Update on European auctions since Ofcom's consultation on Annual licence fees for 900 MHz and 1800 MHz spectrum

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Telefonica UK Ltd response

Telefónica UK Limited
260 Bath Road
Slough
Berkshire
SL1 4DX
T +44 (0)113 272 2000
www.telefonica.com

Section 1

EXECUTIVE SUMMARY

1. Telefonica UK Ltd ("Telefonica") welcomes the opportunity to comment on Ofcom's update on further European spectrum auctions that have concluded since publishing the consultation on mobile annual licence fees for 900 MHz and 1800 MHz spectrum in October 2013.[1] The update document is a follow-up to Ofcom's initial consultation on Annual licence fees for 900 MHz and 1800 MHz spectrum, which was launched in October 2013.

2. We have four main observations:

    a. We broadly support the proposal that Ofcom update its analysis to take account of recent auctions, but the apparent focus on Austria appears partial, especially in the context of previous comments from Telefonica and other stakeholders that Ofcom's original benchmark analysis placed undue weight on auctions with high price outcomes.
    b. In the absence of bid data, Linear Reference Pricing ("LRP") analysis of combinatorial clock auctions should only be used qualitatively, as necessary sensitivity analysis cannot be performed.
    c. The Austrian auction data should be disregarded on three grounds: we do not have the bid data; the auction rules and bidding behaviour were extreme; and the results are, we understand, subject to litigation.
    d. An analysis of the expanded dataset reinforces our previous conclusions regarding the value of 800 MHz and 2600 MHz. The new awards provide no significant insight into the value of 900 MHz and 1800 MHz. Accordingly, our estimates of the value of 900 MHz and 1800 MHz remain unchanged.

3. Telefonica broadly supports the proposal to take account of the results of recent European auctions in developing potential benchmarks for the price of UK 900 MHz and 1800 MHz spectrum. Indeed, in our previous submission, we requested such action:

[1] http://stakeholders.ofcom.org.uk/consultations/900-1800-mhz-fees/update-note/?utm_source=updates&utm_medium=email&utm_campaign=europe-update-note

"Given that Ofcom will need to redo its benchmarking exercise anyway, this provides an opportunity to add [recent] auctions, thus creating a near complete sample of European countries."[2]

4. In our previous response, we identified:

   "serious misgivings with Ofcom's approach to identifying points within this sample that it considers 'more important' evidence. The criteria that Ofcom has adopted to select such evidence is opaque. Further, it appears to us that the approach Ofcom has adopted has resulted in a bias against auction results producing lower outcomes, while never excluding high price outcomes even when they appear to be clear outliers from the full dataset."[3]

5. We welcome the expansion of Ofcom's set of benchmark awards as an opportunity for it to adopt a more broad-based approach to benchmarking, similar to the one we proposed in our consultation response. This means giving similar weighting to all auctions in the sample where data is not clearly unreliable, and not focusing on high price auctions while arbitrarily dismissing lower priced auctions as "*less important evidence*". In support of such an approach, we provide in this submission comments on the use of LRP for other CCAs, detailed observations about the relevance of data points for each of the new auctions as benchmarks for the UK, and an update of our own benchmarking exercise.

6. As with existing data points, careful evaluation of each new award is required. In this respect, Telefonica is deeply concerned that Ofcom appears to have devoted substantial resources to obtaining and processing non-public domain data for just one auction, Austria, whereas the nine other auctions receive scant attention in the new consultation document. This appears to be an arbitrary selection of material, on Ofcom's part.

7. In Telefonica's view, generally, applying LRP to CCAs offers little value if bid data is unavailable. We do not think much weight should be placed on LRP calculations for CCAs if the bid data is not public, as lack of data makes it impossible to conduct proper sensitivity analysis. Our analysis of the UK bid data

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2 Telefonica UK Ltd, submission in response to Ofcom Consultation on annual licence fees for 900 MHz and 1800 MHz spectrum, 10 October 2013 (hereafter Telefonica submission, October 2013), para. 63.

3 Telefonica submission, October 2013, para 64.

involved multiple sensitivity tests, which, for example, identified the importance of few pivotal bids by H3G and EE. We are not in a position to repeat such analysis for the Austrian LRP. We appreciate that Ofcom has carried out a number of sensitivity tests on the Austrian bid data. However, as Ofcom also does not have access to the bid data, the specific choice of sensitivity tests RTR were asked to carry out must have been selected by Ofcom without a thorough analysis of the bid data. In essence, the iterative nature of best practice sensitivity testing is lacking.

8. The proposed reliance on the LRP analysis of the Austrian multiband auction, without the release of bid data, therefore raises serious procedural concerns. The results of the analysis are, essentially, a "black box". It is not possible for stakeholders (or, indeed, Ofcom) meaningfully to analyse the results of this exercise without access to the bid data, which Ofcom does not have. Accordingly stakeholders are not presented with an opportunity to respond substantively to the proposed use of this analysis and, on that basis alone, Telefonica believes that any reliance of the LRP analysis of the Austrian auction would be erroneous.

9. There are other, compelling reasons for disregarding the Austrian multi-band auction as a suitable benchmark for the UK. The auction result was a high price outlier from all European LTE auctions, an outcome that can be linked to the extreme auction design (very weak caps and unduly restricted transparency) and extreme bidding behaviour. The bidders themselves are all on record with statements that suggest they all believe that they grossly overpaid, and that final prices overstate the market price. We anticipate that if the bid data was released, it would prove our concerns about overbidding. In addition, the auction outcome is, we understand, currently subject to legal challenge by the winning bidders. In this context, it is simply unsafe to make any inferences from Austrian auction data for UK prices.

10. The expanded set of benchmarks does not alter our conclusions regarding the pricing of 900MHz and 1800 MHz spectrum. The revised dataset leads to modest reductions in the benchmark values for the 800 MHz and 1800 MHz bands, bringing them more closely in line with our estimates for the per MHz value of 800 MHz and 2600 MHz of £24.16m and £4.21m respectively. None of the new auctions offer any reliable data for the value of the 900MHz or 1800MHz bands. Accordingly, our conclusions on these bands are unchanged. We

estimate a value per MHz of £15.22m and £8.93m for 900 MHz and 1800 MHz respectively, using the methodology described in our previous submission.

Section 2

LRP ANALYSIS OF AUSTRIAN AUCTION

11. Ofcom has extended the application of the LRP methodology to the recent Austrian auction of spectrum in the 800 MHz, 900 MHz and 1800 MHz bands. In this section we provide comments on this analysis.

A. LRP Methodology

12. In our previous response we highlighted a number of concerns with the LRP methodology in general. While we are not directly opposed to applying an LRP methodology in the UK context, we argued that proper sensitivity analysis of results is critical for the confidence in the approach.

13. In particular, we carried out a number of sensitivity tests on the UK bid data:
    - We carried out a sensitivity analysis that revealed how sensitive linear reference prices are to specific losing bids (the losing bids with the maximum excursions), results were particular sensitive to a small set of bids from H3G and EE;
    - We carried out a sensitivity analysis without government reserve price bids, which had the effect of substantially lowering the LRP for each band;
    - We carried out a sensitivity analysis where we included the 800 MHz lot with coverage obligations (Ofcom excluded this lot in its LRP analysis). Our analysis showed that inclusion of the coverage obligation lot would lead to a lower LRP for 800 MHz.

14. We believe the volatility of the LRP approach (as revealed by the various sensitivity tests) casts significant doubt on its validity. With this in mind, proper sensitivity analysis is of upmost importance. Furthermore, best practice sensitivity testing is an iterative process; one sensitivity test may yield an answer that triggers a further sensitivity test, etc. As we explain below, the lack of access to Austrian bid data severely limits our ability to undertake detailed sensitivity analysis, and confidence in results cannot therefore be established.

B. Lack of Access to Austrian Bid Data

15. Bid data for the Austrian auction are not publicly available. As a potential way around this, Ofcom has developed an LRP tool for the Austrian auction, which enables anyone with access to Austrian bid data to calculate linear reference

prices. In this case, Ofcom has asked RTR for assistance in calculating linear reference prices.

16. We have a number of general concerns with this approach related to the lack of public access to the underlying bid data:

    - While we have access to the LRP tool, we do not have access to the Austrian bid data. This means we can test the functionality of the LRP tool (to some degree), but we are forced to take the Austrian LRP results as reported by Ofcom at face value. It is unsatisfactory that Ofcom is seeking to use an approach that cannot be verified by operators.
    - The lack of access to Austrian bid data also means that we cannot carry out a thorough sensitivity analysis of the LRP results. Our analysis of the UK bid data involved multiple sensitivity tests, which, for example, identified the importance of few pivotal bids by H3G and EE. We are not in a position to repeat such analysis for the Austrian LRP.
    - We appreciate that Ofcom has carried out a number of sensitivity tests on the Austrian bid data. However, as Ofcom also does not have access to the Austrian bid data, the specific choice of sensitivity tests RTR were asked to carry out must have been selected by Ofcom without a thorough analysis of the bid data. In essence, the iterative nature of best practice sensitivity testing is lacking.

17. We also have specific objections to the use of the Austrian auction results as a benchmark for UK prices. These are elaborated in detail in the next section, but in summary, we consider the Austrian multi-band auction to be a high price outlier from all European LTE auctions. It clearly grossly overstates the market price for all spectrum bands in Austria. We anticipate that if the public data was released, it would prove our concerns about overbidding. In the absence of such data, as well as legal uncertainty over the validity of the auction outcome, it is simply unsafe to make any inferences from Austrian auction data for UK prices.

C. LRP for other CCA auctions

18. If Ofcom were to proceed with using LRP for Austria, then logically it must also explore the potential for applying LRP to other CCAs. It is inexplicable to us that Ofcom has singled out the Austrian auction for such analysis, without discussing application of LRP to other CCAs, or indeed its broader approach to using benchmarks from non-CCAs.

19. As a general principle, we do not object to the use of an LRP methodology to auctions where bid data is not publicly available (or at least available to operators). Such an exercise may provide useful *qualitative* information about these auctions. However, absent publication of the underlying data set or equivalent information, it is simply unsafe to put weight on the results in any *quantitative* analysis. This is because stakeholders, including Ofcom, cannot be sure how sensitive the results are to particular bids that may not be valuation-based.

20. In our analysis below, we identify specific reasons why Austria should be disregarded entirely from the list of benchmark awards. The same is not necessarily true of other multi-band package auctions, where an LRP exercise may offer some insight. In our analysis below, we conclude that further information about the CCAs in Switzerland, Slovakia and Slovenia may be useful for qualitative purposes, albeit in a very limited way given lack of public data. However, Netherlands and Norway should be excluded from consideration, as local factors (set asides and auction format respectively) make them unsuitable for comparison to the UK.

Section 3

ANALYSIS OF RECENT AUCTIONS

A. Benchmark data for recent auctions

21. Telefonica broadly supports the proposal to take account of the results of recent European auctions in developing potential benchmarks for the price of UK 900 MHz and 1800 MHz spectrum. Indeed, in our previous submission, we requested such action:

> *"Given that Ofcom will need to redo its benchmarking exercise anyway, this provides an opportunity to add [recent] auctions, thus creating a near complete sample of European countries."*[4]

22. We welcome the expansion of Ofcom's benchmarking dataset as an opportunity for it to adopt a more broad-based approach to benchmarking, similar to the one we proposed in our consultation response. To ensure the integrity of the dataset, we believe that three key actions are required when considering both original data points and new ones:

    (1) *Benchmarks that are clearly unreliable should be weeded out.* This includes auctions where the spectrum sold is not comparable, where spectrum was unduly scarce relative to the UK, where selling prices were based on trivial reserve price levels and clearly in no way related to the market value, or where there are strong grounds to believe that bidding in the auction was grossly distorted and does not reflect market value.

    (2) *Only auctions where prices can be validated by affected parties should be used.* Data from multi-round package auctions should only be given substantial weight in Ofcom's analysis if the full dataset is public or if the results can otherwise be validated by UK mobile operators, for example because they were active in the relevant auction.

    (3) *All remaining data points should be considered as potential benchmarks and any weighting between them must be based on clearly objective criteria.* In particular, the bias against auction results producing lower price outcomes in Ofcom's original analysis must be avoided.

[4] Telefonica submission, October 2013, para 63.

23. In this context, Telefonica is deeply concerned that Ofcom appears to have devoted substantial resources to obtaining and processing non-public domain data for just one of the new auctions, Austria. In contrast, the nine other auctions receive scant attention, being mentioned just once collectively, in a single sentence, in the new consultation document. As we discuss below, we strongly object to the use of any data from the Austrian multi-band auction, based on evidence that bidding was distorted by a bad auction design and bids that the bidders themselves say grossly exceeded the market value of the spectrum. Some of the other new auctions are also unsuitable for inclusion because they were multi-band package auctions and public domain data is unavailable. We support the inclusion of all the remaining data points, except for the Czech 1800 MHz data point, where the low price may be attributable to use of very small spectrum packages which cannot easily be compared to full 2x5MHz blocks.

24. In our previous response, we identified:

> *"serious misgivings with Ofcom's approach to identifying points within this sample that it considers 'more important' evidence. The criteria that Ofcom has adopted to select such evidence is opaque. Further, it appears to us that the approach Ofcom has adopted has resulted in a bias against auction results producing lower outcomes, while never excluding high price outcomes even when they appear to be clear outliers from the full dataset."*[5]

25. Ofcom's latest consultation document does nothing to alleviate these concerns. Given that Ofcom is presumably aware of the controversy associated with the Austrian award, we find it odd that its consultation document focuses only on this very high-price auction, when other new awards are likely to offer much better comparison points for the UK. It is unacceptable to us for Ofcom to "cherry pick" high price auctions as benchmarks for the UK, while dismissing other auctions which produced lower prices as less important evidence points.

26. As we discussed in our earlier response, the previous benchmark database was by default weighted towards SMRAs, because, as DotEcon says, these "*auctions provide individual prices for specific lots and are thus an accessible source of data for band-specific benchmarks even in the case where spectrum in multiple bands was auctioned in a single award*," whereas "*the CCA format makes it difficult, if not*

[5] Telefonica submission, October 2013, para 64.

impossible, to attribute the prices paid for packages of spectrum lots to individual lots".[6] However, we also highlighted an apparent bias against SMRAs in Ofcom's approach to selecting between evidence points with the sample. Specifically, it appeared that Ofcom tended towards a presumption that low competition in an SMRA must always be explainable by strategic factors, such as demand reduction incentives or aggregation risk, whereas CCAs are more likely to produce prices reflective of market value.

27. In our previous submission, we argued that this presumption against low price SMRAs is too strong. Of course, demand reduction and aggregation risk can be a concern in some SMRAs. However, this must be assessed on a case-by-case basis. We think that Ofcom far too readily excludes lower priced SMRAs on the presumption that competition was distorted owing to the auction format, when there is actually no substantive evidence to suggest this was the case. Meanwhile, Ofcom and DotEcon failed to discuss the possibility that CCAs may lead to outcomes in which bidders pay significantly above market price, because bidders have obvious opportunities to inflate their demand, so as to drive up prices for rivals and exploit potential budget constraints of rivals. Whether or not Ofcom thinks this is a good strategy in a CCA, it is apparent from events in Austria that some bidders have behaved in this way. In a more general context, this drawback of the CCA was recently highlighted in an academic paper by Larry Ausubel (one of the designers of the CCA format and a previous advisor to Ofcom), which identifies "*manipulative and exploitative pricing of opponents*" as a concern with current CCA formats.[7]

28. The ten awards being added to the data sample include four formats, namely: SMRA (Belgium, Czech Republic, Finland, Latvia and Lithuania); sequential multi-round auction (Estonia); CCA (Austria, Slovakia and Slovenia); and first price, sealed bid package auction (Norway). The formats used for Belgium, Czech Republic, Estonia, Finland, Latvia and Lithuania all give band specific results making it easy to add them to the benchmark dataset.

29. Austria, Norway, Slovakia and Slovenia were all multi-band package auction auctions. Our understanding is that, as with Netherlands and Switzerland, none

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6 DotEcon, Final Report for Ofcom, September 2013, ¶¶ 37-38.

7 Lawrence M Ausubel and Oleg V Baranov, Market Design and Evolution of the Combinatorial Clock Auction, AER 2014, 104(5), p.2

of the regulators running these auctions have published bid data, so none can be used for quantitative benchmarking. However, we do agree that it is useful to look at these awards to see if they can provide any qualitative insights into the benchmarking exercise. Accordingly, we also take a fresh look at the multi-band CCAs in Netherlands and Switzerland that we did not discuss in our previous submission. We conclude that some useful information may be gleaned from looking at the results of Slovakia, Slovenia and Switzerland, but that any benchmarks for Austria, Netherlands and Norway are clearly not reliable and should be ignored.

B. Country-by-country analysis

30. As a contribution to the development of this broad-based sample, we provide detailed observations below about the relevance of data points for each of the new auctions as benchmarks for the UK. In isolation, none of these countries provide particular insight into the value of spectrum in the UK, but taken together with existing country data points, they should enrich the benchmarking process.

1. Austria (October 2013)

31. Austria's multi-band auction of 800 MHz, 900 MHz and 1800 MHz spectrum, finished in October 2013, raising over €2bn (£1.7bn). The award was conducted using a CCA format, with several unusual features: the spectrum caps were exceptionally lax by European standards; and no aggregate demand data was released for the majority of the clock rounds. Only the three incumbents participated in the auction, but bidding was fierce. Somehow, prices were driven up to levels two-to-three times the European average. As we discuss below, the very high prices appear to have surprised not just market commentators but also the bidders themselves.

32. Superficially, the Austrian award offers some attractive properties as a benchmark for the UK, given similar levels of affluence and mobile market development. However, our view is that flaws in the auction format together and apparent irrational or alleged anti-competitive[8] bidding behaviour by one or more of the operators, led to prices hugely in excess of market value. In this context,

[8] We use the term "anti-competitive" here to describe bidding behavior aimed at achieving outcomes relative to competitors that were not permitted in the UK auction. We do not imply any judgment as to the impact of the allocation of spectrum in Austria on future competition in that market.

we think it would be foolish to try and draw any inferences for the UK from Austrian data.

33. Given that the regulator TKK has not published the bid data, it is impossible to be certain what happened in the auction to cause such high prices. However, based on the results and comments from participants, a plausible narrative has emerged as follows. All three operators bid aggressively, but Telekom Austria appears to have bid particularly fiercely, targeting more than 50% of lower band spectrum. The lack of aggregate demand data appears to have created an environment in which operators would not back down, fearful they would be left paying proportionately a lot more than rivals for smaller quantities of spectrum, or even driven out of the LTE market completely. In such a situation, it is only to be expected that bidders pushed down to smaller packages would retaliate with aggressive price setting bids in the supplementary round. We suppose it is very likely that all bidders made bids included packages with quantities of spectrum in different bands significantly in excess of their real demand that they knew would not win. Importantly, unlike in other CCAs, where budget constraints for one or more bidders may have tempered price setting behaviour, in this auction all three operators had deep-pocketed backers.

34. In this context, we are deeply sceptical that the Austrian auction results have any value as a benchmark for the UK. In particularly, we suspect that the 900 MHz price will have been grossly distorted by fallout from competition for 800 MHz and strategic price setting behaviour. We think it very likely that bidders overbid for 900 MHz in an attempt to put price pressure on rivals, hoping this would resolve competition at 800 MHz. 900 MHz is an ideal target for such behaviour because bidders were (astonishingly) allowed to bid for up to 2x30MHz, and Telekom and T-Mobile, as 900MHz operators, had predictable irreducible demands to protect their legacy businesses. The 1800 MHz may be distorted in the same way, as all three bidders had existing 1800 MHz operations that they needed to continue without interruption.

35. All three bidders have themselves argued that the auction process was flawed and indicated that they believe prices grossly exceeded the market value of spectrum. For example:

- **Telekom Austria (TKA):** Under a slide entitled "*The Combinatorial Clock Auction Format is Highly Complex and Creates Partly Undesired Incentives*",

Telekom states that "*Each bidder has a high incentive to bid on much more spectrum than its real demand and thus to reduce its demand late to influence the price of rivals*".[9]

- **T-Mobile:** "*If one of the three operators was unable to afford spectrum, they would not be able to provide 4G services, and we came very close to that scenario. Therefore, the prices set are at the market value of the entire company, rather than the market value of the spectrum.*"[10]
- **3 Austria:** "*For the industry as a whole, however, this auction result is a disaster…*"[11] "*The auction process was illegal in form and in substance. 3 Austria was considerably harmed. To simply accept this would be irresponsible.*"[12] "*Jan Trionow, CEO of H3G, described the auction as a 'disaster for the industry' because the high pricing is likely to see rural rollouts abandoned*".[13]

36. Our understanding is that both T-Mobile and 3 Austria are "*appealing to the country's highest constitutional and administrative courts to order a re-run of the auction, arguing that the conditions were designed to maximize profits and endangered competition*".[14] According to press reports, the courts could take around 2 years to make a decision. In this context where results are subject to legal challenge, we do not think they should be used by Ofcom, for fear they may be overturned later.

37. Many other Industry commentators have similarly expressed shock at the result, with some suggesting that the asymmetric outcome in terms of frequency holdings could adversely affect downstream competition. For example:

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9 Telecom Austria Group, Results of the Austrian Spectrum Auction, October 21, 2013, p. 5.

10 Telecoms.com, 28 November 2013, http://www.telecoms.com/201711/t-mobile-austria-confirms-intent-to-appeal-auction-results/

11 Quote from Jan Trionow, CEO of 3 Austria, in European Communications, 23 October 2013, http://www.eurocomms.com/industry-news/49-online-press/9370-austrian-operators-slam-having-to-spend-2-billion-on-4g-lte-spectrum

12 Quote from Jan Trionow, CEO of 3 Austria, Telecoms.com, 28 November 2013, http://www.telecoms.com/201711/t-mobile-austria-confirms-intent-to-appeal-auction-results/

13 Telegeography, 22 October 2013, http://www.telegeography.com/products/commsupdate/articles/2013/10/22/a1-scoops-half-of-spectrum-spoils-h3g-brands-process-a-disaster-for-industry

14 Reuters, 27 November 2013, http://in.reuters.com/article/2013/11/26/us-austria-telecoms-auction-idINBRE9AP13620131126

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- Bengt Norstrom, Northstream: "*It's important to make sure that the operators are on a level playing field in terms of access to lower and higher bands. Nothing has been done to safeguard the continued existence of competition*."[15]
- Berenberg analysts: "*It appears to us that Telekom Austria has rolled the dice on a 1.03 billion-euro gamble to corner the market for 800-1800MHz spectrum in order to starve Hutchison (seen as the price disruptor) of network capacity*".[16]
- Antonois Drossos, co-Founder of Rewheel: "*Competition has weakened in Austria as a result*."[17]
- Lee Sanders, Aetha Consulting: "*I think the main reason why prices went so high was because Telekom Austria bid so aggressively... and won an unprecedented amount of spectrum … Now they have more 800 MHz and 900 MHz spectrum than any other operator in Europe … At the beginning of the year it was a four player market, now it is a three player market (after the acquisition of Orange by Hutchison) and the third player is now effectively hamstrung*".[18]

38. In this context, we oppose Ofcom's proposal to derive proxy values for bands using an LRP methodology without seeing the detailed bids supporting them. It is simply not acceptable that something as important as the long-term pricing structure for UK mobile spectrum bands could be influenced by data which is both not transparent and suspect with regards to the behaviour of bidders. (Here, the situation is materially different from the Irish auction, where three of the four UK mobile operators were involved and have at least a partial understanding of how Ofcom's proposed values were derived).

39. The lax spectrum caps in Austria, which allowed individual bidders to secure such a large amount of prime spectrum further undermine comparison with the UK. In Austria, each bidder could acquire up to 2x35 MHz of lower band spectrum (800 MHz + 900 MHz) and up to 2x70 MHz across the three bands.

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15 Quoted in Telecoms.com, 28 November 2013, http://www.telecoms.com/201711/t-mobile-austria-confirms-intent-to-appeal-auction-results/

16 Quoted in Reuters, 22 October 2013, http://www.reuters.com/article/2013/10/22/austria-telecoms-auction-idUSL5N0IC1RM20131022

17 Quoted in Reuters, 22 October 2013, http://www.reuters.com/article/2013/10/22/austria-telecoms-auction-idUSL5N0IC1RM20131022

18 Quoted in Policy Tracker, Austrian 4G auction relieves MNOs of over €2 billion, October 2013.

This means that it was possible for two bidders to block a third player from acquiring any spectrum in the auction and/or shutting the out of the lower band completely. It seems that Telekom Austria and T-Mobile may have tried to do this. By contrast, in the UK, Ofcom set caps so as to ensure a minimum of 2x10 MHz at 800 MHz was available for an operator other than Telefonica and Vodafone; and pre-auction allocations ensured that a minimum of four operators would have substantial spectrum holdings across the three bands. It does not make sense that Ofcom could use as a benchmark for UK prices bid values that may have been inflated by bidding behaviour explicitly ruled out as unacceptable in the UK auction.

40. In conclusion, we consider the Austrian multi-band auction to be a high price outlier from all European benchmarks. It clearly grossly overstates the market price for all spectrum bands in Austria and any UK benchmark would similar grossly overstate value. We believe that if the public data was released, it would prove our concerns about overbidding. In the absence of such data, as well as legal uncertainty over the validity of the auction outcome, it is simply unsafe to make any inferences from Austrian auction data for UK prices. Accordingly, we strongly oppose any use of Austrian data points in quantitative analysis, especially in relation to absolute or relative values concerning 900 MHz and 1800 MHz spectrum.

2. Belgium (November 2013)

41. Belgium's award of 800 MHz spectrum, completed in November 2013, raised €360m (£305m). The award was conducted using a standard SMRA format, with spectrum sold in three blocks of 2x10 MHz, one of which had a coverage obligation. The award was not particularly competitive. There were only three bidders (the three main incumbent operators) and each purchased one lot at the reserve price. The fourth incumbent, which holds a 3G licence but has not rolled out a mobile network, declined to bid.

42. Belgium should, in principle, provide a reasonable benchmark for the UK, given similar levels of affluence and mobile market development. However, it is ambiguous to what extent the final price may be considered a proxy for the market price. On the one hand, the reserve price of €120m per lot was substantial. We understand that the BIPT took into account selling prices of 800 MHz spectrum in other countries in determining this price level. This relatively high starting price may have deterred a fourth player with valuation below this

level from participating (we note that Belgium's 4th 3G operator declined to participate). On the other hand, we cannot rule out the possibility that in an award with three lots and three predictable winners, entrant bidders could have been deterred from participating even if they had a value above reserve.

43. In conclusion, we consider the Belgium 800 MHz auction as a suitable benchmark in the context of a broad-based study, but we would not put any great weight on it in isolation. It is ambiguous whether the 800 MHz price overstates or understates market value.

3. Czech Republic (November 2013)

44. The Czech multi-band auction for 800 MHz, 1800 MHz and 2600 MHz concluded in November 2013, raising 8,529m Czech Koruna (CZK) (£287m). We previously commented on the Czech multiband auction in our January 2014 response, primarily in relation to the 1800 MHz band. Our main observations were as follows:

- There were five qualified bidders: T-Mobile, Telefonica and Vodafone, all incumbent operators, and Sazka Telecommunications and Revolution Mobile, both potential entrants. The auction was competitive, with both 800 MHz and 1800 MHz licences attracting bids above reserve. However, only one of the entrants actually placed bids in the auction.
- The 1800 MHz price was low, producing a benchmark UK price of just £0.8 million, lower than any other country in Europe. We attributed this to the unusual structure of 1800 MHz spectrum available in the auction. Incumbents could only bid on incremental 1 MHz blocks positioned in between existing assignments; this a is a very different structure from most recent auctions in Europe, where 1800 MHz has been restructured into 2x5 MHz lots suitable for LTE. We also noted there were obvious market sharing outcomes in this band, given existing 1800 MHz assignments, so it is possible that competition was stalled owing to demand reduction incentives.
- We concluded that the Czech result for 1800 MHz did not represent a reliable benchmark for the general value of 1800 MHz in the UK, so we did not include it in our own analysis. If it were included, we would say there is a strong likelihood that it underestimates the market value of 2x5 MHz blocks. Nevertheless, the fact that this spectrum sold "cheaply" does provide an

indication that smaller chunks of 1800 MHz spectrum may have much lower value than coherent 2x5 MHz LTE lots.

45. In the 800 MHz band, 2x10 MHz of spectrum was potentially reserved for a new entrant, but no entrant bids were received for this lot, and so it was opened up to incumbent bidders. This implies that the reserve price of 1,110m CZK per 2x5 MHz lot, which is at the upper end of European benchmark levels, may have exceeded the value of the spectrum to a marginal bidder. Price increases in this band were primarily driven by competition between the three incumbents for particular band positions.

46. The 2.6 GHz band did not attract any competition, notwithstanding the fact that the reserve price of 80m CZK per 2x5 MHz lot was at the lower end of European benchmark levels. It is possible that entrant bidders were deterred from pursuing this spectrum because the price of complementary 800 MHz spectrum was above their willingness to pay.

47. In conclusion, we think both the 800 MHz and 2.6 GHz are acceptable benchmarks for the UK, in the context of a broad-based study. We think that it is more likely that the 800 MHz price overestimates than underestimates market value, whereas the opposite may be true for 2.6 GHz prices. We do not think the 1800 MHz price is a good benchmark, and if it were included, we would expect it to underestimate the true value of this spectrum.

4. Estonia (2013)

48. Estonia's award of 800 MHz spectrum concluded in 2013, raising a total of €11.2m (£9.5m). The spectrum was awarded in three successive awards. The first award was a beauty contest, which auctioned a 2x10 MHz lot with coverage obligations; four bidders participated. The second and third awards, each for a single block of 2x10 MHz, were conducted using a standard SMRA format. Both auctions were competitive, each raising over €5m, more than three times the reserve price and significantly more than the €1m price tag for the beauty contest.

49. The two auctions should, in principle, provide a reasonable benchmark for the UK, although Estonia is a smaller and less developed economy. The two auctions were clearly competitive: each attracted more operators than licenses

available, and bidding lasting for 69 rounds and 18 rounds respectively. Given the higher prices achieved in the two auctions compared to the beauty contest, it seems reasonable to conclude that the first licence was either priced below market value or the coverage obligation was onerous. Accordingly, we propose that only the two auctions are used for benchmark purposes.

50. The two auctions raised a total of €10.184m for 2x20 MHz. Adjusting for population, this translates to a benchmark price of £10.9m/MHz.

51. In conclusion, we think that Estonia's 800 MHz outcome is an acceptable benchmark for the UK. Given the evidence of robust competition, we consider that the auction price for 800 MHz reflects the true market value of the spectrum in Estonia. However, this may underestimate the value of the spectrum in the UK, given Estonia is a much less developed economy.

5. Finland (October 2013)

52. Finland's award of 800 MHz spectrum, completed in October 2013, raised €108.1m (£91.6m). The award was conducted using an SMRA format, with spectrum awarded in 2x5 MHz lots. In a change from previous policy, the regulator FICORA for the first time adopted a substantial reserve price for the spectrum. There was significant competition in the auction between the three incumbents, presumably driven by one or more operators trying to win more than 2x10MHz. Ultimately, all three bidders secured 2x10 MHz.

53. Finland should, in principle, provide a reasonable benchmark for the UK. Although Finland and the UK are very different in size, they are both relatively affluent and have well-developed mobile markets. Further, the Finnish award was clearly competitive. However, the peculiar auction format used, in which prices could go down as well as up raises questions over whether the final prices, which were modestly above the reserve level, reflect market values. We understand that the auction lasted for hundreds of rounds, so one may suppose that prices at some point were higher than final prices; however, this does not necessarily mean bidders were willing to pay these amounts given that the rules made it easy for bidders to collapse prices during the auction.

54. In conclusion, we consider the Finland 800 MHz auction to be an acceptable benchmark for the UK. We think that it is more likely that the 800 MHz price

underestimates than overestimates market value, given the peculiar format and process of the auction.

6. Latvia (October 2013)

55. Latvia's award of 800 MHz spectrum, completed in October 2013, raised 3.3m Latvian Lats ("LVL") (£4.0m). The award was conducted using a standard SMRA format, with spectrum sold in three 2x10 MHz blocks. The award was competitive, with four bidders (BITE Latvija, Tele2, Latvijas Mobilais Telefons, and Telekom Baltija) participating in the auction. The auction lasted for 24 rounds and final prices were over three times reserve for each lot.

56. The auction was clearly competitive, which suggests that final prices should reflect the market value of the spectrum. However, like Estonia, Latvia is smaller, less affluent economy than the UK, and has a less developed mobile industry, so the benchmark likely underestimates the value for the UK.

57. In conclusion, we think the 800 MHz is an acceptable benchmark for the UK, in the context of a broad based study. Given the evidence of robust competition, we consider that the auction price for 800 MHz reflects the true market value of the spectrum in Latvia. However, this likely underestimates the value of the spectrum in the UK, given Latvia is a much less developed economy.

7. Lithuania (September 2013)

58. Lithuania's award of 800 MHz spectrum, which took place in September 2013, raised 8.1m Lithuanian Litas (£2.0m). We understand that an SMRA format was used and that bidding lasted for 20 rounds. The spectrum was made available as one 2x10 MHz block and four 2x5 MHz blocks. At least three bidders participated (Bite Lietuva, Omnitel, and Tele2), each winning 2x10 MHz. It is not clear to us whether competition was driven by a fourth bidder or by one of the winners bidding for more than 2x10 MHz.

59. Lithuania is the lowest benchmark in the available dataset. Like Estonia and Latvia, Lithuania is a smaller, less affluent economy than the UK, and has a less developed mobile industry, so the benchmark likely underestimates the value for the UK. Furthermore, unlike Estonia and Latvia, it is not clear to us if the process was competitive, further increasing the likelihood that this benchmark underestimates market value. The low price compared to other European

auctions does suggest that incentives for demand reduction could have impacted the outcome.

60. In conclusion, the Lithuanian 800 MHz may underestimate the market price of the spectrum in Lithuania and almost certainly underestimates the value in the UK. Accordingly, we would not place any weight on this benchmark individually. However, we have not identified any reason to exclude it from a broad-based sample.

8. Norway (December 2013)

61. Norway's award of 800 MHz, 900 MHz and 1800 MHz spectrum, completed in December 2013, raised NOK 1.78bn (£194.6m). The award was conducted using a single round package bid format, similar in design to the supplementary round of the CCA but with no proceeding clock stage. Another key difference from the CCA was that bidders paid the amount of their winning bids (i.e. a first price rule was used instead of the second price rule typically used for CCAs). The Norwegian auction was competitive, with four bidders participating and one of the three incumbents (Tele2) unexpectedly failing to win any spectrum.

62. Norway should, in general, be a reasonable benchmark country for the UK. Although Norway and the UK are very different in size, they are both relatively affluent and have well-developed mobile markets. Moreover, the Norwegian award was clearly competitive.

63. However, owing to the unusual choice of auction format, the available price data cannot be used to determine quantitative benchmarks:

- As with a multi-band CCA, prices are for packages across bands, not individual bands.
- To our knowledge, the bid data has not been published.
- The sealed bid format prevents bidders from learning about common values, leaving bidders vulnerable to winner's curse. The fact that the winning entrant outbid all incumbents raised a concern that they may have overpaid.
- The first price rule means that it is difficult to identify a proxy for the market price. In this type of auction, bidders have an incentive to shade their bids below value, so winning bids may or may not be representative of the market price.

64. Owing to these factors, there is no single approach that could be depended upon to identify specific prices for 800 MHz, 900 MHz and 1800 MHz. Even if an LRP approach was attempted with a full dataset of bids, the validity of this would be questionable given that bids may not reflect valuations owing to bid shading.

65. One interesting comparison that can be undertaken is to look at the overall outcome of the Norwegian and Austrian auctions, given that the same bands were sold in both awards: 800 MHz, 900 MHz and 1800 MHz. The Austrian auction raised £0.72 per MHz per pop across the three bands, significantly more than the £0.23 per MHz per pop (or £0.43 if the annual licence fee is included) raised in Norway. This is despite the fact that the Norwegian auction attracted a fourth bidder and one of the incumbents was knocked out by an entrant, whereas only the three incumbents participated in Austria. We think this high level comparison lends weight to arguments that bidders paid prices significantly above market value in Austria.

66. In conclusion, the use of a first price package bid format and lack of auction data means the Norwegian auction cannot be used for benchmarking of UK prices. However, a simple comparison of the overall result to Austria reinforces our conclusion that Austrian prices grossly overstate market value.

9. Slovakia (December 2013)

67. Slovakia's award of 800 MHz, 1800 MHz and 2.6 GHz spectrum, completed in December 2013, raised €157.2m (£133.1m). The multiband award was conducted using a standard CCA, where bidders paid a second price. The Slovakian auction attracted four bidders, including one entrant bidder. Telefonica was a participant in this auction. Our interpretation is that the entrant only bid on the set-aside spectrum in the 1800 MHz band, and did not compete for 800 MHz or 2.6 GHz spectrum. Overall, the auction was competitive, with final prices well above reserve prices.

68. Bidding in the 800 MHz band was not competitive owing to the spectrum cap of 2x10 MHz and lack of entrant participation. Each bidder was limited to bidding on two of the six lots in the band, and each of the three incumbent bidders won two lots. However, reserve prices were set relatively high, which could have deterred an entrant from bidding for 800 MHz spectrum.

69. The 1800 MHz band and the 2.6 GHz band were competitive. Lax spectrum caps allowed the bidders to express their full value for the available spectrum in these bands. All lots in the 1800 MHz band, as well as the 2.6 GHz band saw prices higher than reserve. However, the non-reserved portion of the 1800 MHz band was packaged into small (less than 2x5 MHz), frequency-specific units, which may not be a good proxy for the value of 2x5 MHz lots.

70. This award should, in principle, provide a reasonable benchmark for the UK. While Slovakia differs from the UK in both size and affluence, the auction was competitive in the 1800 MHz and 2.6 GHz bands. Furthermore, it is ambiguous whether the 800 MHz reserve price overstates or understates market value. However, as this was a multi-band CCA and bid data has not been published, no band-specific prices are available. Accordingly, this auction cannot be used in the quantitative benchmarking exercise but may still have some value for qualitative analysis.

71. Given the lack of public domain data, we cannot attempt to derive values for Slovakia using an LRP methodology. Nevertheless, for purely qualitative purposes, we put forward here an approach that may be used to give indicative values for each band. We do not think that any great weight should be applied to these numbers as benchmarks in isolation, but they may be relevant as a sanity check on Ofcom's conclusions.

72. An indicative approach for valuing spectrum in each band in Slovakia is as follows:

    - *Step 1:* Assume all 800 MHz spectrum sold at the reserve price. This assumption is based on lack of competition for 800 MHz spectrum.
    - *Step 2:* Assume 2.6 GHz TDD sold at reserve. This assumption is based on there being unsold 2.6 GHz TDD lots.
    - *Step 3:* Subtract value of 800 MHz and 2.6 GHz TDD lots at reserve (Y) from Telekom's winning price (X). As the only other spectrum that Telekom won is 2.6 GHz FDD spectrum, we derive an implied price for the 2.6 GHz FDD spectrum won by Telekom (Z = X - Y). We then divide this by the total amount of 2.6 GHz FDD won to identify a proxy for the price per MHz.
    - *Step 4:* Subtract value of 800 MHz and 2.6 GHz TDD spectrum at reserve, and the implied value of 2.6 GHz FDD from both Orange and Telefonica's

winning price. The residual amount is a proxy for the value of the 1800 MHz spectrum won by Orange and Telefonica.

- *Step 5:* Sum the leftover amount for Orange and Telefonica. This is the implied price for 2x5.4 MHz of 1800 MHz spectrum.
- *Step 6:* Sum the implied price for 1800 MHz paid by Orange and Telefonica with the 1800 MHz only winning bid of the entrant. Use this number to derive a price/MHz for 1800 MHz in Slovakia.

73. The results are reported in Table 1. The 800 MHz and 2.6 GHz prices are broadly in line with European averages, whereas the 1800 MHz is towards the lower end of European values.

Table 1: Indicative prices for the Slovakian multi-band auction

	800 MHz		1800 MHz		2.6 GHz	
	€/MHz	**£/MHz**	**€/MHz**	**£/MHz**	**€/MHz**	**£/MHz**
Value	1.9m	1.61m	0.28m	0.24m	0.26m	0.22m
Benchmark for UK*	-	23.1m	-	3.8m	-	3.2m

* After normalising for population and licence duration.

74. We do not pretend that this exercise has any precision. However, it does provide a plausible indication of where the value should lie. While there may be many other valid methodologies for attempting to extract prices, we would not expect them to produce wildly different results.

75. In conclusion, the data from the Slovakian multi-band auction is not suitable for use in the quantitative benchmarking exercise for the UK. However, our indicative calculations suggest that prices for 800 MHz and 1800 MHz are broadly in line with European averages, while the 1800 MHz price is well below.

10. Slovenia (April 2014)

76. Slovenia's award of 800 MHz, 900 MHz, 1800 MHz, 2.1 GHz and 2.6 GHz spectrum, completed in April 2014, raised €148m (£125m). The multiband award was conducted using a standard CCA, where bidders paid a second price. The auction attracted only three bidders (the three largest incumbent MNOs – a fourth incumbent spectrum owner failed to bid), but there were still many rounds

of bidding. Overall, the auction was competitive, with final prices well above reserve prices.

77. Competition was presumably focused on the 800 MHz and 900 MHz bands. While it is impossible to verify this without access to bid data, this seems the most likely explanation of the auction outcome, given that some spectrum at 1800 MHz (which should be more valuable than 2.1 GHz or 2.6 GHz) went unsold. We also note that, prior to the auction, at 900 MHz, the two largest incumbents held 2x12.5 MHz and the third operator held 2x10 MHz. Given the regulator's decision to sell blocks only in units of 2x5 MHz, competition for 900 MHz may have been artificially inflated by the desire of each incumbent to preserve their existing footprint so as to avoid disruption to their legacy 2G businesses.

78. This award should, in principle, provide a reasonable benchmark for the UK, albeit with concerns about the 900 MHz band outcome. While Slovenia differs from the UK in both size and affluence, the auction was competitive. However, like Slovakia, as this was a multi-band CCA and bid data has not been published, no band-specific prices are available. Accordingly, this auction cannot be used in the quantitative benchmarking exercise but may still have some value for qualitative analysis.

79. Given the lack of public domain data, we cannot attempt to derive values for Slovenia using an LRP methodology. Nevertheless, for purely qualitative purposes, we put forward here an approach that may be used to give indicative values for each band. We do not think that any great weight should be applied to these numbers as benchmarks in isolation, but they may be relevant as a sanity check on Ofcom's conclusions.

80. An indicative approach for valuing spectrum in each band in Slovenia is as follows:

    - *Step 1:* Assume all 1800 MHz, 2.1 GHz, and 2.6 GHz spectrum sold at the reserve price. This assumption is based on fact that some 1800 MHz lots went unsold.
    - *Step 2:* Subtract the reserve price of all 1800 MHz, 2.1 GHz and 2.6 GHz spectrum lots sold from the total winning prices.

- *Step 3:* Derive the implied prices of 800 MHz and 900 MHz using the average 800:900 price ratio observed across other European countries. We use the ratio of 1 : 0.63 in our previous submission.

81. The results are reported in Table 2. Prices in all four bands are broadly in line with European averages. We do not pretend that this exercise has any precision. However, it does provide a plausible indication of where the value may lie. While there may be many other valid methodologies for attempting to extract prices, we would not expect them to produce wildly different results.

Table 2: Indicative prices for the Slovenian multi-band auction

	800 MHz		900 MHz		1800 MHz		2.6 GHz	
	€/MHz	£/MHz	€/MHz	£/MHz	€/MHz	£/MHz	€/MHz	£/MHz
Value	1.01m	0.86m	0.64m	0.54m	0.24m	0.20m	0.08m	0.07m
Benchmark for UK*	-	32.4m	-	20.4m	-	7.7m	-	2.6m

* After normalising for population and licence duration.

82. In conclusion, the data from the Slovenian multi-band auction is not suitable for use in the quantitative benchmarking exercise for the UK. However, our indicative calculations suggest that prices are broadly in line with European averages.

C. Other CCAs

83. Further to Ofcom's proposal to consider including data from the Austrian, Norwegian, Slovakian and Slovenian package bid auctions, it is appropriate to review the previous approach of excluding the results of the Dutch and Swiss multi-band CCAs from the benchmark dataset. Based on the analysis below, we conclude that the Dutch auction is not a suitable benchmark for the UK given the likely distortions to bid behaviour caused by the large entrant set-aside. As with Slovakia and Slovenia, the Swiss auction may have some merit as a qualitative benchmark for absolute values.

1. Netherlands (December 2012)

84. The Netherlands completed its multi-band award for 800 MHz, 900 MHz and 1800 MHz in December 2012. An exceptional feature of this auction was that 2x10MHz of spectrum at 800 MHz was reserved for a new entrant, leaving the three incumbents to fight for the remaining 2x10 MHz. Unsurprisingly, in this context, bidding was intense, with incumbent bidders paying very high prices, and one failing to win any 800 MHz spectrum.

85. In principle, it may be possible to derive prices for this auction using an LRP methodology if the Dutch authorities were to grant access to the data. However, even if this were possible, we think the results would not be a good proxy for the UK, owing to the distortions caused by the entrant set aside. This almost certainly created artificial spectrum scarcity, driving prices for all lower band spectrum (800 MHz in particular but also 900 MHz) well above the market level. In this context, the use of a CCA format may have contributed to further price increases, as bidders had obvious opportunities to inflate their demand, so as to drive up prices for rivals.

86. Our view that prices were well above the market level is reflected in various comments across the trade press, for example:
    - Telegeography: "*Indeed, the* [auction price] *figure was so high that the country's leading player by subscribers, KPN Telecom, has said it will be cutting its dividend in order to be able to pay for its licences*."
    - Wireless-Mag: "*The high prices in the Netherlands were caused by the government setting aside some of the most valuable 800 MHz spectrum for a 4th operator. This created a squeeze which drove up prices*."

87. We have not attempted to determine indicative prices for the Dutch auction, as we do not consider them a fair benchmark for the UK auction. Prices appear to have been inflated by artificial spectrum scarcity created by the set-aside, so likely grossly exaggerate market value.

2. Switzerland (February 2012)

88. The Swiss multi-band auction for 800 MHz, 900 MHz, 1800 MHz, 2.1 GHz and 2.6 GHz, completed in February 2012, raised SFr 996m (£667m). Only the three

incumbent operators participated. Nevertheless, the auction lasted many rounds, implying strong competition amongst incumbents.

89. Given the lack of public domain data, we cannot attempt to derive values for Switzerland using an LRP methodology. Nevertheless, for purely qualitative purposes, we put forward here an approach that may be used to give indicative values for each band. We do not think that any great weight should be applied to these numbers as benchmarks in isolation, but they may be relevant as a confidence check on Ofcom's conclusions.

90. An indicative approach for valuing spectrum in each band in Switzerland is as follows:

    - *Assume all TDD spectrum sold for zero. As there were no reserve price bids placed by the regulator, this is a possibility. This also serves to provide a concrete upper bound for the price paid for the paired spectrum.*
    - *Add the spectrum won in the 2.1 GHz band with the 1800 MHz band. Since the relative value of 1800 MHz and 2.1 GHz is similar, we will treat these as the same band.*
    - *Derive the implied prices of 800 MHz, 900 MHz, 1800 MHz, and 2.6 GHz using the average 800:900, 800:1800, and 800:2.6 price ratios observed across other European countries. We use the ratio of 1 : 0.63 : 0.37 : 0.175 in our previous submission.*

91. The results are reported in Table 3. Prices in all four bands are broadly in line with European averages.

Table 3: Indicative prices for the Swiss multi-band auction

	800 MHz		900 MHz		1800 MHz		2600 MHz	
	SFr/ MHz	**£/ MHz**	**SFr/ MHz**	**£/ MHz**	**SFr/ MHz**	**£/ MHz**	**SFr/ MHz**	**£/ MHz**
Value	4.4m	2.9m	2.8m	1.8m	1.6m	1.1m	0.8m	0.5m
Benchmark for UK*	-	28.7m	-	20.1m	-	11.8m	-	4.6m

* After normalising for population and licence duration.

92. We would not suggest that this exercise has any precision. However, it does provide a plausible indication of where the value may lie. While there may be

many other valid methodologies for attempting to extract prices, we would not expect them to produce wildly different results.

93. In conclusion, the data from the Swiss multi-band auction is not suitable for use in the quantitative benchmarking exercise for the UK. However, our indicative calculations suggest that prices are broadly in line with European averages.

Section 4

REVISED BENCHMARKS FOR UK SPECTRUM

94. In this section, we report our revised benchmarks taking into account the new auction data, and explore how these affect our conclusions on absolute and relative value benchmarks for 900 MHz and 1800 MHz. We observe that the revised benchmarks are consistent with the conclusions presented in our original submission.

A. Revised benchmarks

95. In the tables below, we report the results of Telefonica's own benchmarking analysis, which we have updated to take account of the new auctions. It now includes some 24 auction processes across 17 European countries, a substantial increase from Ofcom's original dataset that only included 12 countries. To calculate these benchmarks, we use the same methodology as described in our previous submission and report results in the same format. All results are in GBP and show price per MHz. As a reminder, our methodology is as follows:

- For each band in each award, we identify a price per MHz in local currency. We use our own data, but compared this to the DotEcon data, and believe it to be identical, except for the correcting errors.
- To correct for differences in licence duration, we calculate a notional price for a 20-year licence for each country. For ease of comparison, we use the same approach as DotEcon and use a WACC of 4.10%, in line with the lower of DotEcon's two numbers[19].
- Where data can be verified, we have also calculated a price per MHz for any additional spectrum fees within a 20-year term, and added this to the auction fee. To convert from annual payments to a lump sum, we use the same approach as DotEcon including using a WACC of 4.10%, so as to facilitate comparison. Ofcom provided us with data revealing a long list of annual licence fees that DotEcon attributes to each country. However, these fees are not sourced and we have been unable to verify them (with the exceptions of Belgium, Denmark and Ireland, where data was

[19] For the avoidance of doubt, Telefonica remains firmly of the view that the cost of debt should be used as the relevant discount factor.

published in auction documents). Although we have used DotEcon data for all countries, so as to facilitate comparison between our results and Ofcom's results, we repeat here our request that Ofcom provide public domain evidence that all charges included are accurate.

- We then divide the total price per MHz by the local population, using Eurostat 2012 population data.
- We then convert the total price per MHz per pop from local currency into GBP using the average exchange rate over the 2010-2013 period (see detailed explanation in our original submission). We use market exchange rates, not PPP rates and make no adjustments for inflation.
- Finally, we multiple the price per MHz per pop by the UK population, using 2012 Eurostat data, to obtain our UK benchmark price per MHz for each band and award.

96. For each country where data is available, we report the absolute values for benchmarks in each band, and the resulting ratios between bands. In each case, we show the equivalent Ofcom numbers for comparison. We also show results from some simple statistical tests for both the full sample and for two subsets that strip out potential outliers (the first strips out the highest and lowest numbers in each case; and the second strips out observations based on two standard deviations so as to reduce the risk of bias in the results given the modest number of observations). In each case, we show the number of observations, mean average and medians for absolute values in each band and the variance between high and low points.

97. Nine auctions across five European countries plus one data point from each of two other auctions have been excluded from the dataset because we believe the data is unreliable or cannot be validated. These are represented in our table with either an "~~x~~", meaning we have not attempted to calculate a benchmark, or a crossed out number (e.g. ~~0.8~~), meaning we have calculated a benchmark but do not consider it reliable. A list of these auctions, which include a mix of low, medium and high price observations, is as follows:

    - Austria (2013) - 800 MHz, 900 MHz and 1800 MHz: Excluded owing to lack of band specific data AND evidence that bids were grossly in excess of market value.
    - Czech Republic (2013) – 1800 MHz only: Excluded as 1800 MHz sold in small frequency specific chunks not readily comparable to 2x5 MHz blocks.

- Norway (2007) – 2.6 GHz: Excluded because outside sample data range.
- Norway (2013) - 800 MHz, 900 MHz and 1800 MHz: Excluded owing to lack of band specific data AND uncertainty whether bids reflect market value.
- Finland (2008) – 2.6 GHz: Excluded owing to very low price and evidence that format encouraged demand reduction.
- Netherlands (2010) – 2.6 GHz: Excluded owing to very low price and exceptionally tight spectrum caps on incumbent bidders that prevented competition.
- Netherlands (2012) - 800 MHz, 900 MHz and 1800 MHz: Excluded owing to lack of band specific data AND evidence that prices distorted by 800 MHz spectrum set aside for entrants.
- Spain (2011) - 1800 MHz only: Excluded owing to inclusion of investment commitment in the licence that makes benchmark comparison uncertain.
- Slovakia (2013) - 800 MHz, 1800 MHz and 2.6 GHz: Excluded owing to lack of band specific data.
- Slovenia (2014) - 800 MHz, 900 MHz, 1800 MHz and 2.6 GHz: Excluded owing to lack of band specific data.
- Switzerland (2012) - 800 MHz, 900 MHz, 1800 MHz and 2.6 GHz: Excluded owing to lack of band specific data.

Telefonica

Table 5: Benchmarks for absolute values across bands – Telefonica and Ofcom methodologies compared

Telefonica Methodology (including new countries)

£m/MHz (UK Equivalent)	800MHz	900MHz	1800MHz	2.6GHz
Austria	x	x	x	1.5
Belgium	35.9			5.3
Czech Republic	30.1		0.8	2.0
Denmark	18.0	3.9	1.7	8.3
Estonia	10.9			
Finland	17.9			x
France	36.2			5.5
Germany	47.8		1.7	1.5
Greece		27.5	12.1	
Ireland	60.9	36.8	23.9	
Italy	46.8		15.1	3.4
Latvia	2.2			
Lithuania	0.9			
Netherlands	x	x	x	x
Norway	x	x	x	x
Portugal	28.0	18.7	2.4	1.9
Romania	11.4	13.1	3.3	1.3
Slovakia	23.1		3.8	3.2
Slovenia	32.4	20.4	7.7	2.6
Spain	26.8	21.7	1.7	1.5
Sweden	19.0		10.6	10.7
Switzerland	28.7	20.1	11.8	4.6
Average	26.2	20.3	8.9	3.9
Median	26.8	20.2	6.9	2.0
Range	60.1	32.9	22.2	9.4
Removing Highest and lowest numbers				
Average	25.5	20.2	7.5	3.4
Median	26.8	20.2	6.9	2.0
Range	45.6	14.4	13.4	6.9
Using 2σ interval				
Average	23.7	20.3	8.9	3.2
Median	22.9	20.2	6.9	1.9
Range	46.9	32.9	22.2	7.0
Ofcom report for comparison:				
LRP /Proposed	29.9	25.0	15.0	5.0

Ofcom Methodology

£m/MHz (UK Equivalent)	800MHz	900MHz	1800MHz	2.6GHz
Austria				1.8
Belgium				4.5
Czech Republic				
Denmark	10.1	2.4	1.0	9.5
Estonia				
Finland				
France	34.5			5.2
Germany	50.1		1.8	1.5
Greece		31.4	13.9	
Ireland	58.6	35.7	23.1	
Italy	48.3		15.5	3.5
Latvia				
Lithuania				
Netherlands				
Norway				
Portugal	36.1	24.1	3.1	2.4
Romania	21.8	24.9	6.2	2.5
Slovakia				
Slovenia				
Spain	31.4	25.4	2.9	3.1
Sweden	14.3		9.1	9.7
Switzerland				
Average	33.9	24.0	9.2	4.4
Median	34.5	25.2	7.7	3.3
Range	48.5	33.3	22.1	8.2
Removing Highest and lowest numbers				
Average	32.1	26.5	8.3	3.8
Median	34.5	25.2	7.7	3.1
Range	35.8	6.5	13.7	7.0
Using 2σ interval				
Average	33.9	28.3	7.2	4.4
Median	34.5	25.4	6.2	3.3
Range	48.5	11.6	14.5	8.2
Ofcom report for comparison:				
LRP /Proposed	29.9	25.0	15.0	5.0

Telefónica UK Limited
260 Bath Road
Slough
Berkshire
SL1 4DX
T +44 (0)113 272 2000
www.telefonica.com

Table 6: Benchmarks for relative values across bands – Telefonica and Ofcom methodologies compared

Telefonica Methodology

Country	900MHz / 800MHz	1800MHz / 800MHz	1800MHz / 900MHz	1800MHz / 2.6GHz
Austria	~~98%~~	~~58%~~	~~59%~~	~~2843%~~
Belgium				
Czech Republic		~~3%~~		~~40%~~
Denmark	22%	10%	45%	~~21%~~
Estonia				
Finland				
France				
Germany		4%		113%
Greece			~~44%~~	
Ireland	60%	39%	65%	
Italy		32%		~~442%~~
Latvia				
Lithuania				
Portugal	67%	9%	13%	131%
Romania	114%	29%	25%	250%
Slovakia		~~16%~~		~~120%~~
Slovenia	~~63%~~	~~24%~~	~~38%~~	~~300%~~
Spain	81%	~~7%~~	~~8%~~	~~115%~~
Sweden		56%		~~99%~~
Switzerland	~~70%~~	~~41%~~	~~59%~~	~~257%~~
Average	69%	25%	38%	234%
Median	67%	29%	~~44%~~	234%
Range	93%	53%	52%	328%
Removing Highest and lowest numbers				
Average	69%	24%	38%	190%
Median	67%	29%	~~44%~~	190%
Range	21%	30%	20%	119%
Using 2σ interval				
Average	69%	25%	38%	234%
Median	67%	29%	~~44%~~	234%
Range	93%	53%	52%	328%
Ofcom report for comparison:				
Ratios	84%	50%	60%	303%

Ofcom Methodology

Country	900MHz / 800MHz	1800MHz / 800MHz	1800MHz / 900MHz	1800MHz / 2.6GHz
Austria				
Belgium				
Czech Republic				
Denmark	24%	10%	42%	~~11%~~
Estonia				
Finland				
France				
Germany		4%		120%
Greece			~~44%~~	
Ireland	61%	39%	65%	
Italy		32%		443%
Latvia				
Lithuania				
Portugal	67%	9%	13%	129%
Romania	114%	28%	25%	248%
Slovakia				
Slovenia				
Spain	81%	~~9%~~	~~11%~~	~~94%~~
Sweden		64%		~~94%~~
Switzerland				
Average	69%	27%	38%	235%
Median	67%	28%	42%	189%
Range	90%	60%	52%	323%
Removing Highest and lowest numbers				
Average	70%	24%	37%	189%
Median	67%	28%	42%	189%
Range	20%	31%	19%	119%
Using 2σ interval				
Average	69%	27%	38%	235%
Median	67%	28%	42%	189%
Range	90%	60%	52%	323%
Ofcom report for comparison:				
Ratios	84%	50%	60%	303%

B. LUMP SUM VALUES FOR 800 MHz AND 2.6 GHz

98. In our original submission, we concluded that correct values for 800 MHz and 2.6 GHz, if an LRP methodology is used, are £24.16m for 800 MHz and £4.21m for 2.6 GHz.[20] These numbers are derived solely from UK auction data, so no adjustment is necessary in light of the expansion of the benchmark dataset. Nevertheless, as a cross-check for these results, it is informative to look at the results of other European awards of 800 MHz and 2.6 GHz. We previously concluded that the original data set supported our results, and we find that the extended dataset reinforces this finding.

99. In Figure 1 and Figure 2, we provide our own estimates of benchmark prices for 800 MHz and 2600 MHz in the UK. These are based on methodology that we outlined in our original submission, but expanded to include the additional country awards, excluding CCAs where price data is unavailable or unreliable. All relevant country data points are presented in descending order by price, with the highest and lowest benchmarks highlighted as potential outliers. In each case we highlight where our estimates for UK LRP reported above fall in the rank order.

100. As before, we observe that our estimated UK LRP values both fall in the middle of the observed range of European benchmarks excluding outliers. The value for 800 MHz moves up the ranking to the midpoint, having previously been in the lower middle of European benchmarks. The position of 2.6 GHz value is unchanged in the upper middle. Based purely on comparisons with other European outcomes, one may conclude that both are plausible estimates for market value. Put differently, European benchmarks do not provide any evidence that the market value for 800 MHz and 2.6 GHz should be higher or lower than these estimates.

[20] Telefonica submission, October 2013, para 127.

Figure 1: European benchmarks for price/MHz of 800 MHz in the UK

European benchmark 800MHz awards	800MHz benchmark £m/MHz (UK Equivalent)
Ireland	60.9
Germany	47.8
Italy	46.8
France	36.2
Belgium	35.9
Czech Republic	30.1
Portugal	28.0
Spain	26.8
Sweden	19.0
Denmark	18.0
Finland	17.9
Romania	11.4
Estonia	10.9
Latvia	2.2
Lithuania	0.9
All benchmarks:	
Average	26.2
Median	26.8
Range	60.1
Removing Highest and lowest numbers:	
Average	25.5
Median	26.8
Range	45.6
Ofcom modified LRP for comparison:	
LRP /Proposed	29.9

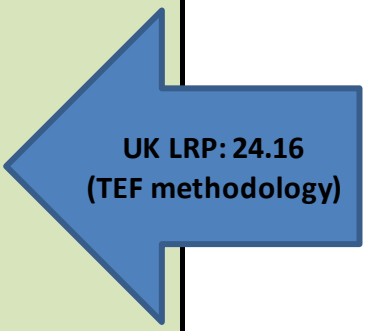
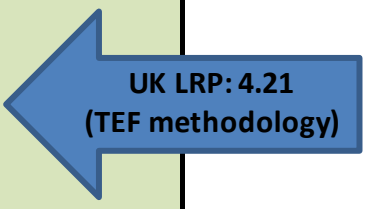


Figure 2: European benchmarks for price/MHz of 2.6 GHz in the UK

European benchmark 2.6GHz awards	2.6GHz benchmark £m/MHz (UK Equivalent)
Sweden	10.7
Denmark	8.3
France	5.5
Belgium	5.3
Italy	3.4
Czech Republic	2
Portugal	1.9
Germany	1.5
Spain	1.5
Austria	1.5
Romania	1.3
All benchmarks:	
Average	3.9
Median	2.0
Range	9.4
Removing Highest and lowest numbers:	
Average	3.4
Median	2.0
Range	6.8
Ofcom modified LRP for comparison:	
LRP /Proposed	4.95



101. As a further cross check on these conclusions we consider the CCAs for which we calculated indicative valuations. We observe that for 800 MHz, indicative values for Switzerland and Slovenia are slightly above the UK value, while Slovakia is slightly below. For 2.6 GHz, we observe that the indicative values for Slovakia and Slovenia are somewhat below the UK benchmark, while Switzerland is slightly above. We conclude that qualitative information from these auctions does not provide any evidence that the market value for 800 MHz and 2.6 GHz should be higher or lower than our estimates.

C. LUMP SUM PRICE FOR 900MHZ

1. Absolute value of 900MHz – new evidence

102. We previously concluded that, based on analysis of the original dataset, "*absolute values for 900 MHz should not be given much, if any, weight.*"[21] Our conclusion remains unchanged, as none of the new auctions provide any strong insight into the absolute value of 900 MHz.

103. Amongst the new auction countries, three of the ten have awarded spectrum in 900 MHz band. Unfortunately, in all cases data is either unavailable or unreliable:

- *Austria.* As discussed previously, we believe the implied 900 MHz price grossly overstates the market value of the spectrum and should not be considered for any quantitative analysis.
- *Norway.* There is anyway no reliable 900 MHz data point for comparison, owing to the package auction format used in 2013.
- *Slovenia.* Slovenia used a CCA, meaning that we cannot determine a reliable 900 MHz data point.

2. Relative value of 900 MHz and 800 MHz – new evidence

104. We previously concluded that: "*a broad analysis of ratios provides no evidence to support Ofcom's ratio of 0.84 for 900 MHz/800 MHz prices in the UK. Instead, the evidence from benchmarks is that the ratio should be set in a range between 0.57 and 0.69. These ratios would be virtually identical if based on Telefonica's estimates of absolute values*."[22] Our conclusion remains unchanged, as none of the new auctions provide any insight into this ratio.

105. Amongst the new auction countries, three of the ten have awarded spectrum in both have these bands. Unfortunately, in all cases data is either unavailable or unreliable:

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21 Telefonica submission, October 2013, para 167.

22 Telefonica submission, October 2013, para 205.

- *Austria.* As discussed above, we believe that prices grossly overstate the market value of the spectrum and should not be considered for any quantitative analysis. It is unsafe to draw any inferences about relative values across the bands, given that many bids may have been motivated by price setting or other strategic objectives, rather than valuation.
- *Norway.* There is no reliable 800 MHz or 900 MHz data point for comparison, owing to the first price package auction format used in 2013.
- *Slovenia.* Slovenia used a CCA, meaning that we cannot determine a reliable ratio. Were data to come available, we would want to check that the price of the 900 MHz was not inflated by strategic bidding in the clock rounds, given predictable demands of participants with legacy 2G businesses.

3. Conclusion on lump sum value for 900 MHz

106. We have explored the impact of new data on two approaches for deriving benchmark values for 900 MHz, one drawing on absolute values from other European auctions, and one using relative values for 900 MHz versus 800MHz. As in our previous submission, we continue to believe that the ratio of 900 MHz to 800 MHz ratio is the best available source for a UK benchmark.

107. The expanded analysis of ratios provides no evidence to support Ofcom's proposed ratio of 0.84 for 900 MHz/800 MHz prices in the UK. Instead, the evidence from benchmarks remains that the ratio should be set in a range between 0.57 and 0.69. We take a simple average of these approaches of 0.63 as a central case estimate for the value of 900 MHz in the UK. Using our value for 800 MHz of £24.16m per MHz, we estimate the value of 900 MHz in the UK at £15.22m (63% of £24.16m) per MHz.

D. LUMP SUM PRICE FOR 1800 MHZ

1. Absolute value of 1800 MHz – new evidence

108. In our previous submission, we identified a number of concerns with Ofcom's approach to analysing benchmarks for absolute values of 1800 MHz. In particular, Ofcom's approach appeared biased towards higher price data points. Given issues with some of the data points, we expressed scepticism about putting much weight on the results. The addition of the new data has not changed our view. However, to the extent that insights can be drawn from the new data, it does support our contention that Ofcom's approach over-valued 1800MHz.

109. Amongst the new auction countries, five of the ten have awarded spectrum in both have these bands. Unfortunately, in three cases, data is either unavailable or unreliable:

- *Austria.* As discussed above, we believe that prices grossly overstate the market value of the spectrum and should not be considered for any quantitative analysis.
- *Czech Republic.* The 1800 MHz benchmark is not reliable given that only very small blocks were sold.
- *Norway.* There is no reliable 800 MHz or 900 MHz data point for comparison, owing to the first price package auction format used in 2013.

110. The other countries that sold 1800 MHz are Slovakia and Slovenia. Both used CCAs and did not release bid data, so we cannot determine a definitive benchmark. However, given low demand for the 1800 MHz band in both cases, our indicative estimates should be quite accurate. The results add weight to our conclusion that Ofcom's UK benchmark of £15m/MHz is overpriced:

- *Slovenia.* Some 1800 MHz spectrum, which was priced at £7.7m/MHz (UK Adjusted), went unsold. This suggests that the 1800 MHz reserve exceeded the market price.
- *Slovakia.* Our indicative calculations reveal an implied 1800 MHz of £3.8m/MHz (UK Adjusted). Owing to local factors, we do note that this price risks understating the market value.

2. Relative value of 1800 MHz and 2.6 GHz – new evidence

111. We previously concluded that: "*the evidence available on the 1800MHz to 2.6 GHz ratio is weak. To the extent it may be considered, the implied ratio is between 190% and 234%. The evidence does not support Ofcom's proposed ratio of 300% for 1800MHz / 2.6 GHz.*"[23] Our conclusion remains unchanged, as none of the new auctions provide any strong insight into this ratio.

112. Amongst the new auction countries, five of the ten have awarded spectrum in both have these bands. Unfortunately, in all cases data is either unavailable or unreliable:

- *Austria.* This produces a ratio of over 2800%, which is clearly absurd. Notwithstanding the fact that the Austrian 2.6 GHz auction result is at the low end of benchmarks, this observation reinforces the conclusion that the Austrian 1800 MHz result grossly exceeds the market price.
- *Czech Republic.* The 1800 MHz benchmark is not reliable given that only very small blocks were sold.
- *Norway.* The 2.6 GHz data was not included in Ofcom (or Telefonica's) sample, as the award took place before 2008. There is anyway no reliable 1800 MHz data point for comparison, owing to the package auction format used in 2013.
- *Slovakia and Slovenia.* Both countries used CCAs, meaning that we cannot determine a reliable ratio for either country. However, some qualitative evidence is available which supports our conclusion that the ratio is below Ofcom's estimate of 300%. Firstly, some 1800 MHz spectrum in Slovenia, which was priced at three times the 2.6 GHz FDD, went unsold, while all 2.6 GHz sold – this may suggest that 1800 MHz was overpriced. Meanwhile, in Slovakia, a simplistic comparison of prices paid suggest a ratio between 1800 MHz and 2.6 GHz of as low as 120%, but this may have been depressed by lack of availability of full size 1800 MHz lots.

[23] Telefonica submission, October 2013, para 304.

3. Relative value of 1800 MHz and 900 MHz – new evidence

113. We previously concluded that: "*the evidence available on the 1800 MHz to 900 MHz ratio is weak. Only the Irish benchmark is consistent with Ofcom's proposed ratio of 60% for 1800MHz / 900MHz. However, we accept this may be a more realistic benchmark than the other available data points*."[24] Our conclusion remains unchanged, as none of the new auctions provide any insight into this ratio.

114. Amongst the new auction countries, only three of the ten have awarded spectrum in both have these bands. Unfortunately, in all cases data is either unavailable or unreliable:

- *Austria.* As discussed above, the 900 MHz and 1800 MHz prices grossly overstate the market value of the spectrum and should not be considered for any quantitative analysis.
- *Norway.* There is no reliable 900 MHz or 1800 MHz data point for comparison, owing to the package auction format used in 2013.
- *Slovenia.* Slovenia used a CCA, meaning that we cannot determine a reliable ratio. However, some qualitative evidence is available which supports our conclusion that the ratio is below Ofcom's estimate of 60%. Some 1800 MHz spectrum in Slovenia, which was priced at 50% of 900 MHz, went unsold, while all 900 MHz sold. This implies that 1800 MHz was overpriced and that the value ratio for 1800 MHz/900 MHz ratio in Slovenia is below 0.50.

4. Relative value of 1800 MHz and 800 MHz – new evidence

115. We previously concluded that: "*a broad analysis of ratios provides no evidence to support Ofcom's ratio of 0.50 for 1800 MHz / 800 MHz prices in the UK. Instead, the clear evidence from benchmarks is that the ratio should be set in a range between 32% and 42%. These ratios are not significantly altered by using Telefonica's revised methodology for benchmarking instead of Ofcom's approach (except for the impact of the Swedish error correction)*."[25] Our conclusion remains unchanged, as none of the new auctions provide any strong insight into this ratio.

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[24] Telefonica submission, October 2013, para 307.

[25] Telefonica submission, October 2013, para 282.

116. Amongst the new auction countries, five of the ten have awarded spectrum in both have these bands. Unfortunately, in all cases data is either unavailable, unreliable or ambiguous:

- *Austria.* As discussed above, the 800 MHz and 1800 MHz prices grossly overstate the market value of the spectrum and should not be considered for any quantitative analysis.
- *Czech Republic.* The 1800 MHz benchmark is not reliable given that only very small blocks were sold.
- *Norway.* There is no reliable 800 MHz or 1800 MHz data point for comparison, owing to the package auction format used in 2013.
- *Slovenia.* Slovenia used a CCA, meaning that we cannot determine a reliable ratio. However, some qualitative evidence is available which supports our conclusion that the ratio is below Ofcom's estimate of 50%. Some 1800 MHz spectrum in Slovenia, which was priced at 44% of 800 MHz lots (the ones without a coverage obligation), went unsold, while all 800 MHz sold. This implies that 1800 MHz was overpriced and that the value ratio for 1800 MHz/900 MHz ratio in Slovenia is below 0.44,
- *Slovakia.* Slovakia used a CCA, meaning that we cannot determine a reliable ratio. However, some qualitative evidence is available which supports our conclusion that the ratio is below Ofcom's estimate of 50%. Given the low level of competition for 800 MHz and 1800 MHz in the auction it is possible to derive indicative estimates of prices for these bands that should be reasonably accurate. This produces a ratio of just 16%.

5. Conclusion on lump sum value for 1800 MHz

117. We have explored the impact of new data on four approaches for deriving benchmark values for 1800 MHz, one drawing on absolute values from other European auctions, and three using relative values for 1800 MHz versus other bands from other auctions. As in our previous submission, we continue to believe that the ratio of 1800 MHz to 800 MHz ratio is the best available source for a UK benchmark.

118. Our original analysis of 1800 MHz/800 MHz ratios suggested a ratio of between 32% and 42%, less than the 50% used by Ofcom. Applying an average

ratio of 37% to our 800 MHz value of £24.16m per MHz results in an 1800 MHz value of £8.93m per MHz. This is not changed by the inclusion of the new auctions, and none are included in deriving this benchmark.

E. Conclusions

119. We have explored the impact of adding the new auctions to the benchmark data set. Some of these auctions offer new data points for 800 MHz and 2.6 GHz. The revised dataset leads to modest reductions in the benchmark values for these bands, bringing them more closely in line with our estimates for the per MHz value of 800 MHz and 2.6 GHz of £24.16m and £4.21m respectively. Unfortunately, none of the new auctions offer any reliable data for the value of the 900 MHz or 1800 MHz bands. Accordingly, our conclusions on these bands are unchanged. We estimate a value per MHz of £15.22m and £8.93m for 900 MHz and 1800 MHz respectively.

120. Using these lump-sum values for the spectrum in place of Ofcom's values, and correcting for Ofcom's errors in converting these values into annuities in the way we describe in section 4 of our original submission (i.e. using a discount rate of 1.7%, and no TAF), results in ALF payments of £0.89m and £0.52m for 900 MHz and 1800 MHz respectively, 55% less than Ofcom's estimates (as illustrated in the table below). These estimates are unchanged from our previous submission.

Table 7
Annuities (£m): Telefonica's estimates of the annuity are 55% less than Ofcom's

Spectrum	Ofcom	Correcting for discounting but retaining Ofcom lump-sum	Correcting for discounting & lump-sum
900 MHz	1.99	1.46	0.89
1800 MHz	1.15	0.88	0.52

121. These are the results from amendments to Ofcom's analysis and rely on Ofcom's broad methodological approach. For the record, we have doubts about a number of aspects of Ofcom's methodology (as set out in section 3 of our original submission). We believe that that the approach Ofcom took in assessing the effects of increased ALFs was too narrowly focussed and that, consequently, in its first consultation it failed to grapple meaningfully with either its statutory duties or the purpose of the Government's Direction.