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Forward-looking cost-based pricing methods

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Executive Summary

1. The initial pricing principle (IPP) for the unbundled bitstream access (UBA) service requires the Commerce Commission (Commission) to benchmark against *"prices from comparable countries that use a forward-looking cost-based pricing method"*. To arrive at its Draft Determination, the Commission excludes from that benchmarking exercise the prices from four countries that employ a 'fully distributed cost' (FDC) approach to determine regulated tariffs: France, Spain, Bahrain and the United Kingdom (UK). In so doing, the Commission reasons that:

   - the IPP is intended to be a proxy for the price that would apply under the final pricing principle;[1] and
   - the FDC methodology is 'not a good proxy' for a total service long-run incremental cost (TSLRIC) approach.[2]

2. In a joint submission on the Draft Determination,[3] three local fibre companies (LFCs) question that reasoning. They state that:[4]

   - the literature cited by the Commission does *not* support its proposition that FDC approaches are not a reasonable proxy for TSLRIC; rather, CRA[5] and Plum Consulting[6] explain that the methods can yield similar outcomes; and
   - even if FDC was not a good proxy for TSLRIC, it is still a 'forward-looking cost-based pricing method' and the observations from France, Spain, Bahrain and the UK should therefore be included in the benchmark set.

3. In our view, the submission of the LFCs has merit. FDC methods that use a *current replacement cost methodology* (as opposed to historical costs) to derive the pool of costs to be distributed might reasonably represent 'forward-looking cost-based pricing methods' within the meaning of *The Telecommunications Act 2001* (the Act). We note that the Australian Competition and Consumer Commission (ACCC) has defined forward-looking costs as:[7]

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1 Commerce Commission, *Unbundled Bitstream Access Service Price* Review, 3 December 2012, paragraphs 59 and 61 (hereafter: 'Draft Determination').

2 Draft Determination, paragraph 169.

3 Enable Networks Limited, Whangarei Local Fibre Company Limited and Ultrafast Fibre Limited, *Joint Submission on Unbundled Bitstream Access Service Price Review Draft Determination Dated 3 December 2012,* 1 February 2013, paragraphs 20 to 26 (hereafter: 'LFC Submission').

4 LCF Submission, paragraph 25.

5 CRA, *Costing methodologies and incentives to invest in fibre*, July 2012 (hereafter: 'CRA Paper').

6 Plum Consulting, *Costing Methodology and Transition to Next Generation Access, a report for ETNO,* March 2011 (hereafter: 'Plum Paper').

7 ACCC, *Access pricing in telecommunications – A guide*, July 1997, p.29.

> *"[T]he ongoing costs of providing the service in the future using the most efficient means possible and commercially available. In practice this often means basing costs on the best-in-use technology and production practices and valuing inputs using current prices."*

4. In our opinion, the above definition and the relevant provision of the Act could reasonably be read as encompassing FDC methods based on current costs as well as TSLRIC approaches. There is no reason in economics to construe the term 'forward-looking cost-based method' as referring only to the latter. This is reinforced by the fact that, in practice, there may be *few differences of economic signficance* between the two methods. The principal function of both approaches is to allocate the (predominantly common[8]) costs of the relevant network elements, including to the service in question. In this respect, the basic mechanics of the TSLRIC and FDC methods can be very similar.

5. There are many ways to arrive at a 'bottom-up' TSLRIC price and to produce a 'pool of costs' to 'distribute' using an FDC methodology, i.e., different asset valuation techniques, depreciation profiles and so on. If an FDC method uses a *current replacement cost methodology* (as opposed to historical costs) to arrive at the pool of costs to be distributed, it may serve as a reasonable (albeit perhaps imperfect) proxy for TSLRIC models that also use replacement costs to value the relevant network elements, i.e., the types of models that the Commission has included in its benchmark set.

6. The extent to which a particular implementation of the FDC or TSLRIC methods represents current as opposed to historical costs – and is therefore 'forward-looking' – can consequently vary from model-to-model. In other words, the Commission is drawing a 'bright-line' distinction between two cost allocation methodologies that, in practice, may not be so readily distinguishable. The UK regulator, Ofcom has stated previously that neither method is necessarily superior[9] and has also observed that:[10]

> *"CCA FAC [current cost accounting fully allocated cost] uses data that can be reconciled to the regulatory financial statements, which are audited and are in the public domain. We also think that the CCA FAC and LRIC+EPMU [long-run incremental cost equi-proportional mark-up]* ***should provide reasonably similar results****, particularly at more aggregate levels, since the overall total of costs to be recovered is the same."* [Emphasis added]

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8 The nature of telecommunications networks means that there are relatively few costs that can be directly attributed (or are 'incremental to') services. Rather, the strong economies of scope means that costs tend to be shared (or common) across multiple services.

9 Ofcom (2011), *Proposals for WBA charge control – Consultation document and draft notification of decisions on charge control in WBA market 1*, p.54.

10 *Ibid.*

7. The Telecommunications Regulatory Authority of Bahrain made precisely the same point in its response to the Commission's Wholesale Bitstream Access questionnaire (see cell FGH 14):

> *"The distinction between the FAC & LRIC [is]* ***unlikely to be significant*** *where the increment in the LRIC is the whole service/network to which a mark-up for common cost is applied. If the FAC is based on CCA, then* ***the output would be practically the same****"* [Emphasis added]

8. One therefore cannot conclude *a priori* that an FDC approach is not a forward-looking cost methodology within the meaning of the Act. What is needed is a careful *case-by-case* assessment. Just as the Commission would not necessarily *accept* all TSLRIC models (e.g., those based on historical costs), neither should it necessarily *dismiss* all prices that have been derived using an FDC model. The implication of this is that it was incorrect, in our view, to exclude from the benchmark set the observations from France, Spain, Bahrain and the UK simply because they are based on FDC approaches.

9. To determine whether those countries should be included, one must examine the way in which the prices have been produced (e.g., whether they are based on current costs or historical costs, or have other elements such that they would be considered forward-looking). We have undertaken an initial analysis of the approaches employed in the four excluded jurisdictions. Based on the information provided by the Commission and certain other materials we have obtained during the limited timeframe for cross-submissions, our preliminary views are that:

   - there is strong reason to think that it would be appropriate to include the UK price in the benchmark set as it is based on an FDC approach using current costs;
   - it is unlikely to be appropriate to include the Bahrain price in the benchmark set, since, according to the Commission, the FDC approach uses historical costs, and so would not represent a forward-looking methodology; and
   - there is insufficient information for us to offer even a preliminary view as to whether France and Spain should be included in the benchmark set – but, by the same token, there is not yet a sound basis to confidently exclude them.

10. We note that our observations regarding the four jurisdictions are strictly preliminary in nature. Ultimately, the Commission is likely to be in the best position to acquire the additional information that would be needed to arrive at a clearer view about whether these jurisdictions have the necessary elements to be considered forward-looking. This might be most efficiently accomplished by directing a further questionnaire to the regulators of the excluded countries requesting more detail about the respective FDC approaches, e.g., asset valuation methodologies and so on.

1 Introduction

11. This report has been prepared by the Competition Economists Group (CEG) on behalf of Chorus. Its subject is the approach that the Commerce Commission (Commission) has taken to interpreting and applying the initial pricing principle (IPP) for the unbundled bitstream access (UBA) service. The IPP requires the Commission to benchmark against *"prices from comparable countries that use a forward-looking cost-based pricing method"*.

12. In its Draft Determination,[11] the Commission excluded from the benchmark set four countries that employ a 'fully distributed cost' (FDC) approach to determine regulated tariffs: France, Spain, Bahrain and the United Kingdom (UK). The Commission explains that this exclusion is based on the premise that a FDC methodology is 'not a good proxy' for a total service long-run incremental cost (TSLRIC) approach.[12] In a joint submission,[13] three local fibre companies (LCFs) question that reasoning. They state that:[14]

    - the literature cited by the Commission does *not* support the proposition that FDC approaches are not a reasonable proxy for TSLRIC; rather, CRA[15] and Plum Consulting[16] explain that the methods can yield similar outcomes; and
    - even if FDC was not a good proxy for TSLRIC, it is still a 'forward-looking cost-based pricing method' and the observations from France, Spain, Bahrain and the UK should therefore be included in the benchmark set.

13. This submission has some merit. In our opinion, a strong argument could be made that FDC methods that use a *current replacement cost methodology* (as opposed to historical costs) to derive the pool of costs to be distributed represent 'forward-looking cost-based pricing methods' within the meaning of *The Telecommunications Act 2001* (the Act). This is reinforced by the fact that, in practice, there may be *few differences of economic significance* between the two approaches – both are, in essence, predominantly common cost allocation methodologies.

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11 Commerce Commission, *Unbundled Bitstream Access Service Price* Review, 3 December 2012 (hereafter: 'Draft Determination').

12 Draft Determination, paragraph 169.

13 Enable Networks Limited, Whangarei Local Fibre Company Limited and Ultrafast Fibre Limited, *Joint Submission on Unbundled Bitstream Access Service Price Review Draft Determination Dated 3 December 2012,* 1 February 2013, paragraphs 20 to 26 (hereafter: 'LFC Submission').

14 LCF Submission, paragraph 25.

15 CRA, *Costing methodologies and incentives to invest in fibre*, July 2012 (hereafter: 'CRA Paper').

16 Plum Consulting, *Costing Methodology and Transition to Next Generation Access, a report for ETNO,* March 2011 (hereafter: 'Plum Paper').

14. In other words, the Commission is drawing a 'bright-line' distinction between two cost allocation methodologies that, in practice, may not be so economically distinguishable. This strongly suggests that the question of whether an approach represents a 'forward-looking cost-based pricing method' should be assessed on a *case-by-case* basis. Just as the Commission would not necessarily *accept* all TSLRIC models (e.g., it might not accept a TSLRIC model based on 'pure historical costs'), it should not necessarily *dismiss* all prices that have been derived using an FDC model. More attention may need to be paid to *how* those FDC prices have been produced.

15. We address these matters in this report, the remainder of which is structured as follows:

- **section two** provides an overview of the statutory requirements and how they have been interpreted by the Commission and by others;
- **section three** explains what is meant by the term TSLRIC and describes the different ways to implement a TSLRIC methodology in practice;
- **section four** explains what is meant by the term FDC and describes the various ways in which to implement an FDC approach;
- **section five** reconciles the two approaches and the potential implications for when an FDC approach might be included in the benchmark set; and
- **section six** contains a high-level description of the FDC models that are used to derive regulated prices in France, Spain, Bahrain and the UK and offers our preliminary thoughts on whether it might be appropriate to include any of those prices in the benchmark set.

2 Statutory Requirements

16. In this section we provide an overview of the relevant statutory requirements and how they have been interpreted by the Commission and by others. The *Telecommunications Act 2001* (the Act) states that, under the IPP, the regulated price for the UBA service must be:

> *"The price for the designated access service entitled Chorus's unbundled copper local loop network plus benchmarking additional costs incurred in providing the unbundled bitstream access service against prices in comparable countries that use* ***a forward-looking cost-based pricing method****."* [Emphasis added]

17. In its Draft Determination, the Commission states that a price from a candidate country will be the product of a 'forward-looking cost-based pricing method' and eligible for inclusion in the benchmark set when:[17]

- the regulated price is regulated using a cost-based price method;
- a TSLRIC methodology, or equivalent, is used to calculate the regulated price;
- the regulated price is set based on current (forward-looking) costs – 'pure historic cost models' are said not to comply with this requirement, though 'hybrid historic/current cost models' may comply; and
- the cost model is designed or expressly reviewed and approved by the regulator.

18. The Commission has also contended that the IPP *is "intended to be a proxy for the price that would be set under the final pricing principle"*[18], i.e., TSLRIC. The Act states that, in relation to a telecommunications service, TSLRIC means:

> *"[T]he forward-looking costs over the long-run of the total quantity of the facilities and functions that are directly attributable to, or reasonably identifiable as incremental to, the service, taking into account the service provider's provision of other telecommunications services; and includes a reasonable allocation of forward-looking common costs."*

19. In our opinion, there is no reason in economics to construe the term 'forward-looking cost-based method' as referring only to TSLRIC approaches and those that serve as a proxy. However, this is ultimately a legal question. Nevertheless, even if the Commission's interpretation of the IPP is correct – i.e., that benchmark prices should be 'a proxy for TSLRIC' – it does not necessarily follow that *only those regulated prices derived using a TSLRIC model* should be included in the benchmark set of countries.

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17 Draft Determination, paragraph 61.

18 Draft Determination, paragraphs 59 and 61.

20. The Commission appears to have acknowledged in its Draft Determination that the suite of 'forward-looking cost-based pricing methods' may indeed *extend beyond* TSLRIC, for example:

    - the Commission's second criterion listed above (paragraph 17) refers to a TSLRIC methodology *or equivalent* being used to calculate the price; and
    - elsewhere in its Draft Determination, the Commission states that a key criterion for the benchmark set is to select countries that *"use a forward-looking cost-based approach, such as a TSLRIC approach"*.[19]

21. Our reading of the Draft Determination is that TSLRIC is presented as an *example* of a forward-looking cost-based approach, rather than being the *only* option. This interpretation is consistent with previous Commission decisions, in which models based on long-run incremental cost (LRIC+) or a long-run average incremental cost (LRAIC) methodology were accepted as 'equivalent to TSLRIC'. This equivalence was said to exist on the basis that:[20]

    > *"[T]hese methodologies estimate forward-looking costs over the total service increment, and include a reasonable allocation of common costs."*

22. The Commission has also recognised that *"it is not unusual for forward-looking cost models to utilise historical cost inputs, where current prices cannot be obtained."*[21] In light of this, it has been prepared to consider including what it has characterised as 'hybrid historic/current cost models' (see the third criterion above (paragraph 17)).

23. In conclusion, we construe the Commission to have interpreted the requirements of the Act (rightly or wrongly) in the following way:

    - regulated prices can be included in the benchmark set if they have been produced using a TSLRIC methodology, or an approach that closely resembles a TSLRIC approach, i.e., yields comparable results; and
    - those forward-looking cost models (TSLRIC models or alternatives) do not need to be based *exclusively* on 'current costs', since it is quite common (perhaps necessary) that some historical costs will be included.

24. However, the Commission ostensibly concludes that prices derived using an FDC method *do not meet this criteria* because they are 'not a good proxy' for prices derived using a TSLRIC method. The consequence of this finding is that prices from

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19 Draft Determination, paragraph 60.

20 Draft Determination, paragraph 168. *See also:* Commerce Commission, *Determining the pricing principle, and core prices, for the voice MTAS services,* paragraph 245. Note that the Commission has also *ruled out* 'pure LRIC' models on the basis that they do not provide for 'a reasonable allocation of forward-looking common costs' – see paragraph 251 of the same document.

21 *Ibid,* paragraph 256.

France, Spain, Bahrain and the UK are excluded. In our view, the Commission should give greater consideration to whether the FDC approaches employed in each country might constitute 'forward-looking cost-based methods' in their own right, rather, than solely upon whether an FDC method can yield proximate results to TSLRIC. It states simply that:[22]

> *"The literature we have reviewed indicates that the FDC and TSLRIC methods may lead to substantially different results and that FDC approaches are not a reasonable proxy for TSLRIC."*

25. In our opinion, the three LFCs are quite right to question the efficacy of that exclusion and the interpretation of the IPP that it implies.[23] There does appear to be a potential inconsistency between the criteria that the Commission has articulated to determine the benchmark set – including its stated preparedness to consider alternative methods to TSLRIC – and its decision to exclude the FDC prices without a detailed examination of the countries' models.

26. There are two problems with the Commission's contention. First, both a TSLRIC and an FDC method can represent a 'forward-looking cost-based pricing method' in the right circumstances. Second, one cannot conclude *a priori* that an FDC approach is a 'poor proxy for TSLRIC'. More analysis is needed. Whether an FDC approach will yield different or similar prices to a TSLRIC depends upon how the models have been applied. This becomes apparent in the following sections, in which we describe the two methodologies in more detail.

22 Draft Determination, paragraph 169.

23 LCF Submission, paragraph 25.

3 Bottom-up TSLRIC

27. In this section we explain what is meant by the term TSLRIC. We then describe the different ways to implement a TSLRIC methodology in practice.

3.1 The TSLRIC Principle

28. The core cost concept used in the TSLRIC methodology is that of long run incremental cost (LRIC). Incremental cost is a generic cost concept, defined as the increase in a firm's total costs as a result of an increase in output, or the costs avoided if output falls. TSLRIC refers to the situation where the increment of output under consideration is the *whole of a particular service*, i.e., the UBA service.

29. The TSLRIC pricing methodology often aims to represent the costs that an *efficient operator* would incur in providing the *pertinent service over the long run* using *least cost equipment and technology*. It can be best understood by separating it into its components:

- **total service** refers to the cost of production of an entire service, not the cost of a particular unit;
- **long-run** refers to a long-run cost concept in contrast to the short-run – in the long-run all factors of production can be varied; and
- **incremental cost** means that it is a form of 'marginal cost', although not the marginal cost of a change in the amount of output produced.

30. It is also usual to allocate some of the common costs associated with a regulated product to the revenue that can be earned from this product. This is because, without that allocation of common costs, a firm that only received revenue equal to TSLRIC for all of its products would make an economic loss. The cost measure that includes TSLRIC plus an allocation of common costs is often called 'TSLRIC+', but we refer to it simply as TSLRIC throughout this paper.

31. In principle, the TSLRIC approach has the potential to closely match prices with replacement costs over time, such that prices reflect forward-looking costs. However, in practice, this depends on the myriad decisions and assumptions that must be made translating the theory into practice. We elaborate on some of the key inputs/decisions below (note that this is not an exhaustive list[24]).

[24] For example, we do not discuss the determination of the cost of capital, which will, of course, be an important determinant of the final prices.

3.2 Degree of Optimisation

32. Because TSLRIC pricing involves hypothesising the costs that would be incurred by a new entrant, a decision must be made about existing network elements that will need to be 'optimised' in the modelling process. Regulators typically choose between two broad alternatives – a *'scorched node'* model and a *'scorched earth'* model:[25]

    - the *scorched earth* assumption bases the modelled network purely on a hypothetically new network, regardless of the assets *in situ*, e.g., it might assume an entirely new number of exchanges in different locations and, possibly, using a different technology; and
    - under the *scorched node* assumption, the model would take greater account of the existing network infrastructure, e.g., the location and number of existing nodes (exchanges and cabinets) might be 'taken as given' – the technology might also be also be assumed to be the same.

33. In practice, some variant of the 'scorched node' model is most commonly applied, i.e., a notional network is typically modelled that reflects some (but not necessarily all) of the existing asset architecture. The result is that a TSLRIC model will typically provide a 'bottom-up' estimate of the costs of some:

    - 'forward-looking' decisions, i.e., the costs that a new entrant would face to build something today – which may or may not resemble what is already there; and
    - 'historical' decisions, i.e., the costs that a new entrant would face today to build something that is already there (the assets taken 'as given' when scorching).

34. The degree of optimisation ('scorching') may therefore vary from model-to-model – potentially considerably. It follows that the extent to which the costs being estimated by a TSLRIC methodology represent the outworking of 'current' (or 'forward-looking') and 'past' decisions may also vary significantly.

3.3 Asset Valuation

35. The most common approach is for a TSLRIC model to value assets based on the current replacement cost of their modern equivalent. This is often referred to an optimised replacement cost (ORC). The ORC of an asset is a measure of the current cost of replicating the service potential of an existing asset with its modern equivalent, after adjustment for any optimisation ('scorching') as may be needed to meet current expected demand.

[25] CRNEC (2001) point out that it would also be possible to construct TSLRIC estimates for a 'real' as opposed to a 'notional' (or partly notional) network. In other words, one could, in principle, construct TSLRIC prices for a network as it exists without undertaking any optimisation. *See:* CRNEC (2001), *The estimation of telecommunications service costs using TSLRIC: a draft of a report for the Ministry of Economic Development,* May, University of Auckland, paragraph 7.

36. It is not uncommon to think of the ORC as the cost that would be incurred by a new entrant to provide the service. However, as the Commission has acknowledged,[26] TSLRIC models sometimes utilise historical (actual) cost inputs where the prices of modern equivalents cannot be obtained. For example, if the cost of an input was determined by, say, a one-off contestable process (e.g., an auction for spectrum), modelling the current cost may be very difficult (i.e., controversial or complex).

37. TSLRIC models might also incorporate historical cost values that have been inflated (or deflated, as the case may be) by reference to an index intended to reflect (albeit imperfectly) movements in replacement costs. The resulting values – often called 'indexed historical costs' (IHC) – are something of a 'hybrid' between 'pure' historical costs and current replacement costs.

38. For this reason, TSLRIC prices are often the product of both current (forward-looking) replacement costs *and* historical costs (indexed or otherwise).[27] It follows that the extent to which asset values (and the prices determined by reference to those values) represent current or historical decisions may again vary significantly from model-to-model.

3.4 Depreciation

39. A TSLRIC model will need to incorporate assumptions about the depreciation profile. A number of different depreciation profiles might be considered. The CRA paper cited by the Commission (and the LFCs) provides a useful overview of the different types of depreciation that might be considered. By way of brief summary, the cost of an asset can be allocated over its life in at least four ways:[28]

- 'economic depreciation' aims to reflect the proportion of an asset's 'usefulness' that has already been consumed;
- 'annuity depreciation' distributes the return on and of capital over the life of the asset – this distribution can be 'constant' or 'tilted';
- 'replacement cost depreciation' incorporates the current cost of the asset but ensures that historical cost to investors is recovered; and
- 'straight-line depreciation' distributes the value of the asset proportionally over its useful life, i.e., it results in a constant rate of depreciation.

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26 Commerce Commission, *Determining the pricing principle, and core prices, for the voice MTAS services,* paragraph 256.

27 As CRNEC (2001) again observes, it is theoretically possible for TSLRIC prices to be based on the historical (actual) costs of an actual (rather than notional) network, but this is certainly not the usual practice. *See:* CRNEC (2001), *The estimation of telecommunications service costs using TSLRIC: a draft of a report for the Ministry of Economic Development,* May, University of Auckland, paragraph 7.

28 CRA Paper, pp.20-27.

40. As the CRA paper explains, these different approaches can result in quite different profiles of regulated prices (and cost recovery). For example, some may result in cost recovery being 'front-loaded' (tilted annuities) or 'back-loaded' and others (economic depreciation) are influenced by the forecast profile of demand (and the assets' remaining productive capacity).

41. For the purposes of this report we do not provide our views as to the 'correct' profile of depreciation. We do note however, that in practice there are a number of ways in which depreciation has been calculated under the guise of TSLRIC.

3.5 Allocation of Common Costs

42. We noted earlier that a TSLRIC model will always allocate some of the common costs associated with a regulated product to the revenue that can be earned from the product. Gans and King (2003) explain that the aggregate measure of the common costs to be allocated can be determined by estimating the incremental cost of each service in turn (of which there may be very many) and then subtracting the sum of these incremental costs from the total cost of all services.[29]

43. The remainder represents the costs that are common to at least two services that comprise the aggregate bundle. Once those costs have been determined, they can then be allocated amongst the relevant services to create the TSLRIC prices.[30] Gans and King (2003) note that *"preferably, this allocation would be on the basis of demand sensitivity for the two products"*,[31] i.e., consistent with conventional 'Ramsey' pricing principles.

44. In other words, in theory, a TSLRIC modelling exercise would involve estimating the cost of a network 'with and without' each service (the difference being the 'LRIC' of the service in question) plus a subsequent allocation of common costs (a 'mark-up'). However, in practice, TSLRIC modelling is almost never done in this fashion. Instead, the TSLRIC of the service is generally estimated as part of a single, all-encompassing, activity-based costing (ABC) exercise (see below).

45. The first step in producing a 'bottom-up' TSLRIC model is to identify all of the assets (network elements) that are used by the service being priced, and all of the other services that also use those assets. Once the network has been 'scorched' (see discussion in 3.2) and the notional assets valued (predominantly based on replacement costs) there will be a 'pool of costs' that must then be allocated to the various services that use those assets, including to the service in question.

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29 Gans and King, *Comparing TSLRIC and TELRIC, A Report on behalf of AAPT Ltd*, 23 July 2003, p.18 (hereafter: 'Gans and King').

30 *Ibid*.

31 *Ibid*, p.14.

46. That allocation is commonly undertaken using 'routing factors' that reflect the intensity of usage of each network element in peak periods. If an asset is being called upon to provide 'service A' more often than 'service B' in the peak period, the former will be allocated a greater allocation of the relevant costs, as reflected by the routing factors. During this exercise, no explicit distinction is made between costs that are incremental (or 'directly attributable') to a service and those that are common to multiple services. The pool of costs is distributed solely on the basis of the routing factors.

47. Notwithstanding the absence of any formal distinction between incremental and common costs, the nature of telecommunications networks means that, in practice, the vast majority of the costs that are allocated will be common costs. Indeed, the economies of scope associated with the provision of telecommunications services mean that there are relatively few assets that are used to supply only one service (the costs of which are therefore truly 'incremental' to the others).

48. In other words, in practice, TSLRIC modelling is a 'bottom-up' exercise which allocates the predominantly common costs of the relevant network elements, including to the service in question. Such models tend not to involve a sequential 'with and without' exercise as the theoretically correct definition of TSLRIC might demand, and there is usually no attempt to calculate the incremental cost of every service sharing the relevant assets to estimate the quantum of common costs.

3.6 Reconciliation with 'Top-down' Results

49. Sometimes a regulator will base regulated prices entirely on the results produced by a 'bottom-up' TSLRIC model (however designed). In other instances, the regulator might first undertake some 'cross-checks' before applying the prices produced by the model. For example, a number of regulators in Europe will 'reconcile' the results of a TSLRIC model with the results implied by the values set out in a firm's own accounts (a 'top-down' approach, which might reflect a FDC approach – see discussion in section 4) before applying a price.

50. For example, a comparison might be made between the outputs of the bottom-up TSLRIC model and the top-down accounting information of the regulated firm.[32] If there is a significant discrepancy between the two, an adjustment might then be made to the bottom-up TSLRIC modelling so that its outputs better reflect the 'top-down' results.

[32] This comparison, or 'calibration', may take a number of forms. For instance, the accounting information may be employed to directly inform the asset value used to determine the regulated price. In other circumstances it may not be used directly for this purpose but rather to establish the accuracy of the model's predictions of cost.

51. In other words, even if the application of a TSLRIC approach produces quite different results to those that would be implied by a firm's financial/regulatory accounts (a 'top-down' approach), that may simply prompt a regulator to recalibrate the TSLRIC model so as to increase or reduce the price. In other words, adjustments can sometimes reduce any significant discrepancy between TSLRIC prices and prices that might otherwise be implied by alternative methods (including FDC).

3.7 Summary

52. The TSLRIC pricing method aims to represent the costs that an operator would incur in providing the pertinent service over the long run using least cost equipment and technology. However, a number of decisions must be made to translate that theory into a functioning TSLRIC model, as Table 1 summarises.

Table 1 Different Variants of the TSLRIC Methodology

<table>
<tr><th colspan="4">Asset Identification – what is being 'priced'</th></tr>
<tr><td colspan="2">Scorched Earth
Hypothetical efficient network – no regard had to existing infrastructure</td><td>Scorched Node
Some regard had to infrastructure already in place (degree of 'scorching' can vary)</td><td>Existing Network
Entrant assumed to replicate what is already there (more a theoretical possibility)</td></tr>
<tr><th colspan="4">Asset Valuation – how to value what is identified</th></tr>
<tr><td colspan="2">Replacement Costs
Assets valued based on the cost of modern equivalent</td><td>Indexed Historical Costs
Assets valued based on historical (actual) cost, but inflated/deflated over time by index to mimic changes in replacement cost</td><td>Historical Cost
Assets valued based on historical (actual) cost and not updated over time (more of a theoretical possibility)</td></tr>
<tr><th colspan="4">Depreciation – how the cost of those assets is allocated over their useful lives</th></tr>
<tr><td>Annuities
Distributes the return on and of capital over the life of the asset – can be constant or a 'tilted' annuity</td><td>Economic
Aims to reflect the proportion of an assets 'usefulness' that has already been consumed</td><td>Replacement Cost
Incorporates the current cost of the asset but ensures that historical cost to investors recovered</td><td>Straight Line
Distributes the value of the asset proportionally over its useful life, i.e., constant depreciation</td></tr>
<tr><th colspan="4">Common Costs – how to allocate costs common amongst services</th></tr>
<tr><td colspan="2">LRIC plus Common Cost Allocation
Measure TSLRICs of individual services & deduct TSLRIC of all services to calculate common costs – then allocate</td><td colspan="2">One-off Exercise with Routing Factors
Single bottom-up model with cost pool allocated using routing factors – no explicit distinction between incremental and common costs</td></tr>
<tr><th colspan="4">Reconciliation – any 'cross-check' with 'top-down' results?</th></tr>
<tr><td colspan="2">No
Model outputs not compared with top-down accounting information of regulated firm(s)</td><td colspan="2">Yes
Model outputs compared with top-down accounting information of regulated firm(s) and adjustments may be made for large differences (a 'hybrid top-down/bottom-up' model)</td></tr>
</table>

53. Different TSLRIC prices can be obtained depending upon the degree of optimisation, the asset valuation methodology and the extent to which the results are 'reconciled' with a firm's own accounts. The decisions that are made in relation to each of these steps have a substantial bearing upon whether a TSLRIC model is influenced predominantly by 'forward-looking' considerations (current costs, a heavily 'scorched' network, etc.) or historical considerations (historical costs, existing network configurations). In practice, models will almost always be influenced by both but are dominated by forward-looking considerations.

4 Top-down FDC

54. In this section we explain what is meant in theory by the term FDC. We then describe the various ways in which to implement an FDC approach in practice.

4.1 The FDC Principle

55. An FDC approach is a 'top-down' methodology that typically uses a company's accounting records as its starting point. Those records will contain information about the costs that the firm has incurred building/procuring and operating/maintaining the assets used to provide the service in question, and any other services that share that infrastructure. A proportion of those costs are then distributed to the applicable regulated service in the following way:

    - those costs that are '**directly attributable**' to the service in question are fully allocated to the service (these costs are analogous to incremental costs); and
    - those costs that are incurred in providing the service in question and at least one other service – '**common costs**' – are distributed between those services by reference to an allocation rule.

56. The prices produced by an FDC approach are influenced to a large extent by the manner in which the costs included in the company's accounts have been generated. In the same way that different TSLRIC models can produce different TSLRIC prices, so too can different accounting approaches yield different FDC-based prices. It follows that a key question is – how have the costs to be distributed been determined in the company's accounts?

57. Sections 3.2 to 3.6 described some of the critical inputs that form the basis of TSLRIC prices. Many of these same inputs will have an equally important bearing on the pool of costs that is sourced from a firm's accounts and then 'fully distributed' using the 'top down' methodology described above. Chief among these is the approach that has been employed to value assets including, most importantly, whether an historical cost or a current cost accounting (CCA) methodology has been used.

4.2 Asset Valuation

58. If assets are listed in the accounts at their historical (actual) costs, then FDC-prices derived by reference to those values are unlikely to serve as a good proxy for TSLRIC models based on current costs (or a hybrid of current and some historical costs). In addition, one could not reasonably contend that those prices were the product of a 'forward-looking cost-based pricing method', since they would be demonstrably backward-looking.

59. However, if assets are included in the accounts at their current replacement costs – as is typically the approach employed in TSLRIC models – the approaches may become increasingly similar. As we noted above, current/replacement cost methodologies value assets based on the cost that would be incurred by a new entrant to provide the service. This has two potentially important effects.

60. First, it introduces a potential element of optimisation into the FDC approach. For example, if a firm spent, say, $100 on switching equipment at some point in the past, but an entrant would now use a newer, cheaper technology, it is the cost of that modern equivalent asset (or MEA) that will be listed in the accounts. This has a similar effect to 'scorching' (see section 3.2), but not always to the same extent (this depends to a large extent upon the degree of optimisation in a TSLRIC model).

61. Second, because the cost reflects the value that an entrant places on the asset today, it can reasonably be characterised as a forward-looking cost. Similar observations can be made about assets that are listed at their IHC, i.e., if historical cost values have been inflated (or deflated) by reference to an index intended to reflect (albeit imperfectly) movements in replacement costs. We noted earlier that IHC values are something of a 'hybrid' between 'pure' historical costs and replacement costs.

62. For this reason, FDC prices can be the product of either current (forward-looking) replacement costs or historical costs (indexed or otherwise). When assets are listed at their current costs (or, potentially, their IHC) an FDC method can exhibit many similarities to TSLRIC models that employ the same asset valuation approach (subject to the various other inputs). This attribute of such FDC methods might also reasonably be characterised as 'forward-looking'.

4.3 Depreciation

63. The same four depreciation approaches that were discussed in section 3.4 can be equally applicable to an FDC approach. Specifically, a firm may use economic, annuity, replacement cost or straight-line depreciation in their financial/regulatory accounts. As we observed above, these different approaches can result in quite different profiles of regulated prices (and cost recovery).

64. Different depreciation approaches may lead to differences between the prices implied by an FDC approach and those implied by a TSLRIC model, e.g., if one uses a tilted annuity approach and the other straight line depreciation.

4.4 Allocation of Common Costs

65. Once the pool of costs to be allocated has been identified the FDC method delineates between those costs that are directly attributable to the service in question and those that are common to at least one other service. Directly attributable costs are fully allocated to the service. However, in practice, these are likely to constitute only

a small fraction of the total cost pool due to the strong economies of scope associated with telecommunications infrastructure and the high proportion of shared assets.

66. Like TSLRIC modelling, in practice, FDC methodologies are very much an exercise in allocating large pools of common costs. In fact, it is relatively common for top-down FDC models to allocate common costs based on the intensity of asset usage, as indicated by the types of routing factors described in section 3.5. In these instances, there may be very few differences between the basic mechanics employed in the top-down exercise and those used in a TSLRIC model.[33]

67. Alternative methodologies might include apportioning costs between services based on their contributions to total revenue, or services' shares of directly attributable costs. In the absence of any unambiguous underlying cost driver (which the routing factors described above are intended to proxy), there is no unequivocally correct approach. This means that, in practice, the objective is often simply to use an allocation method that produces reasonable and equitable results.

4.5 Summary

68. An FDC approach is a 'top-down' methodology that uses a company's accounting records as its starting point. Those records will contain information about the costs that the firm has incurred building/procuring and operating the assets used to provide the service in question, and any other services that share that infrastructure. The prices yielded by an FDC approach are influenced to a large extent by the manner in which the costs included in those accounts have been generated.

69. In the same way that different TSLRIC models can produce different TSLRIC prices, so too can different accounting approaches yield different FDC-based prices. Different approaches to asset valuation, depreciation and the allocation of common costs can produce markedly different FDC-based prices. Table 2 summarises some of the critical methodological steps that will determine the pool of costs to be distributed using an FDC approach – many of which mirror those from Table 1.

33 Of course, differences may nonetheless emerge due to differences in the respective methodologies' approaches to asset valuation, depreciation and so on.

Table 2 Different Variants of the FDC Methodology

Asset Valuation			
Replacement Costs Assets valued based on the cost of modern equivalent – may have a similar effect to 'scorching' in 'bottom-up' TSLRIC methodology	**Indexed Historical Costs** Assets valued based on historical (actual) cost, but inflated/deflated over time by index to mimic changes in replacement cost	**Historical Cost** Assets valued based on historical (actual) cost and not updated over time	
Depreciation – how the cost of those assets is allocated over their useful lives			
Annuities Distributes the return on and of capital over the life of the asset – can be constant or a 'tilted' annuity	**Economic** Aims to reflect the proportion of an assets 'usefulness' that has already been consumed	**Replacement Cost** Incorporates the current cost of the asset but ensures that historical cost to investors recovered	**Straight Line** Distributes the value of the asset evenly over its useful life, i.e., constant depreciation
Common Costs – how to allocate costs common amongst services			
Common costs allocated based on an allocation factor, e.g., relative revenues, proportion of direct costs, routing factors, etc.			

70. The decisions that are made in relation to each of these methodological steps will again have a substantial bearing upon whether an FDC approach is influenced predominantly by 'forward-looking' considerations (current costs based on modern equivalent assets) or historical considerations (historical costs based on existing assets). However, in all variants of the FDC methodology, the principal exercise is to allocate the large pool of common costs, including to the service in question.

5 Comparison and Implications

71. In this section we reconcile the TSLRIC and FDC methodologies described in the previous sections, and consider when either might be said to be a forward-looking cost method. We then consider the circumstances in which it might therefore be appropriate for a price produced using an FDC approach to be included in the benchmark set.

5.1 Comparing TSLRIC and FDC

72. We explained earlier that, in practice, there are a number of approaches that fall within the gambit of TSLRIC models. However, the Commission has explained that not all TSLRIC models will necessarily be considered 'forward-looking cost-based methods', and therefore eligible for inclusion in the benchmark set. To be included, a TSLRIC price must be set based on current costs or, potentially, a 'hybrid' of current/historical costs and be the product of a model that has been designed or reviewed by a regulator.

73. The question is: can an FDC approach also constitute a forward-looking cost-based method in some circumstances? In our opinion, one cannot answer this question with an unequivocal 'no', as the Commission has done in its Draft Determination. The answer depends ultimately upon how the costs that are being allocated using an FDC method have been determined including, most relevantly, whether they reflect the *current replacement costs* of modern equivalent assets.

5.1.1 Current Costs versus Historical Costs

74. Recall that the TSLRIC method aims to represent the costs that a new entrant would incur to provide the service. This can involve abstracting away from the network that exists by envisaging notional assets ('scorching') and, often, valuing those assets at their current replacement costs. The operating and maintenance costs built into the TSLRIC price also reflect the modelled network, which may or may not reflect the incumbent's actual costs. In other words, TSLRIC models based on current costs have a distinctly forward-looking focus.

75. FDC models can also use forward-looking replacement values to derive the pool of costs to be allocated. For example, if a replacement cost method is used, an asset's value will depart from its historical cost and be based instead on the current cost of its modern equivalent. An IHC approach may have an analogous effect. Like the TSLRIC prices described above, FDC prices derived from current costs are influenced to a large extent by forward-looking considerations.

76. The principal potential difference between the two approaches lies in the degree of optimisation. In particular, depending upon the degree of scorching, a TSLRIC

model may entail more extensive optimisation than an FDC approach – particularly 'scorched earth' variants. Those optimisation assumptions will also flow through to the determination of operating and maintenance costs in a TSLRIC model, whereas an FDC approach may simply allocate the costs listed in the accounts.

5.1.2 Other Factors

77. Just as TSLRIC models can employ different depreciation profiles and different common cost allocation methodologies, so too can FDC approaches. For example, a TSLRIC model might use a tilted annuity depreciation approach and allocate common costs based on routing factors reflecting the intensity of asset usage. An FDC approach might use precisely the same methodologies (e.g., top-down models often allocate costs using routing factors), or different approaches.

78. Within the context of a benchmarking exercise it is not clear that those decisions should carry any significant consequences for the characterisation of forward-looking cost-based methods. In particular, given the multitude of different allocation approaches that may be employed in any given TSLRIC or FDC model, it is not clear whether the selection of one or other particular method should necessarily rule a model 'in' or 'out' of the benchmark set.

79. Finally, it should be remembered that, even if the application of a TSLRIC approach produces quite different results to those that would be implied by a top-down FDC approach, that may simply prompt a regulator to recalibrate/reconcile the TSLRIC model so as to increase or reduce the price. In other words, adjustments can sometimes reduce any significant divergence between TSLRIC prices and prices that might otherwise be implied by an FDC approach.

5.1.3 'Bright-line' Distinctions Not Possible

80. In its Draft Determination, the Commission draws a 'bright-line' distinction between two cost allocation methodologies that, in practice, cannot be so readily distinguished. In practice, there may be *few substantial differences of economic consequences* between a TSRLIC approach and an FDC methodology. The principal function of both approaches is to allocate the (predominantly common[34]) costs of the relevant network elements, including to the service in question. In this respect, the basic mechanics of the TSLRIC and FDC methods can be very similar.

81. There are many ways regulators arrive at a 'bottom-up' TSLRIC price and produce a 'pool of costs' to 'distribute' using an FDC methodology, i.e., different asset valuation techniques, depreciation profiles and so on. If an FDC method uses a

34 The nature of telecommunications networks means that there are relatively few costs that can be directly attributed (or are 'incremental to') bespoke services. Rather, the strong economies of scope means that costs tend to be shared (or common) across multiple services.

current replacement cost methodology (as opposed to historical costs) to arrive at the pool of costs to be distributed, it may serve as a reasonable (albeit perhaps imperfect) proxy for TSLRIC models that also use replacement costs to value the relevant network elements, i.e., the types of models that the Commission has included in its benchmark set.

82. The extent to which a particular incarnation of the FDC or TSLRIC method represents current as opposed to historical costs – and is therefore 'forward-looking' – can consequently vary from model-to-model. In particular, in our opinion, TSLRIC and FDC approaches that are based on current replacement costs might both reasonably be construed as forward-looking cost-based methods. Of course, the prices produced by the methodologies may still differ depending upon, amongst other things, the degree of 'scorching', approaches to depreciation and so on.

83. Nonetheless, there may be many similarities and, most importantly, each approach may be influenced to a substantial extent by forward-looking factors as opposed to historical costs or decisions. This is the basis for Plum Consulting's belief that neither method is superior (provided they are defined with broad increments).[35] The UK regulator, Ofcom, has also expressed its view that neither approach is superior and has observed that (see section 6.1):[36]

> *"CCA FAC [current cost accounting fully allocated cost] uses data that can be reconciled to the regulatory financial statements, which are audited and are in the public domain. We also think that the CCA FAC and LRIC+EPMU [equi-proportional mark-up]* ***should provide reasonably similar results****, particularly at more aggregate levels, since the overall total of costs to be recovered is the same."* [Emphasis added]

84. The Telecommunications Regulatory Authority of Bahrain made precisely the same point in its response to the Commission's Wholesale Bitstream Access questionnaire (see cell FGH 14):

> *"The distinction between the FAC & LRIC are [sic]* ***unlikely to be significant*** *where the increment in the LRIC is the whole service/network to which a mark-up for common cost is applied. If the FAC is based on CCA, then* ***the output would be practically the same****"* [Emphasis added]

35 Plum Consulting, *Costing Methodology and Transition to Next Generation Access, a report for ETNO,* March 2011 (hereafter: 'Plum Paper').

36 Ofcom (2011), *Proposals for WBA charge control – Consultation document and draft notification of decisions on charge control in WBA market 1*, p.54.

85. The Commission is, of course, correct that *"FDC and TSLRIC methods **may** lead to substantially different results"* (our emphasis).[37] However, it does not follow that all FDC prices should be excluded from the benchmark set. First, those differences may emerge due to factors that should not necessarily have any bearing on the assessment of whether an FDC price is the product of a 'forward-looking' method, such as differences in depreciation as opposed to, say, differences in asset valuation (current versus historical costs). Second, it would be equally correct to say that: *"FDC and TSLRIC methods may lead to substantially similar results"*.

86. The Commission has therefore mischaracterised the nature of the relationship between the TSLRIC and FDC methods. It cannot say that some (but not necessarily all) TSLRIC approaches may represent a forward-looking cost-based method, but that all FDC approaches do not. In practice, there may be little difference between the approaches, and so it is counterintuitive to consider including one, but to summarily exclude the other. To do so misrepresents the ability of the FDC methodology to produce prices that represent forward-looking costs.

5.2 Implications for Commission's Approach

87. One cannot conclude *a priori* that an FDC approach cannot constitute a forward-looking cost-based method. What is needed is a careful *case-by-case* assessment. Just as the Commission would not necessarily *accept* all TSLRIC models (e.g., those based on historical costs), neither should it necessarily *dismiss* all prices that have been derived using an FDC model. A closer examination of a particular FDC methodology may reveal that:

- it is a cost-based price method;
- it exhibits very similar properties to a TSLRIC model, i.e., in practice, both are primarily common cost allocation methodologies;
- it is based on current (forward-looking) as opposed to historical costs; and
- it has been designed or expressly reviewed and approved by a regulator.

88. In other words, there may be examples of FDC approaches that ostensibly meet the Commission's own interpretation of the statutory requirements (see section 2). Moreover, setting aside the Commission's interpretation (which may be overly narrow[38]), a strong argument could be made that an FDC method based on current replacement costs represents a 'forward-looking cost-based pricing method'. The

37 Draft Determination, paragraph 169.

38 We noted earlier that, as a matter of economics, there is no reason to construe the term 'forward-looking cost-based method' as referring only to TSLRIC approaches and those that serve as a proxy. However, this is ultimately a legal question.

Australian Competition and Consumer Commission (ACCC) has defined forward-looking costs as:[39]

> *"[T]he ongoing costs of providing the service in the future using the most efficient means possible and commercially available. In practice this often means basing costs on the best-in-use technology and production practices and valuing inputs using current prices."*

89. In our opinion, this definition could certainly be read as encompassing those FDC methods that are based on current costs. There does not appear to be any economic reason to construe the term as referring only to TSLRIC models – particularly given the potential similarities between the two approaches that we discussed above.

90. For these reasons, we concur with the general sentiments expressed in the submission of the LFCs, namely that:

- the literature cited by the Commission does not unequivocally support the proposition that FDC approaches are not a reasonable proxy for TSLRIC; and
- in any event, an FDC approach based on current costs could still reasonably be construed as a 'forward-looking cost-based pricing method'.

91. The implication of this is that the Commission was incorrect to exclude from the benchmark set the observations from France, Spain, Bahrain and the UK simply because they are based on FDC approaches. Before one can decide whether those countries should be included or excluded, a careful examination is required of the way in which the prices have been produced and, in particular, whether they are based on current costs.

39 ACCC, *Access pricing in telecommunications – A guide*, July 1997, p.29.

6 Analysis of Excluded Countries

92. In this section we provide some additional information about the cost models used to produce FDC prices in the four excluded countries. We also offer some initial thoughts on whether it might be appropriate to include any of those prices in the benchmark set. These observations are strictly preliminary in nature. The timeframe for cross-submissions has afforded only a limited opportunity to source information above and beyond that provided by the Commission.

93. The information published by the Commission is confined largely to the questionnaire that was sent to the four national regulators. This provides some basic information about the way in which charges for wholesale bitstream access are set in these countries. Table 3 illustrates that, aside from Bahrain, all of the countries use current costs in their cost models. Similarly, with the exception of France, all of the countries use stand-alone top-down FDC models.

Table 3 Cost Models used in Excluded Countries

	France	Spain	Bahrain	UK
Do you use a cost model to set WBA tariffs?	Yes	Yes	Yes	Yes
Do you use historic and/or current costs?	Current costs	Current costs	Historic costs	Current costs
What cost standard do you use?	FDC	FDC	FDC	FDC
Is it a top down, bottom up or hybrid approach modelled?	Hybrid bottom-up / top-down	Stand-alone top-down	Stand-alone top-down	Stand-alone top-down

Source: Commerce Commission.

94. In the case of Bahrain and the UK, we have been able to supplement this information with further detail and reasoning contained in documentation released by the regulators. However, we have been unable to find equivalent documentation for France and Spain (which, of course, do not write their reports in English). Although this has enabled us in some instances to offer some preliminary thoughts, in every instance, more material would be needed before a firm conclusion could be reached as to whether to include a jurisdiction in the benchmark set.

95. Ultimately, the Commission is likely to be in the best position to acquire the additional information that would be needed to ascertain whether these jurisdictions could be included. This might be most efficiently accomplished by directing a further questionnaire to the regulators of the excluded countries requesting more detail about the respective FDC approaches, e.g., asset valuation methodologies, common cost allocation mechanisms and so on.

6.1 United Kingdom

96. On 3 December 2010, Ofcom published a review on the UK's wholesale broadband access markets. It found that there was effective competition in the provision of the service in areas covering close to 80% of UK premises. However, it concluded that British Telecom (BT) should remain subject to price regulation in exchange areas where it was the only provider of broadband services (called 'Market 1)'.[40] [41]

97. On 20 July 2011, Ofcom published a statement on a charge control framework for WBA. This statement set out its conclusions on the approach charges for Market 1. It opted to impose a charge control on the IPStream Connect 8 Mbps (max and max premium) only. It noted that this is the maximum downstream speed currently available and the product most used by end users in Market 1.[42]

98. Ofcom decided to implement an RPI-X charge control to be in force until 31 March 2014. The RPI-X charge control has a single control basket with a 'safeguard cap' on certain services. The charges for BT's regulated services are "required to be reasonably driven from the Long Run Incremental Costs ("LRIC") of providing the that service allowing for an appropriate market-up, including recovery of any common costs". In light of this requirement, Ofcom considered two options:

    - a current cost accounting fully allocated costs approach (CCA FAC); and
    - a LRIC plus equi-proportional mark-up approach (LRIC + EPMY).

99. It ultimately concluded that *"neither of the [above] options is necessarily superior to the other"*.[43] However, it chose to develop a model based on the CCA FAC approach to set the charge control.[44] It explained that:[45]

> *"In summary, we proposed to use CCA FAC, given the additional resource costs and time associated with LRIC + EPMU modelling. CCA FAC has had the benefit of greater transparency to enable us to map more easily BT's audited regulatory financial statements to relevant base year costs. CCA FAC is also consistent with the other charge controls currently being determined by Ofcom for other areas of BT's business such as leased lines and Openreach. This ensures that all common costs are properly accounted for."*

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40 Ofcom (2011), *WBA Charge Control – Charge control framework for WBA market 1 services*, p.1.

41 This is similar to the approach taken in France.

42 Ofcom (2011), *WBA Charge Control – Charge control framework for WBA market 1 services*, p.3.

43 Ofcom (2011), *Proposals for WBA charge control – Consultation document and draft notification of decisions on charge control in WBA market 1*, p.53.

44 Ofcom (2011), *WBA Charge Control – Charge control framework for WBA market 1 services*, p.3.

45 Ofcom (2011), *Proposals for WBA charge control – Consultation document and draft notification of decisions on charge control in WBA market 1*, p.55.

100. Moreover, as we noted earlier, Ofcom has observed that:[46]

> *"[T]he CCA FAC and LRIC+EPMU should provide reasonably similar results, particularly at more aggregate levels, since the overall total costs to be recovered is the same."*

101. Ofcom also refers to a Competition Commission (CC) determination,[47] in which its use of CCA FAC was scrutinised in detail. In this determination, the CC found that Ofcom was not in error in using CCA FAC to check that price differentials between the metallic path facility (MPF – the UK equivalent of UCLL) and shared MPF+WLR were at least equal to LRIC differentials. Further to this, the CC found that in adopting a CCA FAC approach to cost allocation, sufficient weight have been given to allocative and dynamic efficiency factors.

102. In other words, Ofcom (and the CC after it) gave careful consideration to the respective merits of a LRIC+EPMU methodology (analogous to TSLRIC) and a CCA FAC approach (FDC) and concluded that neither was ostensibly superior. Moreover, it concluded that the two methodologies would be likely to deliver reasonably similar results. On that basis, there is strong reason to think that it would be appropriate to include the UK price in the benchmark set.

6.2 Bahrain

103. The Bahraini legal framework requires that the tariffs be based on forward-looking incremental costs. Article 57 of the Telecommunications Law states that:[48]

> *[…] terms and conditions and tariffs shall be fair, reasonable and non-discriminatory and the* ***tariffs shall be based on forward-looking incremental costs*** *or by benchmarking such tariffs against tariffs in comparable Telecommunications markets. [Emphasis added]*

104. Article 58 further notes that tariffs charged by licensed operators need to be "fair and equitable, non-discriminatory and based on forward-looking costs".[49]

105. Under the current regulatory arrangements, reference offers (RO) are submitted to the Bahraini regulator, which assesses whether the tariffs (and other terms and conditions) are fair, reasonable and non-discriminatory in accordance with Article

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46 Ofcom (2011), *Proposals for WBA charge control – Consultation document and draft notification of decisions on charge control in WBA market 1*, p.54.

47 See the CC's decisions in "The Carphone Warehouse Group plc v Office of Communications", August 2010, cases 1111/3/3/09 and 1149/3/3/09.

48 Telecommunications Regulatory Authority (2009), *The Telecommunications Law of the Kingdom of Bahrain*, p. 40.

49 Telecommunications Regulatory Authority (2009), *The Telecommunications Law of the Kingdom of Bahrain*, p.42.

57. The regulator's evaluation of the ROs has, to date, been made based on a 'top-down' FDC framework that, according to the questionnaire released by the Commission, is based on historical costs.

106. There therefore appears to be an inconsistency between the legislation – which calls for forward-looking tariffs – and the current practice, in which tariffs are set based on historical costs. Assuming that the questionnaire is accurate and prices are indeed set based on historical costs it is unlikely to be appropriate to include Bahrain amongst the benchmark countries.

6.3 France

107. In France, the wholesale bitsream access (WBA) tariff comprises two components – access and backhaul. The tariff for backhaul is dependent on the technology, e.g., ATM, IP or Ethernet. The various tariffs are available on the Orange website.[50] The French regulator (Arcep) describes its tariff setting methodology as a 'hybrid bottom-up/top-down' approach, with bottom-up used to model backhaul, and top-down access. The FDC model is based on current costs.

108. Operators are required under 4° Article L. 38 to charge prices which reflect costs, and Arcep may impose a price control on operators with significant market influence to ensure that prices reflect costs.[51] The provision of wholesale broadband access is regulated under decision No.2011-0669 from 14 June 2011. In this decision, Arcep withdrew the regulated tariff in those areas in which a third-party operator offers a bitstream product. As such, regulated prices only remain in those areas in which the incumbent is the only operator (about 20% of the population).[52]

109. We have not been able to locate the cost model used by Arcep to set prices, or any documentation explaining the reason that an FDC approach was favoured over a TSLRIC methodology. It is not possible to say, based on this limited information, whether France should be included in the benchmark set. However, by the same token, there is arguably insufficient information to confidently exclude it.

6.4 Spain

110. The Spanish regulator (CMT) describes its approach as a stand-alone top-down FDC based on current costs. In 2011, CMT reported that it had approved a new long term incremental cost model for Telefónica's fixed network. According to CMT, this model can be used to determine a third cost standard – forward looking long term average incremental costs – which *"supplements the historical and current cost*

50 *See:* http://www.orange.com/fr/reseaux/documentation/documentation.

51 Code des postes et des communications électroniques.

52 Arcep (2011), Decision 2011-0669, section 4.6 Obligation de contrôle tarifaire.

standards that already existed in the regulatory model of Telefónica". It commented further that[53]:

> *"Incremental costs are defined as the cost avoided by ceasing production of a service or sets of services, given a current level of production. As a criterion for asset valuation, the modern equivalent asset criterion is employed, which eliminates unjustified overcapacities and inefficient operating costs."*

111. We note that CMT is currently undertaking two consultations. The first relates to a bottom-up LRIC cost model for a new wholesale broadband service (NEBA), and the second to a bottom-up LRIC cost model for the fixed access network wholesale service loop unbundling. Both of these consultations are ongoing.[54]

112. We have not been able to access the regulatory model for Telefónica referred to by CMT or any further information containing its inputs, or why it was preferred to a TSLRIC methodology. It is therefore not possible to say, based on this limited information, whether Spain should be included in the benchmark set of countries. However, by extension, there is also arguably insufficient information to confidently exclude the price.

53 CMT (2011), *Annual Activity Report 2011*, p. 16.

54 *See:* http://www.cmt.es/consultas-publicas.