

10 Views of the DGT

Contents

	<i>Page</i>
Introduction.....	305
Review of the charge control on calls to mobiles	305
Summary of review	305
Market definition and market power.....	305
Market definition.....	305
Substitution possibilities	305
Exclusion of 3G services.....	306
Separate market for termination on each mobile network.....	306
Response to MNOs' arguments on market definition	306
Market power.....	307
The level of competition in the mobile voice call termination market.....	307
Effective competition indicators	307
Consumer outcomes.....	308
Excessive profits	308
Future competition in mobile call termination	309
Conclusion on level of competition.....	309
The case for regulating termination charges	310
Arguments by MNOs against regulation	310
Swings and roundabouts	310
Economic efficiency and Ramsey pricing.....	310
Distributional effects.....	310
Proposed regulation	311
The proposed charge controls.....	312
The method of setting of the charge caps.....	312
The use of LRIC as a cost base	312
Mark-ups	313
Non-network costs	313
MNOs' criticisms of Ofel's EPMU figures and externalities estimates.....	313
Response to MNOs' criticisms of Ofel's LRIC model	314
Consultation	314
Risk of systematic bias.....	314
Interrelationship between input values.....	314
Proposed amendments: treatment by the DGT.....	314
Other criticisms: response by the DGT	315
Response to Vodafone's comments	315
Response to Orange's comments	317
Response to T-Mobile's comments on the LRIC model and legal matters.....	318
LRIC model.....	318
Uncertainty and risk	318
Mobile network evolution: 3G costs	318
LRIC model: economies of scale	318
Inconsistencies with cost allocation by MNOs	318
Response to legal arguments raised by T-Mobile.....	318
Issues and hypothetical remedies	320
Issues	320
Effect of call termination charges on customers of fixed operators	320

Whether current termination charges allow MNOs to compete unfairly against FNOs.....	320
Remedies	320
Financial impact of the remedies.....	320
Bilateral agreements.....	320
Non-discrimination and price squeeze test for fixed-to-mobile services	321

Introduction

10.1. The DGT sent us his main submission in conjunction with the two references and Oftel subsequently sent us numerous supplementary submissions and other documents conveying its views, some in response to those of the MNOs and of third parties, as well as attending four hearings and other informal meetings. The DGT made his principal views known to the public by Press Notices and the Internet. He posted most of his submissions and other documents on a special area of the Oftel web site, edited where necessary to remove confidential aspects.

10.2. We describe elsewhere (see Chapters 3 and 4) the background to the references and we shall confine ourselves in this chapter to the DGT's views on the references and on the MNOs' views.

Review of the charge control on calls to mobiles

Summary of review

10.3. The DGT published a review, under the above title, in September 2001.¹ He described the existing termination charge control regime, under which charge caps of RPI-9 per cent had been applied on the wholesale charges made by BT Cellnet (now O₂) and Vodafone for terminating calls from fixed lines on their mobile networks. These charge caps were due to expire in March 2002. The DGT explained that Oftel had considered whether competition was then, or would be within the period ahead, sufficient to constrain termination charges imposed by the four main MNOs (O₂, Orange, T-Mobile and Vodafone) or whether regulation was justified to enable consumers to get a good deal. The DGT's conclusion was that competitive pressures did not at that time exert sufficient constraints on termination charges and that they were unlikely to do so in the near future. He therefore took the view that controls on charges for the termination of calls on the four main MNOs were justified in order to protect consumers and that a charge cap, set at RPI-12 each year for the following four years, was both appropriate and proportionate. The DGT therefore proposed to amend the licences of the four MNOs accordingly. In a separate review the DGT concluded that the market was prospectively competitive for retail services bought by mobile subscribers.²

Market definition and market power

Market definition

10.4. The DGT told us that in his consultation document³ which preceded his September Statement he had considered different possibilities for the definition of the relevant market for mobile termination, as follows:

- (a) a separate market for call termination on the network of each MNO;
- (b) a market for call termination which was part of a cluster of linked national markets for mobile services; and
- (c) a national market for call termination on the networks of all MNOs.

Substitution possibilities

10.5. The DGT said that he had considered whether substitution at the retail level, for example by the use of off-net or on-net mobile to mobile calls for fixed-to-mobile calls, might be a source of

¹See Appendix 1.1 of this report.

²*Effective competition review*, Oftel, 26 September 2001.

³*Review of the Price Control on Calls to Mobiles*, Oftel, February 2001.

competitive pressure. He had concluded that substitution of a fixed-to-mobile call by an off-net mobile-to-mobile call would not have a constraining effect on termination charges, as the same termination charge would be paid to the same MNO regardless of the network on which the call originates. The scope for substitution to on-net calls was more limited because it required that both calling and called parties belonged to the same mobile network. The DGT further argued that lower on-net prices might provide a way for the MNOs to meet the requirements of their more price-sensitive consumers while preventing them from increasing the constraints on termination charges. Nor was the use of multiple SIM phones or SMS likely to provide significant competition in the near future.

10.6. A related supply-side substitution possibility, that an MNO might terminate calls directly to a rival MNO's customer, would require a knowledge of his SIM-card details, the unavailability of which provided an effective barrier to entry. Termination by other MNOs had also therefore to be excluded from the market definition. No substitute for voice calls, such as SMS, was close enough to provide competitive pressure and also had to be excluded from the definition.

10.7. The DGT said that he had also considered the MNOs' argument that each operator supplied a bundle of services including termination, but had concluded that MNOs did not sell termination to the same group of people to which they supplied other services. At the wholesale level they supplied call termination to other MNOs, while at the retail level call termination was an input into calling a mobile, which was purchased by callers to mobiles and not by customers of that network. The DGT had also considered arguments by the MNOs that there were linked national networks for mobile services, including termination, and that there was a national wholesale market for mobile call termination. He did not accept that either concept was valid.

Exclusion of 3G services

10.8. The DGT's view was that it was inappropriate at the present time to consider regulating services using 3G technology or spectrum: new or emerging services should be regulated only with extreme caution given the potential impact on investment incentives.

Separate market for termination on each mobile network

10.9. The DGT believed that his view of the competitive constraints on call termination charges led to the conclusion that there was a separate market for termination on each network and that each MNO was, in effect, a monopolist in the supply of termination to its own network. The appropriate market definition was therefore a separate market for termination on each mobile network. The DGT did not believe that his view of the definition of the market was likely to change in the foreseeable future.

Response to MNOs' arguments on market definition

10.10. The DGT gave us his views on arguments made by two MNOs in favour of a market definition covering all mobile services. One such argument had suggested that if an MNO were to seek to impose an SSNIP (the hypothetical monopolist test), it would not be able to sustain excessive profits because these would be competed away by lowering its prices in the retail market, demonstrating the existence of a single market in both termination and retail services. The DGT believed this argument to be invalid because the hypothetical monopolist test was one of demand-side or supply-side substitutability, requiring the prices of other services (retail services in this case) to be held stable. The MNOs had not identified termination and retail services as either demand- or supply-side substitutes, so that each MNO would be able to sustain excessive termination charges. One MNO had argued that there was supply-side substitutability, on the grounds that termination was 'essentially the same product as origination'. The DGT rejected such an assertion, which ignored the basic characteristics of call termination and, in particular, the implications of the CPP principle. Whilst recognizing that there was a relationship between the levels of termination charges and retail prices, the DGT considered that separate markets should be defined because of the absence of demand- and supply-side substitutability which meant that the competitive conditions of termination and retail services were very different.

Market power

10.11. Since, in the DGT's view, each MNO was a monopolist in the supply of termination to its own network, and there was no effective buyer power, he concluded that each mobile network had market power in a separate market for mobile termination on its network and was likely to continue to have such power for at least the succeeding few years. He noted that BT Cellnet and Vodafone had always kept their termination charges at the maximum level permitted by the charge controls.

The level of competition in the mobile voice call termination market

- *The CPP principle*

10.12. It was the DGT's view that the overall effect of CPP in the retail market was that, whereas mobile networks had an incentive to keep the price of those services required and paid for by the mobile owner at a level to attract and retain customers, they had less incentive to keep the price of calls to mobiles low. The reason for this was that each MNO had market power in termination and, in the absence of regulation, it had a clear incentive to increase its termination charge up to the monopoly level. This was because callers could not take their business elsewhere if dissatisfied as they had to use the network to which the receiving customer subscribed to reach that number. MNOs had argued that CPP had been one of the causes of increased levels of mobile ownership and that, with such high levels of ownership, persons calling mobile phones were likely to own one themselves so that what they lost on calling a mobile they gained on lower outgoing charges.

10.13. The DGT did not dispute that CPP was preferable to the alternative, the RPP principle, but he did not believe that this meant that he should not scrutinize the effects of CPP on termination charges nor that it removed the need for proportionate regulatory action where justified.

Effective competition indicators

- *Consumer behaviour*

10.14. The DGT said that he had considered the arguments of MNOs that consumer behaviour reduced the undesirable side effects of the CPP principle.

10.15. Of these, the DGT had found little evidence to support the argument that consumers chose their networks to any significant extent on the basis of the cost of incoming calls. The research of both Ofcom and one MNO had found that only some 13 per cent of residential consumers took this into account. This figure rose to 31 per cent for small and medium-sized firms, which, however, comprised only a very small proportion of total mobile ownership. Even for those consumers who did take the cost of incoming calls into account, many other factors, for example the choice of handset and the price of outgoing services, were far more important. The DGT therefore concluded that too few consumers regarded incoming call charges as an important factor in choosing their networks to constrain charges effectively. Nor did the DGT accept that high churn rates generally indicated a concern of consumers about incoming call rates: in his research into the reasons for such rates in March 2000 not a single consumer mentioned this as a factor.

10.16. The DGT had also considered the existence of what he called closed user groups as a possible factor reducing the effect of the CPP, but believed that the evidence that members of such groups made their choices on the basis of the cost of incoming calls was not strong. In addition, their effect in constraining termination charges was lessened by the ability of operators to segment customers, including through lower pricing of on-net calls, which might be attractive to closed user groups, while raising termination charges to those customers that are less price-sensitive. If the closed user groups were strong enough to constrain termination charges, then the existing level of these would be below the maximum required under the charge controls, which was not the case.

10.17. The DGT also considered other aspects of consumer behaviour which might reduce the effects of CPP, including: awareness of calling a mobile; awareness of termination charges; evidence of

consumers' adapting behaviour in response to these; the substitution of a voice call for another; the substitution of SMS for voice; call-back; and countervailing buyer power. He had concluded that in none of these was there significant evidence of such reduction.

10.18. As regards the possibility of countervailing buyer power, the DGT said that there was no evidence that it existed, given that regulation or commercial pressures obliged fixed operators to pass on calls to mobile operators.

● *Supplier behaviour*

10.19. The DGT said that he had then considered the evidence that the behaviour of the MNOs showed that competitive forces were at work. For instance, the MNOs had argued that competition was demonstrated by the ways calls to different mobile networks differed in price at different times of the day, but he saw this as consistent with an MNO with market power trying to flatten its daily traffic profile by encouraging off-peak traffic. If the call termination market were truly effective, the DGT said that he would have expected the MNOs to set termination charges at a level reflecting cost, but that Vodafone's and O₂'s charges were at that time at a weighted average of 10.2 ppm, compared with Oftel's view of their LRIC cost of terminating a call of about 6 ppm. The DGT also drew attention to the fact that Orange's and T-Mobile's termination charges were somewhat higher than the regulated charges and were similarly high compared with their costs of terminating a call, hardly demonstrating active competition or competitive pressure on termination charges.

10.20. The DGT believed that if the retail market were perfectly competitive, all termination profits would be competed away through lower retail prices, but that, since he believed the retail market not to be effectively competitive, he would not expect this to happen. In his view the balance between termination charges paid by callers and retail prices to mobile customers had become distorted. Oftel's view was that the difference between Vodafone's and O₂'s current and undistorted charges was about 2.6 ppm, or 34 per cent, while Orange's and T-Mobile's were about 2.5 ppm or 29 per cent.

10.21. The DGT told us that he had asked for evidence that MNOs had introduced tariffs to deal with the concerns of business. His research had shown that about 19 per cent of SMEs had sought to reduce their cost of calling mobiles by such means as private wires and adaptations to convert fixed-to-mobile calls into mobile-to-mobile calls. But evidence from Oftel's Large Business Users' Panel suggested that in general even the largest users had difficulty in negotiating customized packages for their own requirements. Where MNOs were willing to accommodate large business users which cared most about incoming charges, the selective nature of their action led only to resistance towards any general downward pressure on the call termination charges paid by the remaining less price-sensitive consumers.

10.22. The DGT also considered supply-side substitution, but found no evidence of this. The main reason why he did not believe supply-side substitution was possible was that for it to take place the MNO needed to have access to details of the consumer's SIM card, which were at present held only by that consumer's MNO. As noted earlier (see paragraph 10.6), that consumer's MNO could frustrate supply-side substitution by refusing to share the necessary access (information and control).

Consumer outcomes

10.23. The DGT said that Oftel had obtained data from 11 European National Regulatory Authorities in order to compare UK and other prices for call termination. These indicated that UK charges were above the average for European countries and well above the cheapest rates.

Excessive profits

10.24. The DGT said that, as a result of the market failure and the resultant excessive call termination charges, all four MNOs were making excessive profits on voice call termination in relation to costs plus a surcharge for externalities. The DGT believed that costs plus the surcharge provided a measure of the 'public interest benchmark' for charges. As to overall profits, the DGT believed that a proxy for the competitive level of prices could be taken as prices that reflected a reasonable ROCE for an MNO's efficiently incurred costs adjusted to allow for economies of scale and, in BT Cellnet's and Vodafone's cases, the lower costs of a hybrid 900/1800 network compared with an 1800 network. The DGT said that

Oftel had found that Vodafone's ROCE was persistently and substantially in excess of the cost of capital. The DGT referred to paragraphs 2.89 to 2.112 of Oftel's September 2001 Statement *Effective competition review: mobile* for further details of Oftel's view on overall profits.

10.25. The DGT emphasized that in assessing whether competitive pressure was being exerted on call termination Oftel had not relied on the comparison between price and cost. Rather, an assessment had been made of potential demand-side and supply-side substitutes. That analysis had found that there were no sufficiently good substitutes for call termination to exert competitive pressure on call termination charges.

Future competition in mobile call termination

10.26. The DGT had considered, since there were too few competitive constraints on mobile call termination charges, how future competitive constraints might develop. MNOs had argued that consumer awareness would increase over the years, leading to greater knowledge of the cost of calling mobiles. Whilst the DGT accepted that mobile owners were more likely to know that they were calling a mobile than non-owners, Oftel's research had shown that awareness of tariff structures was below what might be expected and none of the MNOs had said that knowledge of the price of calling specific networks would increase.

10.27. MNOs had suggested that, as mobile levels reached saturation, mobile owners would become increasingly aware of the cost of incoming calls, while the switch by MNOs to a focus on long-term revenue generation could spur a reduction in termination charges if this generated more revenue. The DGT thought both unlikely: no evidence had been produced in favour of the former, and continuing price insensitivity argued against the latter.

● *Technological and product developments*

10.28. The DGT believed it possible that competitive constraints on call termination charges might increase with technological developments in the future. Such developments might include:

- (a) voice-over packet-switched bearers, which might enable the use of packet-switched technology, such as IP, to avoid the standard switched technology;
- (b) unified messaging service and 'message clips';
- (c) wireless local area networks (W-LAN), the development of which could bring new operators into the market;
- (d) multiple SIM devices, involving the use of different SIM cards in the same mobile phone, giving the user a choice of networks for both outgoing and incoming calls; and
- (e) MVNOs, who could provide more competition.

10.29. The DGT believed it was unlikely that any of these developments would result in a change in his view of the definition of the market. He considered that none of these was likely to provide competitive constraint on call termination charges in the foreseeable future.

10.30. The DGT believed that, future constraints being minimal, in the absence of regulation the MNOs would raise their termination charges and that an even larger divergence between charges and costs would emerge than existed at present. He estimated that the unconstrained monopoly termination charge could be 20 ppm or higher, while costs were expected to fall to less than 5 ppm.

Conclusion on level of competition

10.31. The DGT concluded that competitive pressures did not exert sufficient constraints on termination charges and did not believe that those future changes in consumer or supplier behaviour or technology which could be predicted would have sufficient impact to constrain termination charges to a competitive level in the near future. He believed that the key factor in assessing competitive constraints

on mobile termination charges was the CPP principle, which reduced the incentive for MNOs to compete on incoming call charges, and that there were too few competitive constraints on call termination charges to keep them at a competitive level.

The case for regulating termination charges

Arguments by MNOs against regulation

10.32. The DGT accepted that the absence of competition and the result that prices were excessive in relation to cost did not automatically justify regulation, and he said that MNOs had put forward some arguments that regulation was inappropriate.

Swings and roundabouts

10.33. They had argued, first, that although consumers might lose from paying higher prices to call mobiles, they gained through lower prices in other areas of the mobile package. The DGT said that Oftel had found that the mobile market as a whole was prospectively competitive but not yet fully competitive,¹ which implied that it was unlikely that all the excess profits made on call termination would be competed away.

Economic efficiency and Ramsey pricing

10.34. The DGT said that the MNOs had sought to justify a high level of termination charges in relation to cost as being consistent with economic efficiency since it enabled them to recover fixed and common costs by Ramsey pricing.² While the DGT accepted that Ramsey pricing was an economically efficient way of recovering fixed and common costs, he had examined the representations by MNOs and told us that he fundamentally disagreed that MNOs would set either the level or the structure of prices in accordance with the Ramsey principle in the absence of regulation. First, the DGT believed that the broad retail mobile services market was not sufficiently competitive to lead to a conclusion that all MNOs would be constrained to set the overall level of prices in accordance with the Ramsey principle, which required that only normal profits were earned. Second, he believed that the CPP principle gave MNOs a clear incentive to set termination charges above Ramsey prices. The incentives faced by the MNOs would lead them to depart substantially from a Ramsey structure of retail prices because Ramsey prices reflected market elasticities of demand and not the elasticities faced by individual operators. These were different because of the fundamentally different degrees of competition as between the termination market and the retail mobile services market.

10.35. The DGT concluded that even if the retail market were perfectly competitive, MNOs would not choose to set Ramsey prices: their profit-maximizing incentives would be to raise the termination charge above the Ramsey level, where they would each have market power. If the retail market were not perfectly competitive, there might be, as well as distortion of prices, an excessive overall level of prices, allowing one or more MNOs to earn super-normal profits, resulting in the loss of economic welfare.

10.36. The DGT recognized that Ramsey prices had attractive features in principle and that they could be useful as a theoretical benchmark, but he believed that they did not provide a reliable basis for setting regulated charges in practice, because to calculate robust Ramsey prices would impose onerous informational requirements on the regulator.

Distributional effects

10.37. The DGT said that the MNOs had argued that the proportion of people who did not own mobile phones and could therefore be said to be subsidizing those who did through higher fixed-to-

¹*Effective competition review: mobile*, Oftel, September 2001.

²The use of higher mark-ups for goods or services for which consumers are price-insensitive, or less sensitive, offset by lower mark-ups prices where consumers are more sensitive.

mobile termination charges was now so small that it did not justify regulation to correct any public interest concern. Oftel's own research indicated that the proportion was about 18 per cent of adults, and that about 5 per cent were badly affected, in that they did not own mobiles, but that at least one-quarter of all calls from their fixed telephone were to mobiles.

10.38. The DGT told us that, based on research carried out in May 2001, about 3 million households and 8 million people (18 per cent of all adults) did not own a mobile phone but did call a mobile phone. These people suffered from high termination charges and would not benefit if those charges resulted in lower retail mobile prices. The research showed that lower income groups were less likely on average to own mobile phones. The research showed that of households in the lowest income group (less than £9,500 a year) only 46 per cent owned both fixed and mobile phones, although 72 per cent still called mobile phones. Another group identified in the research as potentially significant losers from distributional effects were those mobile owners who made more off-net mobile calls. The 16 to 24 age group appeared to lose most from this effect. A survey, using a different market research agency, of adults aged 15 years and over, had been carried out in May 2002. This had used a refined sample and methodology, giving greater representation of deprived areas, and indicated that the overall penetration level was at 68 per cent. (This compared with a control sample demonstrated that the trend of mobile ownership had remained at about 75 per cent over the preceding year.) Penetration was broadly similar within urban (67 per cent) and rural (70 per cent) areas, but significantly lower in less affluent areas (52 per cent). The DGT concluded that, while the distributional argument had weakened in recent years, it remained a supporting factor in any decision to regulate charges, although it did not provide a reason justifying regulation on its own.

10.39. Taking into account these arguments made by the MNOs, he believed that, even if the broad market were effectively competitive, the groups of customers who called mobiles and who owned mobiles were not completely aligned. Therefore, setting termination charges that were excessive in relation to cost would be economically inefficient and disadvantage certain groups of customers, so that regulatory action might still be required.

Proposed regulation

10.40. The DGT said that, having considered the matters set out earlier in this chapter and after a thorough assessment of the degree of competition in the provision of call termination, he had concluded that there was insufficient competitive constraint on termination charges, and that regulatory action was justified to protect consumers. The situation resulted from each MNO having market power in the provision of call termination on its own network. The DGT believed that regulation was required because in its absence MNOs would have the incentive and ability to set a level of charge which was excessive in relation to cost, to the detriment of consumers.

10.41. In deciding what form of action to propose, he had considered various possibilities designed to promote effective competition in the call termination market, including the encouragement of MVNOs, the use of multiple SIM devices and improved customer information, but had concluded that none of these would generate sufficient competitive constraints on those charges. He had also considered the possibility of tying termination charges to some other service that was competitively constrained, but had concluded that this would have undesirable effects on competition in other ways.

10.42. The DGT had therefore decided that direct controls on call termination charges were the most appropriate form of control, as they protected consumers whilst giving the MNOs flexibility and efficiency incentives. Given that he believed each MNO had market power in call termination on its own network, the DGT proposed that the controls should apply to all four MNOs, ie O₂, Orange, T-Mobile and Vodafone (and not merely O₂ and Vodafone, as with the existing controls) in relation to all calls to these networks, fixed or mobile, and not merely to fixed-to-mobile calls, as with the existing charge controls. He proposed that the controls should be in place for four years, subject to a mid-point review. The DGT did not propose to apply the controls to 3G services: it was uncertain what services would develop and he did not seek to regulate new services or technologies in advance of their launch. The DGT rejected the suggestion put forward by some MNOs that to cap 2G termination charges was effectively to cap the voice termination charges on 3G, since the DGT considered that the MNOs would have a number of possible practical approaches to charging for termination on 3G.

The proposed charge controls

10.43. The DGT described in detail the method¹ that he had used to calculate the level of the charge and how the controls would operate.

The method of setting of the charge caps

10.44. The DGT said that his approach to controlling charges by charge caps was to identify the appropriate target in 2005/06, the final year of the proposed control, and to calculate the appropriate percentage by which the existing charge should fall each year from the average existing charges in 2001/02, allowing for inflation. This formula was generally described as RPI-X with no one-off adjustment to charges. In the case of O₂ and Vodafone, the average charge for 2001/02 under the existing controls was 10.2 ppm, while the level for Orange and T-Mobile was a little higher, allowing for the higher costs of running an 1800 MHz network.

● *Calculation of X*

10.45. The DGT said that he was proposing as the target charge in the final year of control (2005/06) the LRIC of termination plus a small mark-up to cover fixed and common network costs and a further mark-up of 2 ppm to allow for the network externality, as described in more detail in paragraph 8.106). Allowing for a range of forecasting assumptions, this resulted in figures of 5.8 to 6.3 ppm for 900 MHz operators and 6.2 to 6.8 ppm for 1800 MHz operators, the corresponding rounded figures for X being 13 to 11 per cent in both cases. The DGT had therefore proposed to adopt the mid-point of the range and to propose an X of 12. The DGT said that Oftel had carried out a cost benefit analysis that supported its proposal for charge controls of RPI-12 per cent on all four main MNOs. The DGT had proposed licence amendments accordingly.

10.46. The DGT told us that he had:

- (a) derived the LRIC² figures based on volumes equivalent to a share of total minutes falling from 25 to 20 per cent, to reflect the emergence of a fifth network, Hutchinson 3G (by 2009);
- (b) applied EPMUs to allocate the fixed and common costs; and
- (c) updated the estimate of the value of the 'network externality' (see paragraph 9.54) and added it to the LRIC plus EPMU for termination.

The use of LRIC as a cost base

10.47. The DGT's view was that the most appropriate and economically efficient basis for regulatory charge control was forward-looking LRIC since this corresponded to what the charges would be in an effectively competitive market more closely than the cost base in the existing charge controls FAC using historical cost accounting information). The DGT told us that over the previous year Oftel had devoted significant resources to developing LRIC figures, assisted by consultants and an industry working group, and that it was now suitable for use as the cost base for the proposed new controls.

10.48. The DGT accepted that some versions of FAC might provide an acceptable basis for regulated charges if they met certain conditions, such as the inclusion of relevant costs only and the exclusion of all retail costs; the valuation of assets to reflect their true economic value; and an approach to depreciation that took account of technological progress. At least one MNO had cost information on an FAC basis using current cost accounting, but the DGT had not seen or agreed the detailed costing methodologies used in its preparation.

¹Chapter 7 of *Review of the charge control on calls to mobile*, Oftel, September 2001.

²See relevant documents: (1) *Economic Depreciation in the Long Run Incremental Cost Model*; (2) *Assessment of Demand Elasticity Estimates of *econ*; both available on Oftel's web site; (3) *LRIC Model of UK Mobile Networks*; (4) *Roadmap for the LRIC Model of UK Mobile Networks*; both available on request from Oftel.

10.49. The purpose of the LRIC model used by OfTel was to derive the costs of a reasonably efficient mobile operator in the UK. Its most important aspects had been set out in Annex 3 to the Review¹ (and the complete model was also made publicly available on the web site of the DGT's consultants). These included the derivation of different cost results for hybrid 900/1800 MHz and 1800 MHz operators; the use of three fundamental cost drivers: coverage, traffic and customers, as increments in the model; a breakdown of the incremental cost of traffic into the costs of incoming and outgoing calls on the basis of usage of various network elements; an assumption of the (nominal, pre-tax) cost of capital as within the range of 13 to 17 per cent, with data and other assumptions as detailed in the annex. This had led to an LRIC cost range for mobile call termination before mark-ups across various scenarios of 3.7 to 4.2 ppm for hybrid 900/1800 MHz operators and 4.0 to 4.7 ppm for 1800 MHz operators.

Mark-ups

10.50. The DGT acknowledged that to set charges at LRIC without any mark-up would make no allowance for the recovery of fixed and common network costs, which could then be recovered only from non-call termination services. The DGT did not regard this as appropriate and had therefore decided to add to LRIC a mark-up for such costs, plus a second mark-up for the network externality. He said that the mark-up for fixed and common costs should be calculated on an equal proportionate basis, ie by adding the same proportion to the cost of incoming and outgoing calls, rather than in accordance with the Ramsey principle. The DGT also noted that, because common costs were small, the choice of mark-up method did not have a large impact on the results.

- *EPMUs for recovery of common costs*

10.51. The DGT said that common costs, those incurred across a range of services, were relatively low in the context of mobile call termination, amounting only to about 3 per cent and 5 per cent respectively for hybrid 900 MHz and 1800 MHz operations. The resultant figures for LRIC plus EPMU for common costs were 3.8 to 4.3 ppm for hybrid 900/1800 MHz operators and 4.2 to 4.8 ppm for 1800 MHz operators.

- *Network externality*

10.52. The DGT said that network externalities arose from the benefits to existing mobile owners derived from a new subscriber joining the network, and that it was reasonable that there should be a further mark-up to reflect this benefit. An updated analysis of the DGT's submission to us in 1998 led him to propose that this should be between about 1 and 3 ppm. The DGT said that he had taken into account the views of some FNOs which were opposed to allowing any allowance for externality, but believed that any adverse effects alleged to be anti-competitive could be dealt with under the Competition Act.

Non-network costs

10.53. The DGT told us that he had considered various arguments put forward in favour of the inclusion of some non-network costs in LRIC, but had concluded that no non-network costs should be included, because they were not relevant to termination. Nor was it clear to the DGT that there were material non-network costs that should be allowed into a mark-up contributing to the recovery of common costs.

MNOs' criticisms of OfTel's EPMU figures and externalities estimates

10.54. The MNOs provided us with extensive evidence, produced in the main by consultants, designed to demonstrate that the DGT's proposed figures for EPMUs and for network externalities were incorrect. These, together with the DGT's views, are examined in Chapter 8.

¹Review of the charge control on calls to mobile, OfTel, September 2001.

Response to MNOs' criticisms of Of tel's LRIC model

● *DGT's general response to MNOs' comments and proposals on LRIC*

10.55. The DGT told us that he had undertaken a full examination of all comments and suggestions made by MNOs on his LRIC model. Comments made previously during the review of the LRIC model conducted by Of tel in conjunction with the MNOs had already been dealt with before he had made his proposals. Of the comments put forward by the MNOs in 2002, he could not accept most of them because he considered that they were wrong in principle, because of a lack of materiality or because no specific amendments had been proposed. The MNOs had not demonstrated that the remaining proposed amendments would result in more accurate overall costs of termination, and, having regard to the accounting information available to him, the DGT did not accept that any upward revision of the ppm cost of termination in his LRIC model was necessary. The DGT responded to general criticism of the model as in the following paragraphs.

Consultation

10.56. The DGT refuted the criticism that the MNOs had not been consulted in the development of the model. Over the course of a year the MNOs had been given every opportunity to comment, both orally and in a series of meetings, and also in written correspondence, on the models' development. At each stage a draft had been circulated among the MNOs, enabling them to contribute to the development process. Where comments had been made, Of tel had taken these into account, amending the model accordingly where the arguments had been valid. The MNOs had been requested on many occasions to provide cost, demand and network design data, but none had provided any useful data about their networks that would have enabled Of tel to test whether any further improvements to the model could have been made beyond those embodied in the model of 1 September 2001.

Risk of systematic bias

10.57. The DGT said that if all the amendments suggested by MNOs were to be accepted, significantly higher cost estimates would result from the LRIC model. In the DGT's view it was quite possible that many of the MNOs' criticisms were chosen to focus to a greater extent on parts of the model that they considered to understate costs, while overlooking some other amendments which would have the opposite effect. In other cases a single parameter captured a number of effects and might be different from any value observed in a single network. The proportion of traffic in the busy hour was an example of this, where the value (10 per cent) in 2000/01 had been set in the scorched node calibration and was apparently significantly higher than the MNOs' measured values in practice (a lower percentage figure being associated with lower cost). An implementation of the MNOs' suggested amendments could therefore result at the macro level in a systematic overestimation of costs.

Interrelationship between input values

10.58. In the DGT's opinion, proposed amendments could not be considered in isolation: they might have a consequential effect on other input values. In particular, amendments affecting the network design in the model might require the scorched node calibration to be redone, with the possibility that this could cause other parameter values to alter and offset any change to the cost figures implied by the original amendment.

Proposed amendments: treatment by the DGT

10.59. The DGT concluded that before an amendment could be accepted, it should:

- (a) be justified in principle;
- (b) materially affect the cost of termination

- (c) be consistent with the modelling approach and the specification of parameters; and,
- (d) be supported by evidence to demonstrate that it was valid and represented the costs of a reasonably efficient network operator.

10.60. The DGT added that any consequential effects of a proposed amendment needed to be taken into account and that, where change to the costs was material there should be an overall check to ensure that the amendment would lead to more and not less accurate results.

10.61. As regards proposals to increase the level of detail in the model, those involving an increase in the level of complexity were complicated and time-consuming to implement, and the DGT would need to be convinced that any proposed change would result in a material change in the costs of termination before implementing it.

Other criticisms: response by the DGT

10.62. The DGT responded as follows to the more significant detailed criticisms made by the MNOs.

10.63. The DGT rejected any suggestion that MNOs' concerns over costing principles had been ignored: these had been fully aired at a series of meetings over the course of a year. Nor could he accept that modelling points made by MNOs had not been taken on board or that discussions over methodology had not been completed: he had made several changes to the model in order to accommodate modelling points and discussion over methodology had begun in the summer of 2000, allowing plenty of time for completion.

10.64. The DGT failed to understand the criticism that versions of the LRIC model had been released without prior consultation with the Working Group since all working versions of the model had been released to the Working Group only, until the final version in September 2001, which had been published alongside Oftel's statement. This version had not been circulated first to the Working Group because the DGT believed it appropriate to issue the final version of the model at the same time as its proposed charge control.

10.65. The DGT also responded in detail to over 70 very detailed points made by MNOs, which he published on the Oftel web site.

10.66. The DGT made the following responses to general comments made by individual MNOs.

Response to Vodafone's comments

- *Not an incremental cost model*

10.67. The DGT disagreed with Vodafone's view that the Oftel model was not a model of incremental cost. He did not accept that all the costs of a basic coverage network should be treated as fixed common costs: in his opinion all traffic-sensitive costs of a basic coverage network should be treated as part of the traffic increment.

- *Exclusion of non-network costs*

10.68. The DGT's view was that such costs were not relevant to the LRIC of termination because such costs would not vary with the volume of termination and it was unclear why any non-network costs should be allowed into a mark-up contributing to the recovery of relevant common costs. Also, customer acquisition costs were retail costs and not incremental to termination. The DGT believed that the most economically efficient way to recover costs driven by the number of customers was by a subscriber charge.

- *Cost of location update*

10.69. The DGT disagreed with Vodafone's suggestion that the costs of location should be allocated to call termination: this was driven exclusively by the number of subscribers within mobile networks regardless of the volume of incoming calls they generated.

- *Operating costs*

10.70. The DGT accepted that the costs of operating the networks had been estimates, and said that Oftel would have been happy to review alternative estimates had the MNOs provided any.

- *'Stranded assets'*

10.71. The DGT disagreed that the model assumed a significant degree of stranding of assets and failed to provide for them.

- *Perfect networks not achievable in real world*

10.72. The DGT denied that the model failed to model the full cost of a mobile network in a realistic manner. Its algorithms were not based on 'flat earth' assumptions and took account, for instance, of ground elevation and buildings generating radio clutter. It was also intended to allow for the actual number of base stations employed and specifically for the need for less-than-perfect locations. This was done mainly by the use of a 'look-ahead' algorithm and the 'scorched node' calibration of network design parameters.

- *Cell site closures*

10.73. The DGT said that the MNOs had not indicated that the cost of cell site closures was significant and from the fact of the closure of [30] cell sites during the previous financial year derived a rough estimate of the additional cost arising from site closures as approximately [30] per cent of the total economic cost of [30] network.

- *Network evolution*

10.74. The DGT said that it was not true that the calculations in the model were based on an assumption that the network was dismantled and rebuilt each year, but rather on the deployment and operation of the mobile network over a number of years. The DGT pointed out that the 'look-ahead' algorithm resulted in higher cost figures because it brought forward capacity in advance of demand, the effect being to raise the call termination cost by 18 per cent in 2005/06, while the scorched node calibration ensured that the model's network design algorithms yielded the same number of sites as the MNO's actual network.

- *Intermittent capacity requirement*

10.75. The DGT said that effects such as the intermittent use of sites and the non-uniform distribution of traffic across a large number of sites was reflected in the calibration of the model's network design parameters.

- *Coverage expansion*

10.76. The DGT accepted that the present model did not at present reflect an extension of the coverage area of MNOs, because they had not supplied the necessary information on the planned further roll-out of coverage, but said that it was capable of doing so when the information was received.

- *DGT's model generic not specific*

10.77. The DGT said that an operator-specific model had not been constructed partly because the MNOs had not supplied the detailed information required and partly because Oftel had decided to derive the costs of a '25 to 20 per cent operator', using demand assumptions that were neutral and mutually consistent, on the lines of the MMC's approach in its 1998 inquiry.

Response to Orange's comments

- *Exclusion of relevant cost elements*

10.78. The DGT said that it was not clear what Orange meant by 'start-up' costs. Network costs required to provide geographical coverage in the early years of an MNO's operation were explicitly modelled since the model calculated the costs of a mobile operator regardless of size. As to the use of a top-down approach, Oftel would have preferred to complement its bottom-up model with either detailed accounting-based cost information or top-down LRIC models, but the MNOs had refused to provide either. The DGT said that if they were to do so now, he would be happy to contribute to the reconciliation of the results of the bottom-up and the top-down exercises. As to Orange's assertion that the Oftel model excluded certain significant non-network costs, the DGT said that the type of costs referred to were driven primarily by customer numbers and should not be considered attributable to traffic. Customer acquisition costs were retail costs and not incremental to the wholesale service of call termination: the most economically efficient way of recovering these costs was by means of a per-subscriber charge. On Orange's suggestion that 2G spectrum costs should have been uplifted to include a proportion of 3G costs, the DGT said that this was inappropriate as the latter were not relevant to the costs of 2G termination.

- *Definition and allocation of common costs*

10.79. The DGT did not accept the implication of Orange's argument that that all the costs of a basic network should be treated as 'fixed common costs': Oftel treated all traffic-sensitive costs of a basic coverage network as part of the traffic element. As to Orange's assertion that it was not clear how Oftel had calculated its externality allowance, the DGT said that this had been explained in detail in its Statement of September 2001.¹

- *Economic depreciation*

10.80. The DGT did not accept that Oftel's model understated costs because of overstated asset lives. Under economic depreciation, there was not a simple and mechanical relationship between asset lives and annualized cost. Even if Orange's view of asset lives were accepted, the costs would not be materially higher for the reasons set out in paragraph 7.83 in the draft version sent to Oftel. In the case of handsets, the DGT noted that that the cost of handsets had absolutely no impact on the LRIC of termination. It could only affect the size of the mark-up on termination, but, if Orange believed that the model had understated the cost of handsets, then it had also understated the EPMU on them and so overstated the mark-up in termination.

- *Cost drivers*

10.81. The DGT accepted that the use of a single average busy-hour factor for all types of traffic and all network elements was a simplification, but believed that the net effect of changing to a more disaggregated analysis was unclear and could have unpredictable results. The DGT believed that the value in the model for the proportion of traffic in the busy hour made an allowance for the combined effect of the variety of complex factors that influenced network dimensioning, because it was one of the key parameters calibrated in the scorched node calibration.

¹*Review of the charge control on calls to mobiles*, Oftel, September 2001.

10.82. As to Orange's assertion that the model inadequately modelled the costs of service quality, the DGT said that the model incorporated assumptions on 'blocking probability' and that it also assumed a level of 'coverage quality'. The MNOs' unwillingness to provide better information on their networks had prevented Oftel from making a scorched node calibration on Orange's exact radio network. The DGT believed that the LRIC model did include a reasonable quality of service: it was in any event unclear that callers should be obliged to pay more because a higher quality of service has been chosen by call recipients.

Response to T-Mobile's comments on the LRIC model and legal matters

LRIC model

Uncertainty and risk

10.83. In response to T-Mobile's general criticism of the imposition of price regulation in the light of the degree of risk and uncertainty in the mobile sector, the DGT said that Oftel had already provided justifications for the use of such regulation in previous publications, and notably the September 2001 Statements.¹

Mobile network evolution: 3G costs

10.84. In response to T-Mobile's suggestion that 3G costs should have been included in cost estimates, the DGT said that, since he had proposed, for policy reasons, to regulate only 2G termination charges, 3G costs were irrelevant.

LRIC model: economies of scale

10.85. As to T-Mobile's complaint about the lack of economies of scale in the Oftel model, the DGT replied that he had set out his views on economies of scale in Oftel's paper *Network Common Costs*, submitted to us in February 2002 and published on the Oftel web site.

Inconsistencies with cost allocation by MNOs

10.86. Referring to T-Mobile's objection to the Oftel model on the grounds that it suffered inconsistencies because of its use of economic depreciation and the assumption of an MNO with a 20 to 25 per cent share of the market, the DGT pointed out that T-Mobile had not produced accounting-based information, so precluding any comparison of this with economic depreciation results; while the 20 to 25 per cent share had been assumed partly also because of lack of information and partly because Oftel had sought to derive the costs using demand assumptions that were competitively neutral and mutually consistent. The latter followed the MMC's approach in the previous inquiry.

Response to legal arguments raised by T-Mobile

10.87. T-Mobile raised, in its submissions and during hearings, some legal and regulatory questions (see Chapter 13) concerning the DGT's reference, and we referred these to the DGT for comment. He responded in a document² published by him on 22 March 2002, of which the following is a summary.

10.88. Responding to T-Mobile's assertion that the DGT's reference to us was ultra vires and its request to us to reach an early conclusion that this was so (see paragraph 13.15), the DGT replied that T-Mobile was missing the point: under section 13(1) of the Act, he was empowered to make a reference to us which was so framed as to require us to investigate and report on the questions referred. We could

¹Review of the charge control on calls to mobiles, Oftel, September 2001; *Effective Competition Review*, Oftel, September 2001.

²Oftel's Reply of 22 March to legal arguments raised by *One 2 One* in its paper dated 18 February 2002, including copies of certain legislation referred to in Oftel's Reply, Oftel, 22 March 2002.

not decline to investigate and report. In the view of the DGT, if T-Mobile believed that he had acted illegally or irrationally in making the reference, then the proper remedy was to seek a judicial review of his decision to make the reference.

10.89. Referring to T-Mobile's point that the measures proposed by the DGT were inconsistent with the principle of the EC Interconnection Directive¹ and that he had no power under existing directives to impose cost-based regulation, the DGT maintained that there was nothing in that directive or general EC law which precluded the exercise by him or by us of our respective powers with regard to licence modifications under the Act.

10.90. As to T-Mobile's assertion that the DGT's proposals were inconsistent with the new directives² for the regulation of electronic communications, adopted by the Council on 14 February 2002, the DGT said, first, that these had not yet (at the time of the DGT's reply) been published and were therefore not in force, and second, that they were in any event harmonizing directives carrying no implied prohibition on the DGT using his domestic powers to intervene. Third, and moreover, in his view the CC had no need to decide the issue of any alleged incompatibility of the proposed charge controls in relation to those directives, since:

- (a) the Act required the DGT to make such modifications as appeared to him necessary for the purpose of requisite remedying adverse effects specified in a CC report: he had no need to use the modifications recommended in such a report;
- (b) if the MNOs objected to the insertion of a licence condition, their correct resort was to seek a judicial review, since the CC was not a 'court or tribunal' under the Treaty of Rome and not therefore able to decide issues of European law or to refer matters for preliminary rulings to the European Court of Justice;
- (c) the new Access and Interconnection Directive in its Article 5 did envisage controls on operators not having significant market power where they controlled access to end-users;
- (d) in any event, that directive expressly empowered national regulatory authorities to impose cost-based controls, such as those proposed by the DGT, on operators with significant market power; and
- (e) in short, the DGT maintained his view that he could lawfully intervene on his own initiative, even under the new directives, to impose the sort of controls he was now proposing.

10.91. As to T-Mobile's contention that the regulation of call termination charges risked putting the UK in breach of its obligations under Article 10 of the EC Treaty, the DGT said that the article imposed on member states an obligation in general terms to take measures to ensure the fulfilment of Community obligations and, in the DGT's view had no relevance to the matters within the present inquiry. The DGT therefore believed that its proposals were not incompatible with Article 10 of the EC Treaty. The DGT added the following detailed points:

- (a) no such measure as referred to in Article 10 had yet been taken by the DGT, nor would the CC be taking such a measure;
- (b) the regulation of call termination charges was contrary neither to existing directives nor to the new directives; and
- (c) T-Mobile's reasoning based on its two cited cases was flawed.

10.92. Even if the DGT were wrong in these points, section 16(5) of the Act was capable of dealing with any potential issue of incompatibility with Article 10, should such arise in the future.

¹Directive 97/33/EC.

²Framework Directive, adopted by the Council, 14 February 2002: Access and Interconnection Directive, adopted by the Council on 14 February 2002.

Issues and hypothetical remedies

10.93. During the course of our inquiry the DGT gave us his views on the issues as they arose, and most of these have already been reflected earlier in this chapter. The following are dealt with separately.

Issues

Effect of call termination charges on customers of fixed operators

10.94. The DGT said that in his opinion current mobile termination charges were substantially in excess of costs, resulting in excess profits being generated from mobile call termination. OfTel estimated that these excess profits were just less than £600 million in the year to September 2001 for all four MNOs taken together. To some extent these excess profits were used to reduce retail prices for mobile services, and to that extent customers of FNOs subsidized the customers of MNOs.

Whether current termination charges allow MNOs to compete unfairly against FNOs

10.95. The DGT said that, while choice between fixed-to-mobile and off-net mobile-to-mobile were not distorted, the effect of excessive termination charges was to deter consumers artificially from using a fixed line to call a mobile when they could make an on-net call instead. This reduced economic efficiency and might also lead to a distortion in competition if, when the price of each service were at the competitive level, mobile-originated and fixed originated calls were in the same market. Whether or not this was the case was unclear because two of the services—fixed-to-mobile and off-net mobile calls—were not priced at the competitive level because of excessive termination charges. There was, however, a potential for the current level of termination charges both to distort competition and to impair economic efficiency.

Remedies

10.96. Following our hypothetical remedies (see Appendix 2.2), the DGT, whose general views on the matters covered are already set out in this chapter, confirmed his support for a charge cap; agreed that there were few, if any, technological solutions likely to be viable in the near future which would be attractive commercial propositions for the MNOs; believed that tying termination charges to retail services was inappropriate; and took the view that the case for the introduction of the RPP arrangement in the UK was weak. He commented additionally on the following specific points.

Financial impact of the remedies

10.97. The DGT said that, before proposing the regulation of termination charges, OfTel had considered the impact of any regulation on the financial viability of the MNOs and had set these out in its published document *Assessment of Consumer Benefits and Financial Impact of Proposed Control*.¹ The DGT's view was that capping charges could not be the reason for any financial difficulties of the MNOs, because the caps would allow the MNOs to recover their costs of termination plus a mark-up for common costs and a surcharge for the network externality.

Bilateral agreements

10.98. The DGT had considered the view advanced by Vodafone that the use of bilateral inter-connection agreements among MNOs could avoid the need for regulation, but had concluded that this would not be so. The DGT did not see the incentives of MNOs as aligned with the public interest, since it was in their interest to set termination charges in such a way as to weaken retail competition. High off-net termination charges could also create an entry barrier to the forthcoming new entrant, Hutchison 3G.

¹OfTel, 19 April 2002.

Non-discrimination and price squeeze test for fixed-to-mobile services

10.99. The DGT said that FNOs' main concern appeared to relate to the MNOs' private wire tariffs, on the grounds that the FNOs were at present unable to compete with the low charges made available by the MNOs to corporate customers with large numbers of handsets. The DGT had not previously examined this situation, which would require a separate investigation. The DGT believed that if termination charges were reduced as now proposed, this would enable the FNOs better to compete in this area. Alternatively, the DGT suggested that if we were to consider the FNOs' case to warrant early assistance, a one-off reduction would be preferable to suggesting that the DGT should consider extending the scope of the inquiry.