Supplementary Consultation to resolve a dispute between BT and each of Vodafone, T-Mobile, H3G, O2 and Orange about BT's termination charges for 0845 and 0870 calls

This version is non-confidential.
Confidential redactions are indicated by [✂]

Supplementary Consultation

Issue date: **7 July 2010**

Contents

Section 1

The purpose of this supplementary consultation

1.1 This supplementary consultation provides an opportunity for stakeholders to comment on areas where we have changed some of our provisional conclusions from those set out in our Draft Determination to resolve disputes referred to us by each of Vodafone Limited ("Vodafone"), T-Mobile (UK) Limited ("T-Mobile"), Hutchison 3G UK Limited ("H3G"), Telefónica O2 UK Limited ("O2"), and Orange Personal Communications Services Ltd ("Orange") (together, the "MNOs") against British Telecommunications plc ("BT"). We joined each party to the original dispute submitted by Vodafone, so we therefore refer to this dispute as the "Dispute"; and we refer to the MNOs and BT collectively as the "Parties".

1.2 We note that from July 2010, the Orange and T-Mobile brands will operate under a single company, "Everything Everywhere Limited". However, we have continued to refer to the Parties as Orange and T-Mobile for the purposes of this document. Where joint views have been submitted to Ofcom we will refer to the Parties as T-Mobile/Orange.

Draft Determination

1.3 On 10 June 2010 we published our Draft Determination setting out our provisional conclusions in respect of the Dispute and the reasoning supporting these conclusions. We provisionally determined that NCCNs 985 and 986 were not fair and reasonable and invited stakeholders to comment on the draft determination by 24 June 2010.

1.4 We received responses from: BT (the "BT Response"); T-Mobile and Orange together (the "T-Mobile/Orange Response"); O2 (the "O2 Response"); Vodafone (the "Vodafone Response"); H3G (the "H3G Response"); C&W (the "C&W Response"); Virgin Media (the "Virgin Response") and IV Response (the "IVR Response").

1.5 In Section 2 we set out stakeholders' submissions and our comments on matters relating to the Direct effect and the unintended, unforeseen and wider implications of allowing NCCNs 985 and 986 to stand. We also received submissions on other matters raised in the Draft Determination – these will be addressed in our Final Determination, but as set out in paragraph 1.22 these do not form part of this Supplementary Consultation.

Our revised provisional conclusions

1.6 In response to submissions received during the consultation we have revised some of our provisional conclusions and our reasoning which underpins them, and we are therefore providing the Parties with an opportunity to comment on these matters. The changes relate specifically to our reasoning on the Direct effect and the wider implications of NCCNs 985 and 986. The summary of our revised provisional conclusions are set out in paragraphs 1.7 to 1.18 below; however our overall provisional conclusion remains that NCCNs 985 and 986 are not fair and reasonable.

Our provisional conclusion on Principle 1

1.7 For the reasons set out in the Draft Determination, our analysis suggests that Principle 1 is met by NCCNs 985 and 986 because they allow the MNOs to obtain a sufficiently large retention on 0845 and 0870 calls relative to their retention on geographic calls.

1.8 Having reviewed the responses to our Draft Determination, our provisional conclusion on Principle 1 remains as set out in the Draft Determination.

Our provisional conclusions on Principle 2

1.9 Principle 2 relates to consumer and competition effects.

Consumer effects

1.10 In the Draft Determination our view was that the direction and the magnitude of the Direct effect were unclear. In the light of the responses, our revised view is that the direction of the Direct effect is more likely to be positive for consumers than negative, i.e. there is more likely to be an incentive for MNOs to reduce 0845/0870 call prices than to increase them. However, we maintain the view that the magnitude of the Direct effect is uncertain. We also maintain our view of the Mobile tariff package and Indirect effects as in the Draft Determination.

1.11 The overall effect on consumers depends on the relative sizes of the different possible effects on consumers (i.e. Direct, Indirect and Mobile tariff package), which are uncertain. However, notwithstanding our revised provisional conclusions on the Direct effect, we are minded to remain of the view that the risk of an overall adverse effect on consumers suggests that NCCNs 985 and 986 do not satisfy Principle 2.

Competitive effects

1.12 Our provisional conclusion on the competitive effects is unchanged from the Draft Determination. The risk of competitive distortions between TCPs is relatively low and there may be no significant distortion to competition in MNOs' wholesale sales to MVNOs. However, there are concerns about the potential distortion of OCPs' choice of transit provider, and about competition between MNOs/MVNOs in retail services (relating to disincentives to pricing innovations and potential for the range of retail packages to be reduced).

Overall view

1.13 We maintain our provisional conclusion that, taking the issues raised by our analysis of consumer benefits and competitive distortion in the round, on the evidence currently before us, Principle 2 is not in our judgment sufficiently likely to be met.

Our provisional conclusion on Principle 3

1.14 We maintain our provisional conclusion in the Draft Determination on the derivation of average retail prices. This aspect of NCCNs 985 and 986 should be practicable to implement in practice, but we are unable to reach a firm conclusion because further negotiation is required between the Parties.

1.15 In the Draft Determination we noted that, were we to conclude that Principles 1 and 2 were satisfied, we would need to give further consideration to unintended,

unforeseen or wider implications. Although we remain of the provisional view that Principle 2 is not satisfied, we have considered these issues further.

1.16 The new arrangements proposed under BT's NCCNs represent a substantial change in industry arrangements with considerable complexities of implementation and a number of practical issues which have not been fully resolved. We consider that they carry with them a risk of unintended, unforeseen or undesirable wider implications. If we were in a position to conclude that there would be clear and unequivocal benefits to consumers from NCCNs 985 and 986, we might place less weight on these concerns. However, given our provisional view that Principle 2 continues not to be met, we consider that these concerns are relevant. Taking into account the uncertainty which we have identified as to the practical effects of BT's NCCNs, we provisionally conclude that BT's NCCNs 985 and 986 do not satisfy Principle 3.

Our provisional conclusion across Principles 1, 2 and 3

1.17 Our overall provisional conclusion remains unchanged from the Draft Determination. Taking into consideration our assessment across the three Principles, our provisional conclusion is that it is not fair and reasonable for BT to apply new termination charges for calls to 0845 and 0870 numbers hosted on its network, which are based on the level of the retail charge made by OCPs for calls to these numbers, as specifically set out in BT's NCCNs 985 and 986 dated 2 October 2009. We have reached this provisional conclusion on the basis that the charges do not satisfy Principle 2 and Principle 3 on the evidence currently available to us.

1.18 We therefore propose that the Parties should revert to the terms on which they were trading prior to the imposition of NCCNs 985 and 986.

Our provisional conclusion on repayments

1.19 Our provisional conclusion on repayments remains unchanged from the Draft Determination, for the reasons set out in that document.

Ofcom's decision to re-consult stakeholders

1.20 We have significantly changed certain aspects of our provisional reasoning from that set out in the Draft Determination. As a result, we consider that it is appropriate and fair for us to give stakeholders the opportunity to comment on those changes. We have therefore decided to publish this supplementary consultation on the matters raised in Section 2, on which we invite comments.

1.21 We consider that in the circumstances of this case, the need to undertake a supplementary consultation means that it is reasonable for us to conclude that exceptional circumstances apply, such that we are not required to resolve the dispute within the four month deadline prescribed by section 188(5) of the Act. Notwithstanding this, we remain under an obligation to make our final determination as soon as is practicable.

1.22 For clarity, the following areas (in relation to which we received submissions in response to the Draft Determination) are not referred to in detail in this Supplementary Consultation, as they do not pertain to those areas in relation to which our reasoning has changed from that set out in the Draft Determination. We will however address them fully in the Final Determination:

- Ofcom's policy preferences for 0845 and 0870 calls

- The processes used by Ofcom in reaching a Determination
- The scope of the Dispute
- Ofcom's analytical framework
- The application of Principle 1
- The application of Principle 2 – Mobile tariff package effect and Indirect effect
- The application of Principle 2 – competition effects
- The application of Principle 3 – practicability of deriving the average retail price, MNO pass-on of charges to MVNOs, and porting at the OCP end

Structure of this document

1.23 We have set out stakeholders' relevant submissions and our responses in **Section 2**; part of BT's supplementary economic evidence, a further report by Professor Dobbs ("Dobbs 4"), is at **Annex 1**; part of the MNOs' economic evidence, a report by Frontier Economics (the "Frontier report"), is at **Annex 2**; our response to BT's submissions on the Annexes 3 to 5 of the Draft Determination is at **Annex 3**; and **Annexes 4 to 6** provide details on how to respond to this consultation.

1.24 This supplementary consultation closes at **5pm on 21 July 2010**.

Section 2

Ofcom's modified reasoning following submissions on the Draft Determination

2.1 This Section sets out the submissions we have received from the Parties and interested parties that relate specifically to those areas where we have significantly changed our provisional reasoning or conclusions.

Areas covered in Section 2

2.2 We received comments on the Draft Determination and new evidence from the Parties regarding the Direct effect, which have led us to amend our provisional conclusion on the likely direction of changes in prices in response to NCCNs 985 and 986. We are now of the view that NCCNs 985 and 986 are more likely to lead to a reduction in 0845/0870 prices than a price increase. However, the magnitude of any such price reductions remains unclear. We consider it appropriate to give the Parties (and interested parties) an opportunity to comment on the revised evidence and our analysis of it - see paragraphs 2.15 to 2.156.

2.3 Parties to the Dispute have also raised concerns regarding practical complexities, the wider implications and unintended or unforeseen effects which might arise if we were to find that NCCNs 985 and 986 are fair and reasonable. Having carefully considered these submissions we have revisited our provisional conclusion on Principle 3. We broadly share the concerns that have been expressed, particularly in light of the substantial change in industry arrangements that would be involved in implementing NCCNs 985 and 986 in advance of the conclusion of Ofcom's current NGCS Review, given the uncertainty of possible risks to consumers. These matters are discussed in more detail in paragraphs 2.157 to 2.165.

2.4 Before turning to these issues, we first discuss an important point of context: the nature of the dispute resolution process and its comparison to the process for regulatory policy projects.

The dispute resolution process

2.5 The scope of the Dispute is to determine whether it is fair and reasonable for BT to apply new termination charges for calls to 0845/0870 numbers hosted on its network, as set out in NCCNs 985 and 986. We are required to resolve this Dispute. Whilst we have for exceptional circumstances exceeded the four-month deadline, we remain under an obligation to resolve the dispute as quickly as possible.

2.6 There are two potential outcomes: either we find that the new charges are fair and reasonable, or that they are not fair and reasonable. In determining which of these outcomes is in our judgment the more appropriate, we have to take into account all relevant considerations.

2.7 In the context of a time-limited dispute resolution process, there are limits on the extent of the analysis which both we and stakeholders are able to carry out. In this

Dispute, a substantial – indeed unusually large – amount of evidence has been submitted from the six Parties to the Dispute and the other interested stakeholders. This evidence is wide-ranging and much of it is complex. For example, BT's arguments involve and rely heavily on the extension of the previous economic literature to develop new economic theory. The evidence raises a large number of issues, each of which we have assessed.

2.8 As well as assessing all of the substantial evidence provided to us by the six Parties to the Dispute and by other interested stakeholders, we have used our information-gathering powers to obtain more evidence, which we have also analysed. In any regulatory assessment there is always further analysis that could be done, but the nature of the dispute resolution process imposes some constraints.

2.9 The matters before us in this Dispute are in our view akin to matters which we would usually consider in the context of a more extensive and less time limited policy project. Such policy projects typically allow for a more detailed and broader analysis, longer consultation periods with a wider set of stakeholders, and a larger range of options and outcomes, which are not constrained by the matters referred to us in a dispute. Any resulting conclusions also apply to the industry as a whole, rather than being binding only on the parties to a dispute.

2.10 These constraints reflect the different purpose of disputes, which are intended to provide speedy resolution of disputes between two or more parties, and not the development of new regulatory policy.

2.11 We note these differences here because they are in our view relevant to our proposed resolution of this Dispute. In particular, much of the evidence provided to us by BT in this Dispute is based on theoretical economic analysis, and is not supported by empirical evidence. We note that there may be limits to the amount of empirical analysis that BT could have undertaken itself in this regard.[1] However, in the time available we have not ourselves been able to, for example, commission new consumer research or conduct our own complex empirical investigation (e.g. econometric analysis of the own- and cross-price elasticity of demand for 0845/0870 calls, or of the price-setting decisions of the MNOs), as would be possible in a policy review.

2.12 We consider that this is relevant to the exercise of our judgment in deciding how to resolve this Dispute, given the uncertainties which we consider remain over the magnitude and likely effects of BT's new charges. This is particularly relevant given the fact that in our view there would be a wide range of stakeholders affected, both directly and indirectly, were we to conclude that BT's NCCNs 985 and 986 were fair and reasonable, including:

a) Consumers of 0845/0870 calls and of other mobile services;

b) TCPs which are competing against BT, as they would need to change their own termination charges to remain competitive (as some have already done);

c) SPs using 0845 and 0870 as the charges they pay (or revenue they receive) from TCPs may change;

[1] Although we do not accept that it could not have undertaken any – see paragraph 2.151 and footnote 71 below.

d) OCPs other than the MNOs if their average retail prices for 0845/0870 calls are at least 12.5ppm;

e) MVNOs; and

f) Transit operators, given the changes required for practical implementation of BT's NCCNs and new termination charges by other TCPs, or any changes in the nature of transit competition.

2.13 We note that our current policy project, the NGCS Review, has a broader scope and a process better suited to such wide-ranging issues concerning the appropriateness of the current obligations and policy preferences, and the wider implications.

2.14 As a consequence of the constraints on us in resolving this Dispute (including as to the evidence and options available to us, which is unlikely to be as robust or complete as that used to formulate policy development in a policy project), where we are unable to reach firm, evidence based conclusions on the material before us, we consider it is appropriate to exercise caution when assessing whether NCCNs 985 and 986 are fair and reasonable. We discuss this issue at paragraphs 2.150 to 2.155 below. We consider that this is consistent with our overriding duty to further the interests of citizens and consumers.

Principle 2: The Direct effect on consumers

Introduction

2.15 In this section we summarise the key issues raised in response to the Draft Determination in relation to the Direct effect of NCCNs 985 and 986, set out our view on each issue, and then we explain our revised provisional conclusions on the direction and magnitude of the Direct effect.

2.16 In summarising the issues we have grouped the responses under the following headings:

- Empirical evidence in relation to BT's models
- Elasticity of demand
- Multiple price points
- Lack of competitive interactions and prices of other services
- Substitution between 0845/0870 calls and other services
- Profit maximisation by BT
- Other issues
- Conclusion on Direct effect

2.17 We have received submissions in relation to the Direct effect from BT, including a further economic report by Professor Ian Dobbs ("Dobbs 4"); from the MNOs, including an economic report prepared by Frontier Economics (the "Frontier report") on behalf of Vodafone, O2 and H3G; and from other interested stakeholders. We first summarise the additional analysis in Dobbs 4 and set out our views on this before turning to the key issues raised by BT, the MNOs and other interested stakeholders.

The Dobbs 4 report

Summary of arguments in Dobbs 4 report

2.18 BT has provided a further report by Professor Dobbs (Dobbs 4) which extends the framework used in Dobbs 3. We understand that the purpose of this additional analysis is to respond to the concerns raised in the Draft Determination in relation to the robustness and comprehensiveness of BT's economic analysis, and in particular: (a) to provide a more satisfactory analysis and explanation of strategic interactions and mobile tariff package effects; and (b) to allow for the possibility of relatively inelastic demand for 0845/0870 calls at current prices, as suggested by some MNOs.[2]

2.19 Dobbs 4 adjusts the framework used in Dobbs 3 to take account of possible negative 'spillover effects' between 0845/0870 retail prices on the profits earned by MNOs from other services at current price levels (in this context, a negative spillover effect would arise if an increase in 0845/0870 retail prices led to a reduction in the profits earned on other services). In particular, MNOs are assumed to set 08 prices to maximise the profits earned from these services, whilst taking into account the spillover effect on profits earned from other services. Furthermore, the analysis in Dobbs 4 assumes that:

- The demand for 08 services depends only on the price for 08 services and is not affected by the prices of other services or rivals' prices. Professor Dobbs argues that this is a reasonable assumption in the absence of any evidence to the contrary, and given MNOs' statements that 08 numbers are subject to less competitive pressure than headline rates for other parts of the mobile bundle.

- The spillover term in the MNO's profit function is assumed to increase linearly with the 0845/0870 retail price (i.e. an increase in 08 prices results in a reduction in wider MNO profits from other services). Professor Dobbs explains that:

> "As the 08 retail price p is varied, this may affect the level of demand for the MNO's other services; whilst this might be in part substitution and in part complementary, the primary effect is likely to be complementary. This is because a higher price for 08 services will tend to induce some customers to shift allegiance to other MNOs, so reducing the demand for all the MNO's services"[3]

2.20 Professor Dobbs states that the spillover term is not 'ad hoc' and acts as a 'reduced form' summation of various possible 'indirect effects' of a unilateral change in 08 retail prices (including impacts on the MNO's other service demands, change in its prices for other services due to the mobile tariff package effect, and competitor reactions). In this regard, Professor Dobbs explains that:

> "Conceptually, as the 08 price is changed, this might also lead to the MNO re-optimising prices in the tariff bundle of its other services (the so called mobile tariff package effect – MTP). This can be viewed as a 'feedback' effect. The same is true of hypothesized strategic reactions by other MNOs consequent

[2] Professor Dobbs confirms that in Dobbs 3 the elasticity of demand for 0845/0870 calls at current prices is inferred by assuming that MNOs are profit maximizing and that the implied elasticity is always in the elastic range. Professor Dobbs also notes that spillover effects on other MNO retail services are discussed only briefly in Dobbs 3 and that this report assumed that spillover effects are significant only at prices that are higher than current 0845/0870 retail prices.

[3] Dobbs 4, paragraph 15

> on a unilateral change in a given MNO's 08 price – these can also be thought of as potentially leading to feedback effects on the profitability of the MNO's business."[4]

2.21 As noted above, Dobbs 4 assumes that, whilst a unilateral variation in the 08 price can affect the demand for other services, and may result in tariff reoptimisation and competitor responses, these wider changes are unlikely to have a significant effect on the demand for 08 services.[5] Professor Dobbs explains that:

> "The existence of significant spillover effects is in any case rather speculative – again no robust evidence has been presented for it – and it does seem reasonable, in the absence of any evidence to the contrary, to assume that feedback effects from induced strategic reactions are likely to have negligible quantitative impacts on 08 demands. Indeed, several MNOs have admitted as much, in that they regard 08 numbers as not part of the headline rates which are subject to more intense competitive pressures. It is also worth noting that, in so far as there is a feedback effect, this will tend to reduce the spillover effect on the individual MNO."[6]

2.22 With this modification to the framework used in Dobbs 3, Dobbs 4 presents a number of numerical simulations of MNO profits as a function of 0845/0870 retail prices, assuming that the demand for these services is either linear or constant elasticity.[7] These scenarios cover a range of demand elasticities for 0845/0870 calls in the inelastic range, and a range of marginal cost (up to 5ppm) and initial 0845/0870 prices (up to 40ppm). Professor Dobbs concludes that:

> "if one allows for spillover effects and for the possibility that (as MNOs claim) demands are inelastic at current prices …the WTS [wholesale tariff schedule] proposed in NCCN 985/986 emphatically incentivises retail price reductions. The only marginal cases are when demand is relatively elastic, marginal costs are high, and the MNO current price is 40ppm or more. For MNO current retail prices lower than 40ppm, the effect is clear cut."[8]

> "Whilst it is not possible to prove beyond all doubt that the proposed WTS incentivises price reductions [on 0845/0870 calls], the evidence presented here suggests that it does seem very likely to do so. This conclusion seems to be robust to quite a wide range of model specification variation and also parameter value variation (for example concerning marginal costs and demand elasticities).[9]

Our view

2.23 We set out our views on Dobbs 4 in relation to (a) the reconciliation of profit maximisation behaviour by MNOs and the evidence on demand elasticity; and (b) the treatment of strategic interaction and mobile tariff package effects.

---

[4] Dobbs 4, paragraph 16
[5] Dobbs 4, paragraph 16
[6] Dobbs 4, paragraph 17
[7] Professor Dobbs also reports that he has considered a number of other functional forms. Whilst results are not reported, Professor Dobbs states that these do not affect his conclusions.
[8] Dobbs 4, paragraph 42
[9] Dobbs 4, paragraph 36

Reconciliation of profit maximisation and evidence on demand elasticity

2.24 As discussed above, we understand that one of the purposes of the Dobbs 4 analysis is to reconcile the assumption of profit maximisation with the views and evidence provided by the MNOs which suggest that demand for 0845/0870 may be relatively inelastic at current prices. Dobbs 4 argues that this can be done by modifying the framework used in Dobbs 3 to include a spillover effect as described above.

2.25 We agree that this provides a possible way in theory of reconciling the MNOs' evidence that demand is inelastic at current prices with the hypothesis of profit maximisation. However, it is unclear whether it does so in practice, since as Dobbs 4 notes no clear empirical evidence has been presented to support the materiality of a spillover effect (see paragraph 2.21 above). If spillover effects are not present or not material, the Dobbs 4 framework does not reconcile profit maximisation with the available evidence from the MNOs on demand elasticity. But, although we raised this issue explicitly in paragraph 5.137 of the Draft Determination, in our view neither has any of the MNOs provided a satisfactory alternative explanation (as we explain at paragraph 2.55 to 2.59 below).

Treatment of strategic interaction and mobile tariff package effects

2.26 Professor Dobbs claims that the spillover term in Dobbs 4 is not ad hoc, and that it acts as a 'reduced form' summation of the various indirect effect of 08 prices on an MNO's profits. Whilst a reduced form approach is not necessarily ad hoc, we consider that this does depend on how well the reduced form approach reflects the underlying features of the market or the structural models (in this case of multi-product competition) whose form it reduces. For this reason, it would be preferable to derive the spillover term from an explicit model of competition. However, as noted in the Draft Determination and also by BT in its submission[10], we recognise that a full analysis of multi-product competition between MNOs would be complex.

2.27 The relevant question for us to consider is whether the assumptions that underpin the reduced form approach in Dobbs 4 are likely to be robust. In this regard, Dobbs 4 appears to make two key assumptions: (a) that the spillover term is negative and linear (i.e. the magnitude of the negative spillover effect is proportional to increase in the 0845/0870 call price); and (b) that the demand for 08 calls depends only on the price for 08 calls.

The nature of the spillover term

2.28 Dobbs 4 assumes that an increase in 0845/0870 call prices would result in a reduction in profits earned from other services, since a unilateral increase in these prices will tend to induce some customers to switch MNO. As noted above, this assumption is consistent with inelastic demand for 0845/0870 calls at current prices in the Dobbs 4 framework.

2.29 We note that, if the primary effect of an increase in 0845/0870 call prices on other services is one of substitutes rather than complements, then it would be more likely that the profit earned from other services would increase and that the proposed tariffs would give rise to an incentive to increase 0845/0870 call prices. In the Draft Determination we suggested that there may be some scope for substitution between 0845/0870 calls and other geographic calls. We discuss this issue at paragraphs 2.85 to 2.89 below.

[10] BT Response, paragraph 78

2.30 Dobbs 4 also assumes that the spillover function is approximately linear. Our view is that the spillover function is unlikely to be linear over a wide range of prices, given that it reflects the interaction of a range of complex factors regarding the demand for other mobile services and competitor responses. The nature of the spillover function is ultimately an empirical question, and so in the absence of supporting empirical evidence we are unable to reach a clear view on the shape of the spillover function, given the available information. In this regard, we agree with Professor Dobbs' statement that:

> "Overall, it is difficult to conclude one way or the other on whether the spillover effect might increase faster or slower than in the linear specification".[11]

2.31 Professor Dobbs argues that this does not affect his conclusions, since it would take quite strong concavity in the spillover function at higher prices to significantly alter the finding that the proposed tariffs would give rise to an incentive to reduce 0845/0870 call prices.[12] However, no supporting analysis is presented in Dobbs 4 to show that strong concavity is unrealistic. We also note that the absence of any rigorous derivation of the spillover function from an underlying model of multi-product competition makes it difficult to place *a priori* restrictions on either the shape of the spillover function (i.e. linear, convex or concave) or the size of the effect, especially as it is the summation of at least three indirect effects (as described at paragraph 2.20 above). Given this uncertainty, there is therefore a risk that the spillover function is strongly concave, and in the Dobbs 4 model this could result in an incentive to increase 0845/0870 call prices.

No feedback effect on 08 demand

2.32 The second key modelling assumption in Dobbs 4 is that there is no significant feedback from changes in the prices of other services or competitor reactions on 08 demand. No evidence is presented to support this assumption, but Professor Dobbs argues that it is reasonable, given the lack of any evidence to suggest that there are strong spillover effects, and MNOs' comments that 08 numbers are not part of the headline rates that are subject to more intense competitive pressure.

2.33 We consider that the assumption that there are no significant feedback effects on 08 demand is likely to be a simplification, even if 08 prices are not important to subscription choice. In principle, feedback effects could arise through interdependencies between 0845/0870 calls and geographic calls (a possibility we noted in the Draft Determination), or because the profits earned on 0845/0870 calls may enable MNOs to offer lower charges for other services and attract additional subscribers, which would be expected to result in an increase in 0845/0870 demand.

2.34 Professor Dobbs suggests that if there is a feedback effect, this would tend to reduce the spillover effect. No explanation is given for this claim, hence we have not been able to form a clear view on this question.

2.35 We are therefore currently unable to exclude the possibility that there may be a significant feedback effect on 0845/0870 demand. If this is the case, then it could weaken the incentive to reduce 0845/0870 call prices. However, whilst this may be relevant to the magnitude of any price reduction, the direction of the direct effect is only likely to be reversed if the feedback effect is sufficiently large.

[11] Dobbs 4, paragraph 45

[12] Dobbs 4, paragraph 46 and Figure 7.1. In this context, a concave spillover function implies that the impact of an increase in 08 prices on wider profits diminishes at higher 08 price levels

2.36 As to the suggestion that spillover effects may not be strong, we agree that this is consistent with the evidence currently available to us in the Dispute. However, as noted above, if this is the case, then the Dobbs 4 framework does not appear to provide a reconciliation in practice between profit maximisation and the evidence from the MNOs of inelastic demand for 0845/0870 calls.

Empirical evidence in relation to BT's models

Submissions

2.37 T-Mobile/Orange submits that as well as the points discussed by Ofcom, there are a number of reasons "why BT's assumption that call prices will fall is incorrect"[13]. In particular it argues that:

- BT has provided no empirical evidence to support its assumption except to argue that inelastic demand would not be consistent with profit maximisation by the MNOs (although MNOs have provided evidence to the contrary). Additionally, operators are setting their prices in a competitive market and there is no reason to expect firms maximising prices in a competitive market to be on the elastic part of the market demand curve. As well as elasticity, MNOs have to take into account the risk that a high charge for one call could lead to some consumers switching provider;

- MNOs currently offer a range of tariff plans, but BT's ladder of charges is likely to force operators to set more uniform prices (both by operators across their own tariffs and between operators), with the risk that customers who are most concerned about the cost of these calls face higher prices;

- BT's model ignores further key aspects of the complexity of MNO pricing in practice – the effects on and pricing of substitutes and complements (as identified by Ofcom), as well as the more general issue that customers acquire a bundle of services from MNOs, and so changes to the price of any service in the bundle are likely to necessitate adjustments to other prices (driven by the need to remain competitive and to continue to recover their costs).

2.38 Vodafone argues[14] that BT's claim that tariffs provide an incentive to reduce retail charges is an ex post justification which is not supported by the contemporaneous evidence on BT's motivation. It further adds that BT's economic analysis fails to take into account a number of important issues, in particular the way in which NTS calls are sold and priced by MNOs.

2.39 The Frontier report (on behalf of H3G, O2 and Vodafone) explains that mobile retail pricing is complex:

a) MNOs compete over bundles in a competitive market and tailor their price/product offerings to maximise consumer value, subject to competitive pressures;

b) Firm level demand is in part a function of retail competition;

[13] T-Mobile/Orange Response, page 16
[14] Vodafone Response, paragraph 1.3

c) Price-setting will take into account complementarity and substitutability between different services for different customer groups, the MNO's profit target and the nature of competition between MNOs.

2.40 In Frontier's view, none of the BT frameworks includes all three aspects of this price-setting process. This is important since the impact on retail prices of an increase in the wholesale price of one of many products in a bundle depends on how these factors interact.[15]

2.41 BT argues in its submissions that it can discern no evidence or coherent argumentation from any of the MNOs which in any sense undermines the conclusions it has come to in its submissions on 080 as to the likely incentives on retail prices and which are equally relevant to this dispute[16].

2.42 BT argues that it is unfair for Ofcom to impose a burden of proof on BT which it cannot meet. Furthermore, if it is not possible to determine the elasticity of demand, then it is appropriate to derive conclusions assuming profit maximisation and a plausible range of costs, taking into account the price setting techniques of the MNOs, as is done in BT's modelling.[17]

Our view

2.43 Given the overlap between the issues raised by the Parties and our consideration of BT's papers, we address each of these points further below, as follows:

a) T-Mobile/Orange Response

i) No empirical evidence – Elasticity of demand, see paragraphs 2.45 to 2.59
ii) Uniformity of prices – Multiple price points, see paragraphs 2.60 to 2.66
iii) Complexity of MNO pricing – Substitutes and complements, see paragraphs 2.85 to 2.89, and prices of other services, see paragraphs 2.67 to 2.84

b) Vodafone Response

i) No support from contemporaneous evidence – see paragraphs 2.90 to 2.99
ii) The price setting of NTS calls – see paragraph 2.67 to 2.84 that consider competitive interactions and the prices of other services

c) Frontier report

i) Sales of bundles in competitive market – Competitive interactions and prices of other services, see paragraphs 2.67 to 2.84.
ii) Retail competition – Competitive interactions, see paragraphs 2.67 to 2.84.
iii) Relevant factors in price setting - Substitution and complementarity, see paragraphs 2.85 to 2.89, Competitive interactions and prices of other services, see paragraphs 2.67 to 2.84.

2.44 In response to BT's comments, we acknowledge that there is limited evidence available, and that it is appropriate to take this into account in our assessment. We comment on the available evidence and its implications for our conclusion at paragraphs 2.150 to 2.155 below.

[15] Frontier report, paragraphs 33- 39
[16] BT response, Paragraph 56
[17] BT Response, paragraph 65

Elasticity of demand

Submissions

2.45 BT considers that the Draft Determination is incorrect and misleading in relation to the role of the elasticity of demand for 0845/0870 calls in the Dobbs 3 and Reid 1 frameworks. It states that BT makes no assumption on the price elasticity; rather it is inferred from knowledge of the marginal costs and the assumption of profit maximisation. BT also argues that Reid 1 and Dobbs 4 both consider the possibility of inelastic demand in the context of an implied spillover effect from 08 prices to the demand for other services[18].

2.46 BT states that it would welcome clarification from Ofcom as to whether or not it believes that the MNOs are profit maximising and that such an assumption is appropriate to make in the resolution of this and similar disputes. BT also refers to a comment from Dobbs 4 that if the MNOs are not interested in profit, it begs the question why they object to changes in BT's wholesale tariff schedules in the first place.[19]

2.47 The Frontier report argues that the Dobbs 3 analysis implicitly assumes elastic demand at current prices, and is at odds with the evidence which suggests that demand is inelastic. It cites Ofcom's May 2008 consultation document on extending PRS regulation to 087 numbers, which assumed an elasticity of demand for 087 calls of -0.3[20]. The Frontier report suggests that this evidence is consistent with MNOs considering factors other than the elasticity of demand for 0845/0870 calls when setting retail prices, and hence that the Dobb 3 approach does not reflect the way in which MNOs set retail prices.[21] In this regard, the Frontier report suggests that the setting of mobile prices is complex, and that the price-setting process will take into account complementarity and substitutability between different services for different customer groups, the level of target profit that MNOs wish to make (which is influenced by the overall strength of competition), and the nature of competition between the MNOs.[22] The Frontier report also suggests that MNOs may use 'rules of thumb' for pricing, given the complexities of the retail mobile market, even if this may not be profit maximising.[23]

2.48 T-Mobile/Orange also argue that BT has provided no empirical evidence to support its assumption except to argue that inelastic demand would not be consistent with profit maximisation by the MNOs (even though MNOs have provided evidence to the contrary). Additionally, they argue that operators are setting their prices in a competitive market and so there is no reason to expect firms maximising prices in a competitive market to be on the elastic part of the market demand curve.

2.49 T-Mobile/Orange also argue that as well as elasticity, MNOs have to take into account the risk that a high charge for one call could lead to some consumers switching provider[24].

[18] BT Response, paragraph 67
[19] BT Response, paragraph 68
[20] Paragraph 6.47, "Extending Premium Rate Services Regulation to 087 Numbers", May 2008. http://stakeholders.ofcom.org.uk/binaries/consultations/087prs/prscondoc.pdf
[21] Frontier report, paragraphs 49-51
[22] Frontier report paragraph 38
[23] Frontier report, footnote 21
[24] T-Mobile/Orange Response, page 16

2.50 IVR provided confidential information of the impact of the action of one MNO [(✂)] increasing the effective price of calls to 0870 numbers on the call volumes it received as a TCP. IVR states that 0870 calls were removed from inclusive bundles and increased in price to [✂]. IVR provided data on total monthly 0870 call volume, minutes and revenue figures for May 2006 to May 2008 (i.e. relating to all of the 0870 traffic received by IVR from all OCPs), and in an email on 15th June which initially provided us with this data, IVR argues that the decrease in call volumes "could support the BT elasticity theory".

Our view

2.51 We agree with BT that the analysis in Dobbs 3 and Reid 1 does not make any direct assumption on price elasticity. While paragraph 5.134 of the Draft Determination states that "BT's papers assume that demand is relatively elastic", we clarify elsewhere (for instance in paragraphs 5.135 and A3.13) that BT's papers derive price elasticity from the first-order conditions for profit maximisation before the introduction of the termination charge schedule, based on a range of assumed initial average prices and marginal costs.[25]

2.52 In addition, we agree with BT that Reid 1 and Dobbs 4 both allow for the possibility of inelastic demand at the level of each OCP for 0845/0870 calls in the context of an implied spillover effect between 0845/0870 call prices and the profits earned by an MNO on other services. However, as noted at paragraph 2.25 above, if spillover effects are only limited, as suggested in Dobbs 4, then this does not appear to provide a reconciliation in practice between profit maximisation and the evidence from the MNOs of inelastic demand for 0845/0870 calls.

2.53 The remark in paragraph 4.135 of the Draft Determination that "[…] BT has not provided any direct empirical evidence on the elasticity of demand for 0845 or 0870 calls" is purely a factual observation which is also confirmed by Dobbs 4.

2.54 We also recognise that Dobbs 3 and Dobbs 4 seek to address the lack of empirical evidence by considering a range of scenarios that assess whether the results are robust to alternative assumptions on the key parameters. For example, as noted in Dobbs 4, "it is true that no empirical evidence is presented in favour of assumptions concerning demand elasticity or the structure of MNOs demands. However, this is dealt with by way of sensitivity analysis – that is a range of alternative values for parameters is considered, alongside a range of structural forms for demand functions."[26] We comment below on the assumption of profit maximisation (see paragraphs 2.91 to 2.99).

2.55 On the point raised by the Frontier report about the apparent inconsistency between the evidence of inelastic demand and the Dobbs 3 analysis, we agree that the evidence of inelastic demand might also be consistent with MNOs considering factors other than the elasticity of demand for 0845/0870 calls and marginal cost alone when setting price.[27] The Frontier report refers to demand substitutes / complements, the level of target profits, and the nature of competition between the MNOs. The Frontier report does not, however, provide specific empirical evidence to demonstrate that these are relevant or important considerations for the MNOs in practice. Although the Frontier report also suggests the possibility of 'rule of thumb' pricing by MNOs, it

[25] Dobbs 4 (paragraph 5) and the Draft Determination (footnote 206) both note that the justification for the range of assumptions used for the marginal cost to MNOs of such calls have an empirical basis.
[26] Dobbs 4, paragraph 6
[27] Frontier report, paragraphs 49-51

does not provide any specific supporting evidence to suggest that MNOs use such rules of thumb for pricing in practice.

2.56 We agree with T-Mobile/Orange's observation that there is no reason to expect firms maximising prices in a competitive market to be on the elastic part of the market demand curve. However, we understand that the evidence submitted by the MNOs in relation to the inelasticity of demand (as set out in the Draft Determination) relates to demand at the level of each MNO rather than market level demand for 0845/0870 calls (i.e. the impact of a unilateral change in call price by an MNO on its own demand for 0845/0870 calls). BT's economic models also use demand for 0845/0870 calls at the level of each MNO, not the market demand across all MNOs. Similarly, the reference in the Frontier report to Ofcom's PRS document relates to an estimate for the elasticity of demand at the market level, not at the level of an individual OCP.

2.57 T-Mobile/Orange also question the lack of consideration in BT's framework of the possibility that customers would switch MNO if the price of a given service was set at a high level. We consider that BT's economic models allow for this possibility in theory by taking account of 'spillover' effects.

2.58 We consider that there are serious limitations to the inferences that can be drawn from the data provided by IVR. Firstly, we note that the data is for total call volumes originated by all OCPs, not just [✂], but we have no information on whether any other OCP also changed their retail price for these calls in this period. Secondly, as noted in an email from IVR on 15th June, during the period which the data covers, it was actively migrating traffic from the 0870 number range onto various 0844 price points, due to the impending 0870 policy change. Therefore for both of these reasons, it is difficult to isolate the volume response to the [✂] price change from any price changes by other OCPs in the same period, or the declining call volumes that resulted from the migration by SPs away from the 0870 number range. As a result, we do not consider that this data provides sufficiently reliable evidence to either support or refute the existing evidence and views of demand elasticity for 0870 calls.

2.59 In summary, we consider that the inclusion of a spillover term in BT's analysis represents a coherent way in theory of reconciling the evidence on inelastic firm level demand with the assumption of profit maximisation. However, it only provides a satisfactory reconciliation in practice if spillover effects are significant. This is not clearly supported by the existing evidence – indeed, as Dobbs 4 notes, the evidence set out in the Draft Determination tends to suggest that spillover effects are not large. We also do not consider that the submissions of the MNOs, including the Frontier report, provide empirical evidence to support a satisfactory reconciliation between profit maximisation and the evidence on inelastic demand at the level of each MNO for 0845/0870 calls.

Multiple price points

Submissions

2.60 BT argues that its analysis does consider the issue of multiple price points. It argues that Reid 1 and Dobbs 3 work on this assumption with the latter taking the findings of the former to address the issue of incentivisation based on the average price which is

how the wholesale tariff schedule actually operates. It thus argues that Ofcom is factually incorrect in paragraph 5.140 of the Draft Determination[28].

2.61 Vodafone argues that uncertainty in termination charges will have an adverse effect on the development of new pricing propositions introduced by Vodafone, specifically for calls to non-geographic number ranges. Vodafone has recently introduced a bolt-on tariff to enable 080, 0845 and 0870 calls to be made by customers within their overall bundle of minutes and calls. [✂]. There is a lack of clarity of how minutes within the bundle would be treated in the calculation of the average retail price.[29]

2.62 T-Mobile/Orange also state that MNOs currently offer a range of tariff plans, but BT's ladder of charges is likely to force operators to set more uniform prices (both by and between operators), with the risk that customers who are most concerned about the cost of these calls face higher prices[30]. For example, T-Mobile/Orange argue that since BT's termination charges form part of the marginal cost of 0845/0870 calls, they at the very least create a floor to the retail call prices, as OCPs will not want to price below this floor otherwise they would incur a loss on every call minute made at that price. Therefore, they argue that BT's charges carry a serious risk of forcing the removal of the lowest prices for these calls. Further to this, T-Mobile/Orange state that, given the removal of the lowest priced calls, OCPs will have to remove or adjust tariffs with the highest price for these calls in order to avoid facing higher termination charges. They argue therefore that this process will inevitably lead to a loss in the range of tariffs currently available.[31]

Our view

2.63 In the Draft Determination we expressed the concern that the analysis of the stepped tariff in Reid and Dobbs 3 focused on the average price for 08 calls and did not explicitly consider multiple prices. As noted above, BT has clarified that this analysis relies on the analysis of multiple price points in the context of a continuous tariff in Reid 1. As noted in the Draft Determination, it is suggested by BT that this analysis shows that it is sufficient to focus on the relationship between the wholesale price and the average retail price as a matter of arithmetic (as acknowledged in the Draft Determination at paragraph A3.24). We noted in the Draft Determination (at paragraph A3.29) that there was insufficient explanation to understand some parts of Reid 1's analysis of multiple price points. BT has not provided any further explanation of the mathematical analysis in Reid 1.

2.64 Vodafone and T-Mobile/Orange raise concerns that the new NCCNs may restrict innovation and limit the availability of tariff plans compared to the current situation. In respect of the risk of uniform retail prices (both by and between operators) due to the stepped nature of BT's termination charges, we note that NCCNs 985 and 986 depend on average retail prices. For this reason, if there was a move towards more uniform retail prices between operators this would apply to average prices rather than individual prices, "leaving the MNO with significant freedom to set the individual prices consistent with this average (although the exact nature of this relationship depends on the method used to derive and update the MNO's average retail price, […]" (Draft Determination, paragraph 5.267).

[28] BT Response, paragraph 69
[29] Vodafone Response, paragraph 2.9-2.14. We address Vodafone's related concern about volatility in the termination charge at paragraphs 2.115 to 2.117 below.
[30] T-Mobile/Orange Response, page 16
[31] T-Mobile/Orange response, pages 21-22

2.65 As for the potential deterrent to tariff innovation, suggested by Vodafone, or the reduced variation of tariff plans due to the creation of "a price floor", as argued by T-Mobile/Orange, we note that the withdrawal of low-priced calls may affect the average retail price of the MNO and therefore potentially trigger an increase in the applicable termination charge (although we recognise that the nature of this impact depends on the details of the derivation of the average retail price). For this reason, we would expect MNOs considering the withdrawal of low-priced calls to take account of this impact on the average retail price, given the structure of the termination charge schedule (and once the methodology for the average retail price is clearer), as well as the level of the currently applicable termination charge. As discussed in the Draft Determination (at paragraphs 5.41 to 5.43), the effect on retail prices will depend on the balance between the increase in the level of the termination charges and the structure of the termination charges. T-Mobile/Orange has not provided us with an explanation for the incentive to withdraw lower-priced tariffs that takes account of the impact on the average retail price and structure of BT's termination charges as well as the level of the charge. Further, given that NCCNs 985 and 986 depend on average retail prices, there could still be significant freedom to set different tariff plans consistent with this average (although, as noted, the details of this would depend on the method to derive MNO's average retail price).

2.66 For the reasons above, we consider that BT has partially addressed Ofcom's remarks on multiple price points summarised in paragraphs 5.138 to 5.140 of the Draft Determination. We also consider that the other Parties' submissions in response to our Draft Determination do not provide new or compelling additional evidence or arguments on this issue.

Lack of competitive interactions and prices of other services

Submissions

2.67 T-Mobile/Orange state that BT's model ignores the fact that customers acquire a bundle of services from MNOs, and so changes to the price of any service in the bundle are likely to necessitate adjustments to other prices, due to the need to remain competitive and for MNOs to continue to recover their costs[32]. T-Mobile/Orange also note that the models presented by BT effectively assume that MNOs are monopolists selling a single product that uses termination services supplied only by BT. They argue this is far removed from the reality of MNOs selling a bundle of services to customers in an intensely competitive market and in which BT is one of many TCPs.[33]

2.68 The Frontier report criticises the Dobbs 3 approach for introducing spillover and reputation effects above 20ppm in an arbitrary way which is not supported by any analytical modelling[34]. In Frontier's view, Reid 1 introduces spillover effects in a more rigorous way. However, there are two main issues with the analysis according to the Frontier report: (a) there is no consideration of the nature of competition between MNOs; and relatedly, (b) there is no linkage between prices of different elements of the mobile retail bundles.

2.69 Reid 1 allows for an increase in the price of 080 calls to lead to a decrease in the volume of other services, as end users switch to alternative MNOs to benefit from lower 080 call prices. This is an attempt to model some elements of competition.

[32] T-Mobile/Orange Response, page 16
[33] T-Mobile/Orange Response, page 16
[34] Frontier report, paragraphs 53-54

However, according to the Frontier report the approach ignores the possibility that the prices of other services in the bundle could change. Moreover, if all MNOs have an incentive to raise prices, the spillover effect may not apply because subscribers would not have the choice of alternative tariffs with lower 080 call prices from other MNOs.[35]

2.70 More generally, the Frontier report refers to the academic literature on interconnection charges to illustrate the importance of considering retail competition before drawing inferences on MNO's pricing incentives. In its view, the literature shows that the level of the interconnection charge (and the corresponding retail price) will depend on the model of retail competition assumed. The introduction of a stepped termination charge schedule would likely be more complex, depending also on consumer preferences for the various parts of mobile retail bundles. Thus, in Frontier's view, the BT framework does not provide a reliable basis to draw conclusions on the effect of the termination charge schedule on either the prices of 0845/0870 or the prices for other elements of the bundle.[36]

2.71 For instance, depending on how MNOs react to the termination charge schedule, the competitive equilibrium prices for 0845 and 0870 calls could change significantly. Because the MNO's retention increases with the retail price, on the last step of the termination charge schedule there could be a significant increase in 0845/0870 prices by all MNOs if demand elasticity is low, MNOs all had an interest to increase prices and any reputation/spillover effect was small.[37]

2.72 BT has made several comments in relation to our view of competitive interactions in their papers[38]:

a) Firstly, BT states that it addresses this issue in Reid 1 which shows the direction of price movement.

b) Secondly, BT argues that the MNOs essentially dismiss the relevance of competitive interactions as they argue that prices for 08x numbers are not the primary focus of price setting and competition between them.

c) Thirdly, BT states that its analysis does not treat all the MNOs as pure monopolists as Ofcom claims. In Dobbs 1, the modelling was explicitly that of differentiated Bertrand competition. This framework was simplified in subsequent submissions by Dobbs to illustrate the key properties of the termination charge schedule. Thus Dobbs 2 refers to the 'monopoly case' but in fact the analysis is identical to that in Dobbs 1 except for the assumption that MNOs' marginal costs are similar (and an upper bound can be put on this parameter). That is, as in Dobbs 1 and Dobbs 2, the analysis applies whether the firm is a monopoly or faced with differentiated Bertrand competition. Dobbs 3 is different as it focuses on MNO pricing responses to the NCCN956 step function. BT states that, for simplicity, the analysis assumes constant elasticity demand functions and largely ignores the strategic interaction effects that can arise in oligopolistic competition. There is some discussion of a spillover effect at higher prices, but this is not given particular emphasis in Dobbs 3.

[35] Frontier report, paragraphs 58-59
[36] Frontier report, paragraphs 41-43
[37] Frontier report, paragraph 44
[38] BT Response, paragraphs 70-78

d) Fourthly, Ofcom raises the question of what happens if demand is inelastic and there are significant spillovers, and this is analysed in Dobbs 4, which therefore does implicitly encompass competitive interactions. The spillover term in this work can be interpreted as taking account of the unilateral effect of an MNO changing its 08 price on the demand for its other services; for possible induced changes in prices of those other services; and for the impact of reactions by other MNOs that feedback on to the MNO's other services. The model considers that the possible further feedback of induced changes in the MNO's other prices back on the demand for the 08x numbers is not quantitatively significant. BT argues that in this context it is important to bear in mind the fact that all MNOs are faced with the same termination charge schedule and so might simultaneously adjust retail prices. Simultaneous downward adjustment to retail prices will tend to reduce feedback and spillover effects in comparison to a unilateral price adjustment.

e) Fifthly, BT suggests that strategic interactions amongst TCPs are ignored by Ofcom, even though BT is only one of many terminating operators and that retail prices are set across arrangements for all TCPs.

f) Sixthly, to the extent that there is complexity in modelling multi-product competition – and BT agrees with Ofcom here – there is a limit to what BT or any party can do to ascertain the impact of such effects. BT considers that Ofcom has provided no evidence that these effects are at all material. On the other hand, BT has undertaken work with spillover assessments which do capture these effects at least to a reasonable degree.

Our view

2.73 Our concerns in relation to competitive effects and pricing of other services were summarised in paragraphs 5.141 to 5.144 and 5.151 to 5.154 of the Draft Determination. We note that the comments made by T-Mobile/Orange are in line with the characterisation of BT's economic evidence in Ofcom's Draft Determination. We refer to the specific points made by T-Mobile/Orange in the paragraphs below when addressing Frontier's and BT's comments.

2.74 The Frontier report argues that the analysis of spillover and reputation effects in Dobbs 3 is arbitrary. We agree with this comment and note that BT has sought to address this in Dobbs 4, which we discuss at paragraphs 2.26 to 2.36 above. In our discussion of Reid 1 below, we address the Frontier report's remark that Reid 1, while providing a more rigorous analysis of spillover effects, does not take account of competitive interaction and of multi-product pricing.

2.75 We agree with the Frontier report that alternative models have been developed in the literature of interconnection pricing which differ from the economic models submitted by BT. However, we note that the Frontier report has not demonstrated the empirical relevance of these alternative models to the issues in the Dispute.

2.76 With regard to the incentive properties of the stepped termination charge schedule on the top step, and the potential for price increases, we acknowledge that there may be some conditions under which this is the case, as shown by our results on the Dobbs 3 framework (Annex 5 of the Draft Determination). However, we note that these considerations are relevant only when initial average prices are above 30ppm (for calls to 0845 number ranges) or 36ppm (for calls to 0870 number ranges) and depend on the level of marginal cost and the assumed form of the demand function.

2.77 In relation to BT's six points we note the following. First, we agree with BT[39] that Reid 1 carries out a local analysis which is designed to infer the direction in which the retail price would be modified, following the introduction of the termination charge schedule, rather than to derive the new profit-maximising price for the MNO.[40] Given this, the Reid framework therefore does not need to take account of competitor responses on the basis that they are mathematically second order.[41] This consideration also applies to changes in the prices of other mobile services. The implication, however, is that Reid 1 does not inform the question of the magnitude of the Direct effect.

2.78 Second, as to BT's argument that the MNOs themselves dismiss the relevance of competitive interactions, we note that on the contrary the MNOs emphasise the intensity of competition in the retail market. However, their comments also highlight that competition takes place at the level of the overall bundle of services offered to customers rather than at the level of the single 0845 or 0870 number range.[42] This also reflects the views of T-Mobile/Orange summarised above.

2.79 Third, BT responds to Ofcom's comment that BT's economic models treat the MNO as a niche monopolist. We note that this observation is also made by T-Mobile/Orange and that the Frontier report also comments that BT's economic models do not consider the nature of competition between MNOs. BT points out that Dobbs 1 considers Bertrand competition and that Dobbs 2 builds on an identical framework. In this respect, we note that Dobbs 1 does not derive the competitive equilibrium when other MNOs optimise their prices and considers the profit-maximisation problem of the MNO in isolation.

2.80 We agree with BT that Dobbs 3 "largely ignores the strategic interaction effects that can arise in oligopolistic competition" and that this is the extension considered in Dobbs 4, albeit in a stylised way through the use of a reduced form spillover term that seeks to reflect the implications of changes in the prices of other mobile services and "strategic reactions by other MNOs consequent on unilateral change in a given MNO's 08-price."[43] However, as discussed at paragraphs 2.26 to 2.36 above, the spillover term in Dobbs 4 is not derived from an explicit model of competition, but rather makes a number of assumptions on the nature of the spillover effect and the feedback effect of changes in other prices on 0845/0870 demand. We acknowledge that a reduced form approach has some practical advantages compared to a full analysis of multi-product competition in the circumstances. But the relevant question is whether this reduced from approach is sufficiently robust and comprehensive to provide reliable predictions regarding the direction and magnitude of the Direct effect. We have set out above a number of reservations about the assumptions used, which are relevant to our overall assessment.

2.81 Fourth, we agree with BT that spillover effects may be reduced if all MNOs have an incentive to cut retail prices. The same logic also applies if all MNOs have an incentive to increase retail prices, as noted in the Frontier report.[44]

2.82 Fifth, our analysis in the Draft Determination took into account that BT is one of many terminating operators. Competition amongst TCPs is considered in the Draft

[39] BT Response, paragraph 70
[40] Draft Determination, paragraph A4.14,
[41] BT Response, page 33
[42] As referred to, for instance, in paragraph 2.1 of Vodafone's Response.
[43] Dobbs 4, paragraph 16
[44] Frontier report, paragraphs 58-59

Determination at paragraphs 5.211 to 5.229 (as part of the discussion of the Indirect effect) and at paragraphs 5.238 to 5.242 (in assessing the impact of the NCCNs on competition amongst TCPs). Given this, we disagree with BT's suggestion that strategic interactions amongst TCPs have been ignored. We also note that our provisional conclusions on the Indirect effect as regards pass-on by TCPs to SPs and the risk of competitive distortion among TCPs were broadly aligned with BT's views on these issues.

2.83 Sixth, we consider at paragraphs 2.150 to 2.156 below the available evidence given the constraints of the dispute resolution process on all parties.

2.84 In summary, we consider that BT has partially addressed Ofcom's concerns in relation to competitive interactions and pricing of other services.

Substitution between 0845/0870 calls and other services

Submissions

2.85 BT submits that in relation to substitutability, these are second order effects if anything at all. BT does not consider that switching is a material issue and neither Ofcom nor the MNOs have produced any evidence to show that it is. To the extent that ISPs might switch between 0845 and for example 080 then the two disputes are joined in any case[45].

2.86 Moreover, Dobbs 4 notes that the extent to which substitution is a significant concern is debatable. In his view, in so far as all 08 numbers are subject to a similar termination charge schedule, the importance of substitution is reduced[46].

Our view

2.87 The potential for substitution between 0845/0870 calls and other services is potentially important because, as we noted in the Draft Determination, it tends to increase the MNO's incentive to raise prices (all else assumed constant).

2.88 BT seems to have misunderstood our point where it refers to switching by ISPs. As noted in paragraphs 5.145-5.147 of the Draft Determination, the issue we considered was *callers* substituting between 0845/0870 and other types of call, such as geographic calls. Moreover, while (as noted by Dobbs 4) it may be the case that substitution is less important when all 08 numbers are subject to a similar termination charge schedule, this does not address substitution between mobile calls to those numbers and, for instance, mobile calls to geographic numbers.

2.89 However, we note that the available evidence does not suggest that there is likely to be a large substitution effect, and as BT notes, inelastic firm demand for mobile-originated 0845/0870 calls at current prices, as suggested by the MNOs[47] may be inconsistent with a strong substitution effect.

Profit maximisation by BT

Submissions

2.90 BT considers that profit maximisation by BT is totally irrelevant and states that it is not clear why Ofcom introduces this issue here and not in 080. In particular it argues

[45] BT Response, paragraph 79
[46] Dobbs 4, paragraph 19
[47] Draft Determination, paragraph 5.136

that Ofcom's assertions on the validity of the modelling contingent on profit maximisation by BT are without foundation[48]. BT argues that the real issues are whether NCCNs 985 and 986 induce a reduction in retail prices by OCPs, the acceptability of profit sharing and practicality.[49]

Our view

2.91 In the Draft Determination and where relevant in this document we consider the 'real issues' we understand BT to be referring to, i.e. the Direct effect, the reasonableness of revenue sharing on 0845 and 0870 in the applicable circumstances, and questions of practicability. However, contrary to BT's assertion, in our view it is very relevant to consider profit-maximising behaviour by BT. This is because, as we explain below, consideration of profit maximisation by BT either reveals an inconsistency in BT's analysis of the Direct effect or a limitation in its analysis. In either case, there is a significant doubt about the extent of the reliance we should place on BT's theoretical models, especially as regards the magnitude of the Direct effect.

2.92 We pointed out in the Draft Determination (paragraph 5.150) that, if NCCNs 985 and 986 led MNOs to reduce their 0845/0870 call prices to below 12.5ppm, i.e. on the bottom tier of charges, these NCCNs would result in no increase in BT's termination charges or in its profit per minute. It would be more profitable for BT if MNOs did not have any incentive to reduce 0845/0870 prices or to reduce them by a smaller amount. BT's adviser, Professor Dobbs, accepts that NCCNs 985 and 986 do not maximise BT's profits:[50]

> "Clearly, the proposed WTS schedule[s] do not maximise profits for BT"

2.93 First, on one interpretation, this reveals an inconsistency in BT's theoretical economic analysis of the Direct effect because, on the one hand, it is critically dependent on the assumption that MNOs maximise profits and yet, on the other hand, it also relies on the failure of BT to maximise its profits within the framework of that same theoretical analysis. BT's response to the Draft Determination does not reconcile this inconsistency.

2.94 In the absence of clear evidence to the contrary, it is generally reasonable to assume that commercial companies' decisions are motivated by profit maximisation - as BT has argued in relation to the MNOs, this is rational. In our view the real issue in the context of the Dispute is the extent to which BT's theoretical models of pricing decisions adequately capture the considerations relevant to rational or profit-maximising decisions in the real world (i.e. whether the analysis of the influences on the MNO's profit includes all of the important real-world factors).

2.95 Second, as we set out in the Draft Determination (paragraphs 4.109-4.118), the contemporaneous evidence on BT's rationale is in fact consistent with profit maximisation by BT. However, that evidence is not consistent with an outcome in which the MNOs significantly reduce their 0845/0870 call prices in response to NCCNs 985/986. In its response to the Draft Determination BT does not comment on the contemporaneous evidence or our interpretation of it.

2.96 Third, theoretical economic models are stylised, seeking to capture important aspects of reality. However, decision-making in the real world is complex and in practice operators may take account of a range of considerations that are difficult to capture

[48] BT Response, paragraphs 80 to 81
[49] BT Response, paragraph 80
[50] Dobbs 4, paragraph 20

in such models. For example, the way in which consumers or companies behave does not always accord with traditional economic theory (as recognised in the burgeoning literature on behavioural economics); competitive interactions can be complex and multi-dimensional, especially where operators sell a wide range of services to heterogeneous consumers; and operators may take a long-term view or have wider strategic objectives, trading off short-term profits on the specific services under consideration to build reputations, relationships or to have impacts that will yield long-term gains. The MNOs have referred to some such considerations, as discussed in paragraphs 5.60 to 5.68 of the Draft Determination. For example, in describing their approach to setting prices, the MNOs have referred to consumer perceptions of value (across as well as within the bundle), the variety of customer preferences and tariff packages, and the importance of call volume forecasts and actions of competitors, and they have stressed the importance of practical considerations and constraints, such as the clarity and ease of communication with their customers, and the limitations of billing systems.

2.97 In BT's own decision to set the termination charge schedules in NCCNs 985 and 986, it took account of considerations beyond those captured in the theoretical models on which BT is relying for its analysis of the Direct effect. These models are incapable of explaining BT's choice to introduce NCCNs 985 and 986 within the framework of rational or profit-maximising behaviour, as Dobbs 4 appears to accept (at least by implication). In our view this points to a limitation in these models in providing a complete or accurate view of real-world pricing decisions. If BT's framework is incapable of explaining BT's own behaviour as rational or profit-maximising, then we have significant doubts about the extent that it can do so for the MNOs.

2.98 For the avoidance of doubt, we do not object to BT's assumption that the MNOs will seek to maximise their profits. Rather, in the absence of supporting empirical evidence, we consider that BT's theoretical models cannot be relied on adequately to capture all of the important real-world considerations in those profit-maximisation decisions.

2.99 Nor do we consider it surprising that theoretical economic models of pricing decisions fail to capture all of the important real-world considerations, especially as the nature of those decisions is complex and multi-faceted, as is the case for MNOs, given the number of services they provide, the range of customers they serve and the nature of the competitive interactions they face. Such stylised theoretical models are often useful in a variety of ways, such as understanding specific effects which are part of, but not the complete, picture; or providing illustrations of the scale of different impacts. However, in this Dispute BT's arguments go far beyond such uses of economic theory. BT's argument is that the theoretical models represent the real-world decisions sufficiently accurately that we should rely on them to reach our conclusion in this Dispute even in the absence of supporting empirical evidence. We have significant doubts that BT's models are capable of bearing this weight.

Other issues

Submissions

2.100 The Frontier report applied the Dobbs 3 and Reid 1 frameworks to test the impact of the 0845/0870 charges on retail prices. As regards the Dobbs 3 approach:

a) The Frontier report's results are similar to Ofcom's in Annex 5 of the Draft Determination. With constant elasticity and linear demands, if marginal cost and

initial retail price are sufficiently large, the MNO has an incentive to increase retail prices.

b) However, in Frontier's view there is no reason to restrict demand to linear or constant elasticity. For instance, it may be the case that some customers are very price sensitive and some are not. If MNOs set prices so that many of the more price sensitive customers make 0845/0870 calls, the termination charge schedule could increase 0845/0870 call prices if it is now profit maximising for MNOs to consider only the demand from the more inelastic customers.

2.101 As regards the Reid 1 approach, the Frontier report argues that Ofcom has incorrectly failed to include the call set-up charge for NCCN 985. Frontier states that its analysis suggests that for 0845 daytime calls there could be an incentive to increase retail prices when they are initially below 27.5ppm if the MNOs marginal cost is above 1.8ppm.[51]

2.102 BT argues that Ofcom has incorrectly failed to take account of the existing fixed termination charge for NCCN 985 and 986. BT contends that, when this is taken into account, the Reid framework indicates that there is an incentive to reduce 0845 retail prices if the marginal cost is below 5.83ppm, except for the first step where the marginal cost threshold is 2.33ppm. In the case of 0870 calls, BT contends that the Reid framework shows that there is an incentive to reduce call prices if the marginal cost is below 6.96ppm for all tariff steps.[52]

2.103 BT argues that "it is a misunderstanding of BT's analysis (Dobbs 3 and Reid 1) to separate the case of the continuous wholesale tariff schedule (WTS) and the stepped WTS." [53]

2.104 BT argues that the Dobbs framework should be implemented assuming initial retail average prices rather than specific price points and that BT believes that Ofcom may have based its analysis on individual price points.[54]

2.105 Additionally, BT argues in Annex 1 of its submission that Ofcom is incorrect in stating that the BT models assume a downward sloping demand curve. In particular it argues that Reid 1 looks at the direction of price movement, so it does not rely on this assumption (other than being a consequence of a profit-maximising price). Dobbs 3 does make some assumptions of the wider nature of the OCP's demand in so far as this analysis illustrates where a new profit maximising price is likely to be[55].

2.106 Vodafone considers that the introduction of such unpredictable charging mechanisms by BT reduces the prospects and incentives for Vodafone to set retail charges for [✂] off-net calls to other mobile and fixed lines (such as Vodafone's recently introduced bolt-on tariff – see paragraph 2.61 above).

2.107 Vodafone argues that as other TCPs seek to introduce similar charging structures as BT, but with potentially different pricing bands and wholesale rates, the case for the introduction of what Ofcom has described in another context as a risk premium would become more pressing. Vodafone argues that it would be difficult to introduce

[51] The Frontier report, paragraphs 61-62, incorporates the set-up charge in the analysis, and assumes that the average duration of a call is 3 minutes.
[52] BT Response, page 39
[53] BT Response, page 33
[54] BT response, page 39
[55] BT Response, page 33

differential retail charges based on the identity of the TCP and this would cut across its own objective of providing simple, easily comprehensible tariff structures for its subscribers. Vodafone argues that it might be forced to consider [✂] against a variety of charging structures, prone to change at short notice.[56]

2.108 In this context, Vodafone notes that Ofcom, in its recent consultation on mobile call termination, has expressed concern about the practice of 'flip-flopping'[57] by MNOs. Vodafone has referred to submissions from fixed operators who state that they are forced to increase their retail charges to protect themselves against unexpected swings in termination rates on a monthly basis. Vodafone notes that Ofcom has said:

> "They [the fixed operators] are effectively placing a premium on their retail prices to self-insure against spikes in termination rates. This is obviously detrimental to consumers who pay a higher price as a result."[58]

Our view

2.109 We note the Frontier report's comments on the restrictions imposed on the functional form of demand in the application of the Dobbs framework in Annex 5 of the Draft Determination. However, we consider that we do not have evidence to conclude how the Dobbs results would be affected under alternative assumptions on the demand function and we note that Frontier has not submitted additional evidence that would enable us to draw different conclusions.

2.110 With regard to the application of the Reid condition, we agree with BT's clarification that the existing fixed charge is relevant. This implies a modification of the Reid condition as set out in BT's submission. In the interest of clarity, we reproduce in Annex 3 the modified Reid condition and the tables in BT's submission which apply the condition to NCCNs 985 and 986 (under the assumption there are no spillover effects).

2.111 The Frontier report has not set out the details of its calculations in relation to the inclusion of the set-up fee for NCCN 985 in the Reid framework. However, our understanding is that Frontier has increased the termination charge in column (2) of Table A5.9 of the Draft Determination to reflect an allocation of the set-up fee based on an assumed call duration of 3 minutes. We do not consider that this is correct, since the set-up charge was applicable prior to the introduction of NCCN 985. If the set-up fee was taken into account in the same way as the existing fixed termination charge in line with BT's comments (see paragraph 2.102), then the Reid condition would be satisfied for marginal costs higher than those indicated in the table.

2.112 Concerning BT's comments that Ofcom misinterpreted BT's analysis by discussing separately the continuous termination charge schedule case and the stepped termination charge schedule case, we understand that "the analysis of the continuous WTS is a means of developing the analysis of the stepped WTS" as argued by BT. For this reason, in the draft Determination we described BT's analysis of a continuous termination charge schedule before discussing the stepped termination charge schedule. However, for the purposes of assessing the impact of

[56] Vodafone Response, paragraph 2.16-2.17.
[57] Flip-Flopping refers to the practice of varying rates by time of day and weekend to exploit flexibility in the way that the charge control is formulated. In practice this can result in large short term changes in mobile termination rates, while still allowing compliance with the charge control.
[58] Wholesale mobile voice call termination, Market Review, Consultation 1 April 2010 ("MCT April consultation"), paragraph 9.122

NCCNs 985 and 986, it is clearly the analysis of the stepped termination charge schedule which is of direct relevance and applicability.

2.113 In relation to BT's comments on the Dobbs framework, we are aware that Dobbs 3 refers to average price points rather than individual price points. The range of initial average retail prices we consider in Annex 5 of the draft Determination (i.e. 15ppm – 40ppm) is consistent with Dobbs 3 as well as with indications from some of the MNOs about their average retail prices (see paragraph A5.10(ii) in the Draft Determination).

2.114 In regard to the assumption of a downward-sloping demand curve, while the analysis in Reid 1 does not explicitly make the assumption of a downward sloping firm demand, this is implicit in inferring demand elasticity from the Lerner condition. For instance, when discussing whether the introduction of the termination charge schedule will affect the price setting decision of the MNO, Reid 1 states "given that Δq_i will be negative when Δp_i is positive and vice versa".[59] From this statement, we considered that a downward sloping firm demand was being assumed. The analysis in Dobbs 3, which analyses a stepped termination charge schedule, makes assumptions on the functional form of the demand function to derive the results on the profit-maximising price following the introduction of the termination charge schedule. As reported in paragraph A4.7(iii) in the Draft Determination, Dobbs 3 assumes that "each firm faces a demand for the relevant service which is constant elasticity up to a certain threshold price level." BT does not appear to dispute this fact.

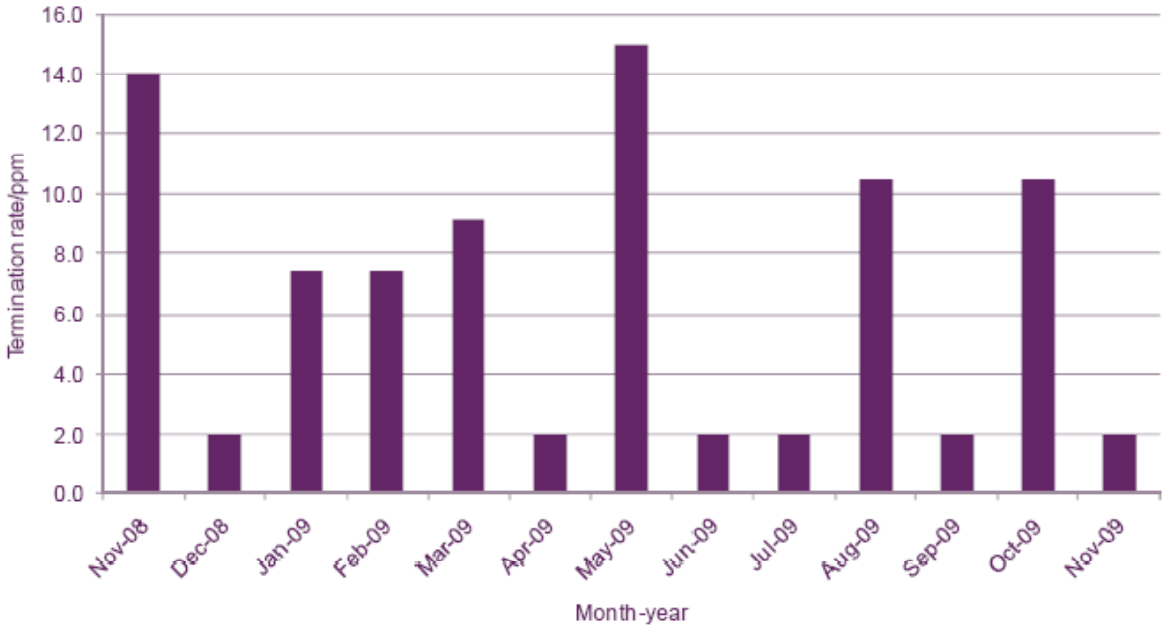
2.115 In relation to Vodafone's submission about the unpredictability of BT's proposed tariff arrangement, we note that the concern about 'flip-flopping' in the context of mobile termination charges is in part that "frequent and radical changes in time of day rates increase risk for originating providers and potentially raise their costs",[60] which we illustrated in the MCT April consultation by showing the weekend mobile termination rates of one national MNO, as reproduced at Figure 2.1 below.

2.116 Will changes in BT's or other TCPs' termination rates subsequent to NCCNs 985 and 986 be as frequent or as radical as the changes experienced in mobile termination rates? BT has suggested to us that it might change termination rates for 0845/0870 calls at most once a year (see paragraph 5.273 in the Draft Determination). Although there is nothing to prevent BT or other TCPs from changing prices more frequently than annually, it is unclear to us that they would change their prices as frequently as on a monthly basis, or by as large amounts as mobile termination rates.

2.117 Therefore, whilst we do not exclude the possibility that MNOs may seek to self-insure against changes in BT's termination rates, it is not clear that the concern is of the same scale as for the regulation of mobile termination charges.

Figure 2.1: Weekend mobile termination rates of one MNO, November 2008 to November 2009[61]

[59] Reid 1, paragraph 39
[60] MCT April consultation, paragraph 9.121
[61] MCT April consultation, Figure 15



Provisional conclusion on Direct effect

Submissions

2.118 BT states that it is surprised to see that Ofcom at paragraph 5.62 of the Draft Determination is uncertain even as to the direction of the effect of the termination charge schedules. BT cannot deduce any plausible scenario or evidence from the Draft Determination by any party which gives any credibility to the assertion that rational behaviour by the MNOs would induce prices to rise[62]. BT invites Ofcom to state what alternative analyses or framework might be appropriate to establish the incentive properties of the MNOs or indeed any other CP in such a dispute[63]. BT totally rejects Ofcom's assertion at paragraph 5.166 that its analysis is not comprehensive and robust[64].

2.119 C&W supports BT by saying that it recognises the opportunity a tiered pricing structure provides in achieving Ofcom's stated aim of driving retail origination prices to reflect those of a geographic call[65]. It refers to Ofcom's market research and an Indepen report (commissioned by UKCTA) suggesting that call volumes are currently artificially depressed on NTS numbers because of the very high tariffs associated with calling from mobile networks[66]. It adds that, were the MNOs to price at a level consistent with Ofcom's preferred policy, benefits in consumer welfare could be considerable. It argues however that Ofcom's analysis of BT's and MNOs' economic evidence has largely been to highlight its failings rather than to construct more robust models through a continuation of the methodology to address the missing data.

2.120 In contrast, T-Mobile/Orange notes and endorses Ofcom's conclusion that BT's analysis of the expected direct effect of NCCNs 985 and 986 is not comprehensive and robust. T-Mobile/Orange argues that the economic evidence supplied by BT is heavily reliant on a number of specific assumptions being valid. It argues further that

[62] BT Response, paragraph 83
[63] BT Response, paragraph 62
[64] BT Response, paragraph 85
[65] C&W Response, page 4
[66] C&W Response, page 10

BT's analysis is far removed from the reality of MNOs selling a bundle of services to customers in an intensely competitive market and in which BT is one of many TCPs. It additionally adds that it has heard that in response to NCCNs 985 and 986, Virgin Mobile has recently announced that it is increasing its charges for 0845/0870 calls to 40ppm.

2.121 Given this comment by T-Mobile/Orange, we asked Virgin Mobile to explain its reasons – it said that the price change was:

"✂"[67]

2.122 Vodafone also endorses Ofcom's provisional conclusions and argues that given the scale of the new charges, Vodafone will [✂]

2.123 O2 and H3G also agree with Ofcom's assessment of BT's analysis and argue that it cannot be expected that NCCNs 985 and 986 will result in a reduction in retail call prices to 0870 and 0845 numbers.

Our view

2.124 In the Draft Determination we reached the provisional view that BT's analysis of the Direct effect may not be robust or comprehensive. This was based on two principal concerns:

a) First, BT's economic analysis relied on theoretical models of pricing and competition that were based on a number of specific assumptions relating to issues such as the pricing policies of the MNOs, the nature of demand for services supplied by MNOs, and the nature of competitive interactions between MNOs, and BT had not advanced any empirical evidence in relation to these models.

b) Second, there were a number of potentially important considerations not adequately reflected in BT's analysis:

i. Multiple price points;
ii. Competitive responses;
iii. Substitution between 0845/0870 calls and other mobile services;
iv. Failure to consider BT's profitability; and
v. No consideration of the implications of adjustments in other mobile prices, which may influence the Direct effect.

2.125 We agree with Professor Dobbs that the modelling in Dobbs 3 is based on the proposed tariffs (NCCNs 985 and 986), and an empirically based assumption that all MNOs' marginal costs lie below 5ppm. We also acknowledge that the Dobbs 3 analysis seeks to illustrate the impact of the proposed tariffs through sensitivity analysis. In this regard, Professor Dobbs states that the analysis makes "maximum use of what quantitative and qualitative information is available"[68]. However, neither BT nor Professor Dobbs have provided supporting empirical evidence in relation to demand elasticity or the structure of MNOs demands, other than some 'stylised facts'. Furthermore, we note that BT's framework and Dobbs 4 is not entirely consistent with the 'stylised facts' as its reconciliation of the evidence of inelastic demand for 0845/0870 calls with profit maximisation by the MNOs relies on the

[67] Email from Andrew Wileman, 5th July 2010
[68] Dobbs 4, paragraphs 5-7

existence of a significant spillover effect, yet (as Dobbs 4 recognises) the available evidence does not support a strong spillover effect.

2.126 Dobbs 4 also suggests that no other party has provided any other significant evidence. We accept that the empirical evidence available on either side of the debate on the Direct effect is limited. We discuss further below the implication of the lack of empirical evidence.

2.127 As regards the considerations that we identified in the Draft Determination might not be adequately reflected in BT's analysis:

a) We consider BT has partially addressed our concern with regard to the fact that MNOs generally have *multiple price points* for 0845/0870 calls (see paragraphs 2.60 to 2.66), and in relation to *competitive interactions* and *other mobile prices* (see paragraphs 2.67 and 2.84).

b) We do not consider that BT's response has directly addressed our potential concern regarding *substitution* between 0845/0870 calls and other mobile services. However, the available evidence does not suggest that this is likely to be a large effect (see paragraphs 2.85 to 2.89).

c) We do not consider that BT has addressed our concerns regarding the consistency of its analysis of the Direct effect with *profit maximising behaviour by BT* (see paragraphs 2.90 to 2.99).

2.128 We therefore consider that BT has gone some way to addressing the concerns we identified in the Draft Determination, although some material concerns remain.

2.129 With regard to the submissions of other parties:

a) We noted in the Draft Determination that the MNOs' analysis of the Direct effect generally focused on the increased level of termination charges in NCCNs 985 and 986, but did not seem to take account of the impact of the structure of charges, i.e. the linkage to the OCP's retail price.[69] In our view this remains a weakness of the evidence provided by the MNOs. The MNOs have generally pointed to the importance of bundles and the fact that it will be necessary to recover the increased termination charges through 0845/0870 prices or other prices. But no new compelling explanation has been advanced to explain why the proposed tariffs would necessarily result in an increase in 0845/0870 call prices when it is taken into account that there is an incentive to reduce these prices in order to move down one or more tariff steps (as identified in BT's analysis).

b) We note that Vodafone considers that it may be necessary to add a 'risk premium' to call charges as other TCPs replicate. As noted at paragraphs 2.115 to 2.117, whilst we do not exclude the possibility that MNOs may seek to self-insure against changes in termination rates, it is not clear that the concern is of the same scale as for the regulation of mobile termination charges.

c) We note Virgin Mobile's reaction to NCCNs 985 and 986, [✂]. The ultimate effect on Virgin Mobile's prices may also depend on the methodology to derive average retail prices and any impact this has on the charges it pays to its host MNO.

[69] Draft Determination, paragraph 5.164

d) We note C&W's reference to Ofcom's market research and an Indepen report. Whilst the research referred to is five years old, it is consistent with our analysis that it would be overall beneficial to consumers if OCPs aligned their 0845/0870 prices to geographic rates (despite the negative Mobile tariff package effect). In regard to C&W's suggestion that Ofcom's analysis of the economic evidence has largely been to highlight its failings rather than construct more robust models, we consider this alongside BT's similar argument at paragraphs 2.150 to 2.155 below.

e) As regards IVR's confidential submission of the impact of one MNO increasing the effective price of calls to 0870 call numbers on the call volumes it received as a TCP, our views are set out in paragraph 2.58 .

2.130 In our view it is not just the direction of the Direct effect that is important. The magnitude of any reduction in the prices of 0845/0870 calls is also of importance, as it would need to be sufficiently large for there to be an overall benefit to consumers, given our analysis of the Mobile tariff package effect and the Indirect effect (see below).

2.131 In the Draft Determination we reached the provisional conclusion that we were uncertain about both the direction and the magnitude of the Direct effect. As explained below, in the light of the submissions received in response to the Draft Determination we have revised our view on the direction of the Direct effect. We now consider, on the evidence currently available to us in this Dispute, that 0845/0870 call price reductions are more likely than price increases. However, as discussed below, we remain of the view that the magnitude of the Direct effect is uncertain.

Direction of Direct effect

2.132 In the information available to us there is relatively little substantiated evidence that 0845/0870 prices will increase in response to NCCNs 985 and 986. On the other hand, BT's models provide a coherent economic theory with results suggesting that MNOs will have an incentive to reduce their 0845/0870 prices.

2.133 In this regard, we consider that Dobbs 4, building on BT's previous 080 papers, has identified and, using numerical simulation, quantified an effect that is relevant to the Dispute. Dobbs 4 shows that, in the context of the model used, the incentive of the *structure* of NCCNs 985 and 986[70] to reduce 0845/0870 prices is likely to be larger than the opposing incentive of the increased *level* of termination charges to increase those prices across a range of scenarios.

2.134 We also consider that the MNOs have not provided any specific explanation of the impact of the proposed tariffs on 0845/0870 call prices that takes into account the effect identified by BT of the structure of NCCNs 985 and 986, i.e. the incentive to reduce call prices in order to move down to a lower tariff step. We note that Vodafone and T-Mobile/Orange have made submissions that uncertainty in termination charges could have an adverse effect on the development of new pricing propositions for non-geographic number ranges or that BT's NCCNs will set a price floor deterring lower-priced tariffs – see paragraphs 2.61 to 2.62. Our views on their arguments are set out in paragraphs 2.64 to 2.65.

2.135 BT has argued that any concerns with its analysis must be sufficiently material. In terms of the direction of the Direct effect, we accept that possible incentives to

[70] i.e. the linkage of the termination charge to the OCP's retail price, the steepness of the termination rate schedule and the breadth of the tiers

increase prices would need to be sufficiently large to more than offset the incentive to reduce prices analysed in BT's models. In this context, we consider that BT has partially addressed three of the concerns we identified in the Draft Determination (see paragraph 2.127a) above). Although we consider that BT has failed to address three of our concerns relating to empirical evidence, profit maximisation by BT and substitution, we recognise that we have not demonstrated that the implications of these concerns would necessarily be to reverse the direction of the Direct effect.

2.136 In summary, whilst we cannot exclude the possibility that the proposed tariffs could result in an increase in 0845/0870 call prices, we consider that the balance of the available evidence suggests that it is more likely that the MNOs have an incentive to reduce these prices than to increase them. Therefore our revised provisional conclusion is that it is more likely that the Direct effect has a positive rather than a negative impact on consumers.

Magnitude of Direct effect

2.137 As noted in paragraph 5.126 of the Draft Determination, BT's framework suggests that the magnitude of the Direct effect depends on the level of the existing retail price, the nature of call demand, and the level of marginal costs. This framework was applied to NCCNs 985 and 986 by us in Annex 5 of the Draft Determination and in BT's Response in Dobbs 4. However, we do not consider that BT's models are sufficiently comprehensive or reflective of real-world pricing decisions to yield robust predictions on the size of the reductions in 0845/0870 prices by the MNOs in response to NCCNs 985 and 986. The fact that the BT Response has only partially addressed our concerns is especially relevant in this context.

2.138 First, even on the concerns that have been partially addressed, we do not consider that the BT Response has fully addressed them. For example, Dobbs 4, whilst partially addressing our concerns on the implications of multi-product competition, is based on a reduced form approach which abstracts from the underlying details of demand and competition. In the absence of explicit or rigorous analysis of multi-product competition it is difficult to impose *a priori* restrictions on either the shape or the size of the spillover effect. This introduces a degree of uncertainty over the Direct effect, especially its magnitude. In addition, we consider that there is uncertainty over the extent of the feedback effect identified in Dobbs 4.

2.139 Second, some of our concerns set out in the Draft Determination remain and have not been addressed by BT:

a) BT's models, including Dobbs 4, still lack supporting empirical evidence.

b) The possibility of substitution between 0845/0870 calls and geographic calls may not be a large effect, given the available evidence, but it could influence the magnitude of the Direct effect.

c) The failure of BT's models to reconcile BT's decision to implement NCCNs 985 and 986 with profit maximisation by BT points to important considerations that they do not fully capture.

2.140 We accept that BT's theoretical models are based on orthodox underpinnings in economic theory. But in our view the models are not complete (e.g. the absence of real-world considerations that the MNOs may take into account in their pricing decisions, or analysis of profit-maximisation by the TCP – see paragraphs 2.91 to 2.99). Theoretical models rarely are complete, because of the complexity of real-

world situations and decision-making. That, however, is an important point and it is the reason why we consider that the magnitude of the Direct effect predicted by BT's theoretical models is insufficiently robust in the absence of greater supporting empirical evidence.

2.141 Therefore, we do not consider that BT's models are sufficiently comprehensive or reflective of real-world pricing decisions to make accurate quantitative predictions of the true incentives of the MNOs to change their 0845/0870 prices. So we maintain our provisional conclusion that the magnitude of the Direct effect is uncertain.

2.142 As set out above, our revised provisional conclusions now vary as between the direction and magnitude of the Direct effect, i.e. we consider that the Direct effect is more likely to be positive for consumers, but the magnitude remains uncertain. In essence, the reason for this variation is that we partially accept BT's arguments:

a) We agree that BT and its advisers have identified a relevant effect and that it would require strong opposing effect(s) to reverse the incentive on MNOs to reduce their 0845/0870 prices. Whilst we cannot exclude the possibility that the proposed tariffs could result in an increase in 0845/0870 call prices, we consider that the balance of the available evidence suggests that it is more likely that the MNOs have an incentive to reduce these prices than to increase them. These considerations underpin our revised provisional conclusion on the direction of the Direct effect.

b) However, we do not accept that BT's models are sufficiently comprehensive or reflective of real-world pricing decisions or that their predictions on the magnitude of the Direct effect are robust. The various possibilities we have identified about both opposing effects and considerations missing from BT's analysis are likely to influence the magnitude of the pricing responses to NCCNs 985 and 986. These considerations underpin our provisional conclusion that the magnitude of the Direct effect remains uncertain.

Revised provisional conclusion on consumer effects

2.143 In the Draft Determination we included Table 2.2 shown below to summarise our analysis (this was Table 5.12 in the Draft Determination). Our provisional conclusions are unchanged from the Draft Determination on the Mobile tariff package effect and the Indirect effect. On the Mobile tariff package effect we maintain the provisional conclusion that an adverse impact on mobile customers is likely through higher prices for other mobile services and we expect this effect to be significant, although its precise speed and scale is uncertain (see paragraphs 5.189 and 6.24 of the Draft Determination). On the Indirect effect there may be sufficient competitive pressure on BT to ensure that some benefits are passed on over time to SPs, but it is unclear that callers to 0845/0870 numbers will necessarily benefit (see paragraphs 5.229 and 6.25 of the Draft Determination).

Table 2.2: Summary of direction of effects on consumers

		0845/0870 prices fall	0845/0870 prices unchanged	0845/0870 prices rise
(i)	Direct effect	Positive for consumers	No effect	Negative for consumers

(ii)	Mobile tariff package effect	Negative	Negative	Negative
(i) & (ii)	Overall effect at originating end	Positive, if the Direct effect is sufficiently large	Negative	Negative
(iii)	Indirect effect	Positive for SPs, but uncertain for callers	Positive for SPs, but uncertain for callers	Positive for SPs, but uncertain for callers
(i), (ii) & (iii)	Overall across both originating and terminating ends	Positive, if the Direct effect is sufficiently large	Negative	Negative

Implication of our modified conclusion on the Direct effect

2.144 As set out above, we have revised our provisional conclusion on the direction of the Direct effect compared to the Draft Determination, i.e. our conclusion now is that it is more likely to be positive for consumers (i.e. that 0845/0870 prices will fall) than negative for consumers. This change means that we now place greater weight on the left hand column in Table 2.2.

2.145 However, we maintain our provisional conclusion that the magnitude of the Direct effect is uncertain. This is important to our overall provisional conclusion, especially as our provisional conclusions on the Mobile tariff package effect and the Indirect effect are unchanged from the Draft Determination. For example, if instead we concluded that the Direct effect was sufficiently large to bring MNOs' 0845/0870 prices down to below 12.5ppm (i.e. the bottom tier of BT's termination charges), it would imply that there was an overall benefit to consumers (see the discussion of the 'reference case' at paragraphs 5.194-5.198 of the Draft Determination for further details).

2.146 We also note the important contrast between:

- MNOs rebalancing their prices to have lower 0845/0870 prices and higher prices for other mobile services (either voluntarily or as a consequence of possible future regulation); and

- MNOs rebalancing their prices in response to NCCNs 985 and 986 with lower 0845/0870 prices through the Direct effect and higher prices for other mobile services through the Mobile tariff package effect.

2.147 In the former case, we have a clear preference for the rebalanced structure of prices which involve 0845/0870 prices more closely aligned with our policy preference – see paragraph 4.32 of the Draft Determination.

2.148 But the latter case is different because the rebalancing arises in the context of the higher termination charges above the bottom tier in NCCNs 985 and 986, which will result in a loss of profit for the MNOs (see paragraph 5.168) - all they can do is minimise their loss of profit.

2.149 The two cases are only similar if the MNOs reduce their prices down to the bottom tier, since at this level the MNOs do not pay higher termination charges to BT. Although that is the theoretical prediction in Dobbs 4, we do not consider that this is a result on which we should rely as accurately reflecting all of the MNOs' important real-world considerations. Therefore, there are offsetting effects: the Direct effect which is likely to be beneficial for consumers; the Indirect effect which is likely to benefit SPs but it is uncertain whether it will benefit callers to 0845/0870 numbers; and the Mobile tariff package effect which in our view is likely to be detrimental to consumers. Our overall conclusion on the impact on consumers therefore depends on the relative sizes of these effects and these are uncertain.

Available evidence

2.150 BT advances a further argument in its response to the Draft Determination. It contends that it has done all the analysis it can and it places an unreasonable burden on BT to expect it to do more.[71] There are limitations on the empirical analysis that BT can conduct, given that the Direct effect concerns the response of MNOs to NCCNs 985 and 986 and BT is not a MNO.

2.151 We note that there may be limits to the amount of empirical analysis that BT could have undertaken (although we do not accept that it could not have undertaken any).[72] We do not accept that we have placed an unreasonable burden on BT. In the context of a dispute it is Ofcom, as regulator, that ultimately has to make a decision to determine the dispute based on the evidence before it. Where feasible, we carry out our own analysis. However, in the context and timeframe of this Dispute, we do not consider that it was possible to initiate our own empirical analysis (e.g. into consumer behaviour or attitudes, and the nature of demand or price-setting decisions for 0845/0870 calls).

2.152 We have looked at all of the voluminous evidence provided to us by the six Parties to the Dispute (and by the interested stakeholders). We have sought to interrogate it both from the point of view of its strengths and weaknesses in theory and in practice. We have used our information-gathering powers to obtain more information and have assessed the resulting evidence. For the reasons set out at paragraphs 2.5 to 2.14 above, the inherent constraints in the dispute resolution process place some practical limits on the scope and extent of our analysis, and that of the Parties.

2.153 We note it was BT's choice to initiate NCCNs 985 and 986 in the [✂],[73] rather than waiting to prepare its evidence more fully or to seek to influence the outcome of our current policy project, the NGCS Review, such as by submitting its analysis into that process of regulatory policy development.[74] That was clearly a choice that was entirely open to BT to take. But it did so in the knowledge of the nature and limitations of the dispute resolution process.

---

[71] BT Response, paragraph 65

[72] It is not clear that BT has exhausted all of the possible analysis. For example, empirical analysis of the calls that BT originates could provide evidence to support the relevance to real-world pricing decisions of BT's theoretical economic models, including the proposition that profit maximisation implies elastic demand (or a significant spillover effect). We note that BT relied on its theoretical models in its initial submission to us in this Dispute – it was open to BT at that stage, or in advance of that date, to undertake such empirical analysis.

[73] [✂]

[74] We referred to this review in advance of BT's notification of NCCNs 985 and 986 in the Statement in the Review of the fixed narrowband services wholesale markets, 15 September 2009, paragraph 15.21, http://www.ofcom.org.uk/consult/condocs/wnmr_statement_consultation/main.pdf

2.154 In this Dispute we must exercise our discretion to make a reasoned, proportionate decision. That involves making a judgement on the evidence before us in the time available and that includes limited empirical evidence on some of the important issues (e.g. to support the accuracy of BT's theoretical models to the MNOs' real-world pricing decisions and their predictions on the magnitude of the Direct effect, or to support alternative models of price-setting and quantitative predictions).

2.155 Whilst BT has been able to show us certain things in theory (such as that a Direct effect that is positive for consumers is more likely than a negative effect), we consider that the following considerations mean that the appropriate provisional conclusion now is for us to find that Principle 2 is not met:

a) First, the lack of sufficient empirical evidence on the relative magnitude of the Direct, Mobile tariff package and Indirect effects to allow us to reach a more definitive conclusion on the overall effect on consumers.

b) Second, implementation of NCCNs 985 and 986 raises complicated matters which may have unintended, unforeseen or wider implications. We consider this in greater detail below under Principle 3 where it is also of relevance, It has not been feasible for us fully to explore these concerns in the time available.

c) Third, many of the issues related to NCCNs 985/986 and alternative approaches to achieve desirable outcomes for consumers fall within the scope of our current policy project, the NGCS Review. Without the same constraints as apply to dispute resolution, we expect in the NGCS review to be capable of reaching a clearer view of the desired outcomes and the appropriate policy option(s) to achieve them.

Provisional conclusion on Principle 2

2.156 In these circumstances, although we recognise the possibility that consumers could benefit from NCCNs 985 and 986, we also recognise the risk of harm to consumers from changing the industry arrangements from those in place before these NCCNs, particularly in light of our provisional conclusions on the Mobile tariff package effect. Given the uncertainty which we have identified as to whether BT's NCCNs would result in a net benefit, or a net harm to consumers, we consider it reasonable, in light of our overriding statutory duties to further the interests of consumers, to place greater weight on this potential risk. Our provisional conclusion, therefore, is that Principle 2 is not sufficiently likely to be met.

Principle 3: unintended, unforeseen or wider implications

2.157 In the Draft Determination (at paragraphs 1.18, 5.336 to 5.339 and 6.44) we discussed the risk of unintended, unforeseen or wider implications in the context of NCCNs 985 and 986 representing a break with industry convention and previous regulatory practice.

2.158 First, a number of respondents have recognised that NCCNs 985 and 986 represent a substantial change in the approach to termination charges for NTS numbers or more generally, because the TCP's termination charge varies with the OCP's retail call price. BT itself recognises that it is a "radical departure from the existing pricing practice"[75]. T-Mobile/Orange considers that Ofcom has failed to give sufficient weight to the fact (recognised in the Draft Determination) that BT's approach is a break with

[75] Paragraph 110, BT Response

industry convention and previous regulatory practice[76]. Vodafone suggests that BT's charging arrangements may frustrate the realisation of Ofcom's policy preference because they diverge so fundamentally from the established regulatory model for termination of calls to geographic numbers[77]. Virgin Media refers to recent exploitation of regulatory and contractual loopholes that has caused considerable disruption and uncertainty[78].

2.159 Second, in the Draft Determination we identified a number of practical difficulties of implementation that remain unresolved, such as the implications of porting at the OCP end and the cost to OCPs of calculating their average prices. Although some respondents, such as BT and C&W, consider that the practical difficulties can be addressed including through commercial negotiation, no specific solutions are identified in their responses. The details of the methodology to derive each OCP's average retail price are also not yet defined and would be matters for commercial negotiation. The MNOs and Virgin Media consider that we have significantly underestimated the practical difficulties of implementation, e.g. to derive average retail prices and implement wholesale billing either with TCPs or MVNOs.

2.160 Third, we recognise that NCCNs 985 and 986 would introduce significant additional complexity (in part reflecting the implementation issues). For example, different TCPs have already set different termination charge schedules linked to the OCP's retail price (i.e. BT, IV Response, Gamma and C&W). OCPs are likely therefore to be charged different termination rates by different TCPs. The OCPs will therefore have to consider their response, e.g. how to vary their prices, taking this variation in termination charge schedules into account. These termination charge schedules may also be changed by each TCP at different times. Further complexity arises because some calls to 0845/0870 numbers involve MVNOs and transit operators. We have also commented above on the complexity of real-world pricing decisions by the MNOs (and the limitations in any model of economic theory in capturing them adequately). These complexities and the inherent difficulty in analysing operators' pricing responses and their implications might lead to unintended and unforeseen consequences. The unintended consequences may include: increases in 0845/0870 prices, or reductions that are smaller than the increases in the prices of other mobile services (through the Mobile tariff package effect); incomplete pass-on by TCPs of higher termination charges into better deals offered to SPs; no or limited benefit to callers to 0845/0870 numbers from any pass-on that occurs; deterrence to tariff innovation by OCPs; or competitive distortions between OCPs, transit operators or TCPs.

2.161 Fourth, we are aware of the potential for significant wider implications of our decision in the Dispute. BT has introduced NCCNs for tiered termination charges in relation to 080 calls as well as 0845 and 0870 calls. We note that another TCP, IV Response, has introduced tiered termination charges in relation to other 08 numbers, such as 0844 and 0871. In addition, O2 has raised the question of tiered mobile termination charges being introduced in relation to fixed-to-mobile calls (see paragraph 4.102 of the Draft Determination). Some respondents have also questioned whether such a fundamental change of a move to termination charges linked to retail prices should be introduced through the process of dispute resolution rather than the process of regulatory policy development, taking a broad perspective of issues and policy options, allowing more time for analysis and including full consultation with all affected stakeholders that is not feasible in the context of a dispute. The constraints

[76] Page 24, T-Mobile/Orange Response
[77] Paragraph 2.3, Vodafone Response
[78] Page 1, Virgin Media Response

on the dispute resolution process compared to policy development are discussed at paragraphs 2.5 to 2.14 above.

2.162 Given a free choice, we agree that such a policy development process (for example our ongoing NGCS Review) would represent a more desirable approach to such a substantial and important change with wide-ranging implications. However, we must resolve this dispute now. In this context it is important to note that we do not consider that it would be appropriate for us to wait until the outcome of the NGCS Review to resolve this Dispute, as this would entail a significant delay, during which time the MNOs would continue to have to pay BT's new charges.

2.163 Fifth, we have been clear that our analysis in the Dispute takes existing regulatory policy as given. If we ultimately decide in the NGCS Review to change regulatory policy or obligations (such as direct regulation of OCPs' prices or other measures), this is therefore not bound by, and would supercede, the analysis in the Dispute. Given this, we have considered the desirability of the changes that NCCNs 985 and 986 would bring as a radical change to existing termination charging arrangements with complex issues of practical implementation, wide-ranging implications, the potential for unforeseen or unintended consequences and material disruption to the sector as the knock-on effects of all these changes are worked through. Without fettering our discretion, the NGCS Review may decide within a year to introduce significant changes to the regulatory regime for 0845/0870 numbers, which might have important implications for the costs and benefits of termination charges linked to OCPs' retail prices, or might implement a further set of changes in industry arrangements, including policy options that are beyond the scope of this Dispute. We are therefore concerned about the potential for a major and potentially disruptive set of changes in industry arrangements to implement NCCNs 985 and 986, which may subsequently be rolled back or substantially affected within one year. Such changes may include: the development of methodologies to derive average retail prices with an associated cost; modifications to wholesale billing systems for OCPs, TCPs and transit operators; changes to retail billing systems for OCPs; revised contracts between TCPs and SPs; and adjustments to tariff packages for mobile customers.

2.164 If we were in a position to conclude that there would be clear and unequivocal benefits to consumers from NCCNs 985 and 986, we might place less weight on these concerns. However, given our provisional view that Principle 2 continues not to be met, we consider that these concerns are relevant.

Provisional conclusion on Principle 3

2.165 In light of the above, and the uncertainty which we have identified as to the practical effects of BT's NCCNs, we provisionally conclude that Principle 3 is not satisfied.

Provisional conclusion: Are the termination charges in NCCN 985 and NCCN 986 fair and reasonable?

2.166 Taking into consideration our revised provisional assessment across the three Principles, our provisional conclusion is that it is not fair and reasonable for BT to apply new termination charges for calls to 0845 and 0870 numbers hosted on its network, which are based on the level of the retail charge made by OCPs for calls to these numbers, as specifically set out in BT's NCCNs 985 and 986 dated 2 October 2009. We have reached this provisional conclusion on the basis that the charges do not satisfy Principle 2 and Principle 3 on the evidence currently available to us.

2.167 We invite comments on the matters set out in this Section, and any other matters which stakeholders consider to be relevant. The supplementary consultation closes at 5pm on Wednesday 21 July 2010.

Annex 1

1 Report by Professor Dobbs for BT (Dobbs 4)

The Dispute concerning BT's charges for 08 Numbers Does the Wholesale Tariff Schedule incentivise Retail Price Reductions?

Ian M Dobbs
Professor of Business Economics and Finance
Newcastle University Business School.
22 June 2010[79]

Summary

Ofcom's draft determination concerning the impact of BT's proposed wholesale tariff schedule (WTS) on 0845/0870 numbers makes use of, and critically comments on, the approach used in my Expert Report to the CAT enquiry on 080 numbers (the Expert Report is referred to as Dobbs-3, and the approach, as the 'Dobbs framework' in the Ofcom draft determination). Ofcom suggests there are several reasons for believing that the approach is incomplete, 'non-robust' and hence should be discounted. This report presents an extension to the Dobbs-3 analysis that helps with the assessment of these Ofcom's claims. The analysis helps to show that, on the contrary, the original conclusion (that the proposed WTS incentivises retail price reductions) is reasonably robust. In particular, I show that my conclusions are robust to allowing for spillover effects (mobile tariff package effects and strategic interactions) and that demand inelasticity at current MNO retail prices, if anything, strengthens the claim (that WTS incentivises retail price reductions). Finally, it is shown that the WTS tariffs for 0845/0870 calls tends to incentivise retail price reductions even more strongly than for 080 calls.

Contents

[79] This is a revised version of the draft report dated 27/1/2010.

1. Introduction

1. This report expands the analysis given in annex 2 to my Expert Report to the CAT concerning wholesale pricing for 080 numbers (Dobbs 3, in the Ofcom draft determination) in order to respond to Ofcom's assessment and use of the 'Dobbs framework' in the Draft Determination to resolve a dispute between BT and each of Vodafone, T-Mobile, H3G, O2 and Orange about BT's termination charges for 0845 and 0870 calls, 10 June 2010.

2. Ofcom makes use of the Dobbs framework (alongside the 'Reid framework' presented in the report Reid-1, also submitted to the CAT in the former dispute) when coming to a view concerning whether the proposed WTS for 0845/0870 numbers are likely to incentivise retail price reductions or not.

3. The Ofcom view of the Dobbs-3 approach is summarised as follows

> *5.127 We consider that the Dobbs approach and the Reid approach are both potentially relevant to the current Dispute. The analysis in these papers takes account of both of the two opposing effects outlined in paragraph , i.e. the incentive for the MNO to increase price due to the higher level of BT's termination charge and the incentive to reduce price due to the structure of BT's termination charge schedule.*
>
> *5.128 To the extent that the MNOs suggest that this is not the case, we disagree with them. We also note that some of the views provided by the MNOs do not take into account both of these effects. They focus on the first effect of the increased level of the termination charge, but not the second effect in the opposite direction of the structure of BT's termination charges.*
>
> *5.129 However, our current view is that BT's analysis may not be robust or comprehensive.*
>
> *5.130 We have two principal concerns with regard to BT's analysis of the Direct effect. First, both the Dobbs and Reid approaches rely on a theoretical model of pricing and competition that is based on a number of specific assumptions relating to issues such as the pricing policies of the MNOs, the nature of demand for services supplied by MNOs, and the nature of competition between MNOs (see Annexes 4 and 5 for details). BT has not advanced any empirical evidence in relation to 0845/0870 calls to support its theoretical models and the key assumptions, such as the elasticity of demand. In addition, as discussed below, the MNOs have advanced a number of criticisms of the key assumptions that are relied upon in BT's 080 papers.*
>
> *5.131 Second, and relatedly, we consider that there are a number of potentially important considerations that are not adequately reflected in BT's analysis. In particular, we note the following:*
>
> *a) BT's analysis does not take into account the fact that MNOs generally have multiple price points for 0845/0870 calls.*
>
> *b) BT's analysis ignores the impact of competitive responses of MNOs.*
>
> *c) BT's analysis does not allow for the possibility of substitution between 0845/0870 calls and other services supplied by MNOs.*
>
> *d) BT's analysis fails to consider the profitability of the termination rate schedules for BT itself.*
>
> *e) BT's analysis assumes that MNOs do not adjust the prices of their other services (i.e. assumes that there is no Mobile tariff package effect).*

4. The principle additional comment of relevance raised by the MNOs and by Ofcom concerns the elasticity of demand and the fact that the Dobbs-3 analysis implies that demand at the current MNO choice of retail price is elastic. Some MNOs suggest this is inconsistent with their experience - that retail demand is in fact ***inelastic***. For example, Ofcom in Annex 5 comment:

> *5.117 In addition, as discussed in Annexes 3 to 5, in its 080 papers BT relies on economic theory to infer the elasticity from its assumed model of price setting. BT's 080 papers assume that the demand for 080 calls is relatively elastic at the prices currently charged by the MNO, on the basis that this is the consequence of profit-maximising behaviour by the MNO (i.e. if the demand were inelastic, it would be profitable for the MNO to increase its price, because the higher profit margin resulting from the higher price would more than offset any reduction in volume; and demand is likely to be more elastic at higher prices). We note that the Dobbs 3 approach is slightly different but still assumes that demand is elastic at existing retail prices (i.e. a magnitude of the elasticity that exceeds 1).*

and at

> *5.165 In our view, BT's analysis relies heavily on a number of key assumptions, such as the elasticity of demand. As discussed above, BT does not provide any relevant evidence to support these assumptions in the context of 0845 and 0870 calls. Furthermore, BT's assumptions on the elasticity of mobile-originated 0845/0870 calls appears to be contradicted by the evidence from the MNOs based on their experience in the mobile market.*

2. Comments on the Ofcom Position

5. ***Para 5.130 (that BT's analysis is theoretical and not supported by empirical evidence)***

The modelling in Dobbs-3 is based on empirical data for the WTS schedule itself, and an empirically based assumption that all MNO marginal costs lie below 5ppm. Neither of these points are in dispute by any of the parties, including Ofcom. It then assumes that 08-retail demand depends negatively on 08-retail price and uses a specific functional form for MNO demands (constant elasticity demand) to illustrate profit impacts. It reports that the results obtained are robust to varying the demand functional form (it notes similar results are obtained with a linear demand specification – and in fact this is also true for semi-log demand and other more flexible form demand functions). The analysis also assumes that MNOs set prices in order to maximise profitability. The Dobbs-3 analysis broadly assumes that spillover effects on demands and pricing of the MNO's other services are not significant – and that potential reactions by other MNOs are also not significant considerations. Section 3 of this paper deals with the case where these spillover effects are deemed to be significant. This section suggests quite strongly that these kind of effects are unlikely to change the essential message – that the WTS is likely to incentivise price reductions.

6. Thus the analysis in previous work (Dobbs 1-3), and in the analysis presented in sections 2-6 below, is based on some empirical 'stylised facts' and several assumptions concerning the quantitative significance of effects (such as spillover effects). It is true that no empirical evidence is presented in favour of assumptions concerning demand elasticity or the structure of MNOs demands. However, this is dealt with by way of sensitivity analysis – that is, a range of alternative values for parameters is considered, alongside a range of structural forms for demand functions. Whilst there is no firm evidence on the level of marginal costs or

demand elasticities, it is possible to make an assessment of the likely range on which these parameters are likely to lie. The sensitivity analysis suggests that the incentive effect (to induce MNO retail price reductions) appears to be robust. Naturally, it is not robust to all conceivable possible variations in parameter values, but the fact that it stands up to significant variation in the range of marginal cost, to the range for demand elasticities at the current prices, and to variation the assumed functional form for MNO demand all points to the conclusion that the WTS incentivises retail price reduction is robust to a fairly high degree.

7. Thus the analysis does rely on empirical evidence to underpin the theoretical models; maximum use is made of what quantitative and qualitative information is available. It is worth emphasising that no other party, including Ofcom, has presented any other significant evidence – other than the suggestion that at current MNO 08-prices, demand may be inelastic (and possibly significantly inelastic) and that spillover effects may be more important than Dobbs-3 assumes. These points are addressed in the analysis in Sections 3-5 below, where it is shown that demand inelasticity, and the presence of implied spillover effects, do not appear to significantly alter the general conclusion that the WTS incentivises MNOs to reduce retail prices.

8. ***Para 5.131(a) (on MNOs generally having multiple price points for 08-numbers)***

   The Dobbs-3 approach does indeed analyse a single value of price for the 08-number at the retail level - the average retail price. The Dobbs-3 approach thus abstracts form the many complex forms of possible price discrimination practiced by MNOs by using the average retail price.

9. In fact the Dobbs-3 (and also Dobbs-1, Dobbs-2) approaches effectively focus on the relation between the WTS and the *average* retail price. The fact that the latter is often disaggregated (in complex ways to facilitate price discrimination) turns out to be of no significance. This point is proved mathematically in the analysis presented in Reid-1. In that paper it was shown that complex (but profit maximising) tariff bundle design does not affect the relationship between the average price at the retail level and the price charged at the wholesale level – essentially because the WTS defines a link between wholesale price and the *average* retail price. The MNO may choose to disaggregate the latter in various ways through price discrimination but this does not affect the incentive created by the WTS to incentivise reductions in the *average* retail price. This point is acknowledged by Ofcom (see for example, para A3.24). The Reid-1 more detailed analysis thus explains why it is acceptable to simply focus on the relation between wholesale price and *average* retail price, as in the Dobbs analysis. Indeed, Reid-1 shows that the consideration on each and every price point within a MNOs use of price discrimination is actually a test on the average price, exactly as is carried out by the Dobbs 3 approach. Establishing this point was one of the major reasons for the additional analysis presented in Reid-1.

10. ***Para 5.131(b),(e)(on strategic interaction and mobile package effects – and also concerning whether demand is inelastic or not)***

    Dobbs-3 deals only with direct effects whilst indirect effects may be important. The direct effect is on profit earned from 08-numbers. The indirect effects arise because as 08-retail prices are changed, this may affect the demand for other services offered by the MNO. Indeed, not only might the price change affect the level of demand for such services, this may induce the MNO to change prices for these services too.

Further, there is the strategic dimension to consider. MNOs are in competition with each other, the ability and incentive to change 08 and other retail prices in the tariff offering needs to take account of possible reactions by other MNOs. Ofcom recognises that Dobbs-3 does take *some* account of spillovers, but considers the approach to be ad hoc (and unsatisfactory).

11. Dobbs-3 also infers demand elasticity at current MNO retail prices simply by assuming these are profit maximising prices. The implied elasticity is thus always in the elastic range – however, some MNOs comments suggest that they consider demand to be inelastic at current prices.

12. These points are best considered together. Spillover effects on other MNO retail services are discussed only briefly in the Dobbs-3 080-Expert Report and the Expert Report does not articulate the mathematics underlying the effect, although it does make clear that it is *assumed* that spillovers impact only at higher prices than current MNO retail prices. This seemed a reasonable assumption to make.

13. However, some MNOs claim that 08-retail demands are inelastic at current prices, and Ofcom in its draft determination (June 2010) notes this point. The issue this raises is clearly articulated in Reid-1: Namely that, ***if*** the MNOs are assumed to be profit maximising ***and*** demand is in fact own price inelastic, it must be that the MNOs are taking account of spillover effects ***at current prices***.[80]

14. Section 2 of this report adjusts the 'Dobbs framework' presented in Dobbs-3 to take account of this. It also articulates the mathematics involved and discusses the role of a spillover profit function. This means that, if current MNO own price elasticities are viewed as inelastic, the 'Dobbs framework' needs to be amended to take this into account.

15. It seems an open question whether 08-demands are indeed elastic or inelastic; no robust empirical evidence has been presented on this point. However, clearly if MNO demands are inelastic at current prices, and if MNOs are profit maximising at these current prices, then account must be made of the spillover effects. Accordingly, section 3 below examines this scenario. It assumes the spillover effect can be described using a spillover profit function denoted $S(p)$ which is increasing in p. As the 08-retail price p is varied, this may affect the level of demand for the MNO's other services; whilst this might be in part substitution and in part complementary, the primary effect is likely to be complementary. This is because a higher price for 08-services will tend to induce some customers to shift allegiance to other MNOs, so reducing the demand for all the MNO's services.[81]

[80] Alternatively, if demand is inelastic at current price and spillover effects are negligible, one would have to conclude that current MNO prices are not profit maximising. Are MNOs interested in profit? In this particular context, if the MNOs are correct in their claim that they are subject to severe competitive pressure, they have little option but to pursue profit maximising strategies. And of course, if they were not motivated by profit, they would not have raised issue with BT's proposals in the first place.

[81] In this context, it is also worth noting that the MNOs do not 'own' the numbers which are allocated to the ISPs, and so the role of the MNO is only on pricing, and not as the primary decision maker on which number to use for which terminating service.

16. Conceptually, as the 08-price is changed, this might also lead to the MNO re-optimising prices in the tariff bundle of its other services (the so called *Mobile tariff package effect - MTP*). This can be viewed as a 'feedback' effect. The same is true of hypothesised strategic reactions by other MNOs consequent on a unilateral change in a given MNO's 08-price - these can also be thought of as potentially leading to feedback effects on the profitability of the MNO's business. Conceptually, the overall profitability consequence arising from a unilateral variation in 08-retail price can be partitioned into a direct effect and indirect one. Overall, the indirect effect (including impacts on the MNO's other service demands, its prices and reactions by other MNOs) can be summarised as a profit consequence that can be shown to be strictly increasing with 08-price at the current MNO retail price. In the model presented in section 3 below, both the 'spillover term' and the demand for the 08-calls is modelled as functions of 08-price alone. This means that unilateral variation in 08 average price can affect other demands, may induce further price and structural changes in the rest of the MNO's tariffing and may induce price reactions by competitors (which may also then feedback to the rest of the *MTP*), but the feedback of these induced effects back onto the demand for the MNO's own 08 services is assumed to be negligible.

17. The existence of significant spillover effects is in any case rather speculative – again no robust evidence has been presented for it - and it does seem reasonable, in the absence of any evidence to the contrary, to assume that feedback effects from induced strategic reactions are likely to have negligible quantitative impact on 08-demands. Indeed, several MNOs have admitted as much, in that they regard 08 numbers as not part of the headline rates which are subject to more intense competitive pressure. It is also worth pointing out that, in so far as there is a feedback effect, this will tend to reduce the spillover effect on the individual MNO.

18. It is important to recognise that the spillover term is not 'ad hoc'. It acts as a 'reduced form' summation of the various indirect effects. It is shown in section 3 below that it is possible, through analysis of MNO pricing decisions and estimates of demand elasticity, to estimate the gradient of the spillover function, and this is all that is required in order to operationalise the 'Dobbs framework' in the presence of such effects.

19. ***Para 5.131(c) (substitution between 0845/0870 calls and other services supplied by MNOs)***

    Ofcom suggests that some 08 numbers may be substitutes for each other – and this is not explicitly modelled. The Dobbs-3 analysis was focused on 080 numbers for which this was not a significant concern. The extent to which it is likely to be a significant concern in the present context is debatable (and this is treated elsewhere in the BT response, where it is argued to be of no material concern). It is also important to note that, in so far as ***all*** 08 numbers are subject to a similar WTS, the importance of substitution is reduced. This suggests this criticism is not a major concern.

20. ***Para 5.131(d):*** *(BT's analysis fails to consider the profitability of the termination rate schedules for BT itself.)*

    Dobbs-1 and 2 indicate clearly that the WTS induces a form of profit sharing between BT and the MNOs. The focus of the analysis is not on whether the WTS proposed

will actually maximise BT's profit share, but on whether the WTS incentivises reductions in 08-average prices. Clearly, the proposed WTS schedule do not maximise profits for BT - rather, it induces a form of revenue sharing. But the consequences for BT's profits are largely beside the point – the question at issue is whether the proposed WTS incentivises reduction in 08-average prices. This is the stated and primary concern for Ofcom concerning these 08-numbers.

21. A rather more minor criticism of the Dobbs framework is that it assumes demands are constant elasticity functions. Ofcom extends this to linear demands in its annexes to the draft determination for 0845/0870 numbers. Results for the constant elasticity case were reported in Dobbs-3, although results for the linear case had been analysed (with broadly similar conclusions). Accordingly in section 3 below, both constant elasticity and linear retail demands are considered (other functional forms have also been explored, including semi-log demand and the case where demand elastic is an increasing function of price, with similar conclusions being drawn). The results obtained when allowing for spillover effects is shown in this report not to contradict, but rather to lend increasing support for the conclusions drawn in the original Expert Report (that is, that the incentive properties of the WTS schedule are not particularly sensitive to demand specification, and that the general tendency is for the WTS schedule to incentivise retail price reductions).

3. Analysis of Profitability in Dobbs-3 for the case where it is assumed that 08-demands are constant elasticity but may be inelastic (and where there are significant spillover effects at current prices)

22. As previously remarked, the original Expert Report analysis assumed that spillover effects are only significant at higher prices, and are not present at the current MNO prices. This in turn entailed that, if current prices are profit maximising, 08-demand must be elastic. Whilst no evidence has been convincingly presented that this is incorrect, some MNOs have claimed that demand is inelastic. Accordingly, this possibility is considered in more detail in this section.

23. This section examines the impact of a generic stepped WTS schedule, denoted $w(p)$ in which the wholesale price w is a function of the MNO average retail price p. The analysis is subsequently applied to the NCCN956 and NCCN986/6 cases. It examines MNO profitability as a function of this step function. The key assumptions are:
    - MNO retail demand is constant elasticity. Demand elasticity is unknown, but a range of values for it are explored (in particular, given MNO arguments that it may be inelastic, the inelastic range is examined in detail)
    - MNO Marginal cost is constant. It may vary across MNOs but is definitely less than 5ppm.
    - Each MNO has an initial profit maximising price in the interval [0,40ppm]. Whether this coincides with their actual choice of retail price is immaterial. Note that *all* extant MNO retail prices currently lie in this interval, so this is *prima facie* evidence the assumption is reasonable.
    - The impact of 08-pricing on demand for the rest of the MNO's offering, on its choice of prices and structures in the tariff bundles it offers, are captured through a 'reduced form' spillover profit function .

Suppose the profit maximising retail price for some particular MNO is denoted p_0 initially, when there is a zero wholesale price. Given this, profits are written as

$$\pi_r(p_0) = (p_0 - MC)q(p_0) - F - S(p_0) \quad (1)$$

where *MC* denotes the MNO's marginal cost and *F* is a catch-all for fixed costs and infra-marginal economies of scale etc. Notice that retail demand $q(p)$ is modelled as purely a function of 08-price; feedback effects from induced changes in other prices are ignored.

24. It is assumed that demand is constant elasticity and so can be written as

$$q = Ap^{\varepsilon} \quad (2)$$

where *A* is a constant and ε is the elasticity of 08-demand for this MNO (so both A and ε may vary across MNOs). Given it is assumed that p_0 is a profit maximising choice, the *FONC* is that

$$\partial\pi_r(p_0)/\partial p = q(p_0) + (p_0 - MC)q'(p_0) - S'(p_0) = 0 \quad (3)$$

or that

$$Ap_0^{\varepsilon} + (p_0 - MC)\varepsilon Ap_0^{\varepsilon-1} - S'(p_0) = 0 \quad (4)$$

This can be used to write

$$S'(p_0) = Ap_0^{\varepsilon}\left(1 + \left(\frac{p_0 - MC}{p_0}\right)\varepsilon\right) \quad (5)$$

This MNO's profit when faced with the wholesale price schedule is

$$\pi_r(p) = (p - MC - w(p))Ap^{\varepsilon} - F - S(p) \quad (6)$$

Clearly it is not possible to plot profitability without knowledge of the function $S(p)$. However, if this is approximated around the initial price using a first order Taylor-series expansion as

$$S(p) \approx S(p_0) + S'(p_0)(p - p_0) \quad (7)$$

and using (5) to replace $S'(p)$, this gives

$$S(p) \approx S(p_0) + Ap_0^{\varepsilon}\left(1 + \left(\frac{p_0 - MC}{p_0}\right)\varepsilon\right)(p - p_0) \quad (8)$$

so

$$\begin{aligned}\pi_r(p) &= (p - MC - w(p))Ap^{\varepsilon} - F - S(p) \\ &= (p - MC - w(p))Ap^{\varepsilon} - F - S(p_0) - Ap_0^{\varepsilon}\left(1 + \left(\frac{p_0 - MC}{p_0}\right)\varepsilon\right)(p - p_0)\end{aligned} \quad (9)$$

which rearranges to give a profitability index as

$$PI(p) = \left(\pi_r(p) + F + S(p_0)\right)/A$$
$$= (p - MC - w(p))p^{\varepsilon} - p_0^{\varepsilon}\left(1 + \left(\frac{p_0 - MC}{p_0}\right)\varepsilon\right)(p - p_0) \qquad (10)$$[82]

25. The constants $A, S(p_0)$ and F affect the absolute level of profit, but it is the level of PI that is critical – if this is maximised, then so too is the absolute level of profit $\pi_r(p)$. Given values for p_0, MC and ε, and the specification for the function $w(p)$ in (21), clearly *PI* can be computed for alternative values for MNO retail price *p*.

26. A similar analysis can be developed for other 2-parameter demand functions. Section 4 below does this for the linear demand case.

4. Analysis of Profitability in Dobbs-3 for the case where it is assumed that 08-demands are linear (and where there are significant spillover effects at current prices)

27. Profits are written as per (1). In this case demand is
$$q = a - bp \qquad (11)$$
where *a,b* are constants (so *a, b* can vary across MNOs). Given it is assumed that p_0 is a profit maximising choice, the *FONC* is again (3), so that
$$(a - bp_0) - b(p_0 - MC) - S'(p_0) = 0 \qquad (12)$$
Demand elasticity at the current MNO retail price is defined as[83]
$$\varepsilon = \partial q/\partial p(p/q) = -bp_0/(a - bp_0) \Rightarrow \%_b = p_0\left(1 - \%_\varepsilon\right) \qquad (13)$$
This can be used to write
$$S'(p_0) = a - 2bp_0 + bMC = b\left(\%_b - 2p_0 + MC\right) = b\left(MC - p_0(\%_\varepsilon + 1)\right) \qquad (14)$$
This MNO's profit when faced with the wholesale price schedule is
$$\pi_r(p) = (p - MC - w(p))(a - bp) - F - S(p) \qquad (15)$$
As before, using the linear approximation that
$$S(p) \approx S(p_0) + S'(p_0)(p - p_0) \qquad (16)$$
and using (14),
$$S(p) \approx S(p_0) + \left(a - 2bp_0 + bMC\right)(p - p_0) \qquad (17)$$
so
$$\pi_r(p) = (p - MC - w(p))\left(a - bp\right) - F - S(p)$$
$$= \left(p - MC - w(p)\right)\left(a - bp\right) - F - S(p_0) - \left(a - 2bp_0 + bMC\right)(p - p_0). \qquad (18)$$
This rearranges to give

[82] A little care needs to be exercised with the sensitivity analysis; the spillover function is never decreasing with retail price *p*, so from (5), the choice of parameter values p_0, MC, ε in the sensitivity analysis must satisfy $\left(1 + \left(\frac{p_0 - MC}{p_0}\right)\varepsilon\right) > 0 \Rightarrow \varepsilon > -p_0/(p_0 - MC)$.

[83] The sensitivity analysis deals with a range of demand elasticity values.

$$\{\pi_r(p)+F+S(p_0)\}/b=\left(p-MC-w(p)\right)\left(\%_b-p\right)$$
$$-\left(\%_b-2p_0+MC\right)\left(p-p_0\right) \qquad (19)$$

so

$$PI(p)=\{\pi_r(p)+F+S(p_0)\}/b$$
$$=\left(p-MC-w(p)\right)\left(p_0\left(1-\tfrac{1}{\varepsilon}\right)-p\right)-\left(p_0\left(1-\tfrac{1}{\varepsilon}\right)-2p_0+MC\right)\left(p-p_0\right) \qquad (20)^{84}$$

The constants on the LHS affect the absolute level of profit, but it is the level of *PI* that is critical – if this is maximised, then so too is the absolute level of profit. Given values for p_0, MC and ε, and the above specification for the function $w(p)$, clearly *PI* can be computed for alternative values for retail price *p*.

5. Sensitivity Analysis for the 080 WTS schedule

28. This section reworks the analysis presented in Dobbs-3 for the 080 WTS schedule to deal with the case where it is possible that demand elasticity at current prices is inelastic (recall that the Dobbs-3 analysis assumed zero spillover effects at current prices, so if these were profit maximising, the implied MNO demands were elastic). A parallel sensitivity analysis for the 0845/0870 is then presented in section 5. In what follows, MNO profitability is graphed as a function of the MNO's choice of retail price for a range of parameter values as follows:

    (a) Initial price p_0 (range 10-40ppm)
    (b) MC (range 0-5ppm)
    (c) Point elasticity at the current price, ε (range -0.1 through to -0.8). Note that consideration of the case where implied demands are elastic is already covered in Dobbs-3.

29. The NCCN956 wholesale price function is

$$\begin{aligned} W(p)&=0.0 \quad for \quad p<8.5\,ppm \\ &=2.0 \quad for \quad 8.5\,ppm\le p<12.5\,ppm \\ &=4.5 \quad for \quad 12.5\,ppm\le p<17.5\,ppm \\ &=7.0 \quad for \quad 17.5\,ppm\le p<22.5\,ppm \\ &=10.0 \quad for \quad 22.5\,ppm\le p<27.5\,ppm \\ &=13.0 \quad for \quad 27.5\,ppm\le p \end{aligned} \qquad (21)$$

where *p* denotes the average MNO retail price.

[84] Again some care is needed in the sensitivity analysis; the spillover function is never decreasing with retail price *p* so in the sensitivity analysis , the choice of parameter values p_0, MC, ε must be chosen to satisfy $\left(MC-p_0(\tfrac{1}{\varepsilon}+1)\right)>0$.

5.1 Constant Elasticity Case – 080-Calls

30. The sensitivity analysis is conducted in this subsection for the case of constant elasticity demand curves, and then in subsection 4.2 for the linear demand case. The profitability graphs are derived using equation (10) and (20) respectively.

Figure 5.1.1 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

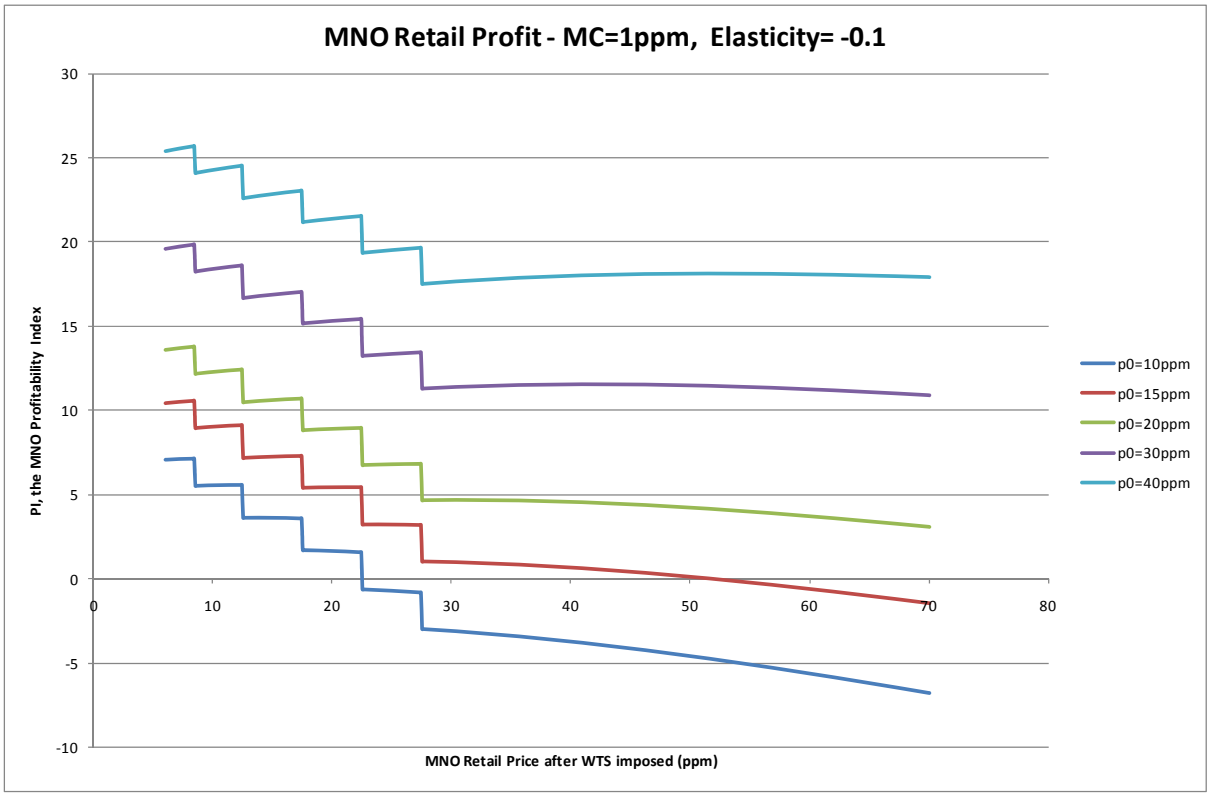


Figure 5.1.2 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

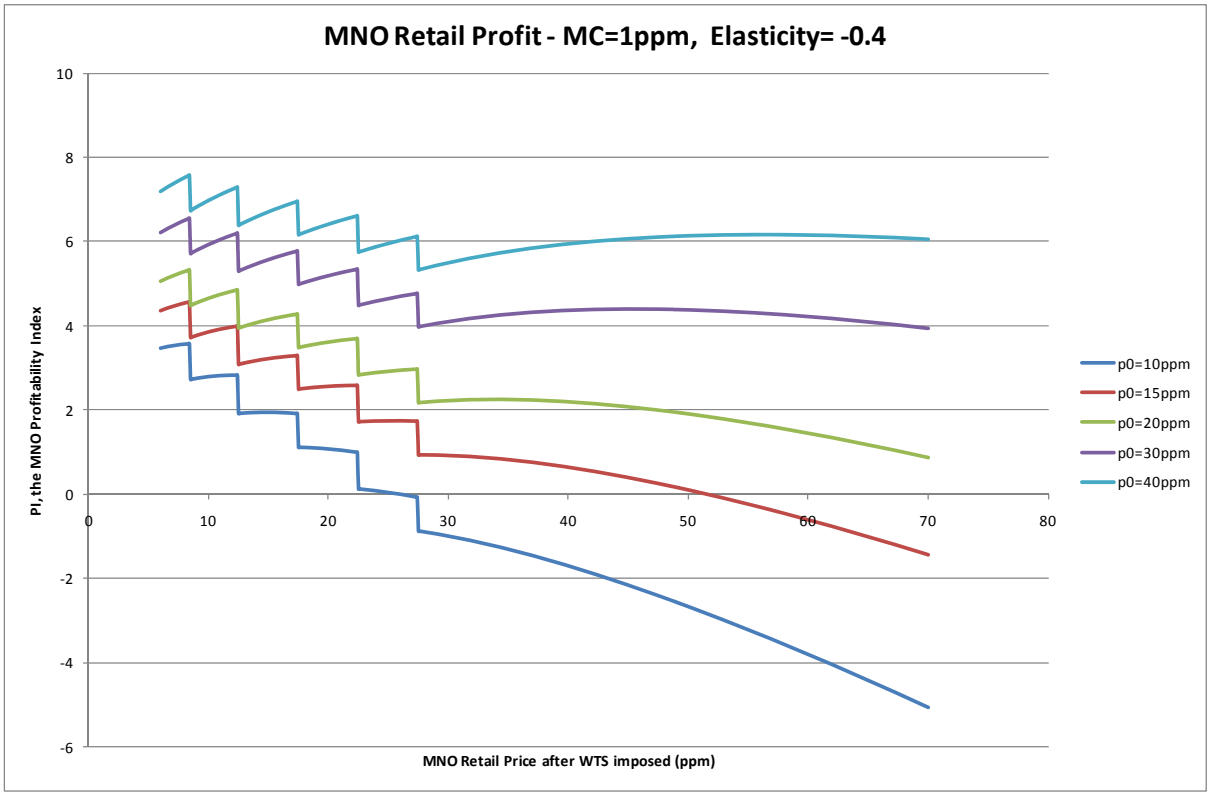


Figure 5.1.3 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

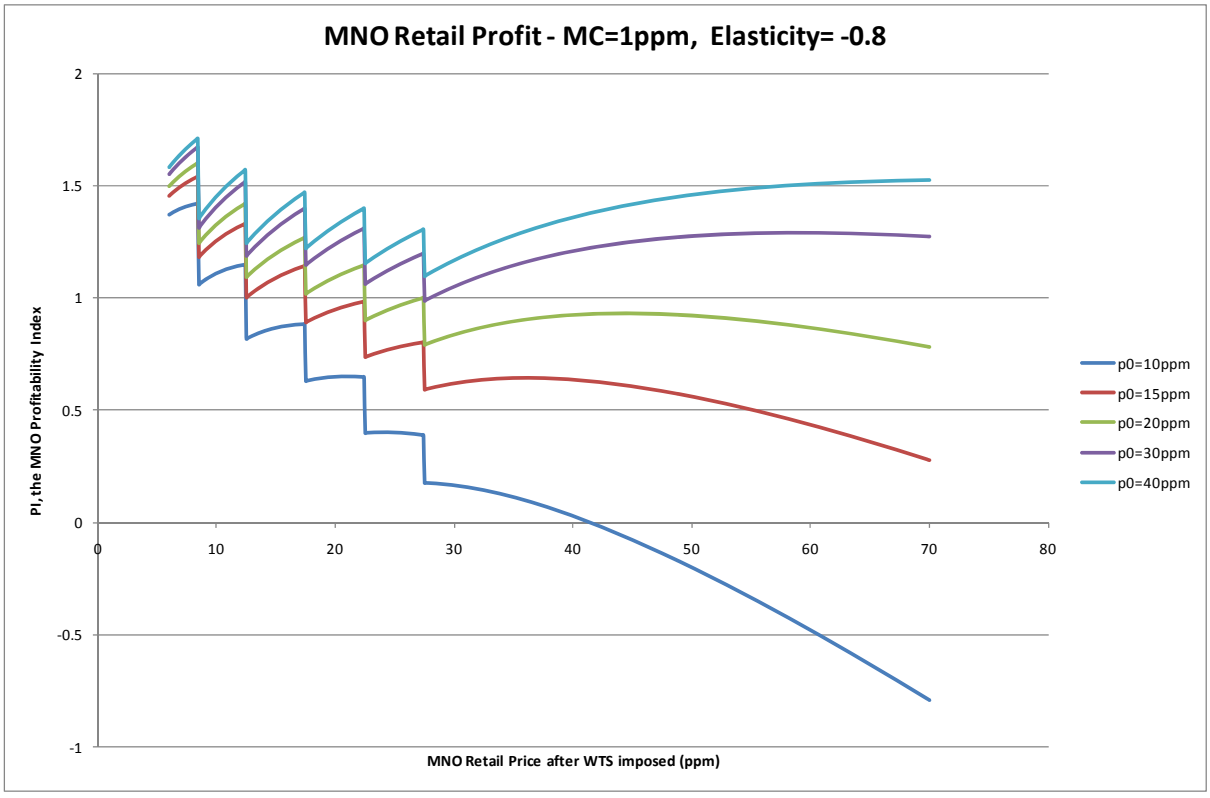


Figure 5.1.4 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

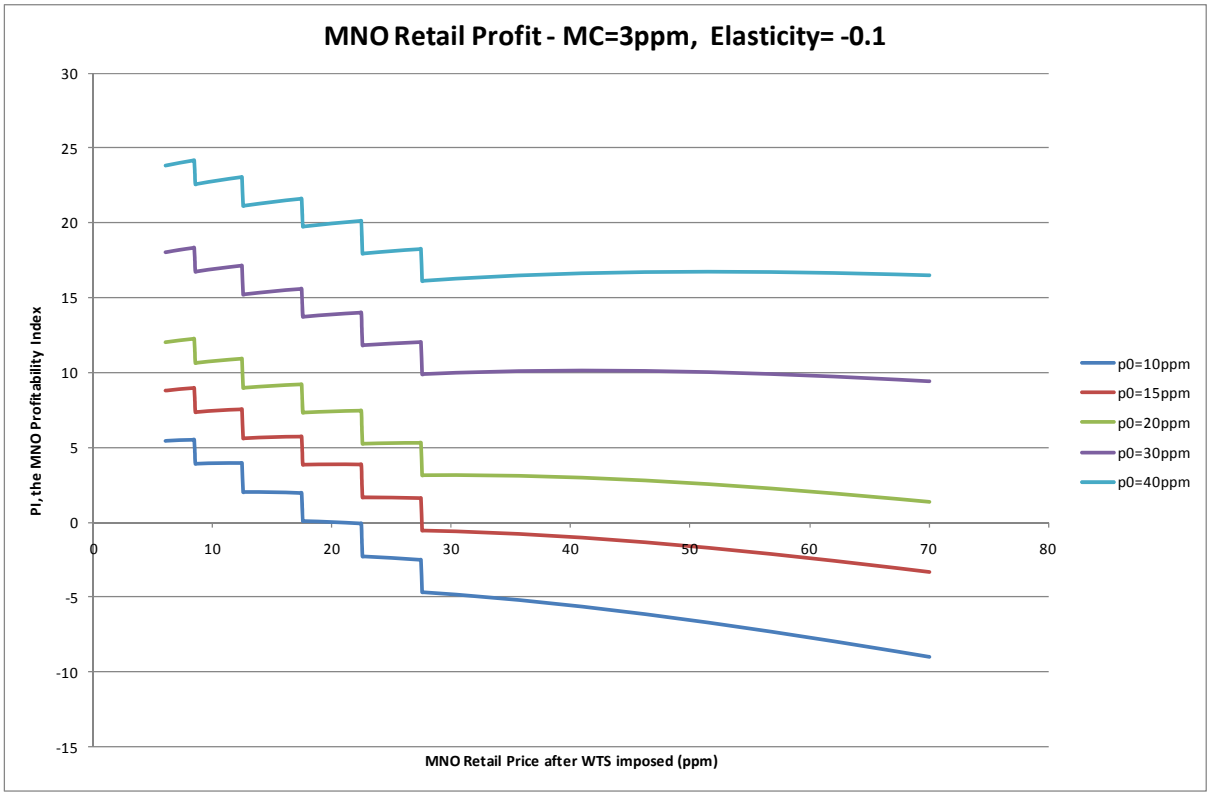


Figure 5.1.5 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

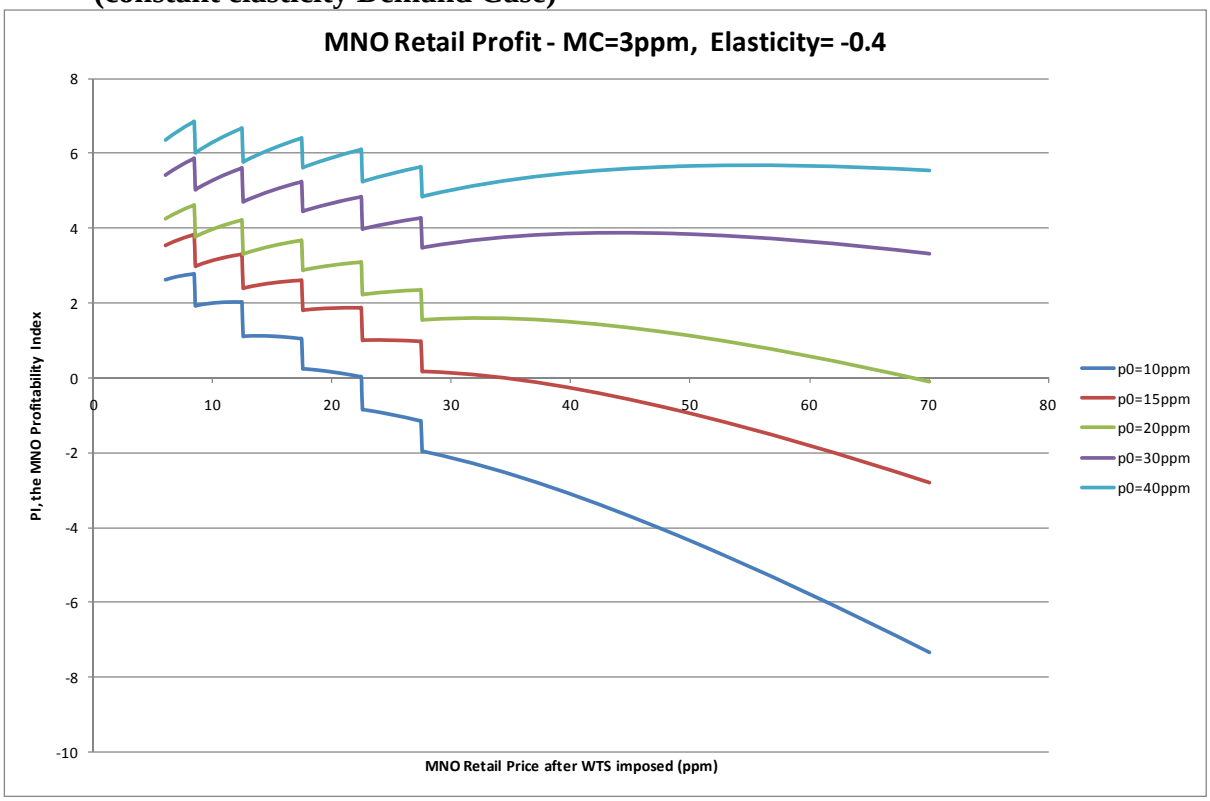


Figure 5.1.6 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

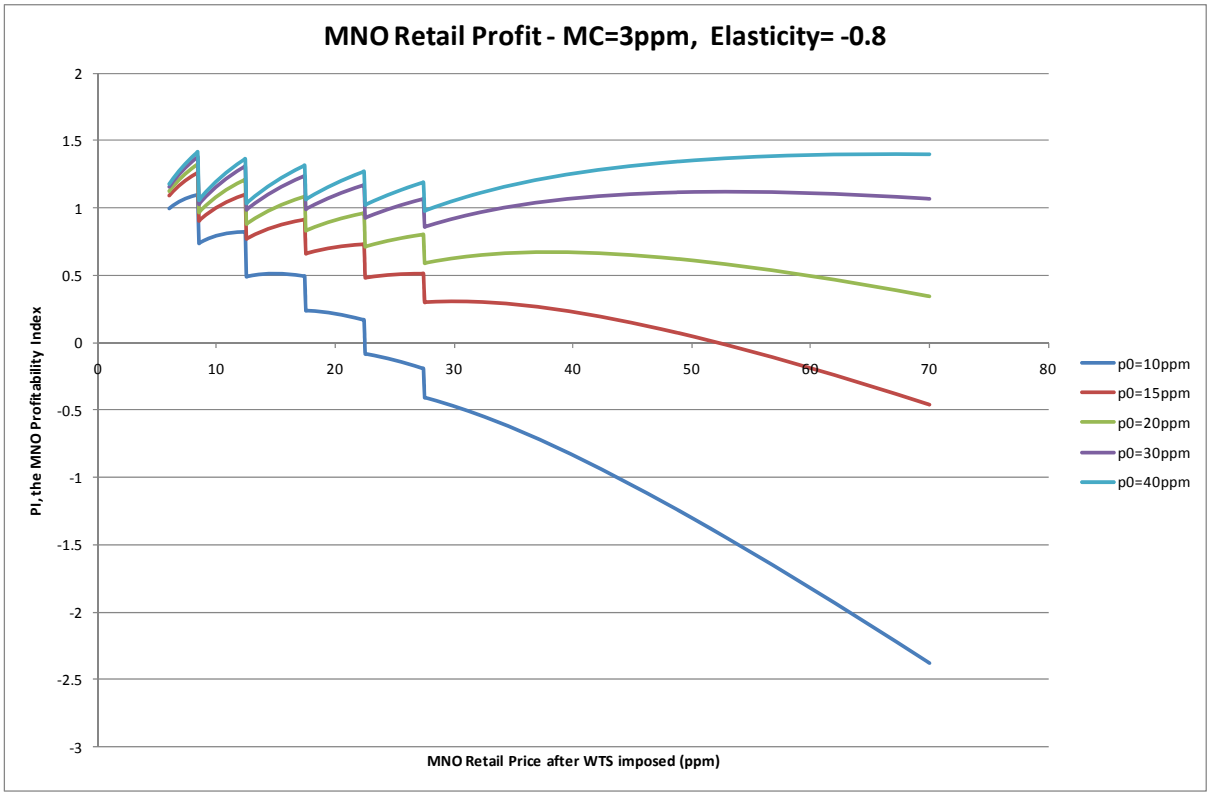


Figure 5.1.7 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

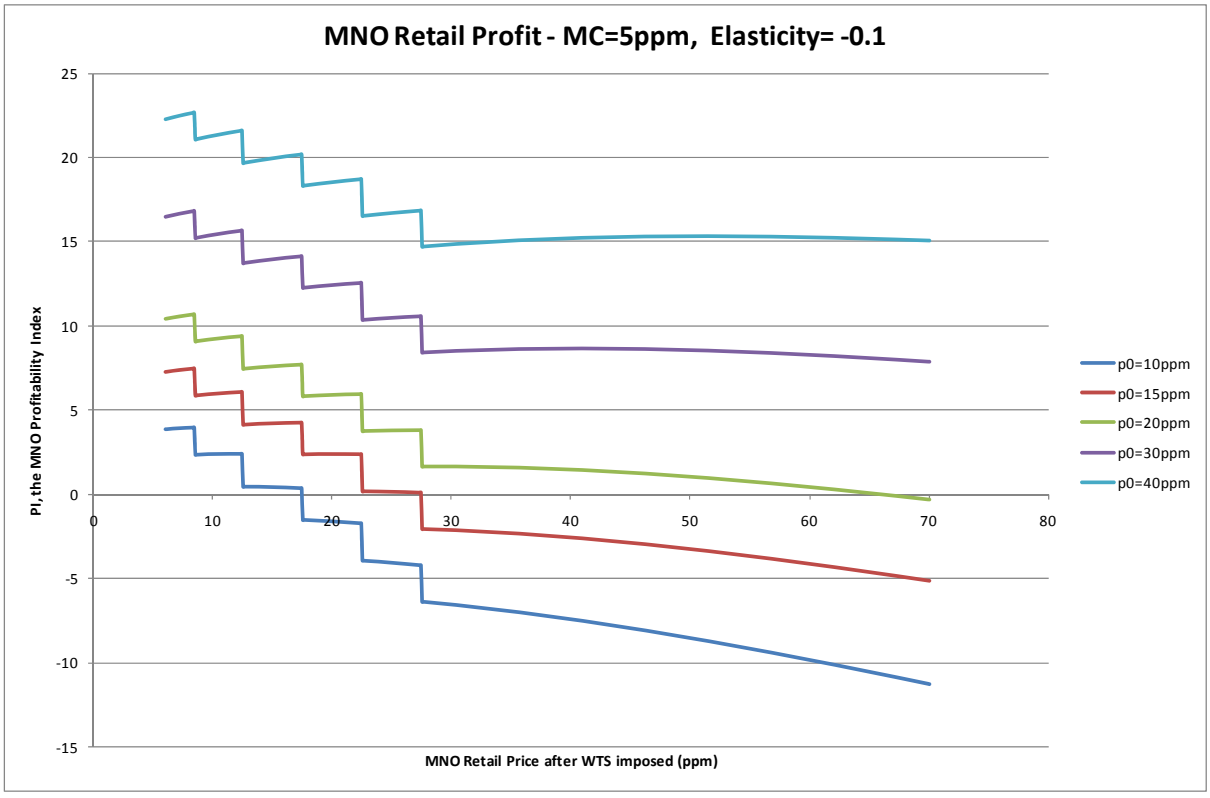


Figure 5.1.8 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

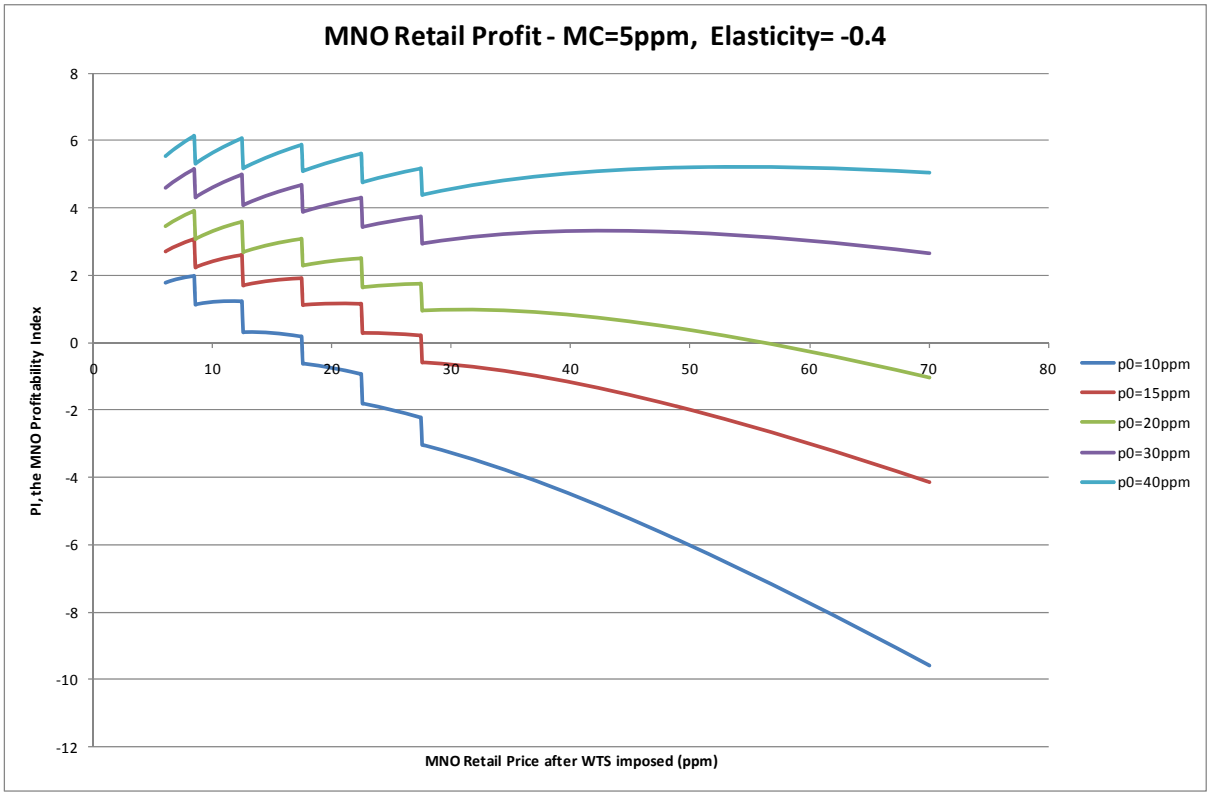
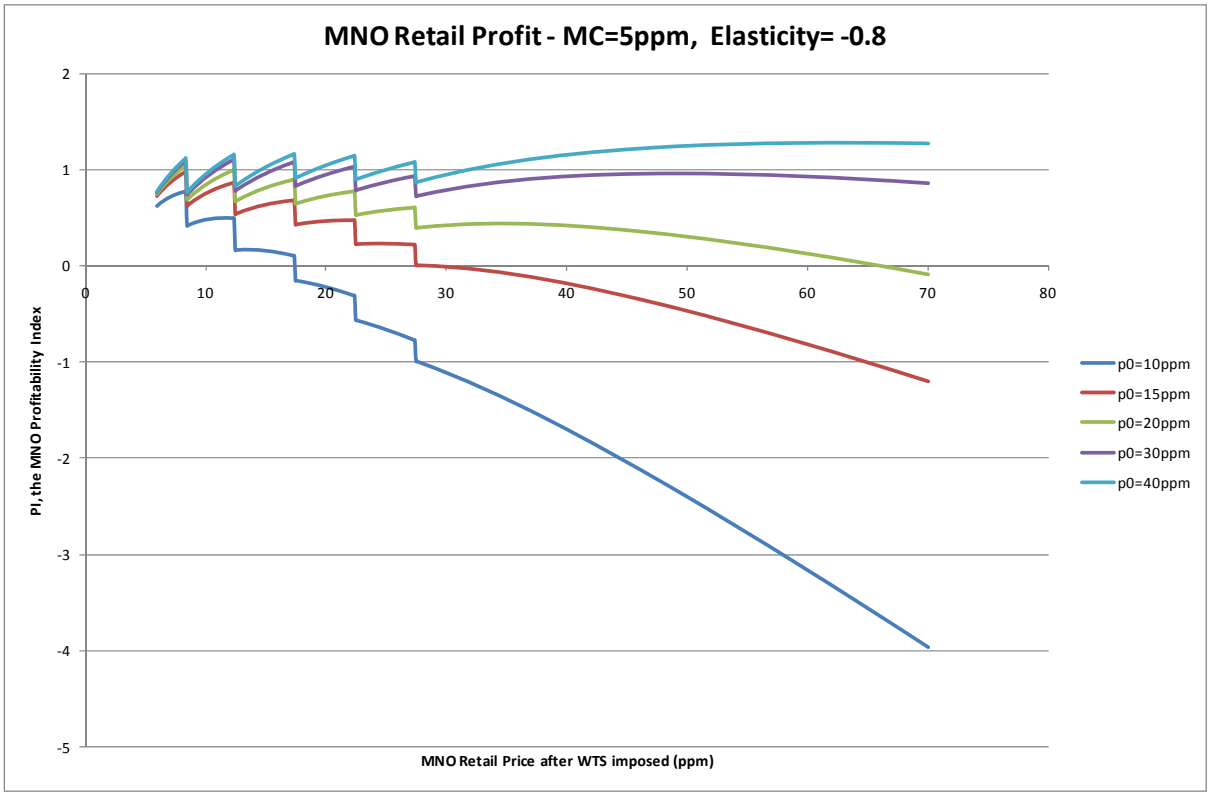


Figure 5.1.9 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)



31. These profitability graphs tell a similar story and strongly indicate that, if MNO current prices are viewed as profit maximising and that MNO demands at these prices are viewed as inelastic, then it is likely that the WTS incentivises retail price reductions. In all figures, MNOs can increase profitability by reduce price - with the only exception being in figure 4.1.9, where demand is fairly elastic, marginal cost is at its upper bound of 5ppm and the MNO profit maximising price is also at the maximum point in the range (40ppm). It is worth emphasising that although some MNOs have a published retail price at around this level, the relevant level to take for MNO retail price is the average price. It is understood that MNO average retail prices are considerably lower than 40ppm (a point that Ofcom is in a position to confirm).

32. It is interesting that the more inelastic the hypothesised MNO retail demand, the stronger the incentive to reduce price becomes. This is because the more inelastic the demand, the stronger the spillover effect must be (for the current price to be profit maximising), and as was noted in Reid-1, spillover effects tend to increase the incentive toward retail price reductions.

5.2 Linear Demand Case – 080 Calls

33. This section repeats the analysis for the case where demands are assumed linear. It is possible to explore other functional forms (to date I have also examined a semi-log specification and a functional form in which demand elasticity increases linearly with retail price). This section shows that the conclusions drawn under the constant elasticity assumption and the linear demand assumption are largely the same (namely that the WTS incentives average retail price reductions.

Figure 5.2.1 MNO Profitability – taking account of spillover effects (Linear Demand Case)

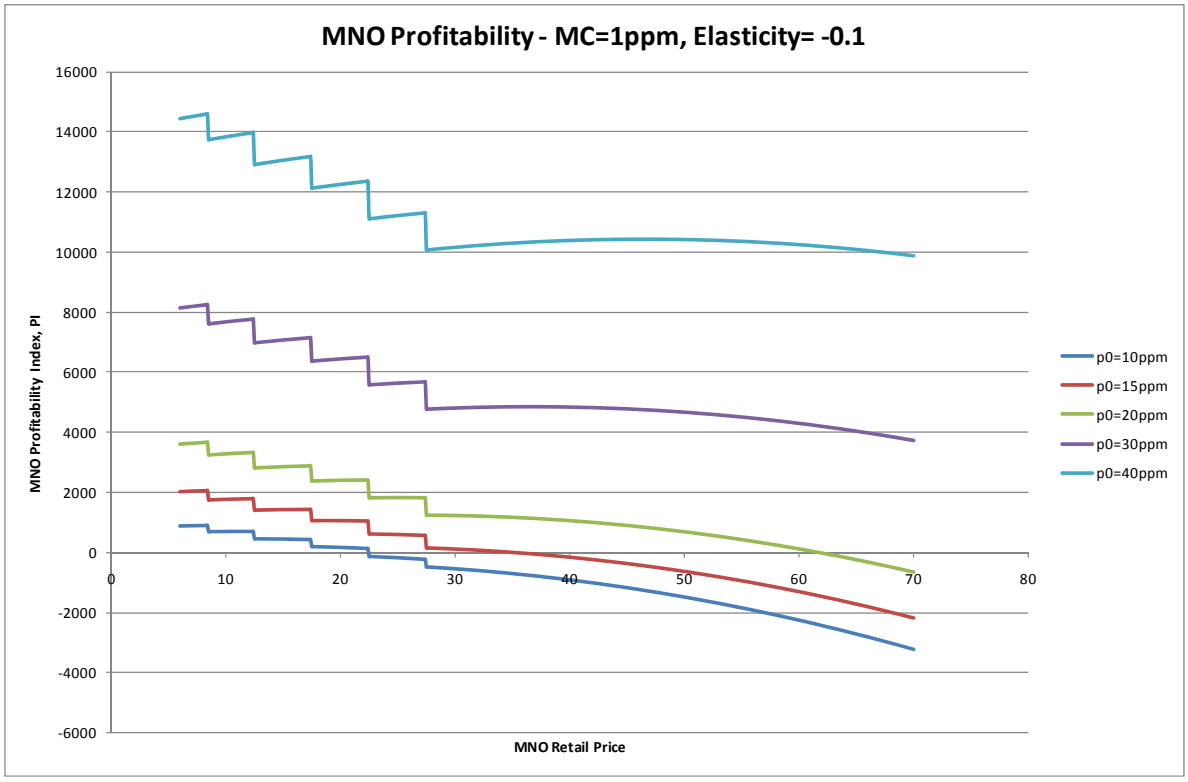


Figure 5.2.2 MNO Profitability – taking account of spillover effects Linear Demand Case)

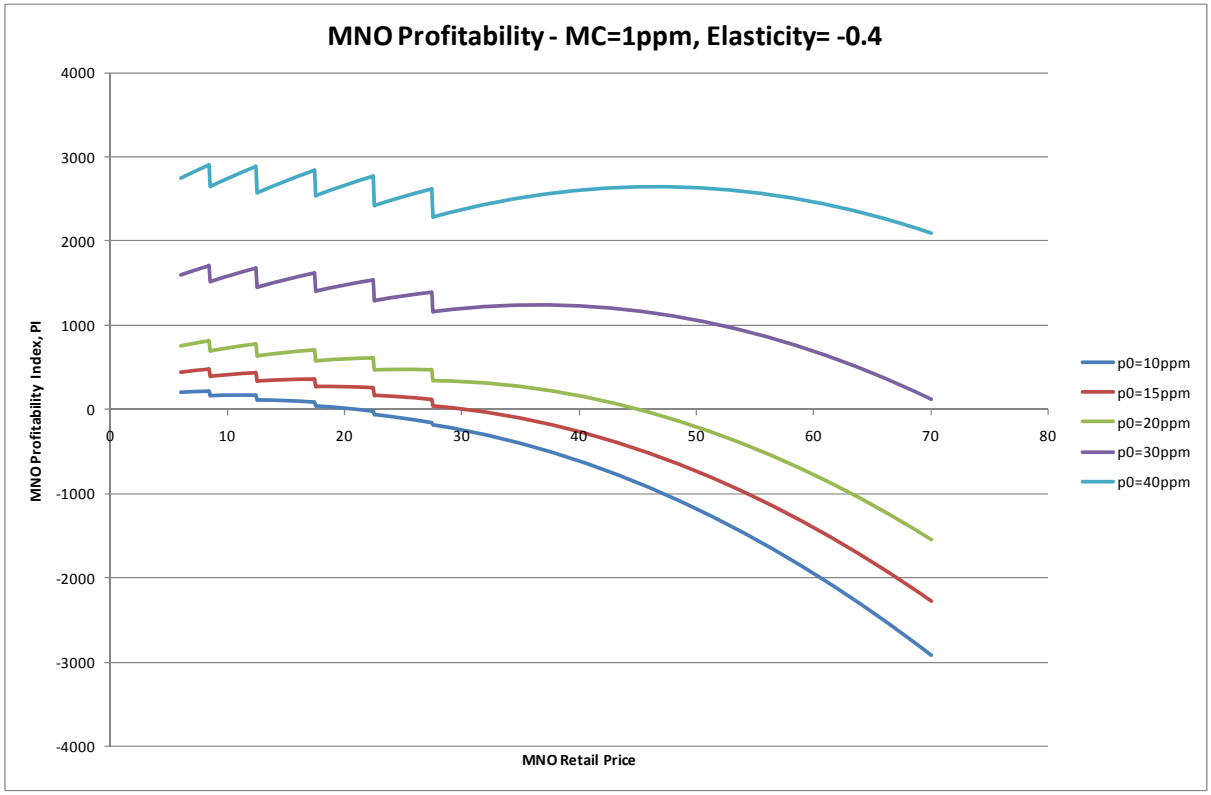


Figure 5.2.3 MNO Profitability – taking account of spillover effects Linear Demand Case)

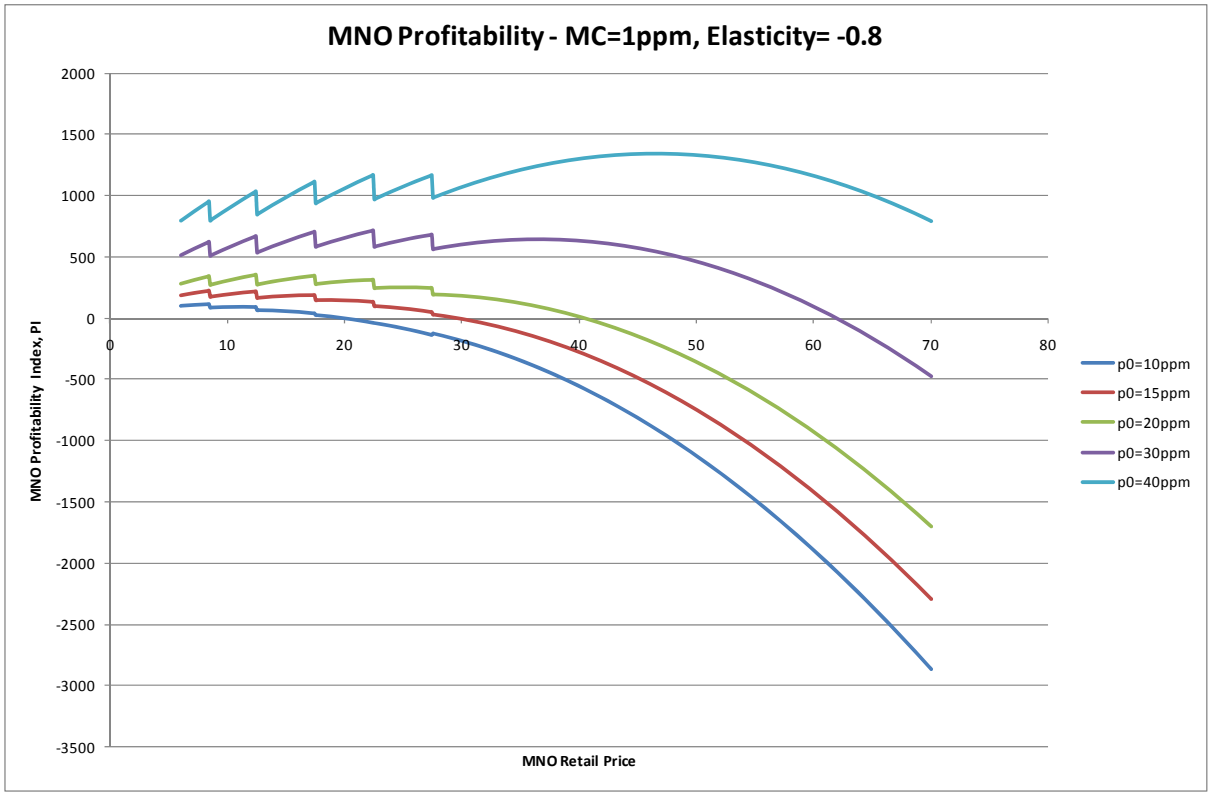


Figure 5.2.4 MNO Profitability – taking account of spillover effects Linear Demand Case)

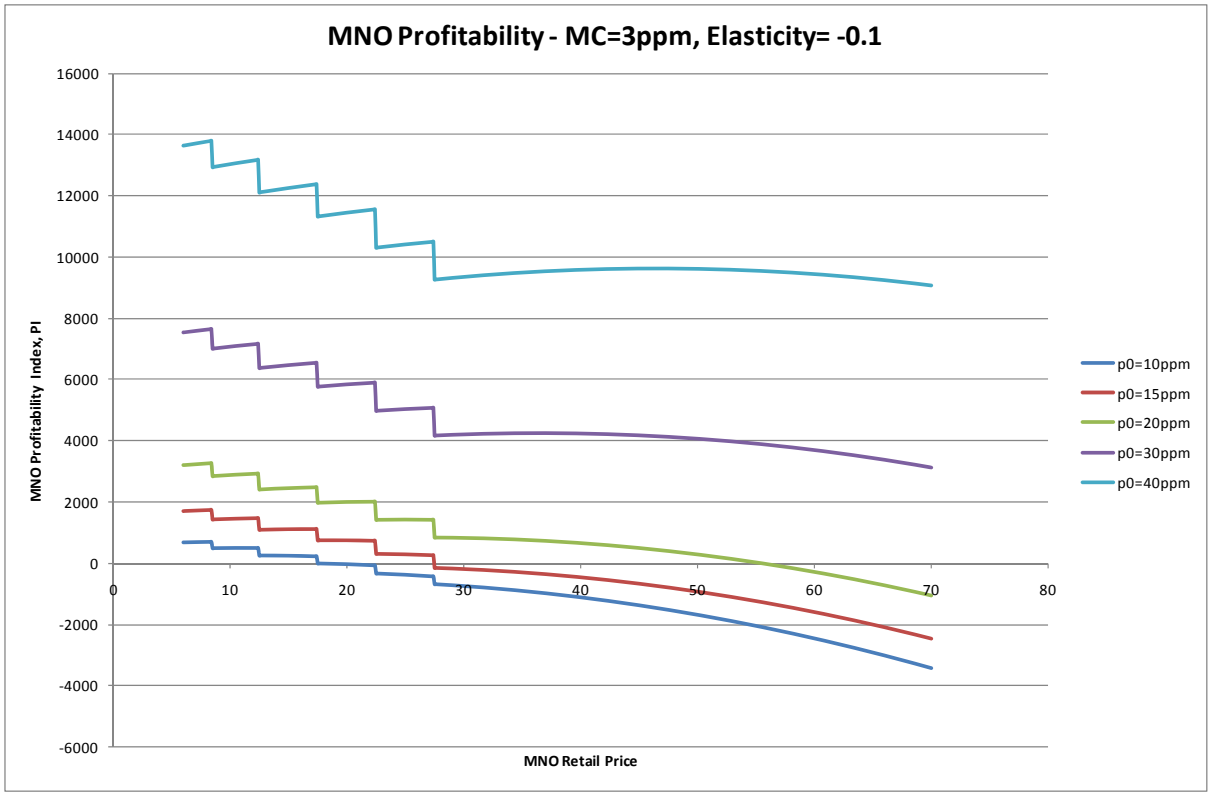


Figure 5.2.5 MNO Profitability – taking account of spillover effects Linear Demand Case)

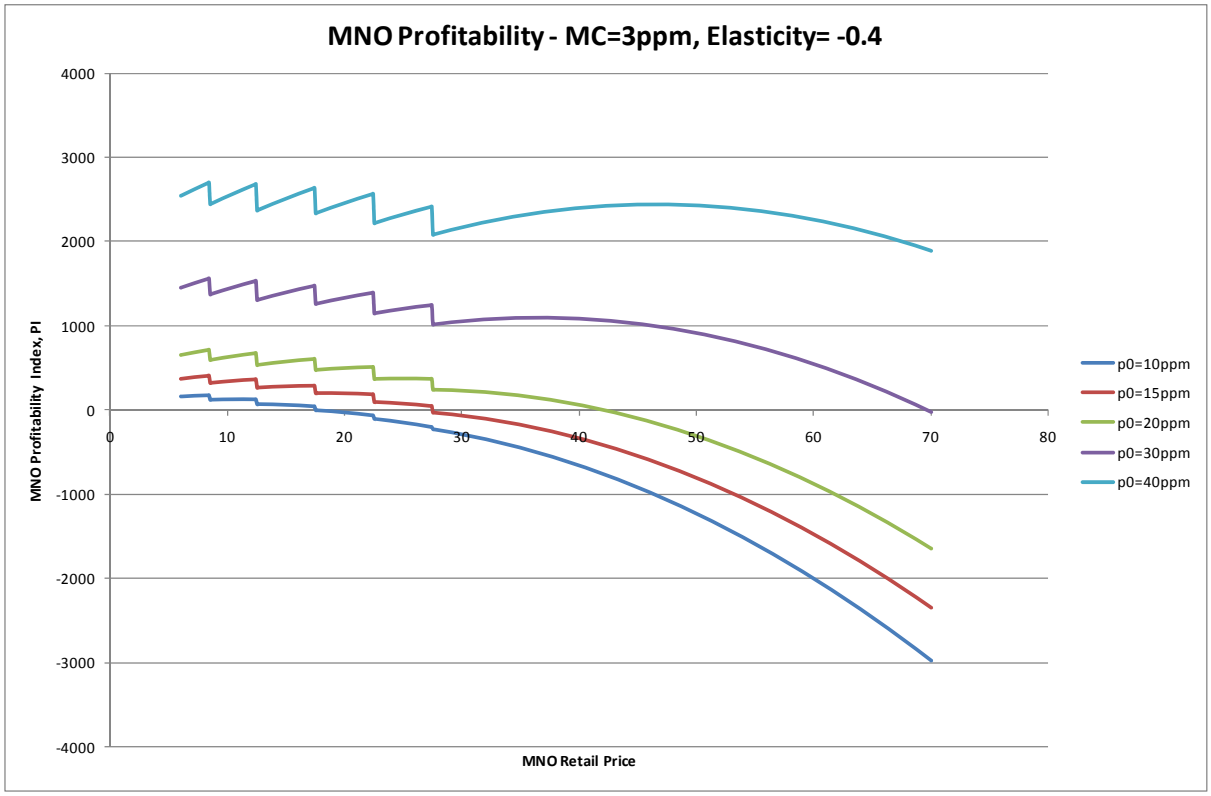


Figure 5.2.6 MNO Profitability – taking account of spillover effects Linear Demand Case)

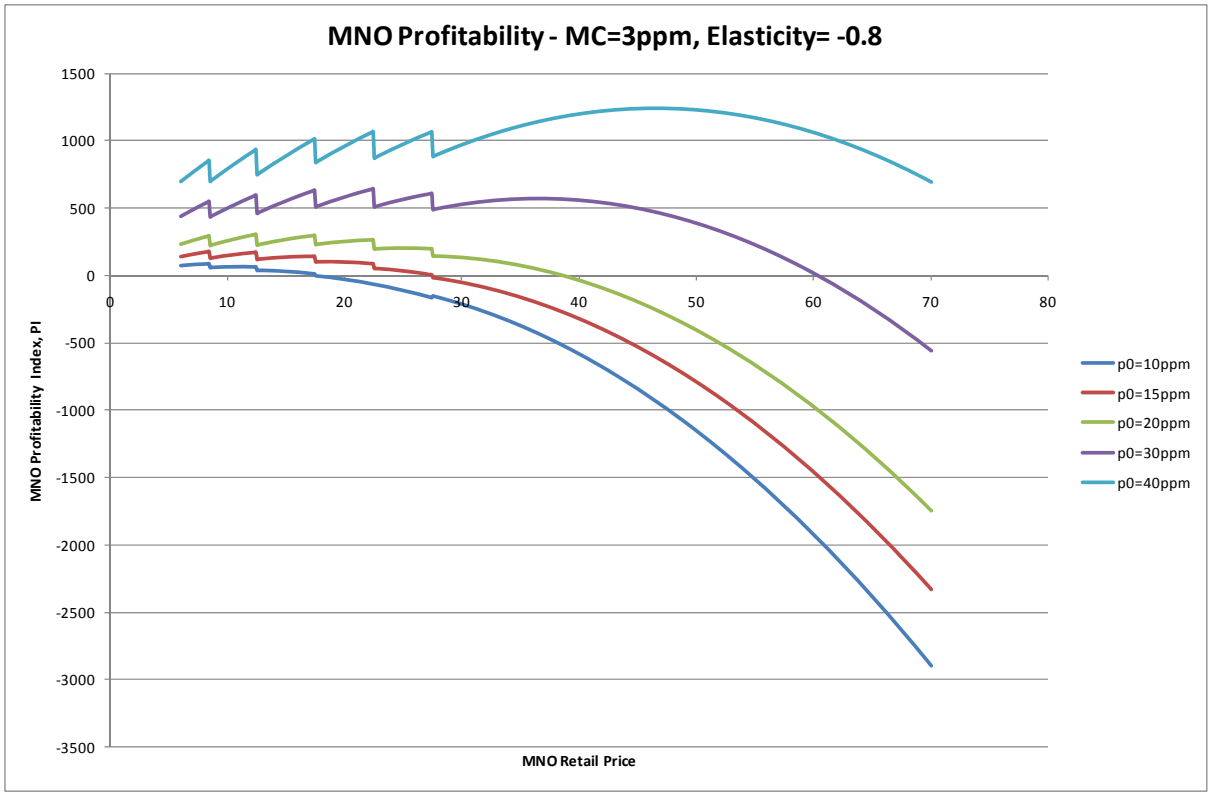


Figure 5.2.7 MNO Profitability – taking account of spillover effects Linear Demand Case)

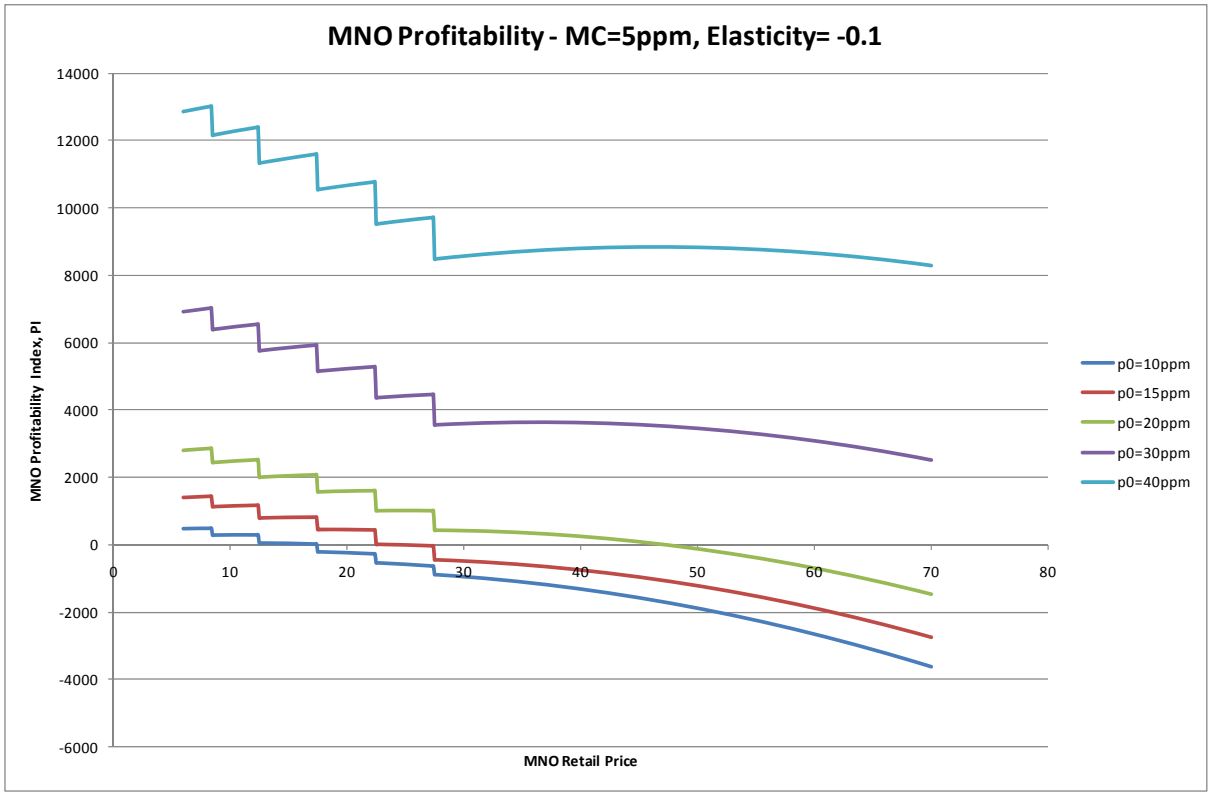


Figure 5.2.8 MNO Profitability – taking account of spillover effects Linear Demand Case)

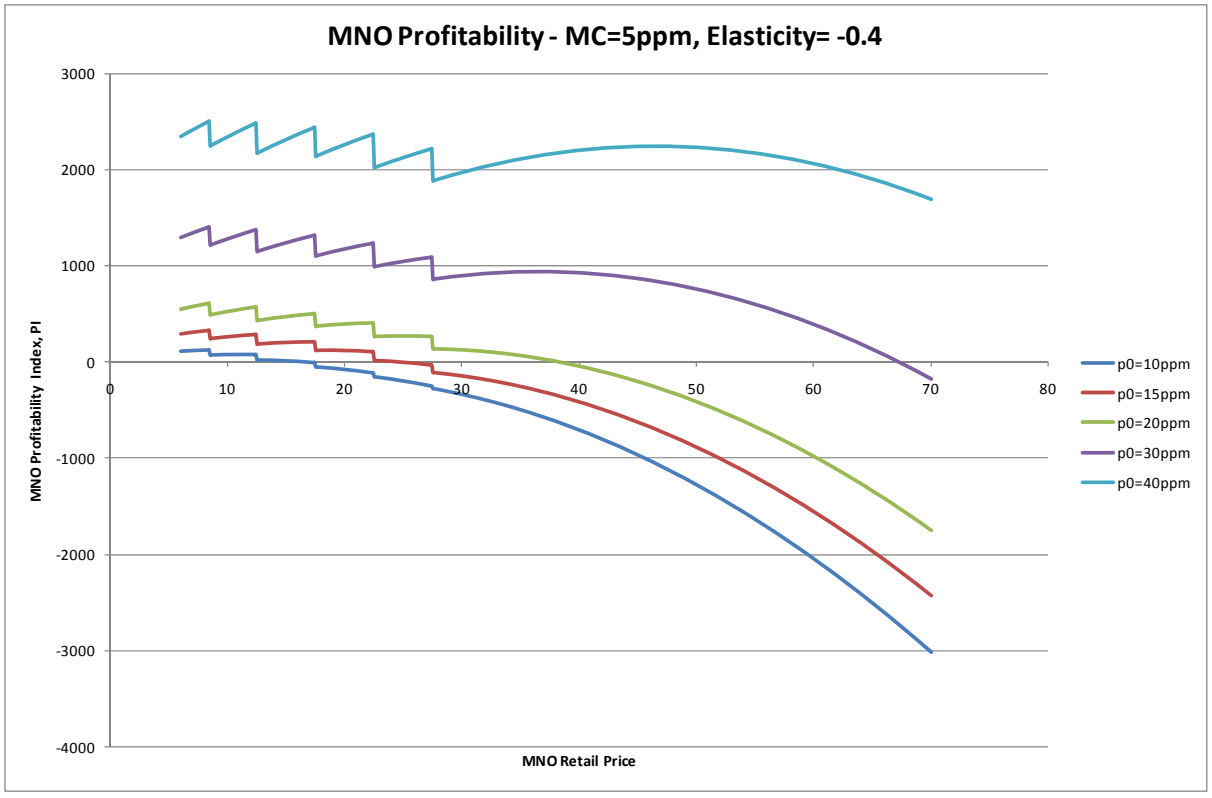
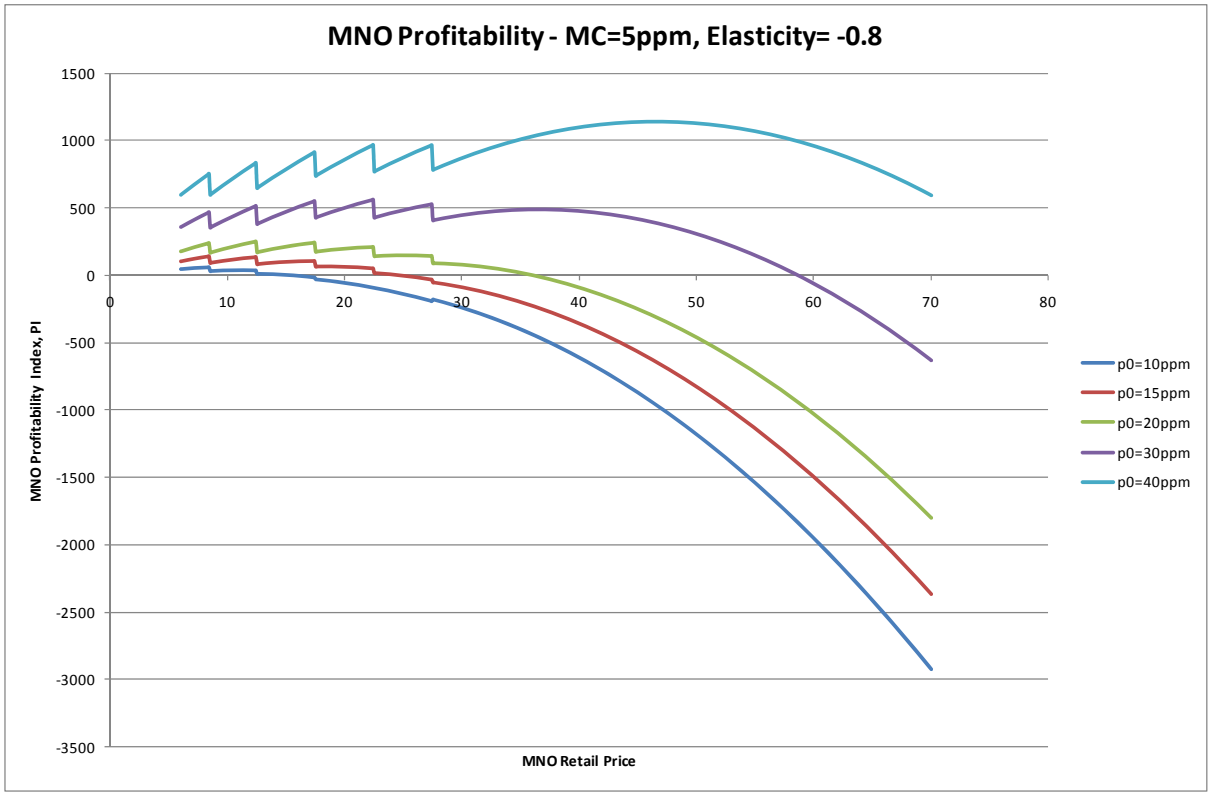


Figure 5.2.9 MNO Profitability – taking account of spillover effects Linear Demand Case)



34. In all figures, MNOs can increase profitability by reducing price - with the only exception being where demand is less inelastic (-0.8) and the MNO profit maximising price is also at the maximum point in the range (40ppm). It is worth emphasising that although some MNOs have a published retail price at around this level, the relevant level to take for MNO retail price is the average price. It is understood that MNO average retail prices are considerably lower than 40ppm, and probably are less than 30ppm (a point that Ofcom is in a position to confirm). Thus, in general, the WTS incentivises retail price reductions.

35. As with the constant elasticity demand case, the hypothesised MNO retail demand, the stronger the incentive to reduce price becomes. This is because the more inelastic the demand, the stronger the spillover effect must be (for the current price to be profit maximising), and as was noted in Reid-1, spillover effects tend to increase the incentive toward retail price reductions.

6. Profitability – The 0845 and 0870 Cases

36. Having discussed spillover effects in the context of 080-calls, this section repeats the analysis for 0845/0870 calls. Ofcom Tables 3.2 and 3.3 are reproduced from the draft determination (p.24). My understanding is that the fixed charge per call in these tables are pre-existing; that is, the question under consideration is (or rather, should be) whether, given the initial position in which there are already fixed charges (ppm), the additional variable rate charges incentivise price reductions. In the 080-analysis,

where there were no pre-existing fixed charges, a range of 0ppm through to a maximum of 5ppm was considered for MNO marginal cost, and this was repeated in Ofcom's analysis utilising the Dobbs framework. In the 0845/0870 cases, there is a pre-existing fixed charge of up to a maximum of 2.67ppm. Accordingly, the overall range considered in this section is from 0ppm through to 7.7ppm (an additional 2.7ppm to account for the extra marginal cost imposed on the MNOs through the pre-existing fixed charge).

37. In the Ofcom tables 3.1/3.2, reproduced below, notice that the variable charge WTS is identical for both 0870 and 0845. That is, the only difference lies in differences in the marginal cost arising form pre-existing fixed charges. It follows that, so long as a range of marginal cost from 0-7.7ppm is considered in the sensitivity analysis, there is no need for a separate analysis for 0845 and 0870-calls.

38. In what follows, for comparability with Ofcom's analysis in Annex 5, sub-section 6.1 deals with the constant elasticity case, whilst sub-section 6.2 deals with the linear demand case.

Ofcom Table 3.2: Charges payable under NCCN 985 for 0845 calls

Fixed charge (ppm)			**Variable charge linked to OCP retail tariff (ppm)**	
Day	**Evening**	**Weekend**	**OCP retail tariff (ppm)**	**Variable charge (ppm)**
2.6654	0.8430	0.6422	0.00 – 12.49	0.0
2.6654	0.8430	0.6422	12.50 – 17.49	2.0
2.6654	0.8430	0.6422	17.50 – 22.49	4.5
2.6654	0.8430	0.6422	22.50 – 27.49	7.0
2.6654	0.8430	0.6422	27.50 – 32.49	10.0
2.6654	0.8430	0.6422	32.50 and above	13.0
A call set-up fee of 2.0171 pence applies to all calls.				

Ofcom Table 3.3: Charges payable under NCCN 986 for 0870 calls

Fixed charge (ppm)			**Variable charge linked to OCP retail tariff (ppm)**	
Day	**Evening**	**Weekend**	**OCP retail tariff (ppm)**	**Variable charge**
0.5600	0.2600	0.2000	0.00 – 12.49	0.0
0.5600	0.2600	0.2000	12.50 – 17.49	2.0
0.5600	0.2600	0.2000	17.50 – 22.49	4.5
0.5600	0.2600	0.2000	22.50 – 27.49	7.0
0.5600	0.2600	0.2000	27.50 – 32.49	10.0
0.5600	0.2600	0.2000	32.50 and above	15.0

Source: Ofcom Draft Determination

6.1 Constant Elasticity Demand Case – 0870/0845 Calls

39. The sensitivity analysis considers a range of MNO marginal costs from 0-7.7ppm and a range of MNO retail prices from 10-40ppm as in Dobbs-3 and the Ofcom annexes. A range of demand elasticity values from -0.1 through to -0.8 are illustrated (the elastic range is not considered as this corresponds to the case where spillover effects tend to be small – the purpose in this analysis is to show that similar results are obtained whether or not demand is inelastic or elastic at current MNO prices). The results are presented in the usual series of profitability graphs.

Figure 6.1.1 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

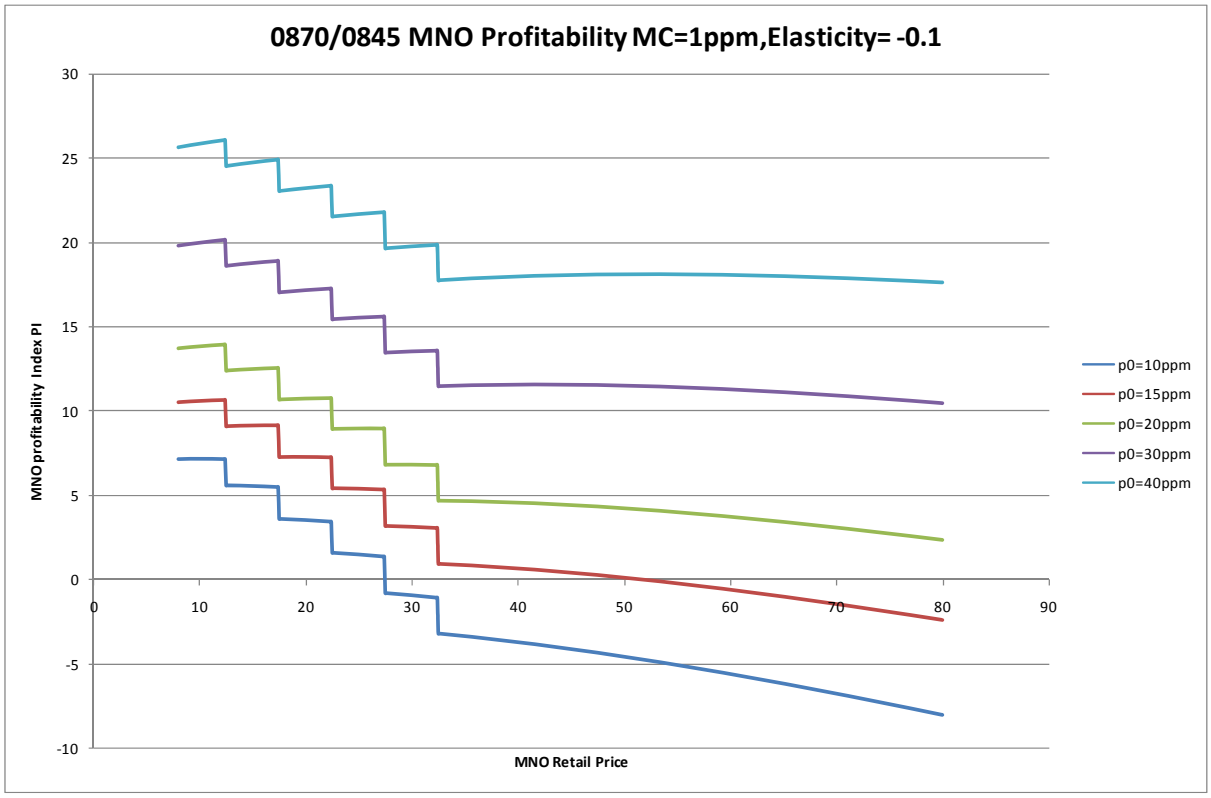


Figure 6.1.2 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

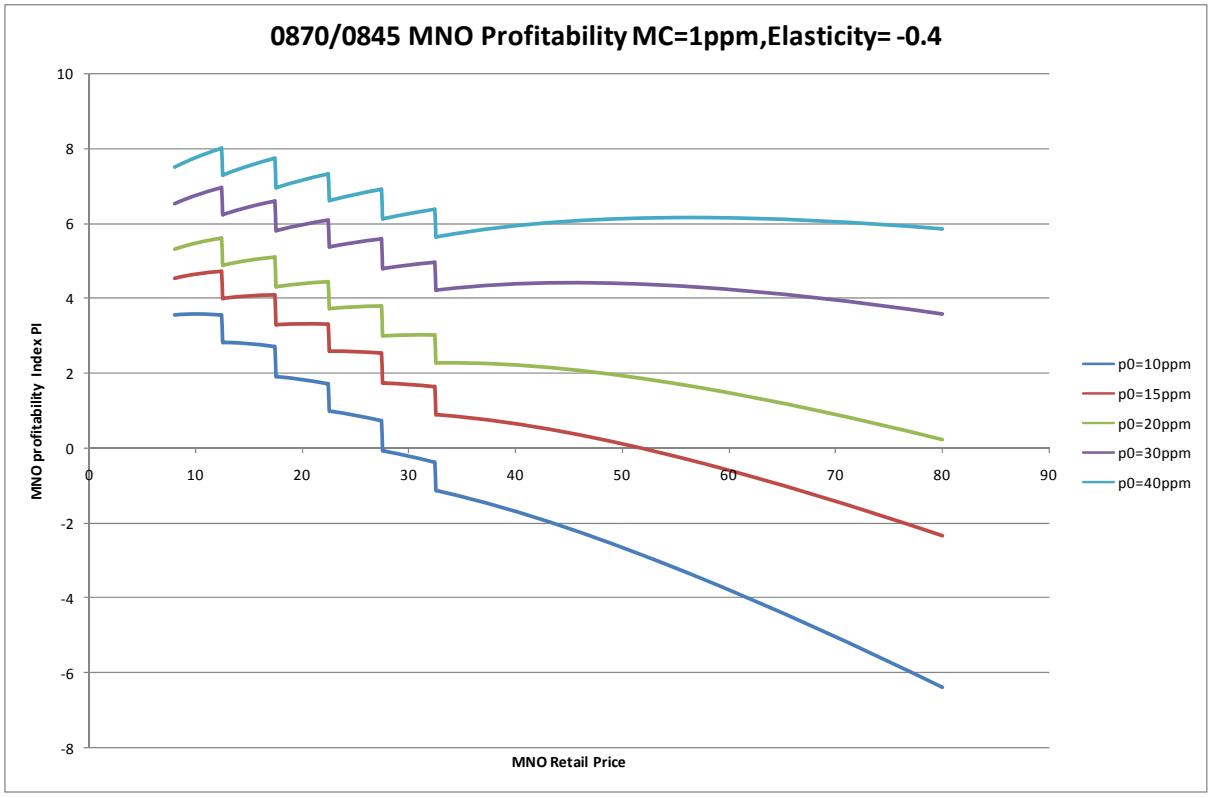


Figure 6.1.3 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

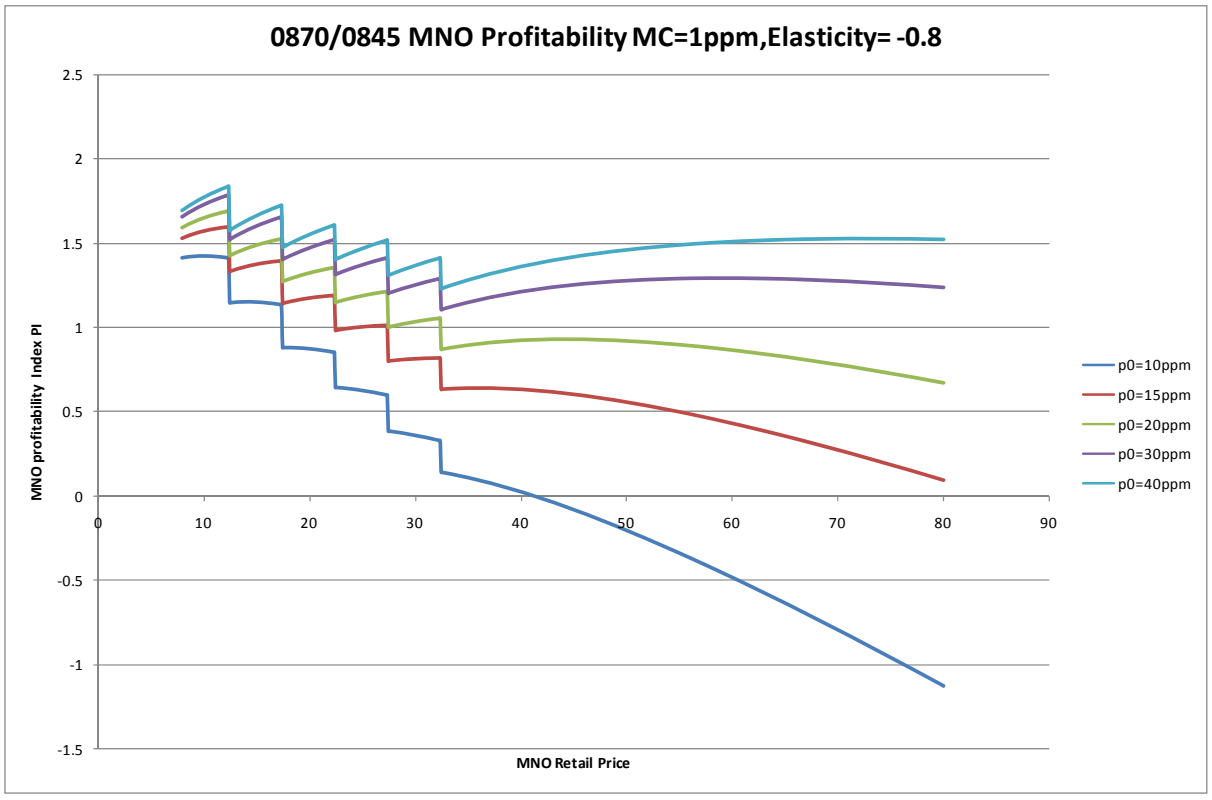


Figure 6.1.4 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

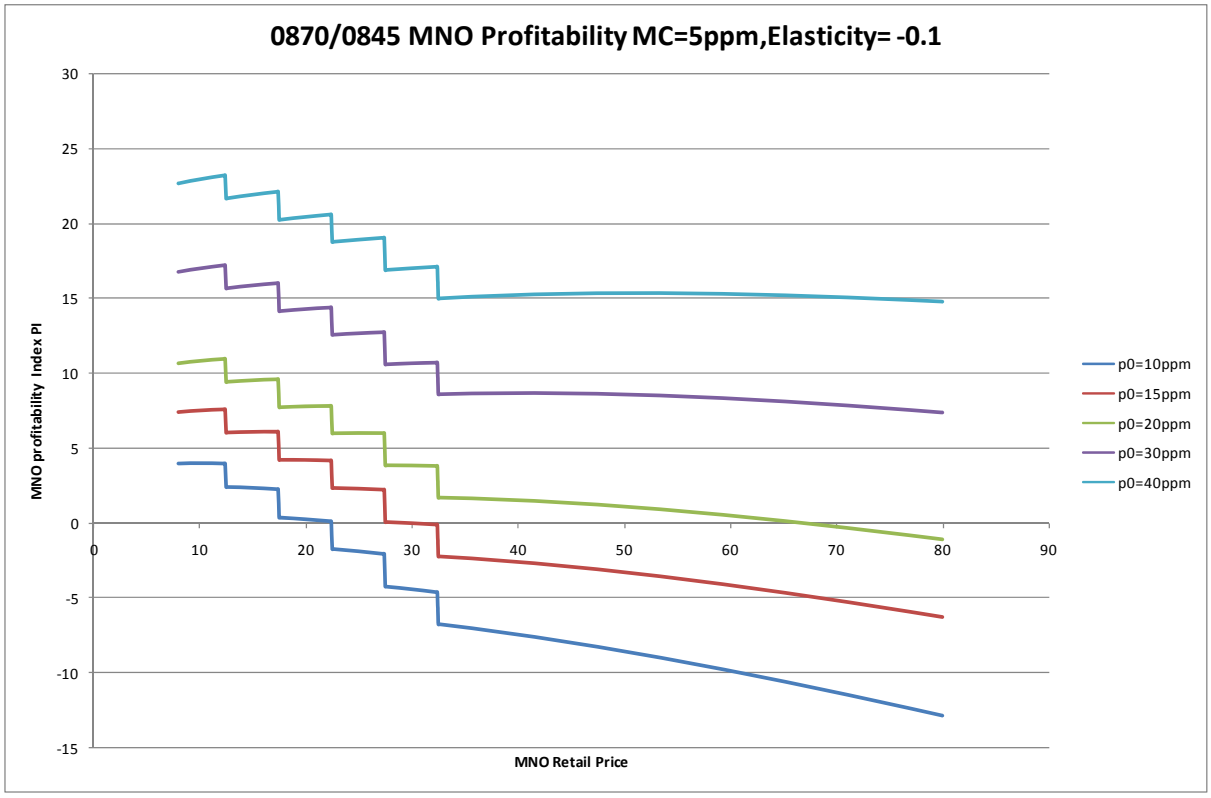


Figure 6.1.5 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

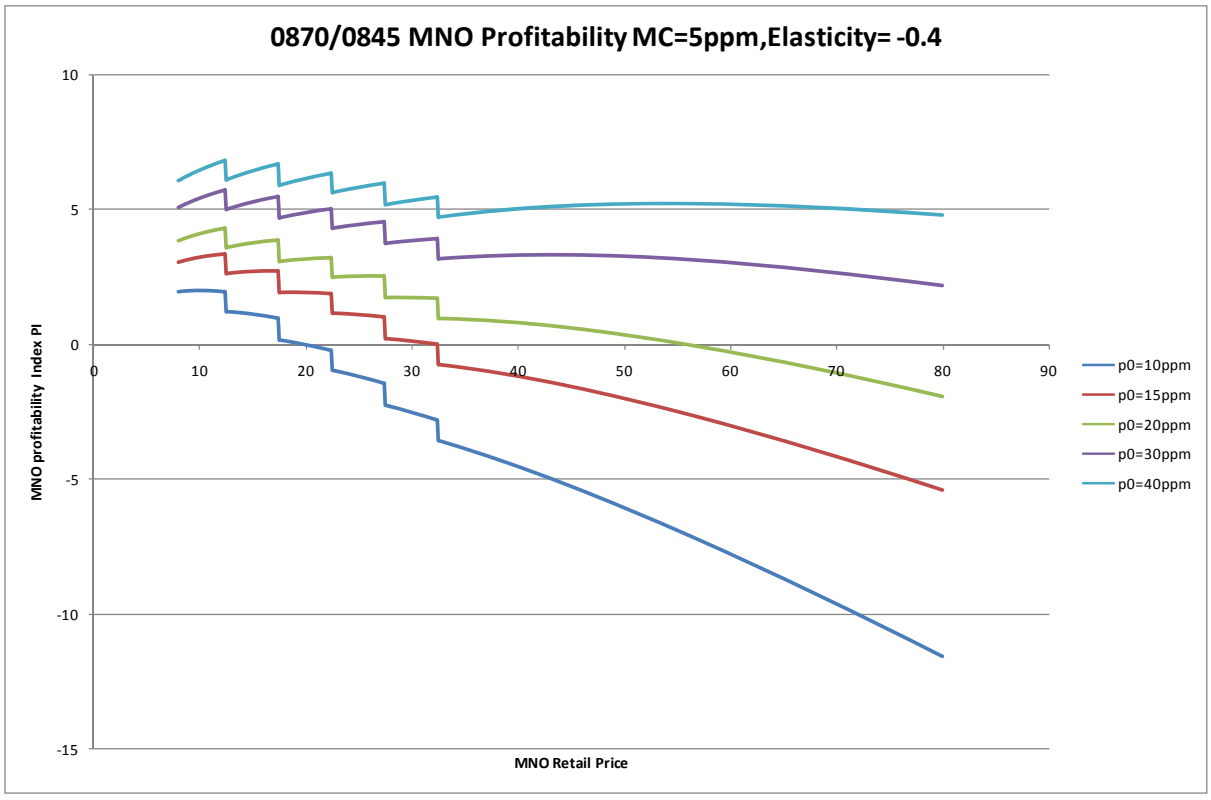


Figure 6.1.6 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

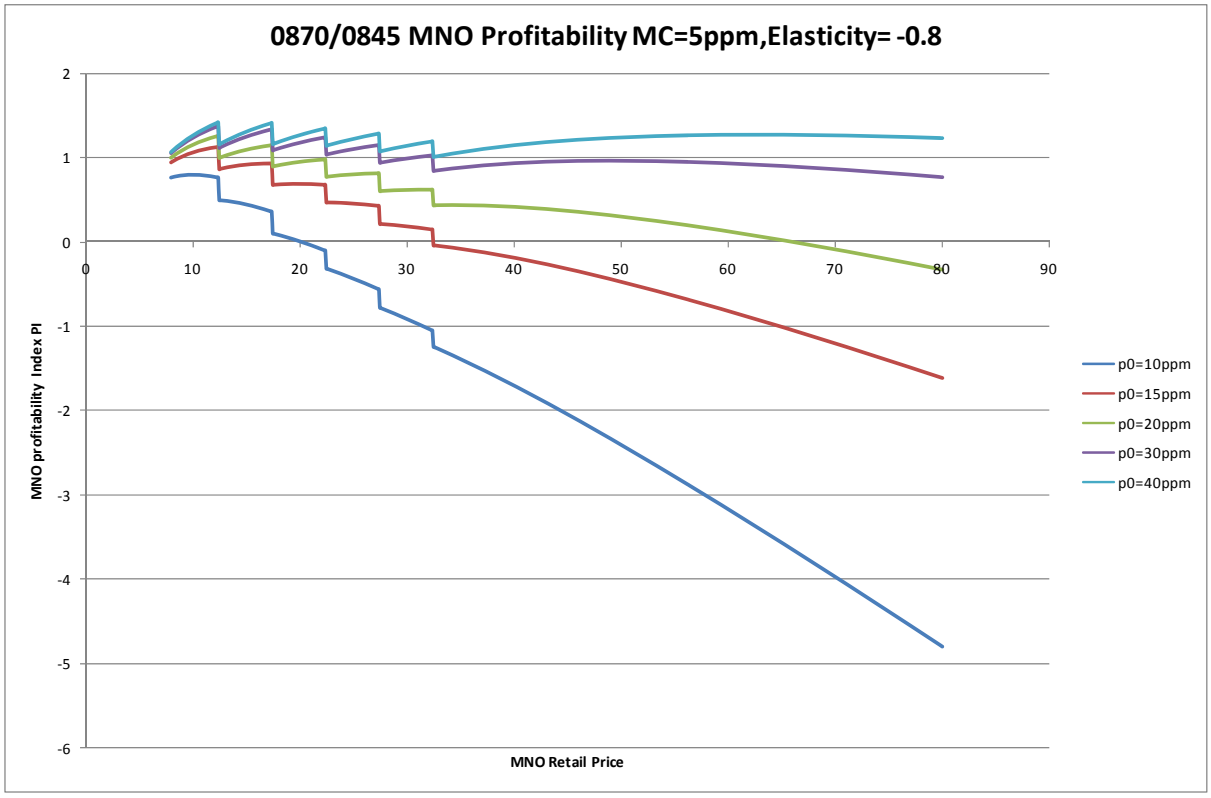


Figure 6.1.7 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

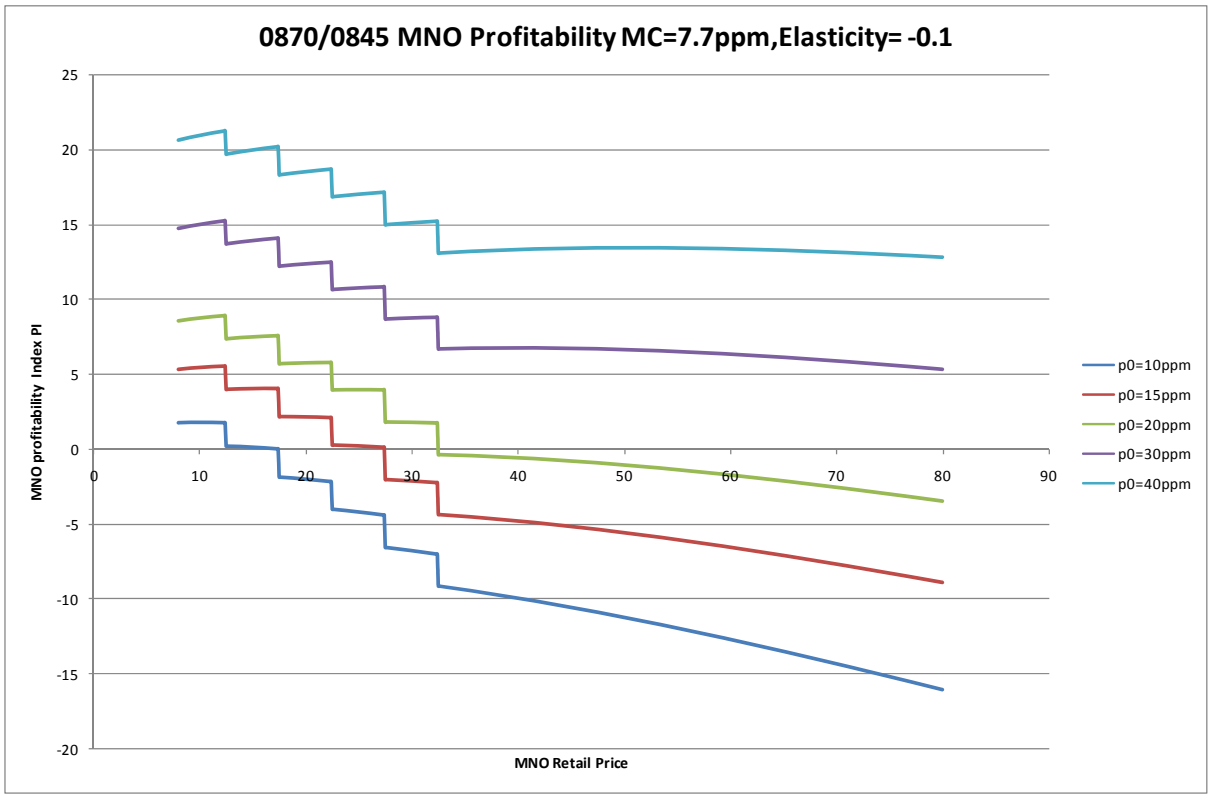


Figure 6.1.8 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)

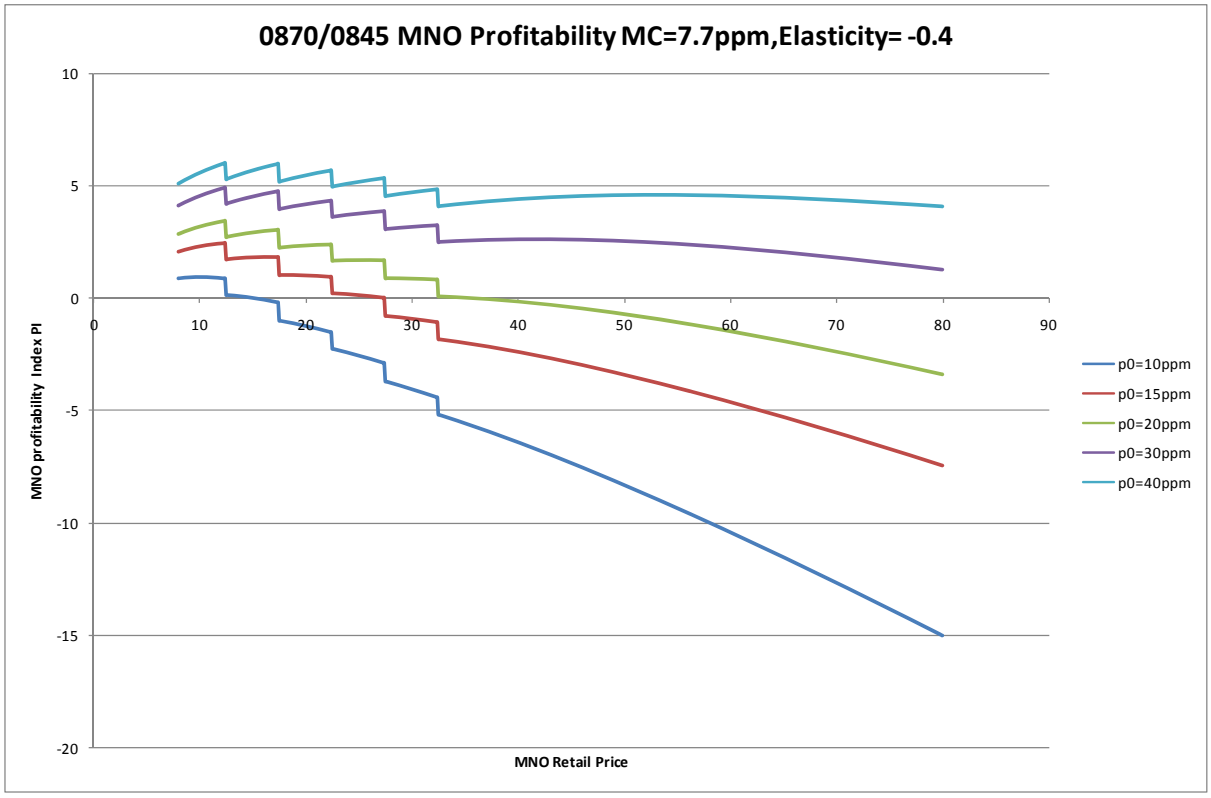
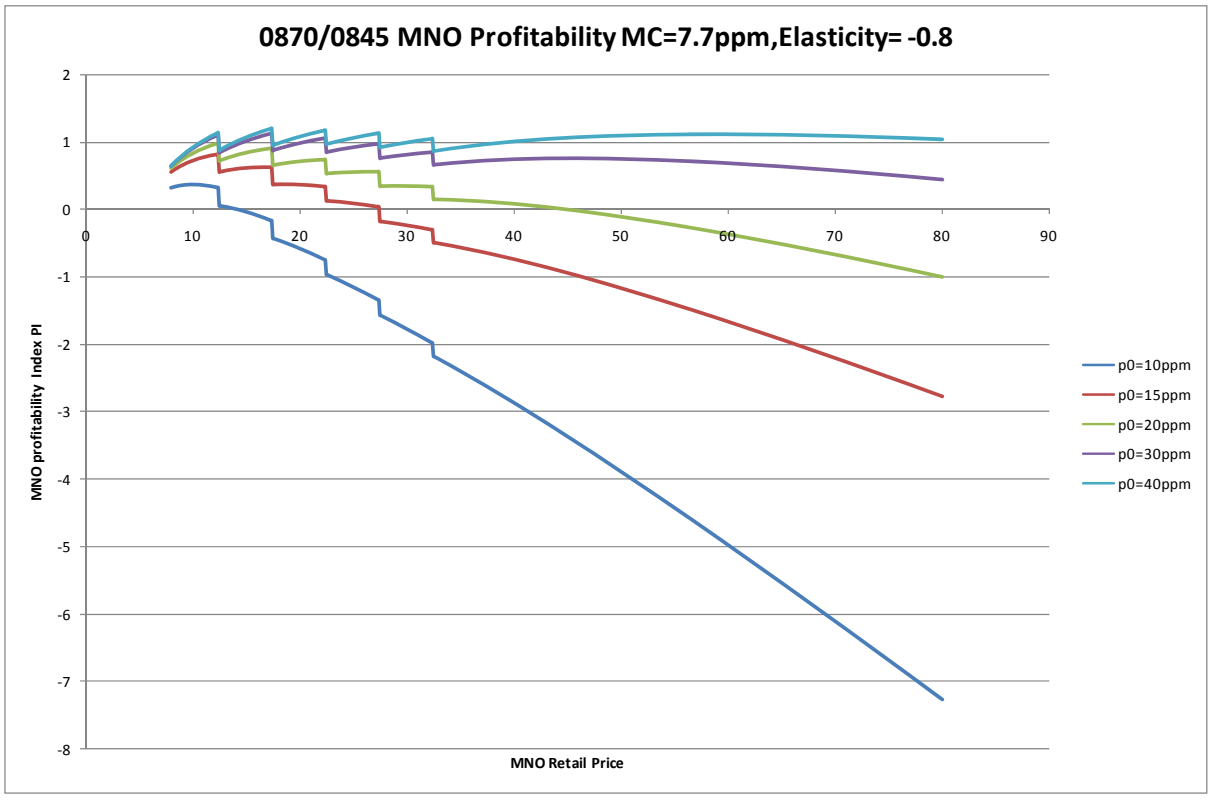


Figure 6.1.9 MNO Profitability – taking account of spillover effects (constant elasticity Demand Case)



40. Figures 6.1.1-6.1.9 all show that, if one allows for spillover effects and for the possibility that (as MNOs claim) demands are inelastic at current prices as in the model presented in section 3, the WTS proposed in NCCN985/986 emphatically incentivises retail price reductions. Indeed the effects are even more striking than in the 080 case.

6.2 The Linear demand Case – 0845/0870 calls

41. This repeats the analysis presented in section 6.1 for the linear demand case. The same parameter ranges are used, and the results are given in the following profitability graphs.

Figure 6.2.1 MNO Profitability – taking account of spillover effects (Linear Demand Case)

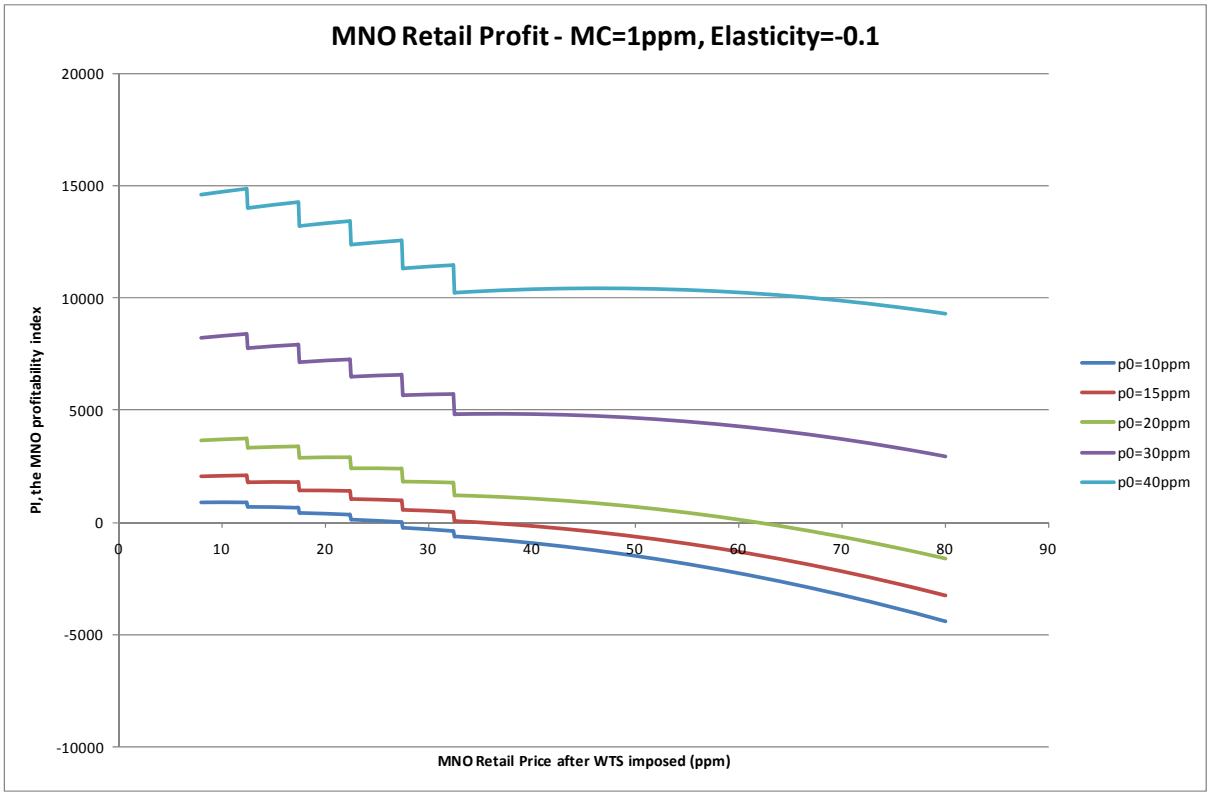


Figure 6.2.2 MNO Profitability – taking account of spillover effects (Linear Demand Case)

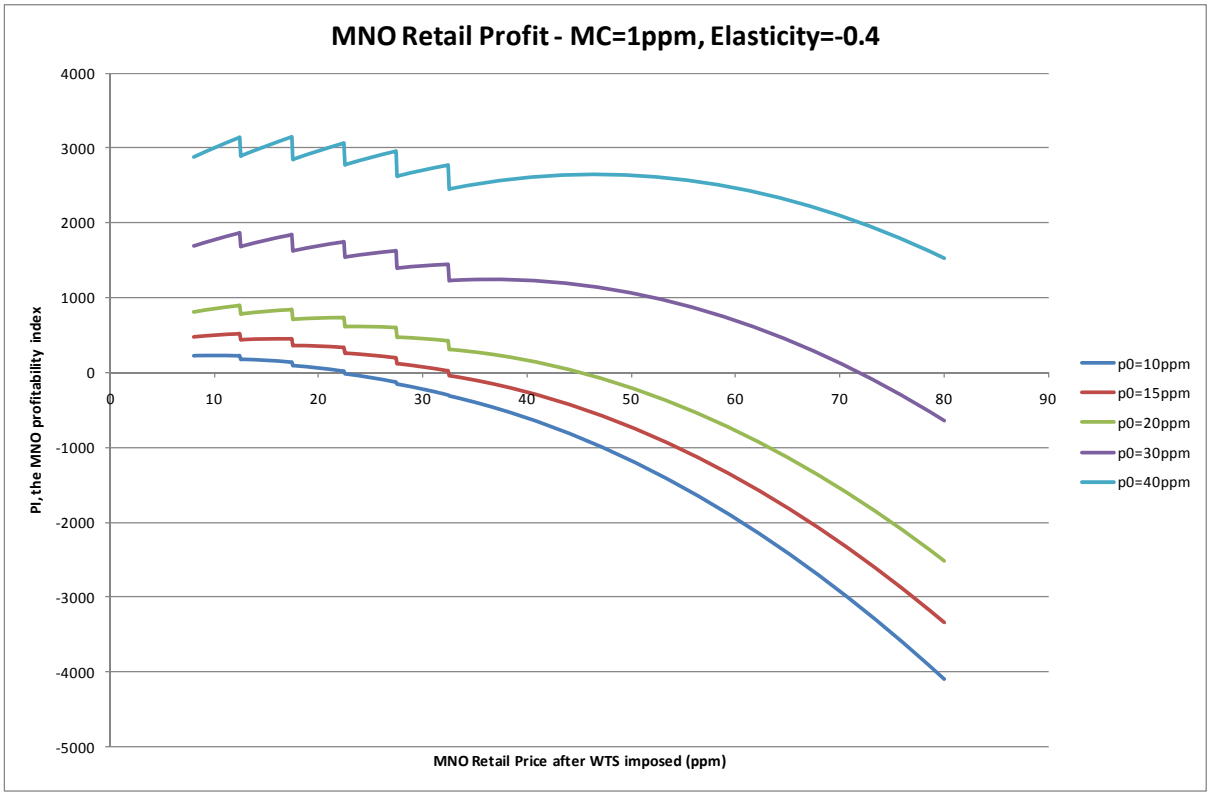


Figure 6.2.3 MNO Profitability – taking account of spillover effects (Linear Demand Case)

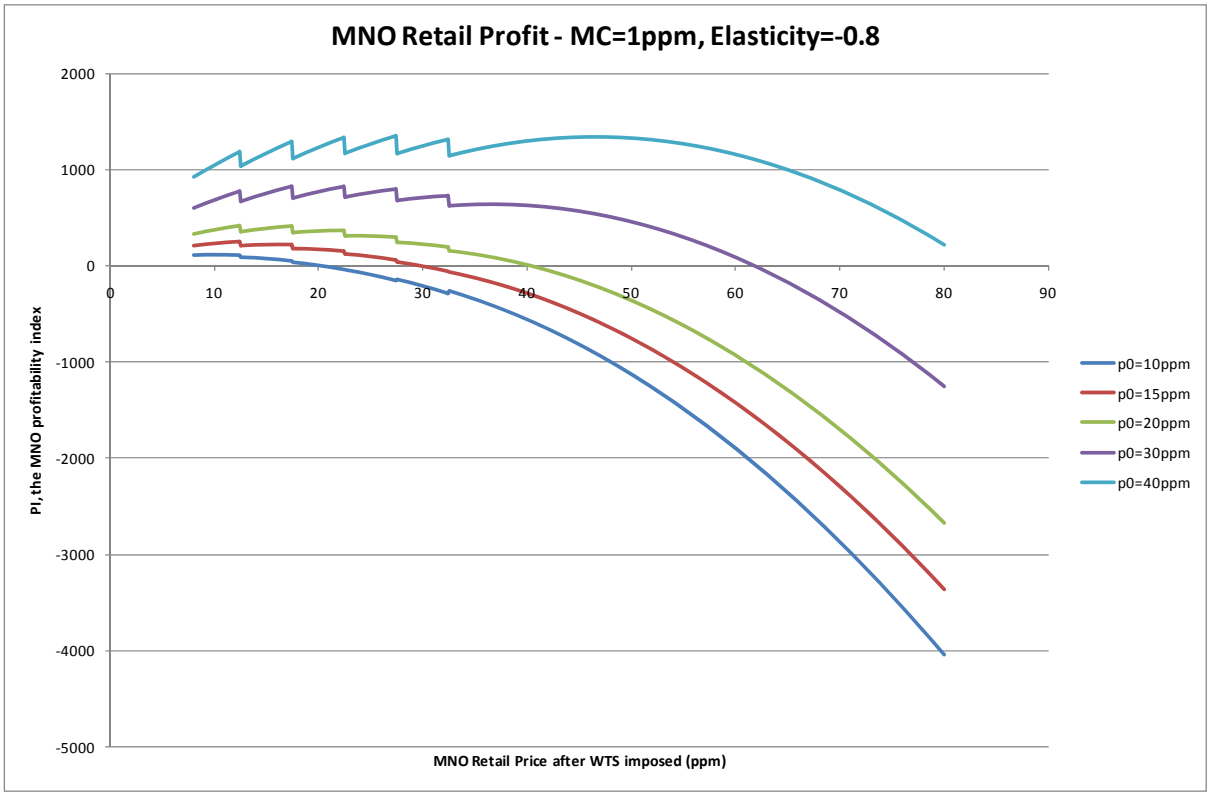


Figure 6.2.4 MNO Profitability – taking account of spillover effects (Linear Demand Case)

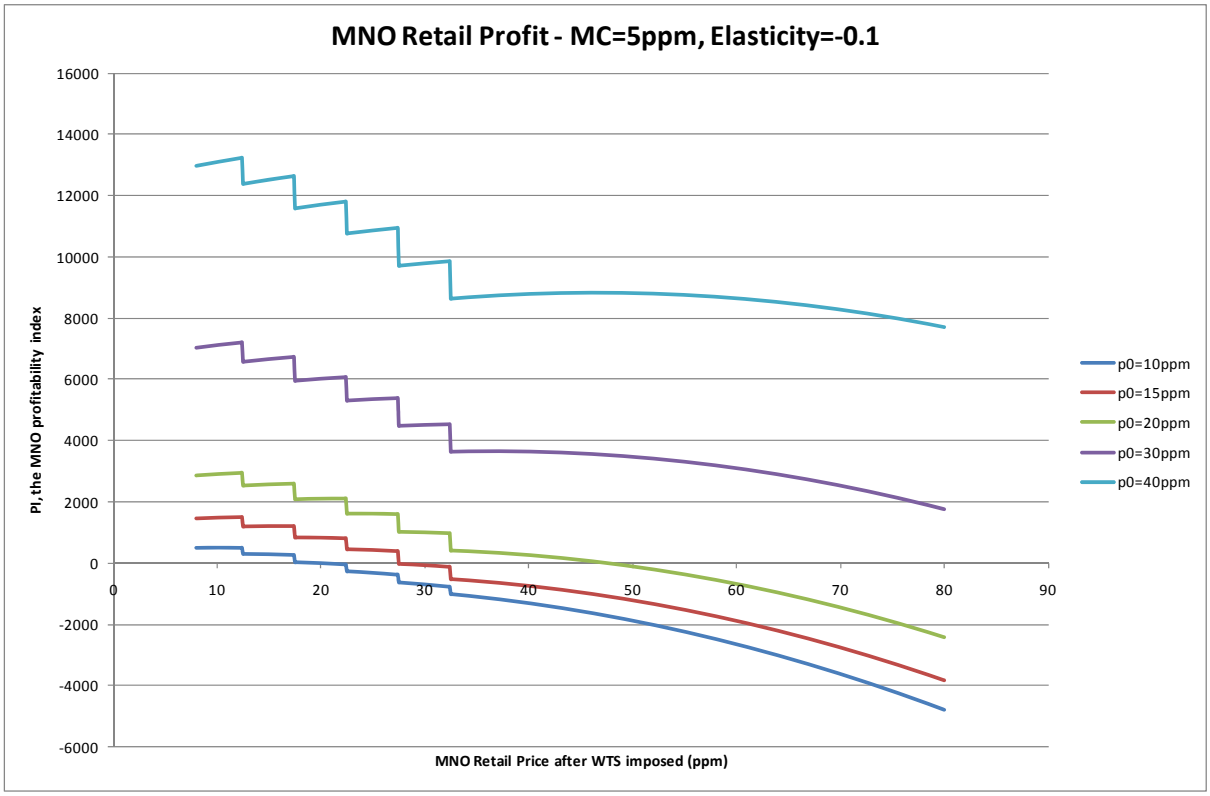


Figure 6.2.5 MNO Profitability – taking account of spillover effects (Linear Demand Case)

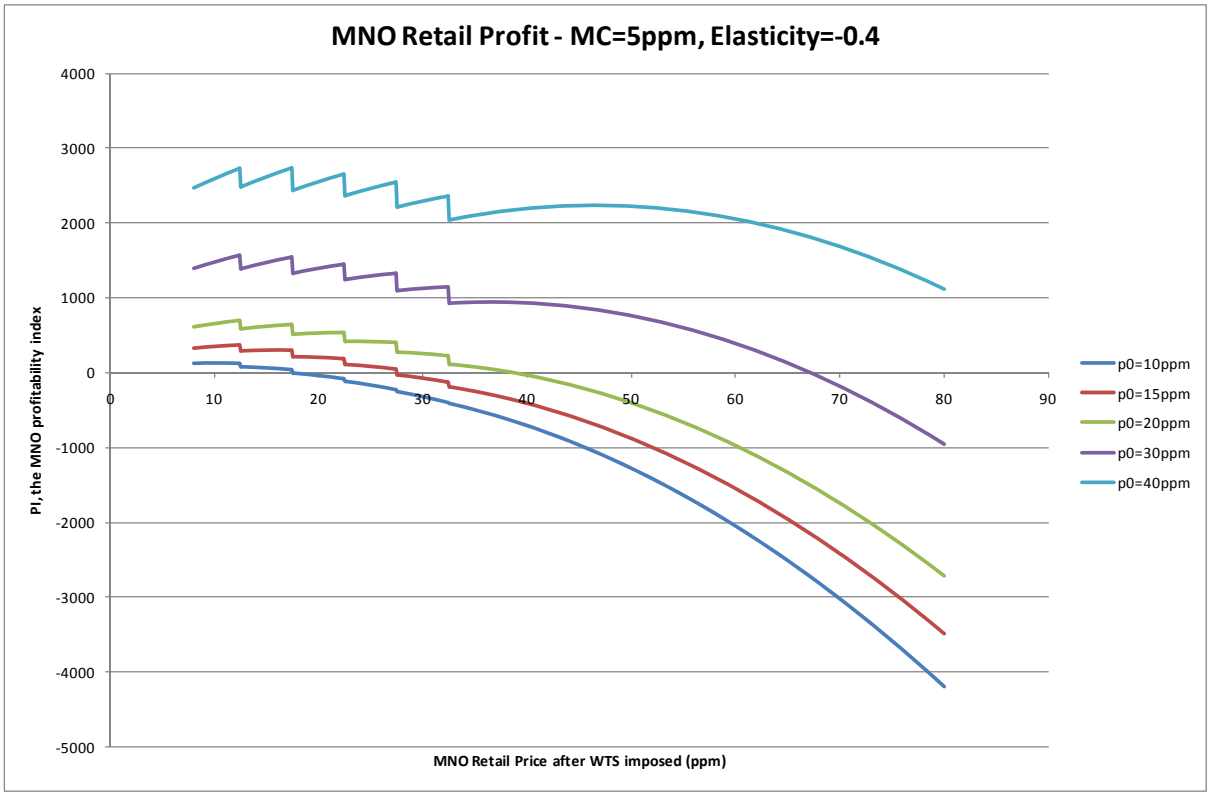


Figure 6.2.6 MNO Profitability – taking account of spillover effects (Linear Demand Case)

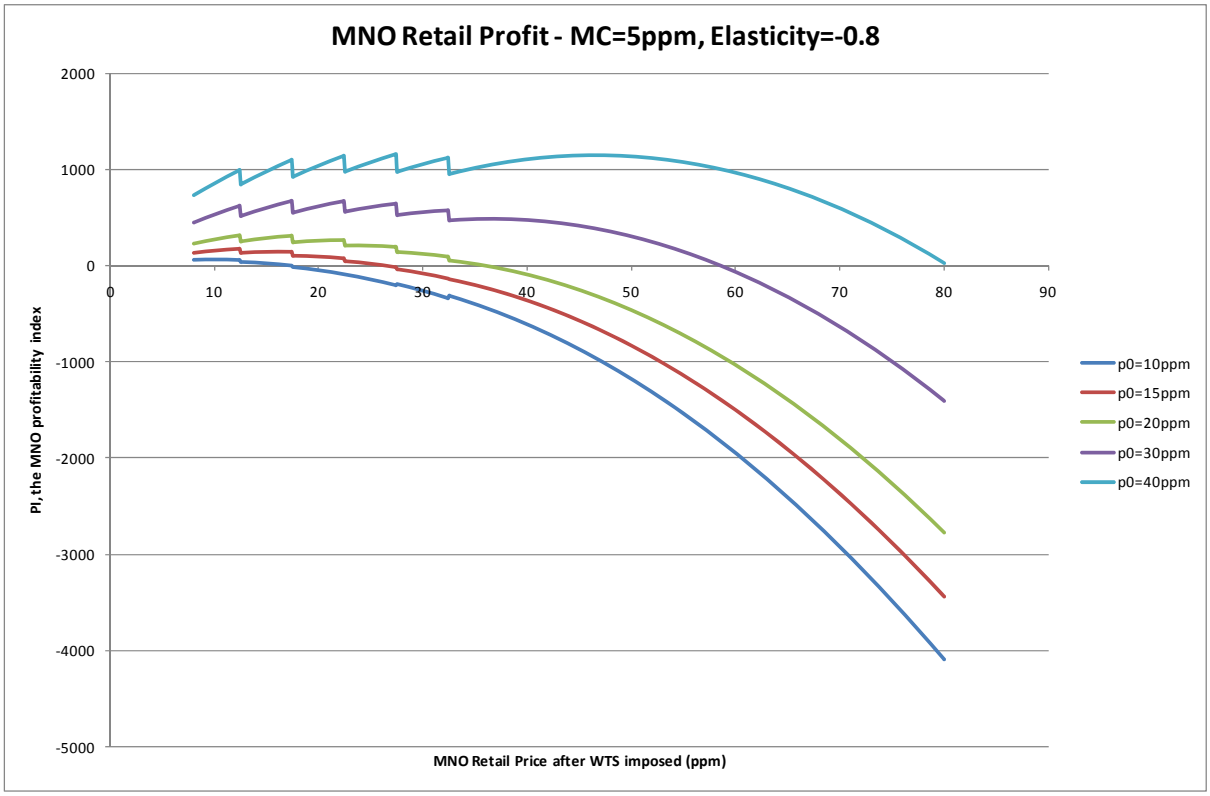


Figure 6.2.7 MNO Profitability – taking account of spillover effects (Linear Demand Case)

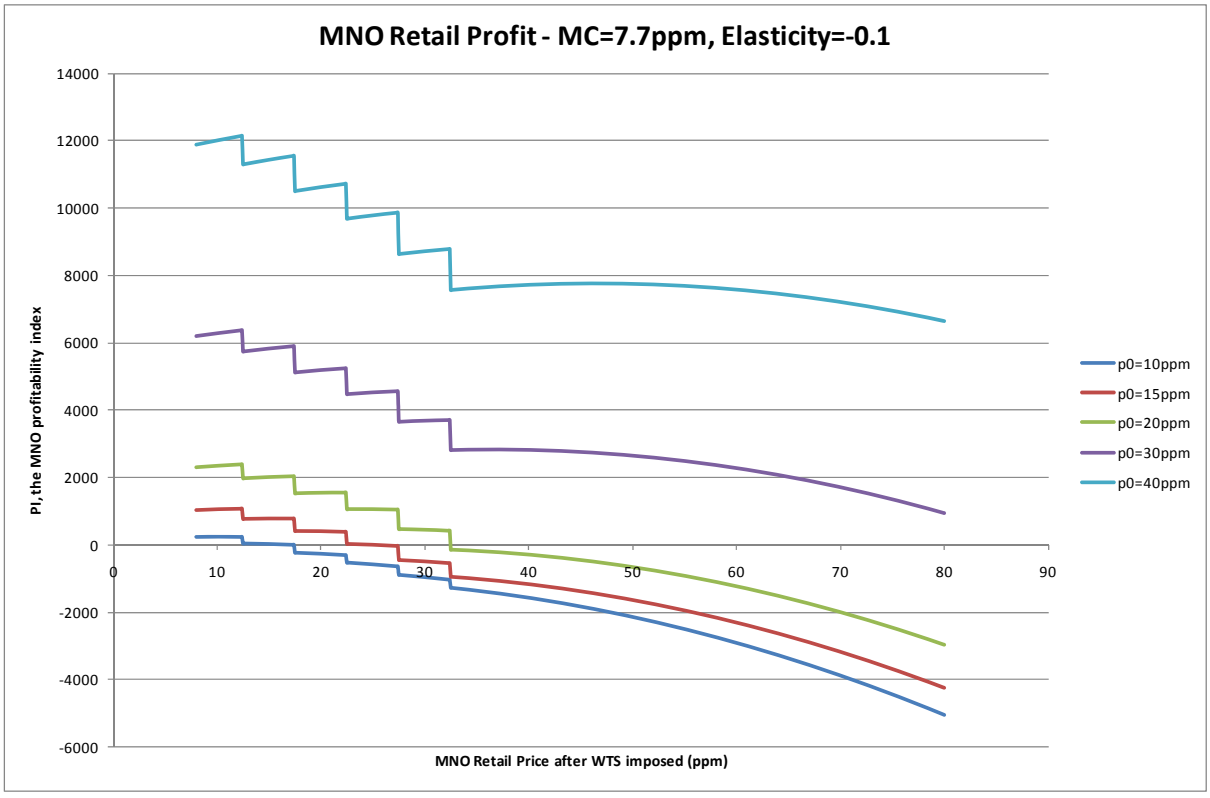


Figure 6.2.8 MNO Profitability – taking account of spillover effects (Linear Demand Case)

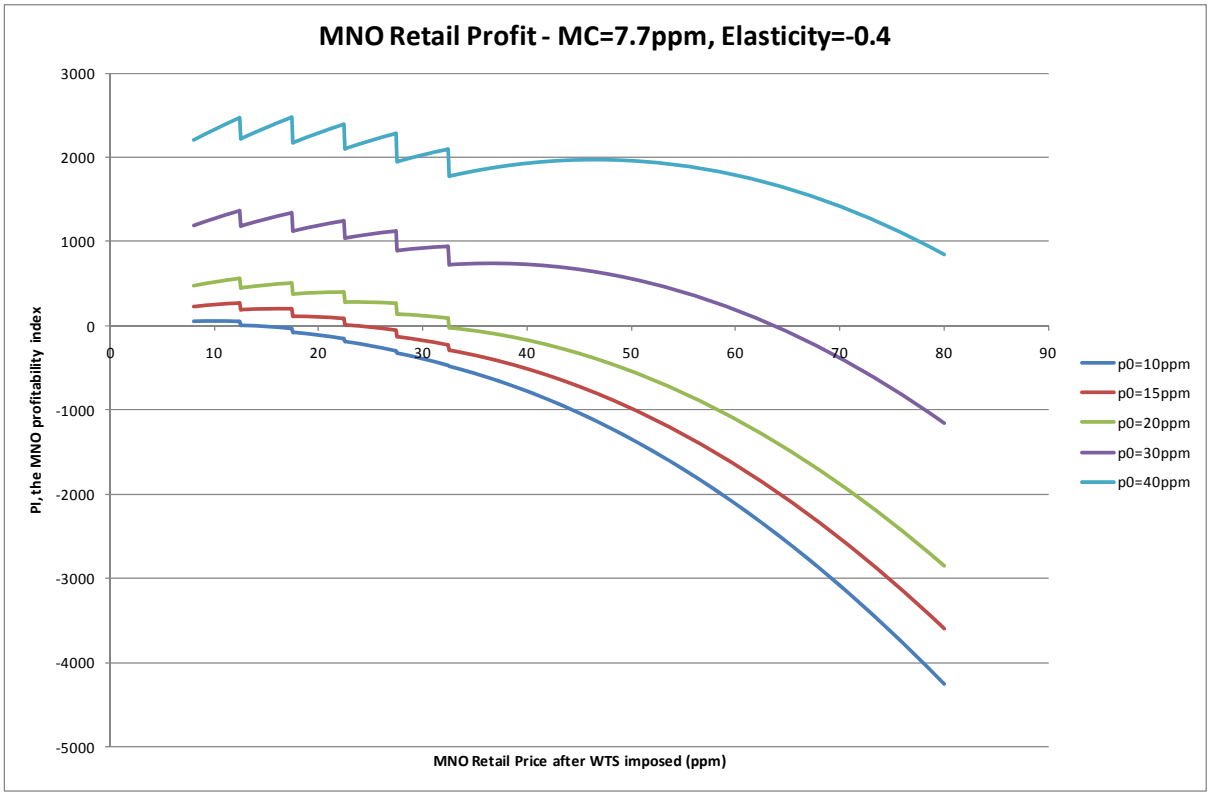
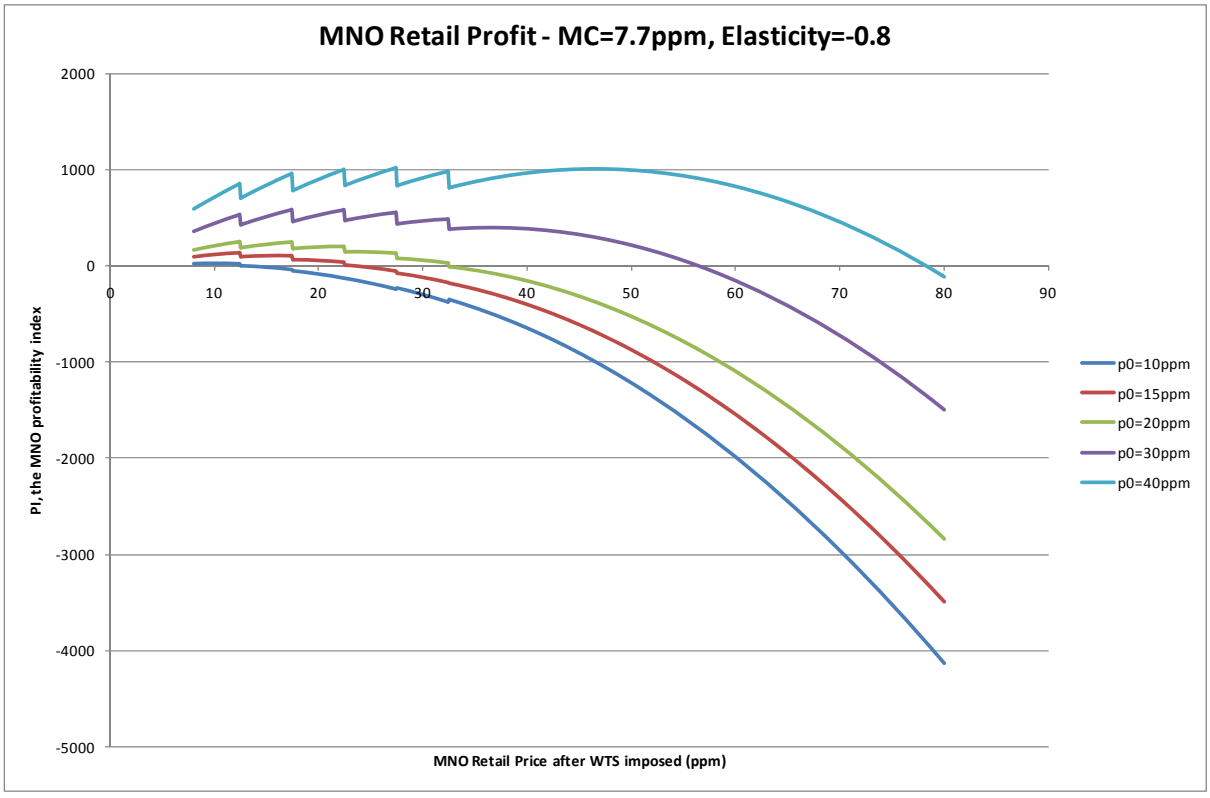


Figure 6.2.9 MNO Profitability – taking account of spillover effects (Linear Demand Case)



42. Figures 6.2.1-6.2.9 all show that, if one allows for spillover effects and for the possibility that (as MNOs claim) demands are inelastic at current prices as in the model presented in section 3, the WTS proposed in NCCN985/986 emphatically incentivises retail price reductions. The only marginal cases are when demand is relatively elastic, marginal costs are high and the MNO current price is 40ppm or more. For MNO current retail prices lower than 40ppm, the effects is clearl cut.

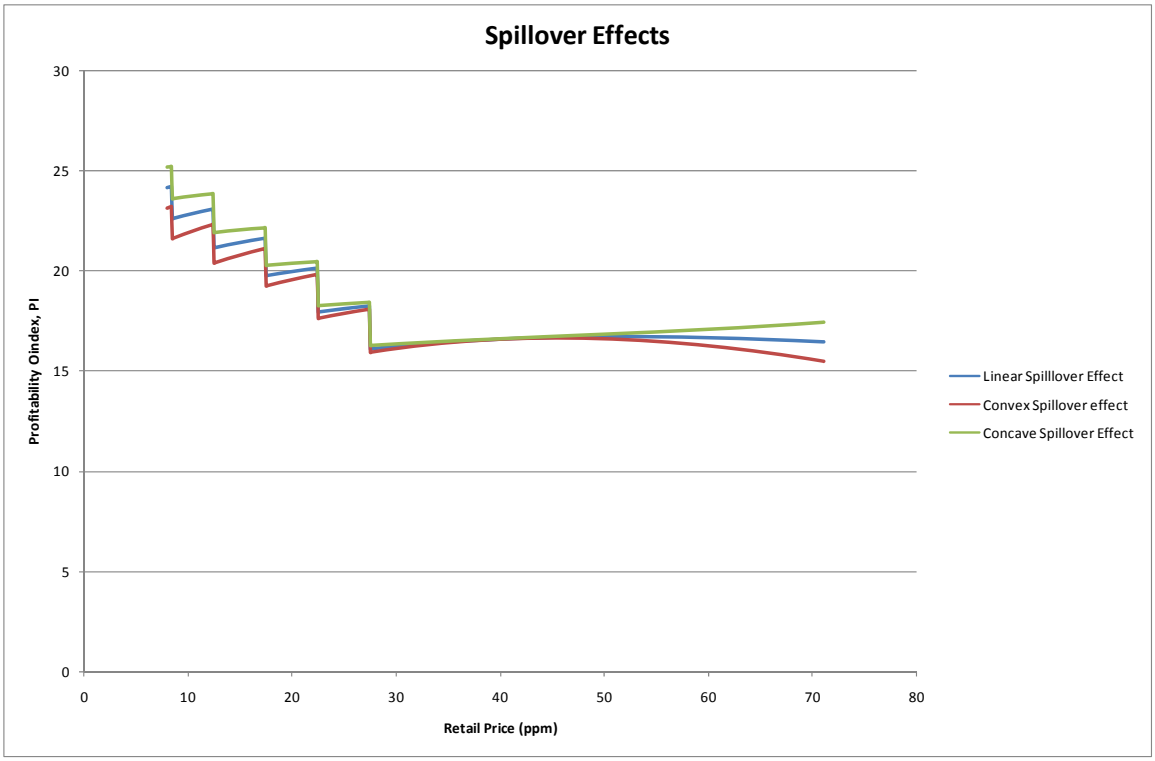
43. As in the constant elasticity analysis, the incentive effects are even more striking than in the 080 case.

7. Possible Concerns with Modelling the Spillover Effect.

44. The spillover effect is derived via a first order Taylor series expansion around the MNO's current average retail price. That is, the spillover function used is linear as retail price is varied around this point. This means that the spillover effects is 'accurately modelled' in a neighbourhood of the current price. Whether the linear approximation spillover function used is a reasonable proxy as retail price diverges significantly from the current position is less obvious.

45. The issue is whether the true spillover function might be convex or concave at the MNO's current price. In Dobbs-3, spillover effects were regarded as only likely to be important at higher prices. This suggests that the effect might be convex. On the other hand, one might argue that, as MNO retail price becomes so large that no-one actually uses the service, the spillover effects might eventually fall and this might suggest concavity. Overall, it is difficult to conclude one way or the other on whether the spillover effect might increase faster or slower than in the linear specification. Figure 7.1 illustrates the effects of possible non-linearity.

Figure 7.1 Effects of non-linearity in the Spillover Function



46. Perhaps the point to make here is that it would take quite strong concavity in the spillover function at higher prices to significantly affect the conclusions drawn above.

8. Conclusions

35. The focus, in all the analysis (Dobbs 1-4), has been on how the WTS impacts on MNO 08-price incentives. This appears to be consistent with Ofcom's objectives in concerning both the 080 and 0845/0870 dispute investigations.

36. Whilst it is not possible to prove beyond all doubt that the proposed WTS incentivises price reductions, the evidence presented here suggests that it does seem very likely to do so. This conclusion seems to be robust to quite a wide range of model specification variation and also parameter value variation (for example concerning marginal costs and demand elasticities).

Annex 2

2 The Frontier Report prepared for O2, Vodafone and H3G

The effect of NCCNs 985 and 986 on the MNOs' retail pricing incentives

A submission to Ofcom's draft 0845/0870 determination

Frontier paper for O2, Vodafone and Three related to the dispute with BT about BT's termination charges for 0845 and 0870 calls.

Introduction

1. Ofcom has issued a *Draft Determination to resolve a dispute between BT and each of Vodafone, T-Mobile, H3G, O2 and Orange about BT's termination charges for 0845 and 0870 calls* ("the Draft determination"). The Draft Determination relates to BT's Network Charge Change Notices (NCCNs) 985 and 986. NCCNs 985 and 986 update the termination charges that BT applies to calls to 0845 and 0870 numbers respectively that are terminated by BT. Under NCCNs 985 and 986 the termination charge increases with average[85] retail prices for 0845 and 0870 calls respectively in a series of steps up to a maximum level.[86] The Draft Determination provisionally concludes that BT should revert to the charges that were applied prior to the imposition of NCCNs 985 and 986.

2. We have been provided with reports prepared for BT by Ian Dobbs, Dan Maldoom, Andrew Reid and two Annexes to a statement of P. Richards (collectively "the BT 080 reports").[87] These reports were prepared in relation to a different dispute related to NCCN956 which applied to 080 calls that are terminated by BT. Amongst other things, the reports seek to argue that the wholesale tariff schedule (WTS) introduced by BT in that case which, similar to the WTSs for 0845 and 0870 calls, is also characterised by a series of steps up to a maximum termination charge, will have the effect of incentivising MNOs to decrease the retail prices for 080 calls.

3. The BT 080 reports make no reference to NCCN 985 and 986 or 0845 and 0870 calls. However, we understand that BT considers that the economic framework set out in the BT 080 reports is relevant to the 0845/0870 dispute. Throughout this report, unless stated, we assume that BT's experts arguments that are made with respect to 080 are intended by BT, and its experts, to apply equally to 0845 and 0870 calls.

4. Frontier has been asked by O2, Vodafone and Three to consider the BT 080 reports in relation to NCCNs 985 and 986. We have been asked to consider the specific question of the effect on mobile network operators' (MNOs) retail pricing incentives of BT's WTSs for 0845 and 0870 calls.

---

85 NCCNs 985 and 986 do not themselves specify that the wholesale tariff schedules apply to average retail prices or how any average would be derived.

86 We follow Ofcom and refer to these as wholesale tariff schedules or WTSs.

87 We have been provided with three reports by Ian Dobbs. We refer to these as Dobbs 1, 2 and 3 (related to the chronological order). We have also been provided with three reports by Dan Maldoom. Similarly we refer to these as Maldoom 1, 2 and 3 (also related to the chronological order).

The appropriate framework for considering the level of interconnection prices

5. The main objective of this report is to address the specific question of the MNOs' retail pricing incentives under BT's alternative proposals. However, before turning to this question, it is helpful to consider the appropriate approach to the determination of the interconnection charges.

6. The nature of number translation service (NTS) payment flows is in general complex and varies by the type of NTS call. We do not seek to provide a thorough analysis of the costs and benefits associated with these calls. However, it is possible to summarise the key elements that need to be considered to determine the efficient level of interconnection (and retail pricing) of such calls.

7. The 0845 and 0870 calls are likely to provide an example of a two-sided market.[88] A two-sided market is one in which a "platform", here the somewhat abstract construct of 0845 and 0870 number ranges, is utilised by two user groups, where each one benefits when there are more members of, and greater usage by, the other user group on the platform. In this case the two user groups are callers and 0845/0870 service providers (SPs).

8. To consider the appropriate structure and level of both retail charges and interconnection payments it is necessary to consider the overall effect on welfare. Since there are two relevant groups of consumers, it is in principle necessary to consider the costs and benefits of both callers and SPs.

Mobile subscribers

9. For the purposes of our discussion we consider callers from mobile phones only. For these customers, 0845 and 0870 calls are part of a bundle of mobile services that MNOs provide. This bundle of services includes handsets, geographic calls and other services (SMS, data packages, etc)). Mobile subscribers attach value to different elements of the bundle depending on their preferences. Furthermore, since mobile subscribers are heterogeneous they would be expected to have different preferences and may place different values on the various elements of the bundle.

10. The mobile retail market has been found by Ofcom to be competitive.[89] Depending on the nature of competition between MNOs, and mobile subscribers values and preferences, then the focus of competition may be greater or lower on various parts of the bundle.

11. Understanding the effect on mobile subscribers of changes to the interconnection charges associated with 0845 and 0870 calls requires a consideration of how these charges will impact on the retail pricing of all elements of mobile service bundles, and the relative value that mobile subscribers place on these elements. We note that Ofcom appears to accept that there is a linkage between the interconnection charges for 0845/0870 calls and the prices for other elements of the bundle. Ofcom refers to this as the "Mobile tariff package effect".

12. Since mobile consumers buy bundles of services from MNOs, considering one element of the bundle in isolation is not sufficient to come to a view on how a change in WTS will impact the welfare of mobile consumers. This is the case because MNOs compete for subscribers, not individual services, and hence the imposition of a WTS that on its own reduces the profitability

88 See the Draft Determination footnote 67 and Maldoom 3 paragraph 27.

89 For example see Ofcom's assessment of the mobile sector: "Mobile Evolution", December 2009. http://www.ofcom.org.uk/consult/condocs/msa/statement/MSA_statement.pdf

of mobile subscribers would be expected to lead MNOs to try and recover the lost profits from increases in other retail tariffs. These increases would reduce the welfare of mobile customers. It is not possible, without detailed analysis that considers all of the elements of the tariff packages, to conclude that BT's proposal would increase overall welfare of mobile customers. This is the case even if it did lead to lower retail prices for calling 0845/0870 numbers from mobiles. And, as discussed below, there is good reason to doubt that this would be the outcome.

Service providers

13. On the other side of the market are SPs. SPs are customers of NTS termination providers (such as BT). The effect on service providers of change to the interconnection regime applied to 0845/0870 calls will depend on: (i) the effect on the volume of calls made to their numbers by callers from mobiles; (ii) the extent to which any change in call volumes is a displacement of calls currently made via other means;[90] (iii) the value that SPs place on increases in call volumes; and (iv) the nature of competition in the NTS termination market, and consequently, how much any change in termination charges will lead to a change in payments to the SPs. It will also depend on the preferences of SPs. For example, SPs may have preferences on what they are willing to pay (or be paid) for calls to their number ranges and how this relates to the retail charges that are levied by MNOs to their retail customers: a SP may be willing to pay so that its number ranges can be treated as geographic calls (and, for example, included within inclusive bundles of minutes).

14. Depending on the payments that SPs make or receive, and the impact this may have on retail pricing, it is possible that SPs may have the incentive to provide improved or additional services using 0845 or 0870 numbers (although this may affect the provision of service on other number ranges). If callers value these services, then it may indirectly benefit them.

Efficiency

15. Determining the efficient outcome[91] would require a consideration of: (i) the costs associated with both sides of the market (the costs of orginating communications providers (OCPs), terminating communications providers (TCPs) and SPs); and (ii) the benefits for the two groups of consumers (mobile callers, and SPs) of the proposed changes – where, as implied by paragraph 11 above, it is necessary to consider the benefits to mobile subscribers from the bundle of services that they consume.

16. Ofcom states that its preference is that calls to 0845/0870 numbers should be treated in the same way as calls to geographic numbers.[92] Elsewhere, Ofcom states that in choosing between (i) lower 0845/0870 call prices and higher prices for other mobile services; and (ii) higher 0845/0870 call prices and lower prices for other mobile services (which both yield the same profit for MNOs), its preference is for the former balance of prices.[93]

17. We are unsure how Ofcom has arrived at these preferences. We believe that an appropriate analysis should consider the framework outlined above i.e. a welfare-based analysis that considers the costs and benefits to both sets of consumers: SPs and mobile subscribers. In

90 This could be 0845/0870 calls that are currently made from fixed lines, or alternatively, calls made to other non-geographic or geographic numbers that are also used by the SP.

91 By efficient, we mean welfare-maximising including static and potentially dynamic effects.

92 Ofcom Draft Determination paragraph 2.2

93 Ofcom Draft Determination paragraph 4.32

particular, without considering the value that mobile consumers place on 0845 and 0870 calls and the value that they place on other elements of service bundles then it does not seem possible to determine what structure of prices within retail tariff packages would imply greater benefit to mobile subscribers, or greater overall welfare.

18. Interconnection charges that do not reflect the costs and benefits of both sides of the market and, perhaps, how the benefits of each side of the market depend on the other, would be expected to lead to inefficiency. It is possible that the efficient outcome could imply interconnection payments between OCPs and TCPs in either direction.

19. Applying such a framework to the current dispute would imply considering whether the WTSs proposed by BT are likely to lead to a more efficient outcome than the previous charges for termination of 0845/0870 calls on BT's network.

20. There is no reason to believe that NCCNs 985 and 986 would be a more efficient structure of termination payments. By its very nature a WTS that varies with retail price in steps does not appear to be efficient, as there does not seem to be any a priori reason for the costs and benefits of these calls to vary with the MNOs' retail prices in the way proposed by BT.

21. BT's proposal appears to be imposing an additional constraint on MNOs's pricing of 0845/0870 calls, for which no evidence is provided that it would lead to a more desirable outcome for the makers and receivers of such calls. BT has indicated that its WTS proposal is likely to lead to an increase in termination payments for such calls. Unless a sufficient proportion of this increase was passed on to SPs, and this led to significant improvement or increase in the provision of 0845/0870 services to the benefit of mobile callers, this restriction would be expected to have a detrimental welfare effect on mobile subscribers. This is because it would constrain the optimisation of retail pricing that MNOs undertake – when the competitive conditions under which MNOs set their retail prices, leads them to price 0845/0870 calls and other elements of the mobile service bundles in a way that seeks to provide value to consumers, subject to the MNOs' target profitability requirements.

22. Besides the Mobile tariff package effect, there appear to be good reasons to doubt that the proposed BT WTSs would fulfil the conditions necessary to lead to greater welfare for callers from mobile.

a. We note that BT has been found dominant in NTS termination provision. If BT retains some market power, then this would imply that it is unlikely to pass on the entire increase in termination revenues to SPs. [94]

b. And, even if BT were to pass on some of the increase in termination revenues, we note that Ofcom has concluded that "*it is uncertain whether and to what extent SPs will improve the availability or quality of their services to the benefit of 0845/0870 consumers*".[95]

23. Ofcom considers that on balance it is more likely that the overall effect on consumers will be negative than positive although it states that this conclusion is finely balanced.[96] However, there appears to be little evidence that the above conditions will be fulfilled. And, there are good reasons to believe that decreases in profits for 0845/0870 calls will lead to increases in prices for

94 Ofcom Draft Determination paragraph 5.222
95 Ofcom Draft Determination paragraph 5.227
96 Ofcom Draft Determination paragraph 1.14

other elements of retail tariff packages. Therefore, using a welfare-based metric the conclusion may not be as finely balanced as Ofcom suggests.

The effect on MNO retail prices

24. In this section we consider the specific question of whether BT's alternative proposals provide an appropriate framework for analysing the MNOs' retail pricing incentives and for concluding on whether MNOs would have the incentive to increase or decrease prices in response to the WTSs in NCCNs 985 and 986.

25. We first describe the BT 080 reports and then provide an analysis of the limitations of the assumptions made in those reports.

The BT 080 reports

26. The BT 080 Reports provide three alternative ways of considering the effect of introducing a WTS under which the interconnection price depends on the retail price. They are as follows:

a. **The Dobbs 1-2 framework**: Dobbs 1-2 and Maldoom 1-3 consider the properties that a continuous WTS would need to have to provide incentives to MNOs to raise, lower or maintain the retail price of 080 calls (compared to an initial situation with no interconnection payments). Both Dobbs and Maldoom use this framework to consider the potential effect on the retail pricing incentives of MNOs from the introduction of the NCCN956 stepped WTS.[97]

b. **Dobbs 3 framework**: Dobbs 3 builds on Dobbs 1 and 2 and provides a framework for analysing how the introduction of a stepped WTS changes the MNOs' profit maximising retail prices of 080 calls. Dobbs 3 applies this framework to the NCCN956 WTS.

c. **The Reid framework**: Reid set out a framework for considering whether a MNO would have an incentive to raise or lower its retail price on the introduction of a continuous WTS. Reid also applies this framework to the introduction of the NCCN956 WTS.

27. There are some differences between the frameworks. For example, the Reid framework focuses on the local profit maximisation condition and how this is affected by the introduction of the WTS. Reid uses this to consider where a MNO would have an incentive to raise or lower its retail prices for 080 calls, without considering by how much. In contrast, the Dobbs 3 framework provides analytical solutions to find the global profit maximising retail price after the introduction of the WTS, under assumptions about the form of the demand function.

28. The BT 080 reports come to similar conclusions. For example, Dobbs finds that the NCCN 956 WTS "*is likely to incentivise retail price reductions.*"[98] Similarly Reid finds that *"With the exception of three very small areas NCCN 956 produces this clear and unambiguous incentive on each and every MNO to reduce its retail price on any average retail price between 8.5ppm and 30ppm."*[99]

---

97 The formal analysis was undertaken for a WTS that is continuous (rather than stepped), hence Dobbs 1-2 and Maldoom 1-3 are able only to state, for example, that *"the proposed tariff had the right kind of structure to give such incentives."* (quotation from Dobbs 3 paragraph 18 which refers to the analysis undertaken in Dobb 1-2)

98 Dobbs 3 paragraph 19

99 Reid paragraph 14

29. The basic frameworks described in the BT 080 reports have a number of aspects in common. In particular, the models all make the following key assumptions.[100]

- There is no consideration of the nature of competition between MNOs in retail markets.[101]
- The focus is on the optimisation of the price of 080 calls alone without any linkage between the prices of different products in MNOs' service bundles. In particular there is no consideration of:
  - substitutability/complementarity between services in the MNOs bundles; or
  - the linkage of prices of different products driven by the desire of MNOs to achieve certain levels of profitability.
- The effect of multiple retail tariff bundles in which 080 calls are priced differently is not considered.

30. Before the introduction of "spillover" or "reputation" effects, these assumptions imply that each MNOs is effectively a monopolist in providing 080 call services.

31. Below we first provide some general comments on the BT 080 reports and then provide specific comments related to the Dobbs 3 and Reid frameworks.[102]

Analysis of the BT 080 reports

32. In Annexes 3, 4 and 5 of the Draft Determination Ofcom has provided a detailed critique of the assumptions in the BT 080 reports. We do not seek to replicate that here.

33. However, the frameworks employed in the BT 080 reports are based on the strong assumptions listed above. And, as Ofcom has made clear, BT has not provided evidence to support those assumptions. We consider that it is helpful to provide further details on the nature of the price setting behaviour of MNOs and how this relates to competition between them and the characteristics of consumer demand.

34. The setting of mobile retail prices is complex. MNOs compete on offering value to subscribers over the bundle of services consumed. MNOs will therefore be expected to assess the elements of the bundle where consumers perceive greater value and then look to tailor their price/product offerings to maximise the overall value that consumers perceive subject to target requirements on profitability.

35. This takes places within a competitive market where the MNOs are acutely aware of their competitors' pricing of both the overall bundles, and the various elements of bundles.

36. Because MNOs are competing on the same set of parameters, or at least very similar ones, and because mobile subscribers switch between MNOs then the firm level demand will, in part, be a function of the competition on the mobile retail market.

---

100 There are additional assumptions as listed at Ofcom's Draft Determination Annexes 3 and 4.

101 Dobbs 3 and Reid both introduce the idea of "spillover" or "reputation" effects, albeit in different ways. To an extent these concepts may include some aspects of competition between MNOs in a limited way. These are discussed further below.

102 Dobbs 3 framework builds directly on the Dobbs 1-2 framework, so we do not analyse this.

37. Within the context of this competitive retail market, MNOs set prices seeking to maximise the overall expected profitability of customers taking into account the full range of mobile services supplied to them.

38. The price setting process will take into account complementarity and substitutability between different services for different customer groups, the level of target profit that MNOs wish to make[103] and the nature of competition between the MNOs.

39. None of the frameworks outlined in the BT 080 reports includes all these factors. This is important because an increase in the wholesale price of one of many products in a bundle, in order to 'engineer' a retail price reduction for this product alone, could have a number of different outcomes depending on how these factors interact.

40. In particular, we understand from Ofcom that, it is accepted by all the parties that BT's changes to the termination charges for 0845 and 0870 calls are expected to lead to lower profitability for MNOs on 0845/0870 calls.[104] However, the MNOs would be expected to try and maintain the overall profitability of customers as far as possible. To achieve this, MNOs will be required to re-balance retail tariffs. As they seek to rebalance, within the constraints of the wholesale tariff schedule, there are a number of potential outcomes, including increases in the prices of 0845 and 0870 calls[105]. Without considering the bundle of different products, the form of consumer preferences and the nature of competition, it is not clear what the outcome of a wholesale price increase will be.

41. To emphasise the effect of different assumptions on the nature of retail competition, it is helpful to consider some models of competition from the literature developed in a different context. There is an extensive literature on the setting of reciprocal interconnection prices by operators. For our purposes it is not necessary to provide extensive details of the literature. But, as the following four paragraphs make clear the model of competition assumed in economic models can have profound implications on the profit maximising incentives of operators.[106]

a. Armstrong[107] and Laffont, Rey and Tirole (LRT)[108] introduced a basic model of competition between operators, which assumes that all consumers subscribe to a

---

103 Note that if the overall strength of competition changes this may imply that the target profit varies.

104 This is also what economic theory would suggest. The WTS reduces the MNOs freedom to set prices and would be expected to lead to the adoption of a less profitable pricing structure than would otherwise be the case. See for example Vickers, J and Armstrong, M (2001): "Competitive price discrimination". Rand Journal of Economics, and Armstrong, M. (2005): "Recent developments in the economics of price discrimination".

105 If, for example, MNOs were to effectively use a pricing rule that set prices of individual services as a mark-up to marginal costs so that each service in a bundle makes the same proportional contribution to the recovery of fixed and common costs, rather than the assumption that MNOs maximise profits from 0845/0870 calls as monopolists, then the introduction of the BT proposed WTS would unambiguously lead to higher retail prices, if it implied higher (average) wholesale termination rates for these calls. We recognise that this may not be profit maximising, but given the complexities of competition in retail mobile market it is possible that MNOs use such rules of thumb for pricing.

106 We provide a description of the results of the academic literature. We do not endorse any of these models as necessarily appropriate for the UK. The purpose of the examples is to illustrate how different assumptions on the nature of retail competition, which has not been considered by BT or its experts, can lead to different conclusions as to the optimal level of prices.

107 Armstrong, M. (1998) "Network Interconnection in Telecommunications," Economic Journal, 108: 545-564.

network, but that they have different preferences in the choice of operator. The papers showed that, in a context where operators compete in the retail market on the basis of offering a single price per minute to customers, operators will have incentives to set interconnection prices higher than cost (and the corresponding retail call prices would also be higher than cost).

b. However, LRT also showed that, if we depart from the assumption that operators compete simply on a single call price in the retail market, then the incentives to agree interconnection prices above cost disappear. As long as operators compete in several dimensions (e.g. by charging for subscription, subsidising handsets or reducing the prices of non-voice services), profits from interconnection will be competed away in the retail market. Profits are therefore neutral to the level of interconnection charge.

c. LRT (1998b)[109] make a further important extension to the model by introducing different prices for making on-net calls and off-net calls. In this case, the outcome is that operators may want to set interconnection charges below cost because, by doing so they can soften competition in the retail market. Under these assumptions, retail prices for calls would also be below cost. Consumer welfare could however be improved by a regulatory intervention that set interconnection prices at cost, as this would be expected to intensify competition amongst mobile operators.

d. There are further economic models in which a high termination charge outcome can be observed. For example, Calzada and Valletti (2007) find that under certain assumptions existing operators may have the incentive to set high charges as this may deter entry.[110]

42. It is clear from the preceding paragraphs that, depending on the assumptions of the nature of competition in the retail market, the models predict that interconnection prices could be set 'high' or 'low'. This illustrates the importance of considering the nature of competition in markets such as mobile telecommunications, before making any conclusive inferences on how retail prices, and consumer welfare, will change in response to changes in, for example, interconnection charges.

43. The effect of introducing a stepped WTS would in practice be likely to be more complex, depending also on the consumer preferences for the various parts of mobile retail bundles. Without considering these factors, it does not seem possible to conclude on the effect of the WTSs on either the prices for 0845 and 0870 calls, or the prices for other elements of the mobile retail bundles, and therefore the likely effect on mobile subscriber welfare. None of the BT reports consider such an analysis.

44. Depending on how MNOs react to the expected increases in average termination charges implied by the WTSs, then it is possible that the competitive equilibrium of prices for 0845 and

---

108 Laffont, J.-J., P. Rey and J. Tirole (1998a): "Network Competition I: Overview and Non-discriminatory Pricing", RAND Journal of Economics 29: 1-37.

109 Laffont, J.-J., P. Rey and J. Tirole (1998b): "Network Competition II: Price Discrimination", RAND Journal of Economics 29: 38-56.

110 Joan Calzada , Tommaso Valletti , Network competition and entry deterrence, Economic Journal, 2008, Vol:118, Pages:1223-1244

0870 calls could change significantly. Under the BT WTS proposals, the MNO retention (the difference between the wholesale and retail price for 0845/0870 calls) increases as retail prices increase on the last step of the WTS. Under the apparently low demand elasticity for 0845 and 0870 calls (see below for a further discussion of this), it is plausible that there could be a significant increase in 0845 and 0870 retail prices for all operators: this could be the outcome if it was in the interests of all MNOs to increase prices in this way to maintain profitability of individual customers, and any "reputation", or "spillover", effect was small.

45. There is additional complexity due to the heterogeneity of subscribers and the existence of multiple tariff packages in which 0845 and 0870 calls are priced differently. None of the analysis by BT experts has explicitly considered this. MNOs will look to optimise pricing both of the components of retail tariff packages and across retail tariff packages (taking into account consumer preferences, and their likelihood of switching between packages). If maintaining certain tariff options with low-prices for 0845/0870 calls would be expected to lead to lower overall profitability, it is possible that MNOs may have incentives to remove or change them.

46. The above analysis has considered the effect of the BT 0845/0870 WTSs on average retail prices, without considering the definition of average and assuming that retail prices, once set, are not changed regularly. However, depending on the definition of the average price, there may be some additional effects on MNO's incentives for setting 0845/0870 call prices which could have adverse consequences on consumers. For example, there could be an incentive to vary retail prices over time to hit a target average retail price. This could lead, perhaps, attempting to setting retail prices high at certain points in time to certain customer groups. We have not considered these complex issues in detail. However, we note that in some ways the issue appears to be similar to the adverse incentives that can arise under different forms of price cap.

47. In the remainder of this section, we address concerns more specific to each of the two analytical approaches put forward by BT to apply to the stepped WTS.

The Dobbs 3 framework

48. We have identified two main additional issues with the analytical approach used by Dobbs:

a. the assumption on the nature of demand conflicts with the evidence on the elasticities of 0845 and 0870 calls; and,

b. spillovers and reputation effects are not modelled rigorously and appear to be added to the framework in an arbitrary way.

We address each in turn.

49. The Dobbs analysis effectively assumes that each MNO is a monopolist in the supply of 0845 and 0870 services.[111] Dobbs's analysis therefore implies that the demand for these services should be elastic at current prices i.e. the elasticity should be greater than 1. With a demand elasticity lower than 1, then a profit-maximising MNO would have an incentive to increase the price. This is because the loss in revenue from a higher price would be lower than the cost savings from the lower volumes (at the margin).

[111] Dobbs 3 introduces a spillover effect which assumes that demand becomes more elastic at higher prices. However, this is not linked to demand for other products.

50. However, the existing evidence of the elasticity of demand curves for this type of services suggests that this is not the case. For example, in its consultation paper on extending premium rate services regulation to 087 numbers[112], Ofcom assumed the elasticity of demand for 087 calls to be equal to 0.3. In the Draft Determination[113], Ofcom reinforces this finding. It states that "*demand for 0845 and 0870 calls is not very sensitive to the retail price. […] This implies a demand elasticity of 0.2 for prepay non-geographic calls and 0.45 for out-of-bundle contract non-geographic calls".*

51. The rigidity of demand found by Ofcom at the observed price points is therefore not consistent with Dobbs's assumption of profit maximisation. And because Dobbs uses this to derive the demand functions that he analyses, the whole approach of Dobbs appears inconsistent with the evidence on elasticities. Rather, this evidence is consistent with MNOs considering factors other than the elasticity of the demand for 0845/0870 calls alone when setting their price. We would therefore conclude that the Dobbs 3 approach does not reflect the way in which MNOs set retail prices.

52. With regards to reputation and spillover effects, these are not modelled analytically in the Dobbs framework. They are however invoked in the numerical modelling to argue that retail prices above 40 ppm would be difficult to justify.

53. In his analysis, Dobbs appears to limit the retail price by assuming that after 20 ppm, MNOs would start suffering from the 'spillover' effects.[114] Dobbs notes that "*[…] this is in part because the 080 calls and other services are economic complements rather than substitutes, and because reputation and brand loyalty effects become important when customers begin to perceive that they are being 'ripped off'.*"[115]

54. However, this observation is not supported by any analytical modelling, only by a numerical simulation. Dobbs 3 reports the graphical results of a numerical simulation of spillover effects. The chart shows that the profitability index tapers of while it would instead increase in the absence of these effects. The threshold set by Dobbs however appears to be arbitrary.

55. Unfortunately, the report does not provide any details on the calculations underpinning these results. We are therefore unable to comment further on the quality of this analysis.

56. These shortcomings of the Dobbs framework are in addition to the general comments made above. We consider that the Dobbs framework cannot be considered to be a reliable basis on which to conclude on the impact of BT's proposed WTS on 0845/0870 retail prices, or on other prices in mobile retail bundles, and ultimately on the welfare of mobile consumers.

The Reid framework

57. The basic Reid framework suffers from the general issues described above. But, by introducing spillover effects in a more rigorous way than Dobbs 3, Reid goes further in considering linkages between 080 calls and other elements of mobile retail bundles. Nonetheless we consider that, even with the introduction of spillover effects, there remain three main issues with Reid's analysis.

a. There is no linkage between the prices of different elements of the mobile retail bundles;

---

112 Ofcom, *Extending Premium Rate Services Regulation to 087 Numbers – Consultation*, May 2008 (paragraph 6.47)

113 Paragraph 5.114

114 It is not entirely clear as Dobbs does not explain how he has modelled spillover effects.

115 Dobbs 3, paragraph A2.5

b. There is no consideration of the nature of competition between MNOs.

c. The Reid analysis does not consider whether there is an incentive to increase prices above the next step of WTSs.

58. The spillover effect, as introduced by Reid, is a relationship between the price of the 080 calls and the volume of other services. In particular, Reid allows for an increase in the price of 080 calls to lead to a decrease in the volume of other services. Reid links this to end users switching to alternative MNOs, to benefit from contracts with lower 080 call prices. Therefore, there is in part a relationship between the other elements of the bundle and the 080 calls, which is an attempt to model some elements of competition. However, there is no consideration that the prices of other elements of the mobile bundles could change or the nature of competition, beyond effectively assuming that the MNO would lose subscribers from 080 price increases (or that other services are generally complementary with 080 calls).

59. Further, the model considers each MNO individually. However, if all MNOs have the incentive to increase prices, then the spillover effect as specified by Reid may not apply, because the mobile subscriber would not have the choice of alternative tariffs with lower 080 call prices from other MNOs.

60. Therefore, the spillover effects do not appropriately model either the nature of competition between MNOs or, relatedly, the linkage between prices.

61. Lastly, the Reid analysis considers the 'local conditions' for profit maximisation – in other words, what might be the impact of the proposed BT WTS, if mobile operators are assumed to be able to engage in relatively 'small' changes in their retail prices. In particular, when considering the stepped WTS function, Reid considers only retail prices changes within a step, and to the next step down, he does not consider whether MNOs would have an incentive to increase prices onto higher steps.

62. However, given the way that MNO retention varies with retail price, it is not clear that this will always give the appropriate answer. In particular, because retention increases directly with retail price along the last step of the WTS curve, whilst it may not be profit maximising for an MNO to increase prices by a moderate amount (because the increases in the termination charges between steps would not make this profitable) it may still be desirable to engage in significant increases in retail prices, so that the MNO is pricing on the top step. For the reasons explained above, any reputation/spill-over effects may not act as a constraint on such price increases, were these to be (individually) desirable by each MNO, when it take into account the likely actions of its competitors.

Modelling of proposed pricing schedules under the BT framework

63. We have applied the frameworks developed by Dobbs and Reid in the context of the 0800 NTS dispute to test the possible impact of the new proposed 0845/0870 wholesale charging schedules (NCCN 985 and NCCN 986) on retail prices. Further details are provided in the Annexe.

64. Our results under the Dobbs 3 framework are similar to Ofcom's. Using the constant elasticity and linear demand functions, we find that if the marginal cost, and the initial retail price, are sufficiently large then there is an incentive to increase retail prices with respect to their

current levels. Therefore, in certain cases, there is uncertainty regarding the impact of the proposed wholesale charges on retail prices.

65. However, there is no reason to restrict consideration to either constant elasticity or linear demand. These demand functions are used because of their mathematical properties, rather than because they necessarily are correct. For example, it is plausible that there are two types of customers those that are very inelastic and those that are more elastic.[116] However, it may be the case that MNOs are currently setting prices so that many of the more elastic customers make 0845/0870 calls. It is plausible that, even under BT's framework, the introduction of a stepped WTS could lead to increases in 0845/0870 call prices if it is profit maximising for the MNOs to consider only the demand from the more inelastic customers.

66. Our results under the Reid framework are different from Ofcom's. The Reid framework identifies the levels of marginal costs above which MNOs would have an incentive to reduce retail prices. Our application of this framework to the proposed wholesale charges shows, in particular, that for 0845 daytime calls, there could be an incentive to increase retail prices when they are initially below 27.5 ppm and when marginal costs are above 1.8 ppm.

67. Therefore, under BT's assumptions, the results of the modelling exercise are not conclusive. On this basis, it is impossible to state with certainty that retail prices will decrease following the introduction of the new pricing schedule.

[116] This is suggested in Maldoom 1 section 4.2 for 0800 calls *"we might well have a situation in which if the retail price of 0800 calls is hypothetically increased from zero, many calls are lost to fixed lines even at low prices, but then there is a rump of customer who need to keep calling and are very price insensitive."* Maldoom concludes that MNOs are currently pricing only to the more inelastic customers. There is no evidence that this is the case.

Annexe: Modelling based on the BT 080 report frameworks

Below we discuss the results of modelling based on the Dobbs 3 and Reid frameworks.

The Dobbs 3 framework

68. Dobbs 3 assesses the impact of the proposed WTSs for 080 calls by modelling how the MNOs' profitability would change after the introduction of the new charges. Using numerical examples, Dobbs shows that, following the introduction of the new wholesale charges, MNOs would generally face an incentive to reduce retail prices.

69. Dobbs recognises that linear demand could also be considered.[117] He states that "*the assumption of constant elasticity demand curves can be debated*". He also notes that, under the assumption of linear demand, "*so long as the initial profit maximising price for an MNO is less than 30 ppm, there is still an incentive to reduce MNO retail price, although perhaps by only one or two steps to the left along the wholesale price function. However, if the profit maximising price were as high as 40 ppm, under the linear demand assumption, there is some incentive to increase price*".

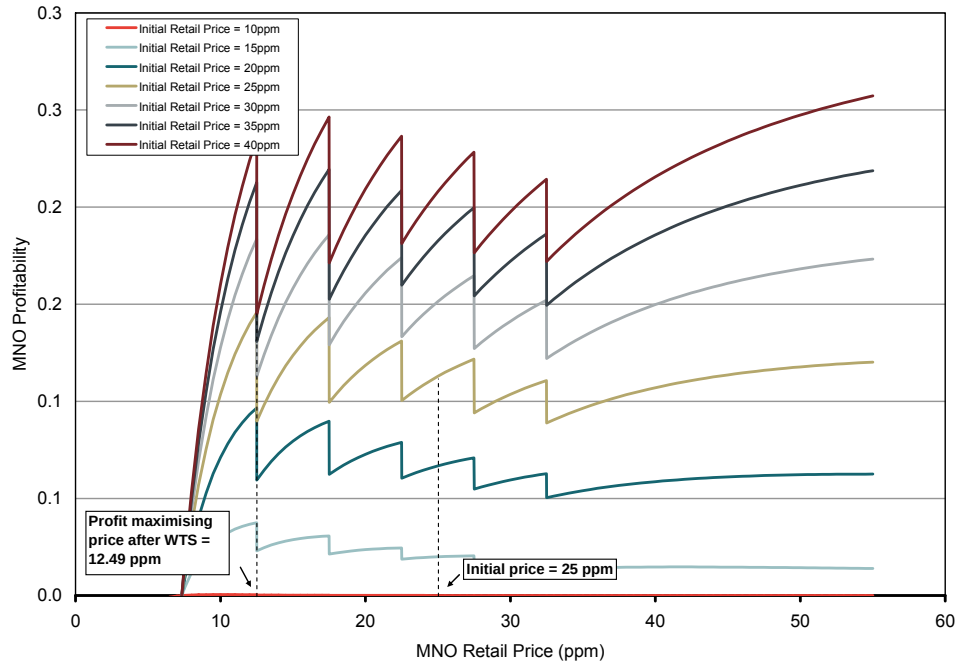
70. To address this, we have carried out the numerical simulation using both a constant elasticity demand curve and a linear demand curve. Our results are broadly in line with Ofcom's analysis. If the marginal cost, and the initial retail price, are sufficiently large then we find that there is an incentive to increase retail prices with respect to their current levels. Therefore, in certain cases, there is uncertainty regarding the impact of the proposed wholesale charges on retail prices.

71. For example, using Dobbs's framework and a constant elasticity demand assumption, Figure 1 shows an example of how MNO profitability would vary with the retail price after the introduction of the wholesale charges, assuming a call origination marginal cost of 6 ppm.[118] For each initial price level (i.e. the retail price before the introduction of the wholesale charge), by choosing the point on each curve where profitability is greatest, the chart can be used to identify the profit-maximising retail price under the new wholesale charges. For example, in the case where the initial price is 25 ppm, it can be seen from the chart that profitability under BT's wholesale charges would be expected to be maximised at the retail price of 12.49 ppm. The example below illustrates that, for retail prices above a certain level, an MNO would have an incentive to increase the retail price.

117 Dobbs 3, paragraph 36.iii

118 We use 6 ppm as an illustration. As Ofcom notes (e.g. at A5.12) under different assumptions on marginal costs the curves have a similar shape.

Figure 1. **MNO profitability when marginal cost equals 6 ppm - 0845 daytime – constant-elasticity demand curve**



Source: Frontier analysis

The Reid framework

72. In his submission to the CAT ('Reid 1'), under a certain set of assumptions, Reid defines a condition which, when satisfied, implies that an MNO has incentive to reduce the retail price under BT's WTS proposals. Specifically, Reid states that an MNO would have an incentive to reduce the retail price when:

$$p - \frac{W(p)}{W'(p)} > MC - \alpha - \delta$$

where p is the retail price, $W(p)$ is the new wholesale price schedule, $W'(p)$ is the gradient of the wholesale price schedule, that is the ratio of the change in the wholesale charge (Δw) over the change in retail price (Δp); MC is the MNO's marginal cost; α is a measure of the impact of the MNO's pricing decision on its wider portfolio; δ is an adjustment to account for the MNOs initial position on a 'step' of the new wholesale price schedule.

73. In his submission[119], Reid checks the condition above for the proposed 0800 stepped price schedule. For each step, Reid calculates the marginal cost below which the condition for retail price reduction would be fulfilled. He then observes that, based on Ofcom's view that the MNOs total cost of origination should be no more than 5 ppm, the MNO marginal cost would be below this threshold. Reid concludes that, generally, MNOs would respond to the introduction of the wholesale charge with a reduction in retail prices. However, even in this case, Reid finds that for some initial retail price levels, the impact of the wholesale charges would be uncertain.

[119] 'Reid 1', section J.3

74. We have applied Reid's approach to the proposed pricing schedules.[120] Figure 2 and Figure 3 show the results of the analysis for NCCN 985 and NCCN 986 respectively.

Figure 2. **Calculation of Reid's price reduction condition – 0845 daytime**

Step	Retail price range	Marginal cost threshold		
		Day	Evening	Weekend
Step 1	0 - 12.49	n/a	n/a	n/a
Step 2	12.50 - 17.49	-3.3	1.2	1.7
Step 3	17.50 - 22.49	1.8	5.5	5.9
Step 4	22.50 - 27.49	1.8	5.5	5.9
Step 5	27.50 – 32.49	6.9	10.0	10.3

Source: Frontier analysis

Figure 3. **Calculation of Reid's price reduction condition – 0870 daytime**

Step	Retail price range	Marginal cost threshold		
		Day	Evening	Weekend
Step 1	0 - 12.49	n/a	n/a	n/a
Step 2	12.50 - 17.49	3.6	4.4	4.5
Step 3	17.50 - 22.49	7.4	8.0	8.1
Step 4	22.50 - 27.49	7.4	8.0	8.1
Step 5	27.50 – 32.49	11.6	12.1	12.2

Source: Frontier analysis

75. The analysis shows that, for 0845 daytime calls, for initial call prices up to 27.49 ppm if the MNOs marginal cost is greater than 1.8 ppm the WTS may lead to an increase in retail prices. This threshold increases to 6.9 ppm for higher initial retail prices. For evening and weekend calls, the threshold rises to 5.5 ppm and 5.9 ppm respectively for the range which potentially includes the current average retail price.

76. The marginal cost thresholds are slightly higher in the case of 0870 calls. For retail prices up to 27.49 ppm, only if marginal cost is greater than 7.4 ppm to 8.1 ppm may MNOs have an incentive to increase retail prices.

[120] Ofcom has carried out a similar analysis in its recent Draft Determination (paragraphs A5.38 to A5.43). We use a similar approach. However, in its analysis Ofcom did not include the set up charge, which is applied to each call independently of its duration. However, an MNO would be likely to take this cost into account when setting the price for these services if the change of volume of 0845/0870 calls is due to an increase or decrease in the number of such calls, rather than a change in the length of call. Accordingly, we included it in the analysis. This requires making an assumption about the average duration of the call, to define the contribution of this cost component to the overall cost of the call. We assume an average length of 3 minutes

Annex 3

3 Ofcom's response to BT's submissions on Annexes 3 to 5 of the Draft Determination

A3.1 Annex 1 of BT's Response to the Draft Determination set out some detailed submissions on Annexes 3 to 5 of the Draft Determination.

A3.2 For each of these Annexes of the Draft Determination we set out below:

a) A summary of BT's comments;

b) Our response; and

c) If applicable, any corrections to the Annexes.

Annex 3 of the Draft Determination

BT's submissions

A3.3 In relation to Ofcom's review and presentation of BT's analysis (paragraph A3.3 and A3.30 of the Draft Determination), BT argues that "it is misleading and a misrepresentation of BT's analysis to separate the case of the continuous WTS from the case of the stepped WTS" and notes that "the analysis of the continuous WTS is a means of developing the analysis of the stepped WTS."[121] .

Key assumptions of the 'basic model' (paragraphs A3.8 – A3.10 of the Draft Determination)[122]

A3.4 In relation to paragraph A3.9 of the Draft Determination, BT observes the following:

i) *Profit maximization on relevant service*: BT does not contest that this is the case in the basic model.

ii) *No adjustment in the prices of other services*: BT notes that Reid 1 does not make this assumption. Since Reid 1 analyses the direction of the price movement rather than the new profit-maximising price, it considers only small changes in the current price. As a result, any consequent adjustments in the prices of other services are mathematically second order. In Dobbs 3, BT acknowledges that the model relies 'to some extent' on this assumption.

iii) *Downward sloping firm demand*: BT contests Ofcom's view that Reid 1 makes this assumption by stating that Reid 1 is only considering the direction of price movement. It argues that Reid 1 relies on this assumption only insofar as it is a consequence of a profit-maximising price. BT does not seem to dispute that Dobbs 3 makes this assumption.

[121] BT response, pages 32 and 35
[122] BT also made similar submissions in commenting on paragraph A3.32 of the Draft Determination

iv) *No price discrimination*: BT does not contest that this is the case in the basic model.

v) *Cost of origination*: BT does not contest Ofcom's interpretation on this assumption, but notes that while BT's analysis assumes constant marginal costs for simplicity "a looser assumption appears possible". In addition, it highlights that, contrary to Ofcom's formulation, Reid 1 refers to the maximum plausible marginal cost, not the actual marginal cost.

vi) *No competitive constraint on retail price of relevant service*: BT notes that Reid 1 does not make this assumption. Since Reid 1 analyses the direction of the price movement rather than the new profit-maximising price, it considers only small changes in the current price. In consequence, the effect of the competitive response can be considered of second order. As for Dobbs 3, BT considers that the model incorporates some assumptions of the nature of competitive constraints.

vii) *Continuous WTS*: BT argues that Reid 1 and Dobbs 3 do not rely on this assumption, which was made for the purposes of presentation.

viii) *Cross-price effects sufficiently small to be ignored*: BT claims that Ofcom has misunderstood the analysis, in particular section G of Reid 1 which deals with spillover effects.

Key results (paragraphs A3.11 – A3.15 of the Draft Determination)

A3.5 BT notes that Ofcom incorrectly refers to convexity rather than the gradient at paragraph A3.11 (ii) of the Draft Determination.

A3.6 In addition, BT contests Ofcom's statement that BT's analysis considers the elasticity of demand (paragraph A3.11 (iii)). On the contrary, it notes that elasticity is derived from the profit-maximisation condition.

Spillover effects (paragraphs A3.18 – A3.22 of the Draft Determination)

A3.7 BT observes that it is not correct, as described in Ofcom's Draft Determination, that spillover effects are considered in Reid 1 in isolation. On the contrary, BT explains that Reid 1 shows that there is a linkage between the difference between the observed elasticity and the elasticity implied by the Lerner index, and spillover effects.

A3.8 Based on Ofcom's observation that demand is inelastic, Reid 1 draws the conclusion that "there must be complementary spillover effects". For this reason, BT notes that it is not correct to state that spillover effects are incorporated into BT's basic model "by allowing for a negative cross-price elasticity between the price of the relevant service and the demand for other services" since the analysis allows for any cross-price elasticity.

Multiple price points for relevant service (paragraphs A3.23 – A3.29 of the Draft Determination)

A3.9 BT finds it unreasonable for Ofcom to conclude that BT's analysis is "incomplete" while at the same time recognising that it did not fully understand the analysis on multiple price points.

A3.10 BT also notes that Section H of Reid 1 covers the case of first degree price discrimination and not only second-degree and third-degree price discrimination as stated by Ofcom in the Draft Determination.

Our view on Annex 3

A3.11 In relation to BT's comment on paragraph A3.3, we understand that "the analysis of the continuous WTS is a means of developing the analysis of the stepped WTS" as argued by BT. However, we remain of the view that, for the purposes of assessing the impact of NCCNs 985 and 986, it is clearly the analysis of the stepped WTS function which is of direct relevance and applicability.

Key assumptions of the 'basic model' (paragraphs A3.8 – A3.10 of the Draft Determination)

A3.12 In what follows, we summarise our view on the points raised by BT and refer to more extensive responses in Section 2 (Direct effect) of the Supplementary Consultation document.

A3.13 With regards to paragraph A3.9 of the Draft Determination, we note the following:

i) *Profit maximization on relevant service*: BT's and Ofcom's views are consistent.

ii) *No adjustment in the prices of other services*: we agree with BT that Reid 1 carries out a local analysis to infer the direction in which the retail price would be modified, following the introduction of the WTS, rather than to derive the new profit-maximising price for the MNO. Our views on this point are set out at paragraph 2.77.

iii) *Downward sloping firm demand*: we understand that Reid 1 does not explicitly make the assumption of a downward sloping firm demand, however this is implicit in inferring demand elasticity from the Lerner condition. On Dobbs 3, there does not appear to be disagreement between Ofcom and BT. Our views on this point are set out at paragraph 2.114.

iv) *No price discrimination*: BT's and Ofcom's views are consistent.

v) *Cost of origination*: we agree with BT's comment that Reid 1 refers to the maximum plausible marginal cost.

vi) *No competitive constraint on retail price of relevant service*: we agree with BT that Reid 1 carries out a local analysis to infer the direction in which the retail price would be modified, following the introduction of the WTS, rather than to derive the new profit-maximising price for the MNO. Our views on this point are set out at paragraph 2.77. In addition, we understand that Dobbs 4 considers this adjustment in its treatment of spillover effects.

vii) *Continuous WTS*: BT's and Ofcom's views are consistent.

viii) *Cross-price effects sufficiently small to be ignored*: we understand that Reid 1 extends the basic model to incorporate spillover effects, as discussed at paragraphs A3.18 – A3.22 of the Draft Determination. Ofcom's comment at paragraph A3.9 (viii) of the Draft Determination refers to the framework of the basic BT model as summarised at paragraph A3.9. For this reason, we do not believe that there is an inconsistency between our view and BT's comment.

Key results (paragraphs A3.11 – A3.15 of the Draft Determination)

A3.14 We agree that paragraph A3.11 should refer to the gradient of the WTS instead of the convexity of the WTS.

A3.15 We understand that BT's models infer the elasticity of demand from the Lerner condition and do not rely on direct evidence on elasticity, as set out at paragraphs 2.51 to 2.54.

Spillover effects (paragraphs A3.18 – A3.22 of the Draft Determination)

A3.16 We agree that Reid 1 does not introduce demand complementarities per se but in the context of a discussion of demand elasticity, as discussed at paragraphs 2.51 to 2.59, the consideration of cross-price elasticity of demand in Reid 1 is an attempt to reconcile the evidence on inelastic firm level demand and the assumption of profit maximisation.

Multiple price points for relevant service (paragraphs A3.23 – A3.29 of the Draft Determination)

A3.17 We understand that BT's analysis shows that it is sufficient to focus on the relationship between the wholesale price and the average retail price as a matter of arithmetic (as acknowledged in the Draft Determination at paragraph A3.24).

A3.18 We note that BT does not provide any further explanation of the mathematical analysis in Section H of Reid 1. Our comment at paragraph A3.29 of the Draft Determination therefore remains.

A3.19 We agree that Reid 1 covers the case of first degree price discrimination.

Implications for the Draft Determination – Annex 3

A3.20 In this section, we highlight the changes to the Draft Determination (Annex 3) required in light of BT's comments and Ofcom's response. The changes are shown in *underlined italics*.

A3.21 Paragraph A3.9 (v) should be modified as follows:

> *Maximum plausible cost of origination*: each MNO has a (possibly different) *maximum plausible* marginal cost of origination which is known to BT.

A3.22 Paragraph A3.9 (viii) should be reformatted as a first-level paragraph in the list but the content should not be amended.

A3.23 Paragraph A3.11 (ii) should be modified as follows:

> The structure of termination charge, i.e. the rate at which the termination charge increases with the retail price (this is referred to as the *gradient* of the tariff).

Annex 4 of the Draft Determination

BT's submissions

A3.24 BT observes that "BT's analytic framework does not separate the analysis of the continuous WTS from the stepped WTS" (page 36). In particular, BT notes that

Dobbs 3 deals directly with a stepped WTS and that Reid 1 presents the model "as a series of increasing generalizations" to aid the presentation, but it would have been possible to present the analytic framework of Reid in a single step including all the extensions.

Key assumptions of the Dobbs Framework (paragraphs A4.6 – A4.13 of the Draft Determination) [123]

A3.25 With reference to paragraph A4.7 of the Draft Determination, BT makes the following comments:

i) *Profit maximisation on relevant service*: BT notes that Ofcom is "broadly" correct, in referring to potential spillover effects incorporated in Dobbs 3.

ii) *No adjustment in the prices of other services*: BT acknowledges that the model relies "to some extent" on this assumption, but observes that Dobbs 4 considers this point.

iii) *Downward sloping firm demand*: BT does not seem to dispute that Dobbs 3 makes this assumption "in so far as this analysis illustrates where a new profit maximising price is likely to be."

iv) *No price discrimination*: BT explains that Dobbs 3 does not make this assumption and refers explicitly to the use of an MNO's average price. In addition, it notes that Dobbs 3 draws on the results of Reid 1 on the incentive effects of the WTS on "each and every point of price discrimination".

v) *Cost of origination*: BT agrees with Ofcom's characterisation that marginal costs do not have to be equal across MNOs.

vi) *No competitive constraint on retail price of relevant service*: BT contests Ofcom's interpretation and argues that Dobbs 3 allows for competitive interactions "in so far as this analysis illustrates where a new profit maximising price is likely to be."

vii) *Stepped WTS*: BT notes that Dobbs' framework can "use any form of WTS".

A3.26 On paragraph A4.8 of the Draft Determination, BT comments that Dobbs 3 does not make the assumption that "cross-price effects between the relevant service and other services supplied by the MNOs are sufficiently small to be ignored (other than at high retail prices for the relevant service)." BT argues instead that Dobbs 3 "uses the spillover effect […] to incorporate a wide variety of plausible scenarios of price effects."

Key assumptions of the Reid Framework (paragraphs A4.14 – A4.20 of the Draft Determination)

A3.27 In relation to paragraph A4.15 of the Draft Determination, BT makes the following comments:

i) *Profit maximisation on portfolio*: BT argues that Ofcom's remark is not correct "in so far as [it] implies that the Reid framework is assuming a negative spillover effect." As discussed at paragraphs A3.7 to A3.8 above, BT explains that the

[123] BT also made similar submissions in commenting on paragraph A4.21 – A4.31 of the Draft Determination

negative spillover effect is introduced in Reid 1 to address Ofcom's and the MNOs observations that demand is potentially inelastic.

ii) *No adjustment in the prices of other services*: According to BT's submission, since Reid 1 conducts a local analysis in which retail price is assumed to vary by a small amount, any consequent adjustments in the prices of other services are mathematically second order. For this reason, BT claims that Ofcom is not correct in stating that Reid 1 makes this assumption. However, BT also acknowledges that, in the case of a stepped WTS, price movements are up to the size of one step and therefore are not necessarily small. Even in this case, BT considers that the effect of the adjustment of other prices is "heavily attenuated by the consideration of the direction not the new equilibrium profit maximising price."

iii) *Downward sloping firm demand*: BT states that Reid 1 does not make this assumption and notes that Ofcom wrongly infers that the use of a linear demand model over the range of a step is a fundamental assumption. BT explains that the functional demand form is only "as a check on the second order effects of any change in elasticity over the range of the step."

iv) *No price discrimination*: BT argues that Reid 1 does not make this assumption.

v) *Cost of origination*: BT does not contest Ofcom's interpretation on this assumption, but notes that while BT's analysis assumes constant marginal costs for simplicity "a looser assumption appears possible". In addition, it highlights that, contrary to Ofcom's formulation, Reid 1 refers to the maximum plausible marginal cost, not the actual marginal cost.

vi) *No competitive constraint on retail price of relevant service*: BT notes that Reid 1 does not make this assumption, for the reasons discussed in the continuous WTS case and summarised at paragraph A3.4 (vi) above.

vii) *Stepped WTS*: BT refers to its comment on the Dobbs framework, i.e. the framework can "use any form of WTS."

A3.28 With respect to the comment made by Ofcom that Reid 1 does not consider the possibility that the MNO can move up to a higher tariff step (paragraph A4.18), BT responds that Reid 1 only considers the direction of a price change and therefore Ofcom's remark is incorrect.

Our view on Annex 4

A3.29 We understand BT's point on the linkages between the continuous WTS and the stepped WTS. However, we remain of the view that, for the purposes of assessing the impact of NCCNs 985 and 986, it is the analysis of the stepped WTS function which is of direct relevance and applicability, as argued above.

Key assumptions of the Dobbs Framework (paragraphs A4.6 – A4.13 of the Draft Determination)

A3.30 In this paragraph we address BT's comments in relation to paragraph A4.7 of the Draft Determination and summarised at paragraph A3.25 above:

i) *Profit maximisation on relevant service*: BT's and Ofcom's views are consistent.

ii) *No adjustment in the prices of other services*: We note that BT's and Ofcom's views on this point are broadly consistent. As per our detailed comments on the treatment of spillover effects in Dobbs 4 (paragraphs 2.26 to 2.36), we agree that Dobbs 4 seeks to account for the adjustment of other prices by introducing a reduced-form spillover term although we have some comments on the approach.

iii) *Downward sloping firm demand*: BT's and Ofcom's views are consistent.

iv) *No price discrimination*: BT has clarified that Dobbs 3 relies on the analysis of multiple price points in Reid 1 (in the context of a continuous tariff) which shows that it is sufficient to focus on the relationship between the wholesale price and the average price as a matter of arithmetic, as acknowledged at paragraph A3.24 of the Draft Determination.

v) *Cost of origination*: BT's and Ofcom's views are consistent.

vi) *No competitive constraint on retail price of relevant service*: we understand that the analysis in Dobbs 4 considers strategic interactions in a stylised way through the use of a reduced form spillover term, but we have some comments on the approach. Our detailed comments on the treatment of competitive constraints in Dobbs 4 are at paragraphs 2.26 to 2.36.

vii) *Stepped WTS*: BT's and Ofcom's views are consistent.

A3.31 We agree with BT that Dobbs 3 allows for the possibility of spillover effects, however we note that these effects do not apply "in a general way" as argued by BT, but in Dobbs 3 are only relevant at high retail prices.

Key assumptions of the Reid Framework (paragraphs A4.14 – A4.20 of the Draft Determination)

A3.32 Our views on BT's comments, as summarised at paragraph A3.27, are set out below. In addition, where applicable we refer to the more extensive comments in Section 2.

i) *Profit maximisation on portfolio*: we understand BT's comment that demand complementarities are introduced in Reid 1 to reconcile the evidence on inelastic firm demand with the assumption of profit maximisation. We do not consider that BT's comment is inconsistent with Ofcom's views as set out at paragraphs 2.51 to 2.59.

ii) *No adjustment in the prices of other services*: we agree with BT that Reid 1 carries out a local analysis designed to infer the direction of price change rather than its magnitude. Our views on this point are summarised at paragraph 2.77. As noted in that paragraph, the Reid framework is not designed to inform the question of the magnitude of the Direct effect.

iii) *Downward sloping firm demand*: we note that BT has explained that the use of a linear demand model is not a fundamental assumption. We do not consider BT's comment inconsistent with Ofcom's understanding. In this respect, we note that Reid 1, footnote 12, shows how the necessary condition would be modified if demand was assumed to have constant elasticity. However, regardless of whether the assumed functional form is linear or constant elasticity, the assumption of a downward sloping demand curve is implicit when relying on the

Lerner condition to infer demand elasticity. Our views on this point are summarised at paragraph 2.114.

iv) *No price discrimination*: we understand BT's argument that the analysis of the stepped WTS function builds on the result obtained by Reid 1 in the case of a continuous WTS.

v) *Cost of origination*: we agree with BT's comment that Reid 1 refers to the maximum plausible marginal cost.

vi) *No competitive constraint on retail price of relevant service*: we agree with BT that the Reid 1 analysis focuses on a small change in retail price and therefore the framework is not designed to assess the impact of changes in the other variables, including the prices charged by competitors. However, as BT itself concedes, price movements in a discrete setting are not necessarily small. Our views on this issue are summarised at paragraphs 2.77 to 2.84.

vii) *Stepped WTS*: BT's and Ofcom's views are consistent.

A3.33 With regard to the range of choices considered by the MNO, as described in paragraph A4.18 of the Draft Determination, we note BT's comment that the Reid framework is designed for a local analysis and consider that the framework itself is not informative of the magnitude of any effects on retail prices.

Implications for the Draft Determination – Annex 4

A3.34 In this section, we highlight the changes to the Draft Determination (Annex 4) in light of BT's comments and Ofcom's response. The changes are shown in *underlined italics*.

A3.35 Paragraph A4.11 (b) should be modified as follows:

> The call volume, which under the assumption of constant demand elasticity is given by ~~q = Ap ε~~ $q = Ap^{\varepsilon}$ where ε is the own price elasticity of demand (at the level of the firm, not the market) for the relevant service (up to the threshold price level.)[359]

A3.36 Paragraph A4.15 (v) should be modified as follows:

> *Maximum plausible* cost of origination: the *maximum plausible* marginal cost of origination is assumed to be constant with volume but may vary by MNO.

Annex 5 of the Draft Determination

BT's submissions

A3.37 As a general remark, BT notes that "Ofcom's application of the Dobbs and Reid frameworks is largely in line with its own" but it identifies two potential exceptions (page 39).

A3.38 One comment relates to Ofcom's application of the Dobbs framework and the other comment concerns Ofcom's application of Reid's framework.

Application of Dobbs' framework (paragraphs A5.3 – A5.32)

A3.39 BT argues that the Dobbs framework should be implemented assuming initial retail average prices rather than specific price points. In addition, BT notes that Ofcom may have based its analysis on individual price points.

Application of Reid's framework (paragraphs A5.33 – A5.43)

A3.40 In relation to the Reid framework, BT observes that Ofcom has failed to take account of the existing fixed termination charge which was already in force prior to the introduction of NCCNs 985 and 986. In Annex 1, BT modifies Tables A5.9 and A5.10 of the Draft Determination to allow for the existing fixed charge.

Our view

A3.41 In relation to the Dobbs' framework, as discussed at paragraph 2.113, we are aware that Dobbs 3 refers to average price points rather than individual price points. The range of initial average retail prices we consider in Annex 5 of the Draft Determination (i.e. 15ppm – 40ppm) is consistent with Dobbs 3 as well as with indications from some MNOs about their average retail prices (paragraph A5.10 (ii)).

A3.42 On the Reid framework, we agree with BT's comments on its application to NCCNs 985 and 986. This has a two-fold implication on the application of the Reid framework:

i) The Reid condition needs to be modified, as shown at paragraph A3.48 below; and

ii) The condition needs to be applied to the new variable termination charge, rather than the total termination charge.

A3.43 The necessary modifications to the Draft Determination are discussed below.

Implications for the Draft Determination – Annex 5

A3.44 In this Section, we highlight the changes to the Draft Determination (Annex 5) in light of BT's comments and Ofcom's response. The changes are shown in *underlined italics*.

A3.45 Paragraph A5.37 should be modified as follows:

In the following paragraphs, we consider this application of Reid's test condition at the limit of each step under the assumption that $\alpha_i = 0$. The term which takes account of the position of the initial price on the step (δ_i) is also a function of the length of the step and the gradient of the wholesale price schedule, as described in footnote 634. For this reason, it may vary across the steps of a given wholesale price schedule. *A further adjustment of the condition is needed to allow for the fact that a fixed per minute charge (i.e. independent of the average retail price) was already in force before the introduction of NCCNs 985 and 986. This is indicated as w_0 in the formula below. The existing termination charge needs to be summed to the marginal cost (mc_i) on the right-hand side of the test condition (1).*

$$p_i - \frac{w_i}{\Delta w_{S_i} / \Delta p_{S_i}} > mc_i + w_0 - \alpha_i - \delta_i \qquad (2)$$

A3.46 Paragraph A5.38 should be modified as follows:

The table below applies Reid's gradient condition to the NCCN 985 daytime termination charges. Column (1) indicates the limit of each step, i.e. the right-hand side of each step. Column (2) shows the termination charge which *was in force prior to the introduction of the WTS, while Column (3) indicates the new termination charge which* is applicable to prices on the relevant step. Column ~~(3)~~ *(4)* shows the length of the step, i.e. the length of the interval over which a given termination charge is applicable, while column ~~(4)~~ *(5)* is the height of a step, i.e. the difference between a row in column ~~(2)~~ *(3)* and the row above.

A3.47 Paragraph A5.39 should be modified as follows:

If the marginal cost is less than the value reported in column ~~(6)~~ *(7)*, the gradient condition developed by Reid is satisfied at the limit of the step (indicated in column 1) and the WTS provides an incentive to reduce the retail price. In the table below, the value in column ~~(6)~~ *(7)* is derived from inequality ~~(1)~~ *(2)*, where mc_i is the unknown term. The inequality is assessed for the following values: p_i is set equal to the price in column (1), w_i is the termination charge in column ~~(2)~~ *(3)*, $\Delta w_{S_i} / \Delta p_{S_i}$ is the gradient calculated as the ratio between column ~~(4)~~ *(5)* and column ~~(3)~~ *(4)*. In addition, *w_0 is reported in column (2),* α_i is set equal to zero and the value of δ_i, shown in column ~~(5)~~ *(6)*, is calculated based on the gradient and the length of the step, as described in footnote 385. In other words, column ~~6~~ *(7)* is obtained in the following manner:

A3.48 The formula at paragraph A5.39 should be modified as follows:

$$column\ 7 = column\ 1 - \frac{column\ 3}{column\ 5 / column\ 4} + column\ 6 - column\ 2$$

A3.49 Table A5.9 should be replaced with Table A3.1 below.

Table A3.1 – Application of Reid's condition to NCCN 985 (BT's submission)

	Price at limit of step	Existing fixed termination charge	New variable termination charge	Length of step	Height of step	Adjustment to Reid's condition	Reid's condition satisfied for mc[124] lower than
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Step 1	12.5	≤ 2.6654	0	12.5	0	n/a	n/a
Step 2	17.5	≤ 2.6654	2	5	2	-7.5	2.33
Step 3	22.5	≤ 2.6654	4.5	5	2.5	-5	5.83
Step 4	27.5	≤ 2.6654	7	5	2.5	-5	5.83
Step 5	32.5	≤ 2.6654	10	5	3	-3.33	9.83

Source: BT Response

A3.50 Paragraph A5.40 should be modified as follows:

[124] BT response, footnote 35, page 40: "this is the internal marginal cost after of [sic] the WTS has been paid including the fixed component".

Based on our understanding of Reid's gradient condition, this analysis indicates that ~~for retail prices between 12.5ppm and 17.5ppm (included) Reid's condition is not satisfied~~ *the threshold level of marginal costs consistent with an incentive to reduce the retail price is 2.3pm*. However, the threshold of marginal costs consistent with an incentive to reduce the retail price is around ~~3.2ppm~~ *5.8ppm* for steps 3 and 4 of the WTS and ~~8.1ppm~~ *9.8ppm* for step 5. These results ~~for retail prices greater than 17.5ppm~~ appear to be broadly consistent with the results using the Dobbs framework.

A3.51 Paragraph A5.41 should be deleted.

A3.52 Table A5.10 should be replaced with Table A3.2 below.

Table A3.2 – Application of Reid's condition to NCCN 986 (BT's submission)

	Price at limit of step	Existing fixed termination charge	New variable termination charge	Length of step	Height of step	Adjustment to Reid's condition	Reid's condition satisfied for mc[125] lower than
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Step 1	12.5	≤ 0.560	0	12.5	0	n/a	n/a
Step 2	17.5	≤ 0.560	2	5	2	-7.5	6.96
Step 3	22.5	≤ 0.560	4.5	5	2.5	-5	7.96
Step 4	27.5	≤ 0.560	7	5	2.5	-5	7.96
Step 5	32.5	≤ 0.560	10	5	3	-3.33	11.96

Source: BT Response

A3.53 Paragraph A5.43 should be modified as follows:

As shown in the table above, Reid's approach indicates that if the maximum value of marginal cost is less than ~~3.96ppm~~ *6.96ppm* the condition is satisfied at the limit of each step. These results appear to be broadly consistent with the results using the Dobbs framework.

[125] BT response, footnote 36, page 40: "this is the internal marginal cost after of [sic] the WTS has been paid including the fixed component".

Annex 4

4 Responding to this consultation

How to respond

A4.54 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 21 July 2010**.

A4.55 Ofcom strongly prefers to receive responses using the online web form at http://stakeholders.ofcom.org.uk/consultations/dispute-BT-termination-charges/ , as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 8), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

A4.56 For larger consultation responses - particularly those with supporting charts, tables or other data - please email Phil.Jones@ofcom.org.uk attaching your response in Microsoft Word format, together with a consultation response coversheet.

A4.57 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.

Phil Jones
4th Floor
Competition Group
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 7783 4109

A4.58 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

A4.59 It would be helpful if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Further information

A4.60 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Phil Jones on 020 7981 3641.

Confidentiality

A4.61 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt. If you think your response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

A4.62 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.

A4.63 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at http://www.ofcom.org.uk/about/accoun/disclaimer/

Next steps

A4.64 Following the end of the consultation period, Ofcom intends to publish a final determination as soon as practicable.

A4.65 Please note that you can register to receive free mail updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

A4.66 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 7.

A4.67 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.

A4.68 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

Vicki Nash
Ofcom
Sutherland House
149 St. Vincent Street
Glasgow G2 5NW

Tel: 0141 229 7401
Fax: 0141 229 7433

Email vicki.nash@ofcom.org.uk

Annex 5

5 Ofcom's consultation principles

A5.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A5.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

A5.3 We will be clear about who we are consulting, why, on what questions and for how long.

A5.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A5.5 We will consult for up to 10 weeks[126] depending on the potential impact of our proposals.

A5.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.

A5.7 If we are not able to follow one of these principles, we will explain why.

After the consultation

A5.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

[126] In the case of disputes we will consult for ten working days from the publication date of the draft determination; this reflects the four month deadline for Ofcom to issue its final determination.

Annex 4

6 Consultation response cover sheet

A6.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.

A6.2 We have produced a coversheet for responses and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.

A6.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.

A6.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at www.ofcom.org.uk/consult/.

A6.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.