ofcom assumes need incur no such costs; and
 - (b) as a result of H3G's strategy of attracting relatively heavy voice users, the levels of voice demand per subscriber forecast by H3G were relevant only to the market share assumed in H3G's forecast.

- 15.24. Furthermore, H3G pointed out that Ofcom's TACs were not based on a single life-time forecast of voice traffic, which was the focus of Ofcom's comparison, but rather on forecasts for a range of services, including messaging and data (altogether 11 separate forecasts). Each of these forecasts was considered by Ofcom under three

¹ibid, paragraph 3.4.29.

²ibid, paragraph 3.4.28.

³H3G's Reply of 14 July to Ofcom's Price Control Defence, paragraph 12.13.

⁴Amended Price Control Appendix, paragraph 8.8(b) and the references therein to H3G's submissions to Ofcom in June and November 2006, in particular H3G's letter of 5 June 2006 to Ofcom.

different traffic scenarios: high, medium and low. There were therefore over 30 different traffic forecasts, all of which had an impact on Ofcom's cost benchmarks which were used to set the MCT charge.¹

- 15.25. According to H3G, if it were the case that the available evidence showed that Ofcom's market share assumption was unreasonable, then in order for that evidence to have no effect on Ofcom's calculation, Ofcom would need to demonstrate that each of the 30 different traffic forecasts was reasonable. H3G submitted that Ofcom had not presented such evidence.²
- 15.26. Finally, H3G argued that Ofcom's treatment of the information from H3G's forecasts was logically unsound. Specifically, even if direct evidence of all 30 forecasts were available, if the available evidence showed that the market share assumption was unreasonable, then the two sets of evidence together would suggest that the demand per subscriber assumptions were also unreasonable. According to H3G, in such a situation, it would be perverse for Ofcom to persist with two sets of unreasonable assumptions (market share and demand per subscriber) on the grounds that their product (ie traffic) was reasonable.³

Criticism of Vodafone's churn model

- 15.27. H3G accepted that it was possible to arrive at Ofcom's market share assumption using Vodafone's churn model by assuming a churn rate of 28 per cent and some adjustment to moderate the early performance of the 3G-only operator. However, according to H3G, such a churn calculation did not give a reliable indication of the market share achievable by a 3G-only operator, because of:⁴
- (a) an unrealistically high assumption for the level of inter-operator churn;
 - (b) a failure to recognize that not all of the market was addressable; and
 - (c) a failure to take due account of network effects and other factors which would prevent the 3G-only operator achieving an equal share of churning addressable subscribers.
- 15.28. H3G argued that reported churn figures generally included high levels of intra-operator churn (ie subscribers churning between tariffs or contracts while staying with the same operator). H3G submitted that the relevant measure for churn-based modelling was inter-operator churn (ie subscribers churning between operators), and that this measure was much lower. H3G pointed out that Ofcom's own survey data suggested that inter-operator churn was around 12 per cent a year.⁵
- 15.29. H3G accepted that any customer prepared to take steps to improve their retail package presented a theoretical opportunity for competing operators. However, it disputed that competing operators would have anything like a one in four chance of attracting those types of customers, which, according to H3G, was the assumption in Ofcom's churn calculations.⁶

¹H3G's Reply to Ofcom's Price Control Defence, paragraph 12.8.

²ibid, paragraphs 12.9 & 12.10.

³ibid, paragraph 12.13.

⁴ibid, paragraph 12.35.

⁵ibid, paragraph 12.37.

⁶ibid, paragraph 12.38.

- 15.30. H3G also said that there was a significant group of customers who very rarely moved network, and hence that it was not able to compete equally across the market.¹ H3G gave an example of business customers to whom it could not offer competitive prices for international data roaming (a key business service) because of the excessive wholesale roaming prices for data.²
- 15.31. H3G also pointed out that Ofcom's own market research had found that 60 per cent of current mobile subscribers had never switched operators. According to H3G, given an average churn rate for the market as a whole of 35 per cent, an assumption that 60 per cent of the market was non-addressable, which was implied by Ofcom's survey data, was consistent with H3G's own churn rate of approximately 60 per cent.³

Ofcom's reliance on the performance of previous market entrants

- 15.32. H3G argued that the performance of previous market entrants did not constitute reliable evidence upon which the market share forecasts for an efficient 3G-only operator could be based.⁴ According to H3G, the additional allowance of four years granted to H3G by Ofcom (by comparison with the time it took T-Mobile and Orange to reach parity) was entirely arbitrary and did not account for differences in market circumstances.⁵
- 15.33. H3G argued that the circumstances faced by the 3G-only operator were entirely different from those faced by T-Mobile and Orange. First, when T-Mobile and Orange entered the market in 1993 and 1994 respectively, subscription penetration was at only 3 to 4 per cent of the UK population. By the time H3G entered in May 2003, penetration had risen to 84 per cent. Second, the regulatory environment was also different in that T-Mobile and Orange had seven to nine years between launch and their MCT rates being subject to price controls, whereas Ofcom proposed to reduce H3G's MCT rate after only four years.⁶

Unavoidable competitive disadvantage

- 15.34. The thrust of H3G's case for the 3G-only operator to be allowed longer time to reach market share parity than assumed by Ofcom was that it faced unavoidable competitive disadvantages relative to other MNOs. According to H3G, the challenges faced by the 3G-only operator were numerous and significant, and included (but were not limited to):⁷
- (a) the impact of network effects; and
 - (b) the impact of MNP arrangements.

¹H3G's Amended Price Control Appendix, paragraph 8.8(a).

²Commentary to Amended Price Control Appendix, p15, and H3G's response to Ofcom's September Consultation, Annex 5, p79.

³H3G's Reply, paragraphs 12.42 & 12.43.

⁴ibid, paragraph 12.31.

⁵ibid, paragraph 12.28.

⁶ibid, paragraphs 12.27–12.31.

⁷ibid, paragraph 12.48.

- 15.35. On the impact of network effects, H3G cited two papers by Dr Luis Cabral which considered the dynamics of price competition with network effects.¹ The papers show that when network effects are large, the market is characterized by 'increasing dominance' (ie the larger network increases in size relative to the smaller network). The second paper shows that a positive mark-up on MCT charges also implies a higher degree of increasing dominance by the larger network.
- 15.36. On the question of MNP arrangements, H3G argued that the absence of an adequate MNP system was a barrier to switching. According to H3G, many customers would rather stay with their existing operator than change their number or go through a cumbersome and time-consuming porting process.²
- 15.37. H3G submitted that Ofcom had not considered the impact of network effects because it relied on H3G's May 2006 forecast and the performance of previous entrants, neither of which, according to H3G, could properly be relied upon to support Ofcom's market share assumptions.³
- 15.38. H3G said that Ofcom dismissed the question of MNP arrangements in a similar vein, by stating that even if H3G's claims were correct, any effects of MNP on H3G's ability to win business would presumably already be reflected in H3G's own forecasts.⁴
- 15.39. H3G also argued that the EU-wide evidence on market shares achieved by new entrants, as detailed in an empirical study of pan-European data by Hannes Leo commissioned by H3G Austria,⁵ supported its position.⁶ H3G submitted that the evidence showed that long-run asymmetries in market shares were common, and that new entrants might achieve long-run market shares lower than those of incumbent operators.
- 15.40. Specifically, the Hannes Leo study cited by H3G showed that:
- (a) those companies that were first to receive a GSM mobile phone licence⁷ could show a distinctly higher market share than those that followed;
 - (b) operator ranking by market shares—taken as an average across the whole of Europe—mirrored the ranking by entry date exactly;
 - (c) in markets with three operators, the first provider commanded a market share of about 51 per cent, the second 33 per cent and the third 16 per cent;
 - (d) in markets with four operators, the first provider commanded a market share of about 36 per cent, the second 30 per cent, the third 22 per cent and the fourth 12 per cent; and

¹Cabral L (2007), *Dynamic price competition with network effects*. Working paper Stern Business School and CEPR; and Cabral L (2008), *Modelling competition and regulation in wireless telecommunications: a progress report*. Cited in H3G's Reply, p61.

²H3G's Amended Price Control Appendix, paragraph 3.6(d).

³H3G's Reply, paragraphs 12.55 & 12.58.

⁴*ibid*, paragraphs 12.57 & 12.58.

⁵Hannes Leo (2004), *First-mover advantages in mobile communications: the influence of market entry timing on market share development*, Report prepared for H3G Austria, cited in H3G's Commentary.

⁶H3G's Commentary to Amended Price Control Appendix, p12.

⁷A GSM licence is a licence to operate a telecommunication network as specified by the Global System for Mobile Communications technical specification.

(e) the process of market share convergence had slowed down markedly since 2000, with market share shifts now taking place on a small scale only.

15.41. The study attributed the above results to the declining influx of new customers and the greater reluctance to switch on the part of established users due to customer tie-in programmes, which increase switching costs, and network effects to the advantage of incumbents.

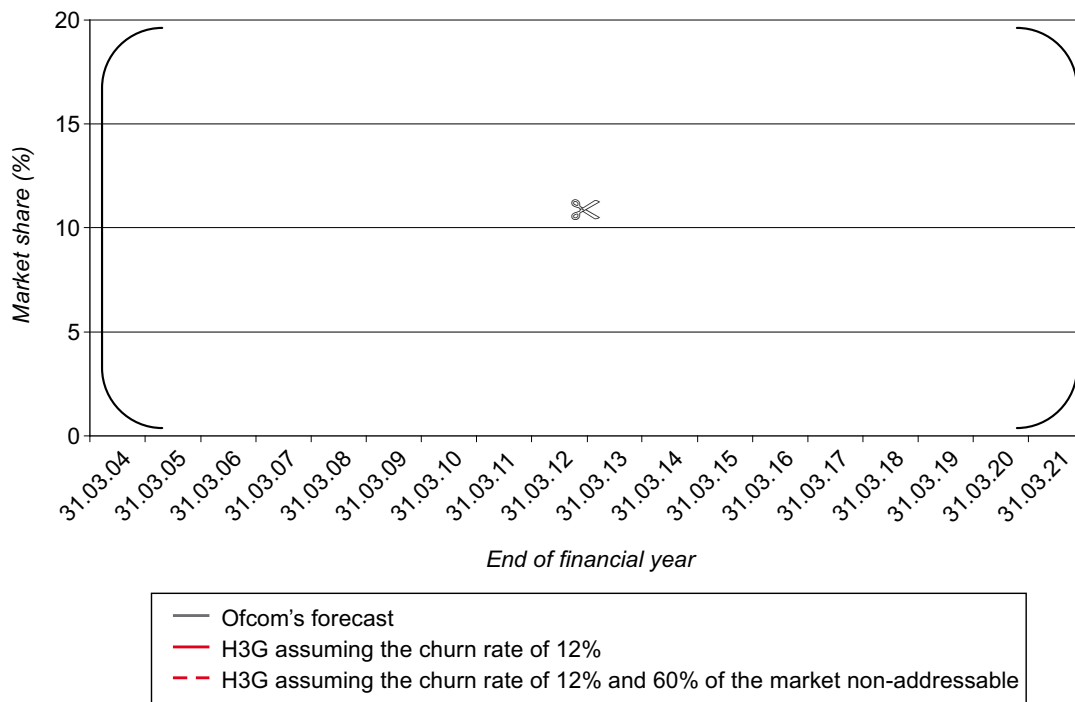
H3G's adjustment of Vodafone's churn model

15.42. H3G adapted Vodafone's churn model using what it considered to be more reasonable assumptions about the extent to which the entrant was in a position to gain subscribers. In particular, H3G presented two models: one which lowered the churn rate from 28 per cent (as assumed by Ofcom) to 12 per cent,¹ and one which used a 12 per cent churn rate and assumed that 60 per cent of the market was non-addressable by the entrant up to 2007/08, with 10 per cent of previously non-addressable subscribers becoming addressable in each year.²

15.43. The results of H3G's modelling exercise are compared with Ofcom's market share forecast for an efficient 3G-only operator in Figure 15.3 below.

FIGURE 15.3

Forecast comparison





Source: CC calculations based on information from H3G.

15.44. It can be seen that the significance of the changes made by H3G is material. Ofcom assumed that the entrant would be able to reach market share parity (ie 20 per

¹H3G's Reply, paragraph 12.39, and H3G's response dated 13 October to the CC's information request of 3 October 2008.

²H3G's Reply, paragraph 12.44, and H3G's response to the CC's information request of 3 October 2008.

cent) in 2016/17. In contrast, H3G's own forecasts give the entrant a market share of 15.8 per cent and 12.5 per cent respectively.¹

- 15.45. In terms of H3G's criticism of Vodafone's churn model, Ofcom recognized that it might be possible to explore differing churn rates applied to different customer segmentations in more detail. However, it argued that this level of analysis would have been disproportionate given the purpose of its subscriber share forecasts (as an input into the key metric of lifetime traffic forecasts). Ofcom also said that H3G itself had not presented a methodology for incorporating the issues it raised in the 3G-only operator subscriber forecasts, or even given its views about the level of customer segmentation that would be appropriate, or necessary, to capture the market dynamics it referred to.²
- 15.46. Ofcom also emphasized the fact that [], and that using H3G's forecasts would have produced [] estimates than those reflected in Ofcom's decision. According to Ofcom, none of H3G's further detailed arguments about Ofcom's market share assumptions altered this critical comparison between H3G's and Ofcom's forecasts in terms of lifetime traffic for the 3G-only operator.³

Interveners' arguments

- 15.47. The Interveners agreed with Ofcom that it was appropriate to set the charge control at a level which reflected the costs of an efficient operator, and that it was entirely reasonable for Ofcom to assume that an efficient 3G-only entrant should be able to reach market parity in 13 years from the date of entry (ie by 2016/17). The Interveners also pointed out that the estimation of efficient network costs depended primarily on traffic levels rather than subscriber numbers, and that in this respect H3G had already achieved a market share of more than 10 per cent.
- 15.48. O2 criticized H3G's argument that an efficient 3G-only operator would permanently have a smaller market share than existing network operators because of 'tariff mediated externalities' that derived from on-net/off-net price differentials. O2 argued that customers appeared to value being able to call off-net at the same rate as on-net, and that in a competitive retail market this had driven all operators to price most of their tariffs in this way.⁴
- 15.49. O2 also argued that the paper by Dr Cabral referred to by H3G as supporting its case on network effects made a number of assumptions that were not appropriate for analysing the UK mobile market, including:⁵
- (a) that there were only two networks, thereby magnifying the effects of any asymmetry;
 - (b) that mobile subscribers knew whether they were making on-net or off-net calls and took into account the number of on-net or off-net calls they made when choosing to subscribe to a network; and
 - (c) that mobile networks had different on-net and off-net call prices.

¹H3G's Reply, paragraphs 12.39 & 12.44.

²Ofcom's Price Control Defence, paragraph 3.4.35.

³ibid, paragraph 3.4.19.

⁴PwC expert report for O2, paragraph 85.

⁵ibid, paragraph 86.

According to O2, none of these assumptions was robust and so the papers therefore provided limited useful information to help in considering the competitive dynamics of the UK mobile market.

- 15.50. O2 estimated that well over [X] per cent of its post-pay subscribers were on tariffs where on-net and off-net calls were priced equally both within the bundle and for calls made outside the bundle. It believed that this was reflective of other operators. O2 also argued that the pre-pay sector was also generally moving to equal prices for on-net and off-net calls. O2 had differential charges for on-net and off-net calls on some pre-pay bundles but not on all. It pointed out that all Orange and Vodafone pre-pay tariff plans (as at 22 June 2008) charged the same for on-net and off-net calls, as did T-Mobile's 'Everyone' plan.¹
- 15.51. Vodafone also argued that there was no good reason to believe that H3G suffered any disadvantage by virtue of its achieving smaller network effects than other MNOs. Vodafone submitted that to the extent that a group/family of subscribers saw value in subscribing to a single network (eg because the network offers benefits to groups of subscribers all subscribing to the same network), they could achieve those benefits by subscribing to any network, regardless of its size.²
- 15.52. On the question of MNP arrangements, Vodafone cited the judgment of the Tribunal on non-price control matters (the NPC Judgment),³ in which the Tribunal held that H3G had failed to show that the MNP arrangements would present a barrier to its attaining Ofcom's contemplated market share, and that it was not incumbent upon Ofcom to investigate every other alternative reason why a company in H3G's position might gain more or less than its fair share of the business available over the period.⁴
- 15.53. Vodafone also suggested that most customers attached little priority to keeping their phone number,⁵ and noted that Ofcom's survey evidence suggested that those who did port their number were generally satisfied with, and well-served by, the current MNP process.⁶
- 15.54. Vodafone argued that the reason why H3G had not been able to grow its market share faster reflected low customer satisfaction with H3G's service and H3G's own commercial strategy, citing H3G's reported average churn rate of nearly 60 per cent. According to Vodafone, this suggested that H3G's own customers were not deterred by the MNP arrangements from leaving H3G and H3G had provided no explanation as to why the opposite should be true for customers wanting to leave other networks and join H3G.⁷
- 15.55. In its original churn model (described in paragraph 15.17 above), Vodafone assumed that the overall market churn rate was 35 per cent and that the entrant won 1 in 4 from the pool of churned subscribers. On the basis of this model, Vodafone said that the entrant should reach market parity by 2012/13, that is, four years earlier than Ofcom decided to be the case.

¹ibid, paragraph 85, footnote 38.

²Vodafone Sol, paragraph 3.8.

³[2008] CAT 11.

⁴Vodafone Sol, paragraph 3.6; NPC Judgment, paragraphs 260, 267 & 268.

⁵First witness statement of Craig Tillotson for Vodafone, paragraph 33.

⁶ibid, paragraph 29(c).

⁷ibid, paragraph 53.

- 15.56. Vodafone subsequently revised its model, to take into account the fact that its original model failed to account for the possibility that consumers who choose to take up a new mobile subscription may 'churn and return'. The adjusted model predicts that, if consumers who switch are just as likely to 'churn and return' as they are to churn to any other network, then H3G would achieve market share parity by 2014/15 (ie two years earlier than Ofcom decided to be the case).¹
- 15.57. Vodafone provided us with a detailed explanation of its churn figures. It clarified that its churn and return category did not include those who took up an upgrade, but only those who left Vodafone (ie switched off their SIM) and then came back as a new customer. Vodafone submitted that those customers represented an opportunity for H3G to compete for on equal terms with other MNOs.²
- 15.58. Using this definition of churn, Vodafone gave us the following statistics:
- (a) Vodafone's overall churn level was about 34 per cent (ie pre-pay and contract);³
 - (b) Vodafone's churn in the post-pay market was [X] per cent;⁴ and
 - (c) approximately [X] per cent of churners returned to Vodafone.⁵
- 15.59. Vodafone also provided a detailed critique of H3G's churn model, which itself was an adaptation of Vodafone's churn model. In particular, Vodafone argued that:⁶
- (a) H3G used an improbably low volume of annual churning customers;
 - (b) H3G's model did not show an improvement in switching levels resulting from changes to the MNP process;
 - (c) H3G incorrectly assumed that there was a significant non-addressable segment of the market; and
 - (d) H3G had incorrectly used MNP twice, in effect treating it not only as an inhibitor to switching in general, but also as a further inhibitor to switching specifically to H3G.
- 15.60. Vodafone argued that the assumption in H3G's churn model that the inter-operator churn rate was as low as 12 per cent was based on a single survey-based data point from Ofcom that 12 per cent of consumers switched network in a given year. According to Vodafone, this was inconsistent with actual operator data, as reported by Ofcom, which showed that total disconnections were running at around 36 per cent a year.⁷
- 15.61. Vodafone said that data from the operators showed that there were 25.8 million connections in 2006/07 of which 2.9 million were new connections, and that this implied 22.9 million (or 36.1 per cent of the total number of subscribers) churning customers which could not be reconciled sensibly with H3G's assumption of inter-

¹Vodafone Sol, paragraph 3.9(iii).

²Vodafone's comments on H3G's churn model submitted at the bilateral hearing on 24 September, footnote 8 on p3.

³First witness statement of Craig Tillotson for Vodafone, paragraph 53.

⁴Vodafone's bilateral hearing, transcript, p49.

⁵Vodafone's bilateral hearing, transcript, pp46&50.

⁶Vodafone's comments on H3G's churn model submitted at the bilateral hearing on 24 September.

⁷This is based on published operator data for the four larger MNOs since H3G's data is not published (Vodafone's comments on H3G's churn model distributed at the bilateral hearing on 24 September, p3).

operator churn of 12 per cent (which, if correct, would imply that the operators should only have reported 7.6 million connections).

- 15.62. According to Vodafone, H3G's assumption would leave a shortfall of 15.3 million (22.9 less 7.6 million), or two-thirds of the total connections. The only way to reconcile H3G's assumption with the actual number of disconnections would be to accept that 15.3 million were customers who were disconnecting and then returning to the same operator (ie churn and return), which was not credible and was contradicted by Vodafone's own evidence (as described in paragraph 15.58 above).
- 15.63. In any case, Vodafone submitted that all disconnecting customers (except those permanently exiting the market) represented a connection opportunity for all operators, and that any churn model should reflect this fact by using an industry standard churn rate of 35 per cent or so.¹
- 15.64. On H3G's treatment of MNP, Vodafone argued that if H3G believed that MNP arrangements inhibited switching, then any amendment of the MNP process which made porting faster, such as the reduction in the porting period from five days to two days in 2008, should be expected to produce an increase in the overall industry switching percentage in H3G's model. Vodafone pointed out that such a change was absent from H3G's model which assumed a constant rate of churn of 12 per cent from 2003 unchanged through to 2076.²
- 15.65. Vodafone further criticized H3G's assumption that 60 per cent of the market from 2003 to 2008 was non-addressable and that thereafter the size of the non-addressable market would shrink by 10 per cent every year. In Vodafone's view, the idea that a large proportion of the customer base was non-addressable was incorrect—some customers may be less likely than others to switch, but switching was possible for all.³
- 15.66. Vodafone also pointed out that the same assumption about the proportion of non-addressable customers was also applied in H3G's model to new customers. It submitted that this was simply wrong as customers who were new to the mobile market could not logically be considered non-addressable.⁴
- 15.67. Vodafone gave us evidence about the ageing of its own consumer base by date of SIM activation which revealed a fairly straight-line relationship of age and proportion of the customer base. It said that by year 4, approximately [%] per cent of pre-pay and [%] per cent of post-pay would have left it, and that fewer than [%] per cent of its customers stayed with it for [%] years or longer. Vodafone argued that this showed that there was no sign of any core of customers who had never switched, and never would.⁵
- 15.68. Vodafone also criticized the growth inhibitor in H3G's model which was specific to H3G and which represented 'network effects and other factors', presumably MNP. Vodafone did not consider MNP to be relevant—even if MNP were an inhibitor to switching, the impact of MNP would be general to all operators, and not specific to

¹Vodafone's comments on H3G's churn model submitted at the bilateral hearing on 24 September, p5.

²ibid, p5.

³ibid, p5.

⁴ibid, p5.

⁵ibid, p5.

H3G, and would already be accounted for in H3G's unreliably low switching percentage of 12 per cent.¹

- 15.69. Vodafone said that the alleged network effects were not properly argued or explained by H3G. It said that the academic literature cited by H3G in support of its case on network effects relied on the existence of on-net/off-net pricing differentials, and said that the Tribunal had already ruled that such evidence was inadmissible in these proceedings.²
- 15.70. Vodafone considered the only relevant inhibitor specific to the new entrant to be what it described in its original simple churn model as a 'brand preference factor', which represented the fact that the new entrant needed time to establish its brand, its sales outlets, its organization etc. Vodafone submitted that five years after launch the need for such a factor for the average efficient 3G-only operator would be long gone.³
- 15.71. T-Mobile argued that H3G's argument that the MNP process significantly reduced the amount of switching in the market, and that this accounted for H3G's low subscriber market share, was at odds with the available evidence.
- 15.72. It cited evidence from a report by Merrill Lynch⁴ which suggests that the actual level of monthly churn in the UK market in the fourth quarter of 2007, as reported by the operators themselves, was 2.8 per cent, which was higher than the churn rate in any other country in Europe and about 50 per cent greater than the European average of 1.9 per cent.⁵
- 15.73. According to T-Mobile, this meant that H3G could not use the UK's MNP system as an excuse for its poor growth since the evidence suggested that alternative MNP systems (ie ones that are quicker and recipient led) did not lead to greater levels of churn.⁶
- 15.74. T-Mobile also pointed out that H3G reported a churn rate of between 2.6 and 3.6 per cent a month for 2007, implying an annualized churn rate of between 31.2 and 43.2 per cent for 2007.⁷ T-Mobile said that in 2006 H3G reported a figure of 4.9 per cent, which was equivalent to 58.8 per cent when annualized.
- 15.75. T-Mobile also estimated how it would have expected H3G's market share to evolve over time using the monthly churn rate of 2.8 per cent as reported by Merrill Lynch.⁸ It assumed that H3G should be able to capture 25 per cent of the churned subscribers and lose subscribers according to the overall churn rate (ie 2.8 per cent of its subscribers every month). Using these assumptions, T-Mobile said that H3G should have expected to achieve a market share of 15 per cent by 2007. It contrasted this with H3G's actual share of subscribers of 5.6 per cent,⁹ concluding that H3G's low market share was not therefore explained by the UK's churn rate, and must be due to other factors.

¹ *ibid*, p7.

² *ibid*, p7.

³ *ibid*, p7.

⁴ Merrill Lynch, *European Wireless Matrix* 1Q08.

⁵ Expert report of Dr Mike Walker for T-Mobile, paragraphs 19 & 20.

⁶ *ibid*, paragraph 23.

⁷ These are simple arithmetic averages.

⁸ Expert report of Dr Mike Walker for T-Mobile, paragraphs 28 & 30.

⁹ Based on the data from Merrill Lynch; see the footnote to paragraph 15.72.

- 15.76. T-Mobile also gave us evidence which suggested that H3G had been less successful at winning customers that ported away from T-Mobile than the other networks.¹ According to this evidence, only 14 per cent of customers who ported away from T-Mobile ported to H3G. This compared unfavourably with the 35 per cent who ported to Orange and 31 per cent who ported to O2, and it also fell below the 17 per cent who ported to Vodafone, which T-Mobile said tends to have the highest prices in the market.²
- 15.77. Orange, along the same lines, submitted that should H3G fail to achieve market share parity over the period of 13 years, that was likely to be a result of its own poor commercial strategy rather than an indication of any flaw in Ofcom's cost modelling assumptions.³
- 15.78. Orange, like Vodafone, provided information on the ageing of its customer base. According to that evidence, [X] per cent of its current customers had been with Orange for at least the last four years, leaving around [X] per cent of customers who had switched to Orange from another network or otherwise.⁴

Assessment

- 15.79. The questions we need to address with respect to market share are whether Ofcom was wrong (a) to assume that an efficient 3G-only operator would achieve market share parity; and (b) to assume that it would take 13 years to reach parity. We note that we are concerned not with H3G's actual performance, but with a competitively-neutral assumption for a hypothetical efficient 3G-only operator.

Market share parity

- 15.80. Forecasting market share for the 3G-only late entrant into the UK mobile market over the lifetime of Ofcom's MCT model (ie to 2040) is a formidable task. We think that the assumption of market share parity in the long run is a reasonable starting point, both from the viewpoint of principle, and as a practical solution to the forecasting problem in hand.
- 15.81. We think that unless there are strong and persistent barriers to switching in the market, the late entrant should be able to reach the scale of an efficient operator in the long run. Furthermore, as we discussed in Section 5 of this determination on Reference question 2, asymmetric regulation can cause a number of detriments, and may mute the entrant's incentives to become more efficient and reach scale.⁵ Eventual symmetry in MCT rates, which implies, at least in terms of modelling, an assumption of equal market shares in the medium or long term, is also consistent with the views of other regulators and authorities at the European level.

The path to parity

- 15.82. At a broad level, we would not dispute Ofcom's decision to consider the performance of the past entrants T-Mobile and Orange, and to grant H3G an additional allowance of four years relative to the time it took T-Mobile to reach market share

¹Expert report of Dr Mike Walker for T-Mobile, paragraph 31.


²First witness statement of Philip Barden de Lacroix for T-Mobile, paragraphs 54 & 55. Other MNOs reported similar figures.

³Orange Sol, paragraph 6.14.

⁴Letter from Orange dated 15 October, p2.

⁵See paragraph 5.4.53.

parity. However, because of the difference in market circumstances between 1994, when T-Mobile entered the market, and 2003, when H3G entered the market, we think that this evidence provides only limited support for Ofcom's market share assumptions.

- 15.83. We also agree with Ofcom that Vodafone's churn model is a useful methodological device for estimating the growth in the share of subscribers for an efficient 3G-only operator under different assumptions about market churn levels.¹ We note that all the parties in this appeal accept this, and that the disagreement between them is about the appropriate churn rate (and other modelling assumptions) which should be used in the case of the 3G-only operator.
- 15.84. Ofcom's market share forecast implies an annual churn rate of approximately 28 per cent, assuming that the entrant takes one in five of the new and churning customers and loses 25 per cent of its subscribers each year. This is some 8 per cent lower than the average churn rate in the UK in 2007 of approximately 36 per cent implied by Ofcom's published operator data (for the four 2G/3G MNOs).²
- 15.85. This being the case, in the absence of evidence that the reported churn rate is wrong, or that the entrant is unable to compete with the incumbents on equal terms for the churning subscribers, we would agree with Ofcom that its forecast of market share for the 3G-only entrant is not too aggressive.
- 15.86. In this appeal Ofcom has relied on the fact that H3G's own forecast would have produced [] those reflected in the MCT Statement (see paragraph 15.14 above). According to Ofcom, none of H3G's detailed arguments alter this critical comparison between H3G's and Ofcom's forecasts in terms of lifetime traffic for the 3G-only operator.
- 15.87. In our provisional determination we accepted that it was legitimate for Ofcom to compare its own forecast with that of H3G in terms of lifetime traffic as another check that its forecast for the 3G-only entrant was not too aggressive. However, in the light of the fact that Ofcom's forecast comparison was based on voice traffic alone whereas MCT charges were driven by traffic forecasts for a range of services, we disagreed with Ofcom's assessment of the significance of this evidence.
- 15.88. Without considering H3G's forecasts for other services, we did not think that Ofcom should have placed as much weight as it seemed to in these proceedings on the argument that H3G's forecast would have produced lower efficient unit cost estimates than those reflected in the MCT Statement. We also questioned Ofcom's selective approach to the forecasting comparison. Ofcom told us that its medium-traffic scenario for data was more optimistic than H3G's, but because Ofcom thought that forecasting voice was less uncertain than forecasting data, and because it considered H3G's forecast of data to be too low, it decided to focus on voice traffic alone as the relevant comparator.³
- 15.89. We said that we were not entirely comfortable with that logic. We noted that Ofcom itself argued that it would be inconsistent to adopt H3G's forecast of subscriber

¹Churn-based calculations were also recommended in the European Regulators' Group (ERG) Common Position on symmetry of fixed and mobile call termination rates (adopted on 28 February 2008).

²See paragraph 15.61 above. Including data for H3G would increase the average churn rate. The Merrill Lynch data for the same period implies a churn rate of 33 per cent (based on the arithmetic average of monthly rates) or 38 per cent (based on the compound rate), again excluding H3G.

³Ofcom's bilateral hearing on the H3G appeal, transcript, p69.

numbers, but not its forecast of traffic per subscriber,¹ and we thought that similar reasoning undermined Ofcom's decision to use voice traffic, but not data traffic, for the purpose of the forecast comparison.

- 15.90. Therefore, contrary to Ofcom's view, we had found it necessary to examine H3G's case in more detail.
- 15.91. In its response to our provisional determination, Ofcom did not accept that our characterization of its approach as selective was fair. It thought that we should have noted (a) the need for broad consistency between spectrum values and traffic forecasts that Ofcom highlighted in the MCT Statement and (b) the validity of considering a voice traffic comparison in the context of having set the charge control by placing some weight on voice-only traffic forecasts.²
- 15.92. On the first point, Ofcom explained that one of the reasons for presenting a comparison of voice traffic rather than total traffic was that H3G's May 2006 data traffic forecast was too low to be consistent with some of the spectrum valuations that Ofcom used to set the charge control level.³ We find this a difficult point. As set out in Section 2 of our determination on Reference question 1(i), we think that the 3G spectrum cost allowance in the price controls set by Ofcom was too high. H3G's own data forecast appears to be consistent with this view, but was not relied upon precisely because of that fact.
- 15.93. On the second point, we have more sympathy with Ofcom's position. Having considered voice-only traffic forecasts and assessed the extent of economies of scope from carrying voice and data traffic, we accept that a meaningful comparison could be made between Ofcom's and H3G's voice traffic projections, especially given Ofcom's view (with which we agree) that forecasting voice was less uncertain than forecasting data.
- 15.94. However, we still do not think that the comparison provides a complete answer to H3G's case, and accordingly it remains our view that it is necessary to examine it in more detail.

H3G's arguments

- 15.95. H3G put forward a number of arguments as to why it faced competitive disadvantages relative to the incumbents, including the inability to acquire significant numbers of business customers, the inconvenience of the current MNP arrangements and the more general network effects which favoured the incumbent operators. According to H3G, as a result of these impediments, there was a non-addressable segment (or at the least a very difficult to address segment) for an efficient 3G-only late entrant.⁴
- 15.96. As a preliminary point, we disagree with the strong version of H3G's argument, namely that an operator could be entirely precluded from any segment of the market. We think that some customers may be less likely to switch than others, but that, given strong enough incentives, eventually almost everyone should be addressable. We find it plausible though, and indeed likely, that some market segments may be more difficult to address than others, but, in our view, H3G has not

¹Ofcom's Price Control Defence, paragraph 3.4.18.

²Ofcom response to provisional determinations, paragraphs A6.1–A6.4.

³ibid, paragraph A6.5.

⁴H3G's Reply, paragraph 12.42.

presented a compelling case as to why this problem affects H3G and not the other MNOs.

- 15.97. Furthermore, much of what H3G said in relation to market share either lacked substantiating evidence, or was contradicted by the evidence submitted by the Interveners, especially in relation to the key question of the appropriate churn rate.
- 15.98. Turning to H3G's specific points, H3G has not explained to us why it is not able to acquire a significant number of business customers. We note that in its response to Ofcom's September 2006 Consultation, H3G argued that for business customers it could not offer competitive prices for international data roaming because of the excessive wholesale roaming prices for data (see paragraph 15.30 above). However, in this appeal we have seen no supporting evidence from H3G that this is in fact the case.
- 15.99. In support of its argument about network effects, H3G relied on two research papers by Dr Cabral (see paragraph 15.35 above). These papers show that in a world where there are two networks—one very large and the other very small—and where consumers always know whether they are making on-net or off-net calls, a positive mark-up on termination charges also implies a higher degree of increasing dominance in market share dynamics: that is, a greater tendency for larger networks to become even larger.
- 15.100. In our view, neither the assumptions nor the conclusions in these papers are reflective of the market dynamics in the UK mobile telecommunications sector. In the UK, there are four 2G/3G incumbents with similar market shares, one 3G-only operator and a number of MVNOs. We would expect the presence of that many competitors to reduce the impact of network effects which are driving the result in Dr Cabral's papers. We also note that market shares in the UK market have been converging gradually rather than diverging, as predicted in Dr Cabral's papers.
- 15.101. On the question of MNP arrangements, the evidence that we have seen leads us to reject H3G's argument that the porting arrangements in the UK are deterring significant numbers of subscribers from switching networks.¹
- 15.102. First, the evidence we have been presented with by T-Mobile shows that market churn is higher in the UK than in any other European jurisdiction, including those in which H3G considers a preferable MNP system to be in place (see paragraph 15.72 above). This evidence undermines, in our view, the alleged link between the porting arrangements and the churn rate.
- 15.103. Second, each 2G/3G MNO submitted evidence that H3G has been less successful in attracting customers who do port away from their networks than other MNOs. According to T-Mobile, only 14 per cent of customers who ported away from it ported to H3G, compared with 35 per cent who ported to Orange, 31 per cent who ported to O2 and 17 per cent who ported to Vodafone (see paragraph 15.76 above). Vodafone [] gave us evidence that for the 12 months from April 2006 to March 2007, [] per cent of the total number of its subscribers who ported their number did so to H3G, which compared unfavourably with the number

¹Our observations should be read in the light of the specific points that H3G has appealed. We do not intend to suggest that there may not be detrimental features of the current MNP system. It is possible that there are reasons why the MNP arrangements may disadvantage H3G or be undesirable for other reasons, but in so far as they fall outside the scope of this appeal we say nothing about them.

captured by other MNOs over the same period (ie [X] per cent between Orange, T-Mobile, O2 and the MVNOs).¹ Other MNOs reported similar figures.²

- 15.104. While we would not go as far as saying that this evidence implies that H3G's inability to win the expected share of switching customers can be attributed to a poor level of customer service, as argued by the 2G/3G MNOs, we do think that this evidence undermines H3G's argument that MNP is a significant impediment on its ability to win customers from other MNOs.
- 15.105. Taking all of the above into account, we think that H3G's calibration of Vodafone's churn model, which we described in paragraphs 15.42 to 15.44 above, understates considerably the ability of the entrant to grow its share of subscribers. In particular, on the basis of our assessment of H3G's arguments about barriers to switching, we see no justification for H3G's assumptions that 60 per cent of the market is non-addressable for the new entrant, and that in any given year only 12 per cent of the subscribers churn.
- 15.106. These two assumptions are based on Ofcom's consumer survey which suggests that 60 per cent of non-business customers have never switched operator and that only 12 per cent of consumers switched operator in 2006/07.³ However, even if the results from Ofcom's survey could be extrapolated to the market as a whole (ie as applying to business customers too), and we have seen no evidence from H3G that this is the case, they cannot be reconciled sensibly with the actual churn statistics reported by the operators.⁴
- 15.107. We draw particular attention here to the evidence presented by Vodafone, which we set out in paragraphs 15.60 to 15.62 above, and which shows that there were 25.8 million connections in the UK in 2006/07, as reported by Ofcom, of which some 2.9 million were new customers and the remainder (ie 22.9 million) were churning customers. Taken against the total customer base, this implies a churn rate of approximately 36 per cent which is broadly consistent with the Merrill Lynch data put forward by T-Mobile.
- 15.108. These figures cannot be reconciled with the 12 per cent churn rate assumed by H3G unless the majority of the churning customers (two-thirds in fact) are disconnecting and then returning to the same operator (ie churn and return), which we do not consider plausible. Indeed, Vodafone's evidence, which we describe in paragraph 15.58 above, shows that only about [X] per cent [X] of its disconnecting subscribers can be accounted for as churn and return.
- 15.109. In any case, we agree with Vodafone and Ofcom that all disconnecting customers (ie including churn and return) present a genuine acquisition opportunity for another network, and not only those who actually choose another provider.⁵ It is not clear to us why a customer who does not accept an upgrade, and goes through the process of disconnecting from his or her MNO, would not represent an acquisition opportunity for other MNOs, as claimed by H3G.

¹First witness statement of Craig Tillotson for Vodafone, paragraph 54.

²Orange's bilateral hearing on H3G appeal, transcript, p157; PwC expert report for O2, paragraphs 136 & 138.

³Ofcom's research document *The Consumer Experience*, November 2007.

⁴In response to our provisional determination, H3G cited this paragraph as an example of us wrongly allowing the Interveners' submissions to add to Ofcom's reasoning (H3G's response to provisional determinations, paragraphs 6.1–6.4). Leaving aside the issue of whether or not, or in what circumstances, it would be wrong for us to rely on points made by Interveners that were not made by Ofcom, the argument that Ofcom's market share growth forecast for the 3G-only operator was not too aggressive when compared with observed market churn rates was advanced by Ofcom as well as by others (see, for example, paragraphs 15.18 & 15.19 above and paragraph 3.4.29 of Ofcom's Price Control Defence).

⁵We note that the Tribunal has taken the similar view (NPC Judgment, paragraph 249).

- 15.110. Indeed, Vodafone's evidence, which suggests that Vodafone wins [] (see paragraph 15.58 above) of its disconnecting subscribers, implies that a subscriber who goes into the market to search for a better deal is no more likely to return to the previous provider than to choose any of the other MNOs in the market.
- 15.111. We also note that H3G's assumption about the size of the non-addressable market is inconsistent with the evidence from Orange and Vodafone about the ageing of their customer bases. Orange submitted that around [] per cent of its current customers had been with it for at least four years (ie since H3G's entry into the mobile market), leaving [] per cent of customers who had switched to Orange from another network or were new to the market.¹
- 15.112. Vodafone reported similar statistics (see paragraph 15.67 above): some [] per cent of its contract base and [] per cent of its pre-paid base had been with it for four years or longer. It also gave us evidence that fewer than [] per cent of its subscribers ([] per cent of contract and [] per cent of pre-pay) had been with it for eight years or more. These statistics are at odds with H3G's assumption that 60 per cent of the market is non-addressable for the 3G-only entrant.

Recalibration of the churn model

- 15.113. Whilst we do not think the fact that approximately [] per cent of Vodafone's subscribers have been with it for eight years or longer means that we should automatically assume that these customers are non-addressable to an entrant, we have nevertheless considered what implication such an assumption would have on the market share path of the 3G-only operator.
- 15.114. Therefore, notwithstanding the views that we have expressed above, we have recalibrated H3G's version of Vodafone's churn model using the following assumptions:
- (a) We assume that all new customers to the mobile market are addressable by the 3G-only entrant.
 - (b) We assume that 10 per cent of the existing subscriber base is not addressable by the entrant until the end of this price control period (ie until 2010/11), and that all subscribers are addressable by the end of the explicitly modelled period (ie in 2020). We interpolate linearly the proportion of the non-addressable customers in the intervening years between these two data points.
 - (c) Consistent with our views set out in paragraph 15.109 above, we use the actual churn rate of 35 per cent, and assume that the entrant wins one in five of the churning customers and loses 35 per cent of its subscribers each year.
 - (d) We have retained Vodafone's brand preference factor and calculated its value for each year in the model as the average of the values assumed by H3G and Vodafone. The brand preference scalar retards the growth of the 3G-only entrant until 2011.²
- 15.115. We are conscious that some of these assumptions may appear to be arbitrary. However, on the balance of the evidence we have seen, we believe that they

¹Orange's additional information in response to questioning in bilateral hearing provided in a letter of 15 October 2008.

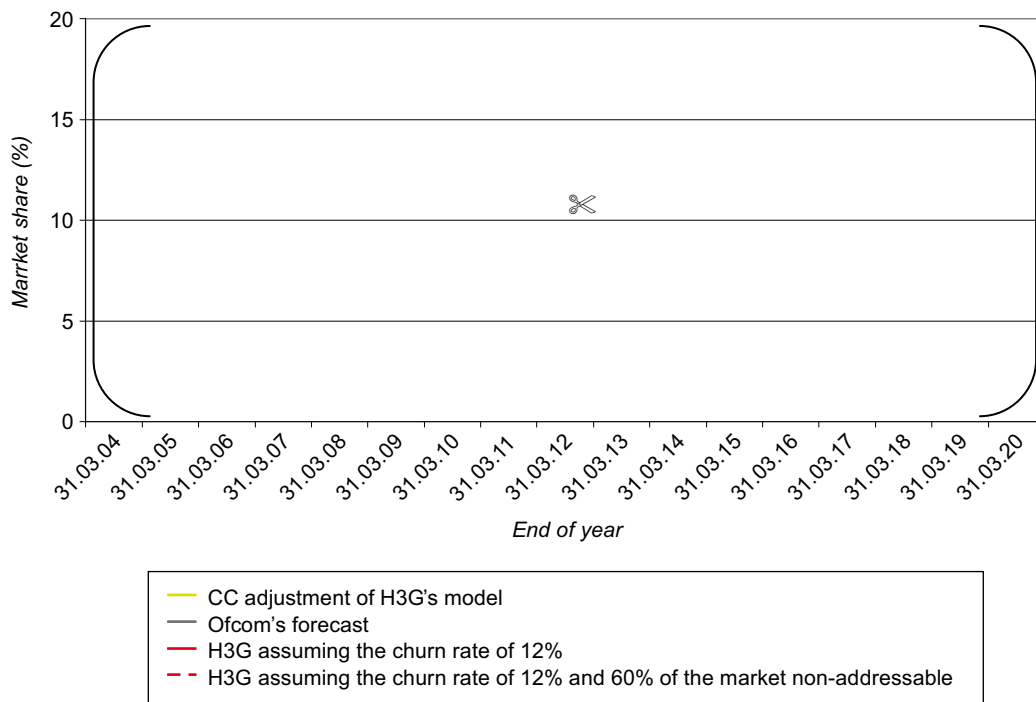
²Neither Vodafone nor H3G has convinced us that its version of the brand preference factor is appropriate. In the absence of any other relevant evidence, we have decided to average the values assumed by the two parties.

describe the market conditions faced by an efficient 3G-only operator better than the assumptions made by either H3G or Vodafone.

- 15.116. Furthermore, we wish to emphasize that our calibration of the churn model is intended only to serve as a cross-check on the reasonableness of Ofcom's market share forecast in the light of our views on the case that H3G has presented and the evidence we have seen (indeed, in some respects, the assumptions we are using in the model are generous to H3G, given the evidence we have seen, in that it incorporates both a non-addressable segment of the market and a brand preference factor). We consider that such a cross-check is useful given that each of H3G, Vodafone, and Ofcom (to a certain extent) have relied on a variant of the churn model to support their respective positions.
- 15.117. Using the assumptions set out above, we have calculated the market share for the 3G-only entrant and compared it with Ofcom's and H3G's own forecasts, as illustrated in Figure 15.4.

FIGURE 15.4

CC forecast comparison with Ofcom's and H3G's forecasts*



*The percentages shown on the chart refer to the year 2016/17.
Source: CC calculations.

- 15.118. The comparison shows that even allowing for the existence of a non-addressable segment of the market, which we do not think is justified by the evidence, the resulting forecast of the share of subscribers for an efficient 3G-only entrant is close to Ofcom's forecast towards the end of the modelled period. In particular, it suggests that the entrant should be able to achieve a market share of [✂] per cent by 2016/17, which is just under 1 per cent lower than Ofcom's forecast of [✂] per cent for the same year.
- 15.119. Furthermore, the revised forecast implies a [✂] market share for the efficient 3G-only operator than Ofcom's for the duration of this price control period, so that in

terms of lifetime traffic volumes, which are to the key input in deriving the efficient unit cost benchmarks, the difference between the two forecasts is even smaller.

- 15.120. In our view, the comparison does not assist H3G's case that Ofcom's forecast was unreasonable.

Other evidence

- 15.121. Another piece of evidence, which was introduced by H3G to support its criticism of Ofcom's market share parity assumption, is the paper by Hannes Leo which provides EU-wide evidence on market shares achieved by new entrants (see paragraphs 15.39 to 15.41 above). However, we think that the evidence presented in this study is only of limited relevance for the forecasting of the share of subscribers for a 3G-only operator in the UK.
- 15.122. First, the churn rate in the UK is higher than in any other country in Europe, and it is about 50 per cent greater than the European average. Therefore, all else being equal, an entrant in the UK market should be able to reach market share parity in less time than entrants in other European countries.
- 15.123. Second, and related to the first point, the market share dynamics in the UK appear to be very different from those in the rest of Europe. In the UK, the four largest firms have similar market shares whereas in other European countries the first and second movers typically have much larger shares than other players.
- 15.124. Third, and in any case, the Hannes Leo paper suggests that it could take 10 to 20 years for a new entrant to reach a market share of 20 per cent. This is not inconsistent with Ofcom's assumption that it would take an efficient 3G-only operator 13 years to reach parity.

Determination

- 15.125. For the reasons set out above, our determination is that Ofcom did not err in respect of its 3G-only operator market share forecast.

16. Determination on Reference question 8

- 16.1. As set out in the preceding sections, we have determined that Ofcom erred in respect of its treatment of 3G spectrum costs and by including an NES within the MCT charge controls, so the answers to Reference questions 1(i) and 1(iii) are ‘yes’. It therefore falls to us under Reference question 8 to give clear and precise guidance as to how those errors should be corrected, and, in so far as is reasonably practicable, a determination as to any consequential adjustments to the level of the price controls.
- 16.2. We have approached this reference question with the comments made by the Tribunal in the Reference Ruling in mind (see Section 1 of this determination, paragraph 1.20).

The nature of our determination

- 16.3. We have considered whether, in the light of the nature of the errors that we have found, it is reasonably practicable for us to make a determination as to what consequential adjustments to the level of the price controls should be made.
- 16.4. We are conscious of the fact that we have not been able to take into account matters which have been ruled inadmissible.¹ However, in our view that does not mean that we cannot make a determination as to what consequential adjustments to the level of the price controls should be made if it would otherwise be appropriate to do so. In making such a determination, we would not be setting a new price control that was independent of the one set by Ofcom—we would be determining what needed to happen to the price controls to correct for specific errors that had been found to exist. It seems to us inherent in the appellate scheme that if other errors had been made by Ofcom they could not have been corrected by us if they had not been appealed.
- 16.5. We recognize that there will be cases where it will not be possible or appropriate for us to issue a determination that, in specifying what consequential adjustments should be made to the price controls, in effect settles the question of what the level of the price controls should be. However, we consider that in this case the nature of the errors we have found, and the nature of the corrections that are required, are such as to make it both possible and appropriate for us to do so. The issues in question—the NES and the appropriate quantum of 3G spectrum costs to include within the MCT charge controls—have been subject to extensive scrutiny on this appeal, the parties have each had a number of opportunities to contribute to our considerations (and to respond to them), and in our view it is desirable to have the issues settled without further delay and expense.
- 16.6. We therefore consider that it is reasonably practicable and appropriate for us to make a determination as to what consequential adjustments to the level of the price controls should be made.
- 16.7. We begin by addressing the consequences of our determinations for the 2010/11 TACs. We then turn to the question of the glide paths and finally address some other issues that have been raised by the parties in relation to this reference question.

¹H3G argued that because of the Admissibility Ruling (among other things), the matters which we could take into account had been limited, and that our role therefore had to be confined to either quashing or upholding some or all of Ofcom’s original decision (H3G’s response to provisional determinations, paragraphs 3.1–4.9).

The 2010/11 TACs

- 16.8. Ofcom set TACs for 2010/11 of 5.1ppm for the 2G/3G operators and 5.9ppm for the 3G-only operator (in 2006/07 prices).
- 16.9. The consequence of our determination on Reference question 1(iii) is that no NES allowance should be made. The consequence of our determination on Reference question 1(i) is also clear for the 2G/3G operators' TACs. The 2G cap implies that the network and 3G spectrum cost element of the charge should be 3.7ppm.¹ Adding the administration costs allowance of 0.3ppm gives a final 2010/11 TAC of 4.0ppm.
- 16.10. The position is not so straightforward when it comes to the 3G-only operator. We noted (in Section 2 of this determination, paragraphs 2.9.153 and 2.9.158) that the application of the 2G cap to the 3G-only operator did not necessarily lead to the same charge control levels being set for all operators. This is because there are two competing considerations to balance:
- (a) On one hand, the 2G cap, which is based to an extent on an analogy with a competitive market, can be taken to imply that any MCT charge differentials between operators would not be sustainable, and that therefore an MNO would not be able to charge consumers more on the basis that its costs were higher than other MNOs (because of smaller economies of scale, for example).
 - (b) On the other hand, Ofcom allowed for certain differences in the level of efficient costs to be reflected in the final charge control levels. We note, similarly, that whilst we rejected H3G's argument for greater non-cost-based asymmetry, the materials discussed in Section 5 of this determination in relation to Reference question 2 demonstrate a widespread recognition at the European level of the legitimacy of reflecting differences in efficient costs in the case of later entrant operators, at least temporarily.
- 16.11. We asked for, and received, a number of submissions on this point. Ofcom recognized that there were three alternative possibilities for the final year TAC for the 3G-only MNO—higher charges reflecting higher administration and network costs, higher charges reflecting higher administration costs only, and the same charge applying to all MNOs—but did not urge us to adopt any particular one.² It did, however, note that from an economic perspective, there was only a single opportunity cost of 3G spectrum³ and that reflecting differentials in certain types of network costs, for example costs which are outside the control of the operator, was consistent with past regulatory policy.⁴
- 16.12. H3G urged us to apply the 2G cap to the 3G-only operator (if at all) consistently with Ofcom's MCT cost model, with the result that network cost differentials and the extra administration costs allowance should be reflected in its TAC. H3G put forward two ways in which this could be done. First, one could take the ppm 3G spectrum allowance implied by the 2G cap and add that on to the 3G-only operator's modelled network unit costs for 2010/11, leading to a final TAC of 4.3ppm. Second, one could work out the total spectrum cost that would need to be inputted into the model to generate the 2G cap for the 2G/3G operators, and then input that total into the model

¹We note that we would not have reached a different figure if we had adopted an amended scenario analysis, given our views on asymmetry of risk and the use of the medium-demand forecast (see Section 2 of this determination, subsection 2.8 and paragraphs 2.9.159–2.9.169).

²Ofcom presentation of 28 November 2008.

³Ofcom's plenary hearing of 28 November 2008, transcript, p29.

⁴ibid, p30.

to derive the 2010/11 TAC for the 3G-only operator. Such an approach would lead to a TAC of 4.4ppm. The first approach keeps the per unit 3G spectrum allowance uniform between all operators, whilst the second keeps the total (predicted) recovered 3G spectrum allowance the same.¹

- 16.13. H3G submitted that applying the 2G/3G operators' 3G spectrum and network allowance implied by the 2G cap (3.7ppm) to the 3G-only operator would either result in its network allowance being constrained below the (modelled) efficient level, or would result in it recovering a smaller amount of total 3G spectrum costs from MCT than other operators, a result for which it could see no justification. Such an outcome, it said, would be inconsistent with a forward-looking opportunity cost approach, as the forward-looking value of equivalent spectrum must be the same for all operators.²
- 16.14. BT argued, conversely, that the 2G cap should lead to the same 3G spectrum and network cost allowance for each of the MNOs (3.7ppm), although it accepted that the 3G-only operator should continue to receive a higher administration costs allowance, so the final 2010/11 TACs would be 4.0ppm for the 2G/3G operators and 4.1ppm for the 3G-only operator.³ It said that there was no reason why there should be different prices for different competitors in a competitive market, that regulation should ensure that the same situation resulted in a regulated market, and that there was no reason why fixed customers should pay more for receiving the same service from H3G as from the other MNOs.⁴
- 16.15. T-Mobile submitted that our basis for endorsing the 2G cap was that it would send efficient price signals, that we had rejected cost recovery as a relevant objective, and that applying these principles leads to the conclusion that there should be no differences in rate between the 2G/3G and 3G-only operators.⁵ It said that the only legitimate basis for differentiating H3G—that because of its lower market share it had higher costs per unit of traffic—was irrelevant since we had placed no weight on cost recovery.⁶ It argued that the fact that H3G may be at a smaller and less efficient scale than other operators was not relevant to the price signals that would exist in a competitive market, which would be based not on the actual costs incurred by different operators, but on the forward-looking costs of the most efficient operator.⁷
- 16.16. On the basis of that logic, T-Mobile also submitted that an increased allowance for administration costs for a 3G-only operator could not be justified (and could only be justified by a principle that was in some way related to cost recovery).⁸ O2 and Orange adopted a similar position.⁹
- 16.17. Vodafone also took the view that since the 2G benchmark was not operator specific, but represented a benchmark as to what was the efficient price for the network and spectrum elements of MCT, it was equally applicable to H3G.¹⁰ Vodafone argued that

¹H3G's slide presentation for plenary session on 28 November 2008.

²H3G's plenary hearing of 28 November 2008, transcript, p10.

³BT's skeleton argument for plenary session of 21 October 2008, paragraph 42.

⁴BT's skeleton argument for plenary session of 28 November 2008, paragraph 18.

⁵Although it also submitted that 'the forward-looking value of equivalent spectrum must be the same for all operators as the value is determined by the opportunity cost of that spectrum in its next best use, i.e. a value which is not specific to any operator' (T-Mobile's skeleton argument for plenary session of 28 November 2008, paragraph 7).

⁶T-Mobile's skeleton argument for plenary session of 21 October 2008, paragraphs 23 & 24.

⁷T-Mobile's skeleton argument for plenary session of 28 November 2008, paragraph 9.

⁸T-Mobile's skeleton argument for plenary session of 28 November 2008, paragraph 10—although we note that T-Mobile appeared to take the opposite view at times—see T-Mobile's skeleton argument for plenary session of 21 October 2008, Annex A.

⁹O2's plenary hearing of 21 October 2008, transcript, pp47&48; O2's letter of 27 November 2008; Orange's skeleton argument for plenary session of 21 October 2008, paragraph 18; Orange's letter of 27 November 2008, paragraph 4.

¹⁰Vodafone's skeleton argument for plenary session of 21 October 2008, paragraph 14.

the logic of the 2G cap implied that the network/spectrum element of all MNOs' MCT charges should be capped at the 2G cap. If a particular operator had higher network costs, this would imply that its implicit spectrum allowance would be lower than others. Vodafone said that this was entirely consistent with the fact that H3G paid less for its 3G spectrum than did other MNOs. It added that to allow any further asymmetry would risk distorting competition with no countervailing benefits.¹

- 16.18. Vodafone initially also argued that no greater administration costs allowance should be given to the 3G-only operator either,² but subsequently submitted that the extra 0.1ppm allowance could be reflected in the final year TACs.³
- 16.19. We have found this a difficult decision. We recognize that a strict application of the analogy with a competitive market, on which the 2G cap is based to an extent, could imply a single TAC for all MNOs. We also see the force in BT's point that it should not have to pay more for an identical service purely because the service is being provided by a later entrant with higher costs. However, on balance, we have decided that the position taken by H3G on this point should be adopted for the following reasons:
- (a) It is not the case (as argued by T-Mobile) that we have dismissed cost recovery as an objective or placed no weight on it. Rather, as set out in Section 2 of this determination on 3G spectrum costs, we decided that Ofcom did not err in focusing on providing appropriate price signals for efficient consumption as the main pricing objective in relation to 3G spectrum, implying that forward-looking values, rather than historic values, were relevant (see paragraphs 2.3.58 to 2.3.61 and 2.3.71). We explicitly did not reject the proposition that an appropriate proportion of 3G spectrum costs should be recovered through regulated MCT charges (see paragraph 2.3.19). As also set out in Section 2, we do not consider that the 2G cap approach denies MNOs the opportunity to recover their efficiently incurred costs of termination in this case (see paragraphs 2.3.12, 2.3.63 and 2.9.168(a)).
 - (b) We think that a valid distinction can be drawn between the regulatory treatment of the introduction of a new and more efficient technology, and the regulatory treatment of (forward-looking) cost differentials that are outside the control of a particular operator. The 2G cap implies that prices should not increase for an identical service as a result of the introduction of a new technology. However, the 2G cap would not necessarily imply that, for example, a later entrant 2G operator's smaller initial scale and lower lifetime traffic should not be recognized. Late entry raises separate regulatory issues.
 - (c) As stated above, Ofcom's modelling approach recognized differences in costs that were outside an operator's control such as initial smaller scale due to late entry. Recognizing such differences is, as Ofcom points out, consistent with previous regulatory practice. Such an approach is also consistent with positions taken by the ERG, other NRAs and the European Commission. We do not think it could be said that Ofcom's decision to recognize those cost differentials was wrong.
 - (d) We think that there is force in the point that it would be inconsistent to build into the assessment a smaller allowance for 3G spectrum costs for one MNO than for

¹Vodafone's skeleton argument for plenary session of 28 November 2008, paragraph 7.

²Vodafone's plenary hearing of 21 October 2008, transcript, p70.

³Vodafone's skeleton argument for plenary session of 28 November 2008, paragraph 3.

others as it would imply that there is more than one opportunity cost for 3G spectrum.

16.20. Therefore we have determined that the TAC for the 3G-only operator in 2010/11 should recognize its higher (modelled) network costs and its higher administration costs. We have also determined that its TAC should be 4.4ppm, as the methodology from which this result is derived¹ seems to us to be more consistent with Ofcom's overall modelling approach than the methodology which leads to a TAC of 4.3ppm.²

Glide paths

16.21. Whether adjustments to the glide paths fall within this reference question, or indeed within BT's appeal at all, is a question that has generated a great deal of controversy, ultimately leading to a hearing before the Tribunal that took place on 4, 5 and 12 December 2008. In its judgment (Judgment on the scope of the Tribunal's powers on disposal of the appeal³), the Tribunal held that:

- (a) BT's appeal challenges the TACs set in all four years of the price control,⁴ and each of its grounds of challenge, if upheld, would affect all four of those years.⁵
- (b) BT did not challenge the glide path because it accepted the following principles:⁶
 - (i) that prices should only be reduced to the level of efficiently incurred costs in the fourth year of the price control rather than in an earlier year;
 - (ii) that the glide path should start at the level of headline 2G regulated rates for the 2G/3G MNOs and at 8.5ppm (adjusted for inflation) for H3G;
 - (iii) that the first year of the price control should be 'tweaked' to take account of the absence of 60 days notice; and
 - (iv) that aside from that, the glide path should descend in annual reductions of equal percentage each year, reflecting the balance struck by Ofcom between the objectives of achieving price reductions sufficiently quickly to deliver substantial benefits to consumers and allowing operators and customers to adjust to new levels and structures of mobile charges and take these changes into account in their business plans and planned capital expenditure.
- (c) The relief which the Tribunal was empowered to grant on the disposal of the appeal was, at the least, to direct Ofcom to adopt a revised price control condition that sets a new price control for the unelapsed period of the price control period based on what it called the 'recalibrated' glide path.⁷ The Tribunal used that term to refer to adjustments made to the glide path so that the same principles that were applied by Ofcom in moving from the MNOs' 31 March 2007 prices to the price that should pertain in 2010/11 are applied to move instead from the

¹Taking an implied total 3G spectrum value and allocating it across services and spreading it across lifetime traffic volumes.

²Taking the ppm 3G spectrum allowance of the 2G/3G operators and adding it on to the 3G-only operator's network costs.

³[2009] CAT 1.

⁴[2009] CAT 1, paragraph 25.

⁵ibid, paragraph 29.

⁶ibid, paragraph 25.

⁷ibid, paragraph 30.

31 March 2007 prices to the new TAC computed in accordance with our determinations.¹

- (d) The primary task of the appellate body in challenges to SMP conditions was to determine first whether Ofcom fell into error when devising the price controls and, if it did, what Ofcom ought to have done.²
- (e) The Tribunal's powers to direct Ofcom as to what the price control should be covered the whole of the price control period and were not limited to the unelapsed period of the price control at the conclusion of the appeal.³
- (f) The questions referred to us ask, if possible, for us to determine the TACs for all four years of the price control period.⁴

16.22. We have, accordingly, calculated an approximation of what the level of the price controls would be in each year of the control period, applying Ofcom's overall glide path methodology to move from the relevant 2006/07 level of charges to the new, lower 2010/11 TACs. The results are shown in Table 16.1 and in Figure 16.1 below.⁵

TABLE 16.1 Revised TACs for the period 2007/08 to 2010/11 applying the approach taken by Ofcom in the MCT Statement (all figures in 2006/07 prices, figures for 2007/08 adjusted to take into account the absence of 60 days notice)

	<i>ppm</i>			
	<i>2007/08</i>	<i>2008/09</i>	<i>2009/10</i>	<i>2010/11</i>
Vodafone and O2	5.2	4.7	4.4	4.0
T-Mobile and Orange	5.7	5.0	4.5	4.0
H3G	8.9	6.8	5.5	4.4

Source: CC calculations.

¹ibid, paragraphs 20, 23 & 30.

²ibid, paragraph 45.

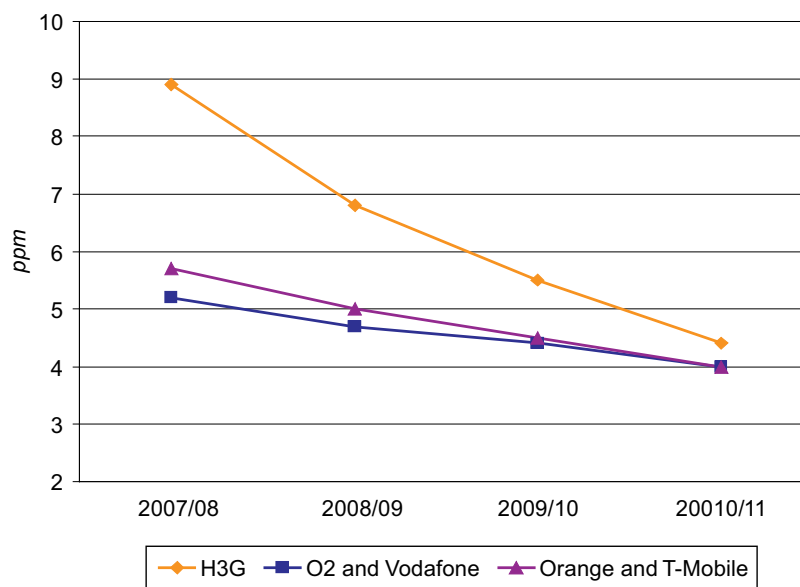
³ibid, paragraph 46.

⁴ibid, paragraph 47.

⁵In the MCT Statement, Ofcom set the TACs for 2007/08 to be equal to an absolute ppm figure (in 2007/08 prices), and specified TACs for the subsequent periods as an RPI-X control to reflect the required reductions from the 2007/08 charges necessary to reach the efficient charge level for 2010/11 (see paragraph 9.220 and Annex 20 of the MCT Statement). The figures in Table 16.1 above are all in 2006/07 prices and are derived by first applying equal percentage reductions to move from prevailing rates in 2006/07 to the year 4 TACs, then applying the adjustment in the first year of the price control to account for the absence of a 60-day notice period, and finally rounding the results to one decimal place. For the first three years of the control period, it is possible that the charge controls (expressed in 2006/07 prices)—other than H3G's 2007/08 TAC—that would result from the application of Ofcom's methodology may differ slightly from the figures in Table 16.1 as the effect of rounding results to one decimal place may be different when applied to TACs expressed in nominal rather than 2006/07 prices. Any differences will, however, be small, and the figures in Table 16.1 above are sufficiently accurate for the purposes for which they are used in the following paragraphs.

FIGURE 16.1

Revised TACs (2006/07 prices)



Source: CC calculations.

- 16.23. On H3G's glide path, T-Mobile argued that if we had jurisdiction to revisit the price control for all four years, applying Ofcom's logic would require a larger initial one-off cut for H3G than determined by Ofcom, reflecting the now greater divergence between H3G's starting MCT charges and its 2010/11 TAC. It submitted that the most reasonable approach would be to apply the same proportionate change between starting and target levels as had been applied by Ofcom.¹
- 16.24. H3G disagreed with this point, pointing out that Ofcom decided that a 20 per cent cut in its prevailing MCT rate was proportionate given that the rate was significantly above cost, but that the degree to which it was above cost was not referred to in Ofcom's decision and there was nothing in its reasoning that would necessarily change the conclusion that 20 per cent was a proportionate initial cut.² H3G added that it is not clear what Ofcom's approach would have been in circumstances where the 2G/3G operator's prevailing rates were significantly above cost and whether it would have imposed an initial one-off cut on them before moving to a smooth glide path. Therefore, to the extent that years 1 and 2 were relevant at all, H3G submitted that there should be a smooth glide path from the (then) prevailing MCT rates to the year 2010/11 TACs for all operators.³
- 16.25. In our view, it would not be appropriate to revisit the level of the price control for the 3G-only operator in the first year of the control period. To do so would appear to go outside the scope of the appeal as determined by the Tribunal (see paragraph 16.21 above). In any event, if we were to revisit the initial year of the price control for the 3G-only operator, we agree with H3G that it is not clear how Ofcom would have applied its principles given that the 2G/3G operators' MCT rates, and not just H3G's,

¹T-Mobile's skeleton argument for plenary hearing of 28 November 2008, paragraph 15.

²H3G's presentation for plenary hearing of 28 November 2008, slide 6. H3G agreed with T-Mobile, however, on the point that Ofcom's approach could not meaningfully be applied to periods which were now in the past (H3G's plenary hearing of 28 November 2008, transcript, pp13&14).

³H3G's plenary hearing of 28 November 2008, transcript, pp15&16.

may have been judged to be significantly above cost. We also note that the glide path for H3G implied by Table 16.1 above leads to a broadly smooth rate of percentage reductions from its prevailing unregulated rate to the new 2010/11 TAC.

- 16.26. More generally, it has been submitted that we should keep in mind the underlying rationale behind the glide paths and how it should be applied at the present time. T-Mobile argued that if consequential adjustments to the glide path were within our jurisdiction, we should follow the balanced approach that Ofcom took in the MCT Statement. Ofcom balanced the objective of reducing charges sufficiently quickly in order to deliver substantial benefits to consumers with the objective of allowing sufficient time for operators and customers to adjust to new levels and structures of mobile charges.¹
- 16.27. According to T-Mobile, Ofcom's logic would permit making adjustments to the glide path going forward to smooth price levels to the new 2010/11 TAC from their current levels, but that there would be no justification for attempting to achieve some form of retrospective modification by calculating what the price control would have been had our decision been implemented by Ofcom in 2007.²
- 16.28. We think that it is appropriate for us to specify what consequential effects our determinations have on the level of the price controls for each of the four years of the price control period in the manner envisaged by the Tribunal (see paragraphs 16.21 and 16.22 above). The question of what effect, if any, such a specification will have in respect of periods now expired is not for us to determine. The practical question for us, to which T-Mobile's argument relates, is whether reducing the TACs from their current levels to the year 3 levels set out in Table 16.1 above³ would be inconsistent with the reasoning underpinning Ofcom's overall glide path methodology.
- 16.29. The MCT price controls are currently approximately⁴ 5.4ppm for the 2G/3G 900/1800 MHz MNOs, 5.7ppm for the 2G/3G 1800-MHz-only MNOs, and 7.5ppm for the 3G-only MNO (all in 2006/07 prices). Applying the TACs set out in Table 16.1 above would lead to TACs for year 3 being set at 4.4ppm, 4.5ppm and 5.5ppm respectively (in 2006/07 prices). On T-Mobile's suggested approach, they would instead be 4.6ppm, 4.8ppm and 5.7ppm (in 2006/07 prices).
- 16.30. Moving from the current TACs to the year 3 TACs set out in Table 16.1 would involve a real reduction of approximately 19 per cent for the 2G/3G 900/1800 MHz operators, approximately 21 per cent for the 2G/3G 1800-MHz-only operators, and approximately 27 per cent for the 3G-only operator.⁵ Reductions of this magnitude are not without precedent. We note that the CC previously recommended two real reductions of 15 per cent in MCT rates to occur in 2003/04.⁶ Ofcom in its 2004 Statement on wholesale MCT also set real reductions of approximately 34 and 36 per cent.⁷ In doing so, Ofcom stated that it believed that the charge controls allowed sufficient time for preparation and adjustment, both in terms of financial planning and adjustments to retail prices.⁸

¹T-Mobile' skeleton argument for plenary hearing of 21 October 2008, paragraphs 36–41.

²ibid, paragraphs 42 & 43.

³Assuming that any changes are implemented at the start of year 3.

⁴The footnote to paragraph 16.22 above explains why these figures are not precise.

⁵Under T-Mobile's approach, these reductions would be approximately 15 per cent, 16 per cent and 24 per cent respectively.

⁶2003 CC report, paragraphs 2.579 & 2.580.

⁷Ofcom, *Wholesale Mobile Voice Call Termination, Statement*, 1 Jun 2004, paragraphs 6.73–6.87.

⁸ibid, paragraph 6.82.

16.31. The MNOs have been aware of this appeal and its potential consequences for over a year. We also consider, for the reasons given above in paragraph 16.30, that the reductions in MCT rates from the current levels to the new year 3 levels set out in Table 16.1 above will be unlikely to lead to unjustified or undue disruption or damage to mobile subscribers. We therefore do not think that those reductions (compared with the reductions implied by T-Mobile's suggested glide path) are inconsistent with Ofcom's overall glide path methodology.

Wider considerations

16.32. T-Mobile submitted that it was important that there was a robust assessment of the costs and benefits of our proposed approach as a means of meeting the statutory objectives imposed both on Ofcom and (indirectly) on us. It argued that we had proposed in our provisional determinations (our provisional determination on spectrum costs in particular) a severe reduction in the level of termination charges, but had failed to consider all the relevant factors for the determination of an efficient structure of prices and for ensuring the greatest benefits for end-users.¹

16.33. In particular, T-Mobile said that we had failed to take into account (a) the extent of the waterbed and its implications for mobile retail prices and mobile consumers and (b) the extent to which cuts in termination charges are passed through into lower fixed-to-mobile prices for consumers.²

16.34. We accept that it is necessary for us to be satisfied that any adjustments to the price control levels that we determine should be made to correct for the specific errors that have been identified do not lead to the imposition of price controls that offend section 88 of the 2003 Act and the other relevant provisions that bind Ofcom when it is setting charge controls (in particular, sections 3, 4 and 47). We are so satisfied in this case. We have also taken account of the extent of the investments in the matters to which the condition relates (section 88(2)).

16.35. Having said that, we disagree with T-Mobile's characterization of what we have in fact done on this appeal. We are not starting afresh on an exercise that requires a robust assessment of the costs and benefits of regulation. We are not departing from Ofcom's market assessment, its findings of SMP, its decision to impose charge controls or the broad principles upon which it based the calculation of those charge controls.³ What we have found are specific errors that relate to Ofcom's calculation of certain elements that make up the cost base of the charges and to the NES. We do not consider that correcting those errors will lead to a fundamental departure from the principles upon which Ofcom based its regulation. We also do not consider that our determination will result in a 'radical change'⁴ in the regulation of termination charges—although we recognize that it will lead to a reduction in their level compared with the charge controls set by Ofcom in the MCT Statement.

16.36. As to T-Mobile's specific point about the waterbed, to the extent that it is not complete, MCT revenues that are in excess of MCT costs will be kept by MNOs to the detriment of consumers. To the extent that it is effective (or complete), MCT charges

¹T-Mobile's response to provisional determination on 3G spectrum costs, paragraphs 6–9.

²*ibid*, paragraph 10.

³We note that Ofcom considered the analysis in sections 6–9 of the MCT Statement, when read in conjunction with the rest of the document and with the previous consultation documents, represented an impact assessment as defined in section 7 of the 2003 Act (MCT Statement, paragraph 6.1). On a similar basis, this determination, when read with those documents, could also be considered as an impact assessment.

⁴T-Mobile's response to provisional determination on 3G spectrum costs, paragraph 11.

that are in excess of MCT costs will lead to an inefficient structure of prices and the other detriments identified by Ofcom in section 7 of the MCT Statement (distortion of consumer choice and inequitable distributional effects). The argument that MCT charges that are more closely reflective of efficient costs, and therefore happen to be lower, will lead to an inefficient structure of prices appears to be inconsistent with the rationale behind regulating MCT charges by reference to benchmarks of cost in the first place. Furthermore, we considered and specifically rejected the argument that a surcharge above cost (the NES) would increase welfare or efficiency.

16.37. As to T-Mobile's specific point about pass-through, as Ofcom set out in the MCT Statement, a significant proportion (of the order of two-thirds) of wholesale charge changes have been passed through directly to fixed-to-mobile calls, and reductions in termination charges may also feed through into other consumer prices.¹ We also refer to our comments in Section 13 of this determination on Reference question 6 that fixed operators might be expected to have incentives to set an efficient structure of prices, and that if there was a retention problem that would not provide a rationale for looser regulation of MCT, but rather for potential regulatory intervention in the fixed market (see paragraph 13.16(b)).

Financial impact

16.38. We recognize, as did Ofcom,² that any reduction in MCT charges will have a financial consequence for the MNOs to the extent that the waterbed effect is not complete. In respect of mobile-to-mobile traffic, the total balance of revenue transfers between operators will still net to zero regardless of the level of termination rates, although we would expect there to be some changes in the net revenue collected by particular MNOs. In respect of fixed-to-mobile traffic, there will be a transfer of value from mobile operators to customers of fixed operators—to the extent that this represented a closer relationship between the efficient charge level and the price of termination, Ofcom considered that it would represent an increase in economic efficiency.³

16.39. Ofcom estimated the financial impact of its charge control levels on the MNOs to assess whether they were likely to generate any financial effects which would present an unreasonable adjustment for the MNOs. It compared its charge controls against a scenario where MCT rates were maintained at their (then) current levels, assuming the volumes of terminated minutes forecast in the cost model. It estimated that, in NPV terms over the period of the charge control, in comparison with (then) existing charge levels, gross termination revenue would be reduced by a little over £100 million for the 900/1800 MHz operators, a little over £250 million for the 1800-MHz-only operators and [] for the 3G-only operator.⁴ Ofcom estimated, in respect of the 2G/3G operators, that these reductions represented less than 2.5 per cent of total revenues over the charge control period.⁵ It noted that that estimate assumed no revenue growth from 2005 levels and may therefore overstate the impact of the reductions in gross termination revenue.⁶

16.40. Ofcom recognized, however, that these measures clearly overstated the size of the financial impact for two reasons: they do not take into account the waterbed effect,

¹Ofcom's MCT Statement, paragraphs 7.26 & 7.47.

²ibid, paragraphs 9.197–9.205.

³ibid, paragraph 9.199.

⁴ibid, paragraphs 9.202–9.205.

⁵For H3G, we calculated that a reduction in gross termination revenues of £[] over the charge control period would represent [] per cent of its projected total revenues (see Section 5 of this determination on Reference question 2, paragraph 5.5.7).

⁶Ofcom's MCT Statement, paragraph 9.202, footnote 114.

and they do not allow for the MNOs to benefit from reduced termination payments arising from the reductions in the MCT charges of counterpart MNOs. In respect of the second reason, Ofcom calculated the net financial effect of its charge controls on 2G/3G operators assuming that incoming and outgoing minutes between MNOs were balanced. It estimated that for 1800-MHz-only operators, the net reduction in revenue would be less than half of the gross reduction (of a little over £250 million), and that for 900/1800 MHz operators, the net financial impact would be positive due to their lower MCT outpayments.¹ For H3G, Ofcom did not set out its estimation of the net revenue reduction (although Ofcom noted that it would be significantly smaller than the gross reduction in revenues of [✂] that it estimated) but stated that its charge control should also be measured against a benchmark of cost.²

- 16.41. At a higher level, Ofcom reported in the MCT Statement that annual retail revenues of the mobile industry were approximately £13 billion and wholesale revenues around £3.6 billion, that annual revenues from MCT were in the order of £2.5 billion, which was equivalent to approximately 15 per cent of revenue for the sector, and that around two-thirds of this MCT revenue (£1.5 billion) relates to calls between MNOs with the remaining sum (£1 billion) relating to calls from fixed operators.³
- 16.42. Our determinations will result in charge control levels lower than those set by Ofcom, and we would therefore expect the gross reduction in termination revenues experienced by each operator to be greater than the figures that Ofcom estimated. However, we do not consider that the change will be of such an order of magnitude as to alter the broad overall position as assessed by Ofcom. The fall in each MNO's gross termination revenues will still account for a relatively small proportion of its total revenues over the charge control period, and it will still be the case that these falls will clearly overstate the size of the financial impact. This is because, first, the water-bed effect, to the extent that it is effective, will reduce the overall financial impact on the MNOs, and second, MNOs, as purchasers of wholesale MCT, will benefit from the reduction in termination charges so the net impact on termination revenues will be smaller in magnitude than the gross reductions in termination revenue, and, in some cases, may even be positive.
- 16.43. More fundamentally, we also agree with Ofcom that the charge controls should be measured against a benchmark of cost. We refer to the conclusion we reached in Section 5 of this determination on Reference question 2 that we would generally expect price controls to have an impact on the revenues earned by a firm from the service that is being regulated, but that the particular reduction in MCT revenues that is experienced cannot tell a regulator at what level the price control level should be set (see paragraphs 5.5.21 and 5.5.22).
- 16.44. We do not therefore consider that the financial impact on the MNOs of our determination of the consequential adjustments that should be made to the charge control levels in order to correct the errors that we have identified provides a reason to depart from them.

¹ibid, paragraph 9.203.

²ibid, paragraph 9.205.

³ibid, paragraph 2.17.

Determination

- 16.45. For the reasons given above, and in all our determinations, we have determined that the TACs in 2010/11 should be 4.0ppm for O2, Orange, T-Mobile and Vodafone, and 4.4ppm for H3G in 2006/07 prices.
- 16.46. Ofcom's MCT Statement does not specify in detail precisely how it derived the controlling percentages from the starting points of the glide paths and the 2010/11 TACs in 2006/07 prices. We have therefore determined that we should not ourselves specify ppm TACs for each year of the price control period or the controlling percentages that should be applied.
- 16.47. We have instead determined that Ofcom should make such changes as are necessary to SMP Conditions MA3.4 and MA4.4 and to the definition of 'Controlling Percentage' in Schedule 1 to Annex 20 of the MCT Statement to generate TACs for each year of the price control period that are consistent with our views on the glide path as set out above and the approach underpinning the approximations in Table 16.1. In our view this means that:
- (a) For the 2G/3G MNOs:
- (i) The glide paths should start at the level of headline regulated 2G rates in 2006/07.
 - (ii) The TACs should descend in annual reductions of equal percentage each year from the starting points of the glide paths to arrive at the levels specified in paragraph 16.45 above in 2010/11.
 - (iii) The TACs for the first year of the price control period should be adjusted so as to take into account the absence of 60 days' notice.
- (b) For H3G:
- (i) The pre-adjusted TAC for the first year of the price control period should be 8.5ppm in 2006/07 prices.
 - (ii) The TACs should descend in annual reductions of equal percentage each year from the pre-adjusted first year TAC to arrive at the level specified in paragraph 16.45 above in 2010/11.
 - (iii) The pre-adjusted TAC for the first year of the price control period should be adjusted so as to take into account the absence of 60 days' notice.
- (c) In each case, the adjustments to take into account the absence of 60 days' notice, the calculation of nominal figures (where such calculation is required), the approach taken to rounding and the methodology for deriving the controlling percentages should be carried out consistently with Ofcom's original methodology.

**Reference from the Competition Appeal Tribunal to the Competition
Commission**

**IN THE COMPETITION
APPEAL TRIBUNAL**

Case Numbers:
1083/3/3/07
1085/3/3/07

HUTCHISON 3G UK LIMITED

Appellant

-v-

OFFICE OF COMMUNICATIONS

Respondent

BRITISH TELECOMMUNICATIONS PLC

Appellant

-v-

OFFICE OF COMMUNICATIONS

Respondent

and

O2 (UK) LIMITED

T-MOBILE (UK) LIMITED

VODAFONE LIMITED

ORANGE PERSONAL COMMUNICATIONS SERVICES LIMITED

HUTCHISON 3G (UK) LIMITED

Interveners

**REFERENCE OF SPECIFIED PRICE CONTROL MATTERS
TO THE COMPETITION COMMISSION**

18 MARCH 2008

1. Having regard to:
 - (A) the Mobile Call Termination Statement and Notification issued by the Office of Communications ("OFCOM") dated 27 March 2007 ("OFCOM's Decision");

- (B) the price controls set by Condition MA3, Control of Fixed to Mobile Interconnection Charges ("Condition MA3") and by Condition MA4, Control of Mobile to Mobile Interconnection Charges ("Condition MA4") in Annex 20, Schedule 1 part 2 of OFCOM's Decision;
- (C) the notice of appeal dated 23 May 2007 lodged by Hutchison 3G UK Limited ("H3G") in Case 1083/3/3/07 (and amended pursuant to the Order of the Tribunal dated 6 November 2007) and the statement therein that the Appendix to the Notice of Appeal ("the H3G Appendix") sets out specified price control matters within the meaning of Rule 3(1) of the Competition Appeal Tribunal (Amendment and Communications Act Appeals) Rules 2004 ("the 2004 Rules"); and
- (D) the notice of appeal dated 29 May 2007 lodged by British Telecommunications plc ("BT") in Case 1085/3/3/07 (and amended pursuant to the Ruling of the Tribunal dated 17 December 2007) ("the BT Notice of Appeal") challenging certain aspects of the setting of Conditions MA3 and MA4 and the statement therein that the appeal relates exclusively to specified price control matters within the meaning of Rule 3(1) of the 2004 Rules; and
- (E) the outline defence to the price control matters filed by OFCOM on 16 November 2007 and the defence and supporting evidence filed by OFCOM on 28 January 2008; and
- (F) the outline statements of intervention filed by each of the Interveners (including H3G and BT as Interveners in each other's appeals) on 30 November 2007

the Tribunal, pursuant to Rule 3(5) of the 2004 Rules and section 193 of the Communications Act 2003, hereby refers to the Competition Commission for its determination the specified price control matters arising in these appeals.

2. By this reference the Tribunal orders the Competition Commission to determine the following questions:

In relation to the BT Appeal

Question 1

Whether, in relation to the BT appeal, the price controls imposed by Conditions MA3 and MA4 on any or all of the four 2G/3G Mobile Network Operators (T-Mobile, Vodafone, O2 and Orange) or as regards the 3G Mobile Network Operator (H3G) have been set at a level which is inappropriate for one or more of the following reasons:

- (i) OFCOM erred in its approach to the inclusion of spectrum costs for the reasons set out in paragraphs 83 to 148 of the BT Notice of Appeal;
- (ii) OFCOM erred in its approach to the inclusion of administration costs for the reasons set out in paragraphs 149 to 159 of the BT Notice of Appeal;
- (iii) OFCOM erred in its approach to the allowance of a network externality surcharge for the reasons set out in paragraphs 160 to 184 of the BT Notice of Appeal;

(iv) OFCOM erred in failing to take proper account of the cost savings arising from network sharing between the MNOs when conducting its analysis for the reasons set out in paragraphs 185 to 187 of the BT Notice of Appeal.

In relation to the H3G appeal

Question 2

Whether the price controls imposed on H3G were too low relative to the price controls imposed on the other 2G/3G MNOs because OFCOM erred in failing to take account, or sufficient account, of the financial impact of these controls on H3G's business and on the adverse effect of that impact on competition, for the reasons set out in paragraphs 3.3 to 3.12 of the H3G Appendix.

Question 3

Whether the price controls imposed on H3G have been set at a level which is inappropriate for one or more of the following reasons:

(i) OFCOM's welfare analysis was flawed for the reasons set out in paragraphs 3.13 to 3.15 of the H3G Appendix;

(ii) OFCOM erred in basing its modelling of costs on Economic Depreciation methodology for the reasons set out in paragraphs 5.1 to 5.15 of the H3G Appendix;

(iii) OFCOM erred in failing to make allowance for H3G's costs of Customer Acquisition, Retention and Service in setting the price cap for call termination for the reasons set out in paragraphs 8.1 to 8.46 of the H3G Appendix;

(iv) OFCOM erred in failing to take account of distortion created by arrangements for ported numbers for the reasons set out in paragraphs 9.1 and 9.2 of the H3G Appendix;

(v) OFCOM erred in selecting the charge to be imposed from the values generated by the scenarios it used for the reasons set out in paragraphs 10.1 to 10.4 of the H3G Appendix.

Question 4

Whether the level of Target Average Charge set for each of the 2G/3G MNOs (of 5.1ppm) is inappropriate because OFCOM erred in basing its modelling of costs on Economic Depreciation methodology, for the reasons set out in paragraphs 5.1 to 5.15 and 11.1 to 11.6 of the H3G Appendix;

Question 5

Whether OFCOM erred in setting a blended Target Average Charge for the 2G/3G MNOs rather than specifying separate rates for termination on 2G and 3G networks for the reasons set out in paragraphs 12.1 to 12.8 of the H3G Appendix.

Question 6

Whether OFCOM erred in setting H3G's glide path for the reasons set out in paragraphs 7.2 to 7.4 of the H3G Appendix.

Question 7

Whether OFCOM should have exercised its powers in such a way that net wholesale payments between MNOs were zero, with suitable cost-based price controls retained for fixed to mobile calls, either (a) for the period of the price controls or (b) pending the introduction of revised arrangements for mobile number portability, for the reasons set out in paragraphs 4.1 to 4.7 of the H3G Appendix.

In relation to both appeals

Question 8

Having regard to the fulfilment by the Tribunal of its duties under section 195 of the Communications Act 2003 and in the event that the Competition Commission determines that the answer to any of the above questions is yes, the Competition Commission is to include in its determination:

(i) clear and precise guidance as to how any such error found should be corrected; and

(ii) insofar as is reasonably practicable, a determination as to any consequential adjustments to the level of the price controls.

3. The Competition Commission is directed to determine the issues contained in this reference by either 31 October 2008 or two months after the Tribunal delivers its judgment on the non price control matters in the H3G appeal, whichever date is the later. The Competition Commission shall notify the parties to these appeals of its determination at the same time as it notifies the Tribunal pursuant to section 193(3) of the Communications Act 2003.

4. Should the Competition Commission require further time for making its determination it should notify the Tribunal and the parties so that the Tribunal may decide whether to extend the time set out in the previous paragraph.

5. There shall be liberty to apply for further directions.



**IN THE COMPETITION
APPEAL TRIBUNAL**

Cases No: 1083/3/3/07
1085/3/3/07

B E T W E E N

HUTCHISON 3G UK LIMITED

-and-

BRITISH TELECOMMUNICATIONS PLC

Appellants / Intervenors

-v-

OFFICE OF COMMUNICATIONS

Respondent

-and-

TELEFÓNICA O2 UK LIMITED

T-MOBILE (UK) LIMITED

VODAFONE LIMITED

ORANGE PERSONAL COMMUNICATIONS SERVICES LIMITED

Intervenors

ORDER

UPON the Tribunal having referred the specified price control matters raised in these appeals to the Competition Commission on 18 March 2008 (“the Reference”) and having directed the Competition Commission to determine the issues contained in the Reference by 31 October 2008

AND UPON the Competition Commission, by letter of 22 August 2008, explaining that the progress of its investigation has been delayed by the need to resolve issues between the parties as to the admissibility of certain submissions sought to be made

AND UPON the Competition Commission therefore requesting that the period for the determination of the Reference be extended to 9 January 2009

AND UPON none of the parties raising any objection to the Competition Commission's request for an extension

IT IS ORDERED THAT:

1. The date by which the Competition Commission is directed to determine the issues contained in the Reference be extended to 9 January 2009.
2. There be permission to apply.

Vivien Rose
Chairman of the Competition Appeal Tribunal

Made: 15 September 2008
Drawn: 15 September 2008



**IN THE COMPETITION
APPEAL TRIBUNAL**

Cases No: 1083/3/3/07
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TELEFÓNICA O2 UK LIMITED

T-MOBILE (UK) LIMITED

VODAFONE LIMITED

ORANGE PERSONAL COMMUNICATIONS SERVICES LIMITED

Intervenors

ORDER

UPON the Tribunal having referred the specified price control matters raised in these appeals to the Competition Commission on 18 March 2008 (“the Reference”) and having directed the Competition Commission to determine the issues contained in the Reference by 31 October 2008

AND UPON the Tribunal by Order dated 15 September 2008 having extended the period for the determination of the Reference to 9 January 2009

AND PENDING judgment on the issues considered at a hearing on 4, 5 and 12 December 2008

IT IS ORDERED THAT:

3. The date by which the Competition Commission is directed to determine the issues contained in the Reference be further extended to 16 January 2009.
4. There be permission to apply.

Vivien Rose
Chairman of the Competition Appeal Tribunal

Made: 07 January 2009
Drawn: 07 January 2009

Comparison of administration costs with those provided to the Competition Commission in 2002

1. Table 1 shows, for each of the four 2G/3G MNOs, their administration costs for 2001 provided to the CC in 2002; and their administration costs for 2002 subsequently provided to Ofcom. For each MNO, these show considerable variation in the level of administration cost as between 2001 and 2002.

TABLE 1 MNOs' costs for 2001 and 2002

	<i>£ million</i>			
	<i>O2</i>	<i>Orange</i>	<i>T Mobile</i>	<i>Vodafone</i>
2001, as in CC 2003 report (Appendices 7.2 to 7.5 of the unexcised version)	[X]	[X]	[X]	[X]
2002, as subsequently reported to Ofcom	[X]	[X]	[X]	[X]

Source: CC 2003 report for the 2001 data; and 2002 data supplied by Ofcom to the CC during the course of the appeal.

Note: CC report figures relate to March 2001 for O2 and Vodafone and December 2001 for Orange and T-Mobile.

2. We had some concerns over the differences, shown above, between the 2001 figures submitted to the CC and the 2002 figures submitted to Ofcom. Ofcom told us that it too was troubled by the variation but was not able to establish what was driving the differences, though it thought they were probably due to differences in cost allocations.¹ Vodafone told us that it believed that the two sets of figures were compiled on different bases, giving as an example IT costs, which were included within network and retail cost statistics in the figures reported by the CC but which were required by Ofcom to be included within administration costs.² Orange also thought that the difference was explicable by different allocation methods, noting that the total quantum of their administration costs in the year ending December 2002 was not out of line with, and was possibly slightly lower than, the total quantum of administration costs in the year ended December 2001.³
3. We have examined the data provided to the CC in 2002.⁴ Whilst our examination was not entirely conclusive, it did appear that certain costs now classed as administration costs were previously accounted for under network and non-network costs. There also did not appear to be any uniform system of cost classification between operators.

¹Ofcom BT bilateral hearing transcript, pp92&93.

²Vodafone BT bilateral hearing transcript, non-confidential version, p91.

³Letter of 15 August 2008, paragraph 13.

⁴In Table 1 and contained in Appendices 7.2 to 7.5 of the unexcised version of the CC's 2003 report.