

**BEREC Guidance on the regulatory accounting approach  
to the economic replicability test  
(i.e. *ex-ante*/sector specific margin squeeze tests)**

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## 1. Introduction

The purpose of this Guidance document is to provide guidance to NRAs from the regulatory accounting point of view on how to understand and deal with the relevant provisions of the Recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment 2013/466/EU<sup>1</sup> related to the so called *ex-ante economic replicability test* (in a framework of an EoI or equivalent procedure) and how to run such an *ex-ante economic replicability test* according to Annex II. For this purpose the current NRAs' practices are analysed and other relevant directions<sup>2</sup> are taken into account. The document looks at questions such as "what are the NRAs' main objectives/reasons for implementing *ex-ante margin squeeze tests*: in a mature market and in a growing market?"

The Recommendation is laying down the 'concept' of the ERT. From a practical point of view, the ERT can be considered as a new term for the *ex-ante margin squeeze test*, which is already known from both, current practice from the regulators and also in *ex-post* form as a practice known (in principle) from competition law. In this sense the Guidance document is aligning the current practice of *ex-ante margin squeeze tests* as applied by NRAs and the main characteristics of the recommended ERT.

For the purposes of this document, the term "*ex-ante margin squeeze test*" is reserved for the description of current practices, while the term "*economic replicability test*" (ERT) is used in the meaning of the Recommendation as (future) "*ex-ante margin squeeze test*" since the term "*margin squeeze test*" is more commonly used for *ex-post* (competition law) procedures. Therefore one of the purposes of the document is to establish clearly the distinction between the *ex-ante sector specific margin squeeze test*, *economic replicability test* on the one hand and the *ex-post margin squeeze test* on the other. The differences between *ex-ante margin squeeze tests* and the ERT (legal basis, level of aggregation, wholesale services taken into account, timing and information used in the test, etc.) will be dealt with.

The Recommendation addresses in particular NGA products; however copper based products cannot be excluded, especially if the product has NGA characteristics. The Guidance is set up as a more general approach, leaving room for the estimation of the relevance of the single product to the NRA taking into account national circumstances. Finally, to ensure that both the Recommendation's aim to provide more pricing flexibility to SMP operators and the

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<sup>1</sup> Commission Recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (C(2013)5761 final), 11/09/2013, OJ L 251 of 21/09/13

<sup>2</sup> Namely the 3 BEREC BB CPs of 2012: BEREC Common position on Best Practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines (BoR (12) 126); BEREC Common position on Best Practice in remedies on the market for wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location imposed as a consequence of a position of significant market power in the relevant market (BoR (12) 127); BEREC Common position on Best Practice in remedies on the market for wholesale broadband access (including bitstream access) imposed as a consequence of a position of significant market power in the relevant market (BoR (12) 128), Dec. 2012; 2 ERG documents of 2009: ERG Report on the Discussion on the application of margin squeeze test to bundles (ERG (09) 07), March 2009; ERG Report on price consistency in upstream broadband markets (ERG (09) 21), June 2009; Commission Recommendation on regulated access to Next Generation Access Networks (NGA) (2010/572/EU), 20/09/2010, OJ L 251 of 25/09/10

ERT's purpose to preserve competition are met, the ERT needs to be applied intelligently and its parameters calibrated accordingly.

The Guidance document is structured as follows. Chapter 2 deals with the objective, the definition and the parameters of the ERT as foreseen in the Commission's Recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (hereinafter: the Recommendation). In Chapter 3 the NRAs' current practice of ex ante margin squeeze tests including relevant regulatory cost standards used is described based on a questionnaire circulated among BEREC NRAs. Chapter 4 sets out the economic rationale and implementation of the ex-ante ERT of the Recommendation in practice (synthesis of Chapter 2 and 3). Chapter 5 looks in detail at the procedural issues of applying an ex-ante margin squeeze test. Chapter 6 summarizes the case law and application of margin squeeze tests in competition law (i.e. in the ex-post context). Chapter 7 contains the conclusions (including guidance on the application of ex-ante margin squeeze tests).

## **2. Parameters of the ex-ante economic replicability test as applied by the Commission Recommendation on consistent non-discrimination obligations and costing methodologies (Annex II)**

This chapter gives a brief overview of the Recommendation's provisions related to the ERT.

### **2.1. Objectives of the Recommendation**

The aim of the Recommendation as stated in Recommend 1 is to improve the regulatory conditions needed to promote effective competition, enhance the single market for electronic communications networks and services and foster investments in NGA networks. In order to reach these goals the Recommendation recommends in the costing methodology part (Recommends 30 – 47) that NRAs use a BU-LRIC+ costing methodology for an efficient NGA network as a basis for the determination of the ex-ante regulated monthly unbundled copper local loop price<sup>3</sup>. In order to allow for wholesale pricing flexibility<sup>4</sup> of NGA products as specified in Recommends 48/49 the Recommendation recommends the lifting or non-imposition of the price regulation acc. to Art. 13 of Dir. 2002/19/EC in cases where the following conditions are in place: the equivalence of inputs (Eoi), the technical replicability and the economic replicability. The latter is the focus of this Guidance document, since the NRAs which regulate markets No. 4 and 5 of Rec. 2007/879/EC after a finding of SMP are expected to follow methodologically comparable regulatory tools. This is to ensure that the ex-ante economic replicability test (ERT) is consistently applied across Europe and that regulatory conditions are suitable, sustainable and predictable to all market players, SMP operators as well as access seekers.

According to Recital 52 and Recommend 52 the ex-ante economic replicability test must be fulfilled in cases where wholesale price regulation should not be imposed. The ex-ante eco-

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<sup>3</sup> Which acc. to Reco. 41 the Commission anticipates to fall within a price band of EUR 8 – 10 in 2012 prices.

<sup>4</sup> To deal with demand uncertainty for NGA products thus providing investment incentives.

conomic replicability test has the purpose of safeguarding competition in cases where wholesale price regulation is not imposed on the SMP operator (cf. also Recitals 49/50).

### 2.1.1. Definition of the ex-ante economic replicability test

The Recommendation defines the ex-ante economic replicability as the test which assesses whether the margin between the retail price of the relevant retail products and the price of the relevant NGA-based regulated wholesale access inputs covers the incremental downstream costs and a reasonable percentage of common costs (Annex II). A lack of economic replicability exists if the SMP-operator's downstream retail arm could not trade profitably on the basis of the upstream price charged to its competitors (Recital 64).

According to the Recommendation the ERT is considered to be a safeguard for competition in cases where no **cost-oriented** price regulation is in place/imposed.

Alternative operators often depend on wholesale services of operators with significant market power (SMP). By setting either wholesale or retail prices (or both), the SMP-operator which are in principle vertically integrated firms, can define the space (margin) between the wholesale and the retail price level. By setting the margin too small, the SMP operator could potentially squeeze other operators out of the market. A margin squeeze test is a means to identify such a situation. Thus a margin squeeze test defines a minimum distance between a retail price and a wholesale price (or between two wholesale prices at different stages of the value chain respectively<sup>5</sup>). Two basic settings (situations) can be identified:

- The retail price is linked to a given (i.e. cost oriented) wholesale price: Here the margin squeeze test ensures that the retail price does not fall below a certain (anti-competitive) level.
- The wholesale price is linked to a given (i.e. competitive) retail price: The margin squeeze test guarantees that the wholesale price does not exceed a level that does not allow replicability or that other operators are discriminated by being charged other prices than the SMP operator charges internally.

Hence a margin squeeze test allows SMP operators more flexibility in setting prices than cost oriented prices could provide, where the absolute values of prices are controlled. Providing SMP operators with a certain level of pricing flexibility would allow them to test price points and conduct appropriate penetration pricing. Given the uncertainties surrounding current demand for NGA-based retail services, SMP operators could use penetration pricing strategies in order to foster retail demand for NGA-based retail services. The purpose of the economic replicability test is to ensure, in combination with the other competitive safeguards introduced,<sup>6</sup> that SMP operators do not abuse this pricing flexibility in order to exclude (potential) competitors from the market (Recitals 19, 49 and 62).<sup>7</sup>

In carrying out the economic replicability test, it is important to bear in mind that a whole bundle of retail services (voice, broadband services etc.) can be offered via the local loop. Thus the retail level must take into account a bundle of the most relevant retail products.

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<sup>5</sup> While the Recommendation does not exclude these type of tests (nor other types of competition-related tests like e.g. dumping, unjustified discrimination etc.), it clearly focuses on margin squeeze test between the wholesale and the retail level.

<sup>6</sup> E.g. EoI, the technical replicability test, and a demonstrable retail price constraint resulting from a copper anchor or alternative infrastructures.

<sup>7</sup> Limits to the volume discounts and/or long-term access pricing agreements mentioned in Recital 19 and 49 can be found in the NGA Recommendation 2010/572/EC, Annex I, pt. 7 and 8 which state that long-term commitment prices/volume discounts must only reflect the reduction of risk for the investor".

In addition, the Recommendation sets out<sup>8</sup> that the ex-ante economic replicability test should specify at least the following parameters:

- (i) the relevant downstream cost taken into account;
- (ii) the relevant cost standard;
- (iii) the relevant regulated wholesale inputs concerned and the relevant reference prices;
- (iv) the relevant retail products; and
- (v) the relevant time period for running the test.

According to the Recommendation, when applying the ERT NRAs should use a LRIC+ model taking into account the audited downstream cost of the SMP-operator (Recital 67, Annex II). The ex-ante margin squeeze test is without any prejudice to an ex-post margin squeeze test pursuant to competition law (Recommend 56(b)).<sup>9</sup>

When implementing the ERT as specified in the Recommendation NRAs should bear in mind the objectives of the Recommendation as outlined above.

To support the abovementioned, the Recommendation lists a number of parameters considered important to run the ERT. Below is a review of the parameters that BEREC believes are necessary to consider when implementing a margin squeeze test.<sup>10</sup>

### 2.1.2. Level of efficiency as foreseen in the Recommendation

The implementation of a margin squeeze test involves a certain number of key methodological choices. One of them is a choice of the level of efficiency of the operator used in the test. It must be decided if the efficiency level of the tested operator is comparable to the scale (and implicitly the efficiency level) of the SMP (incumbent) operator or to the scale (and implicitly the efficiency level) of the generic (alternative) operator, i.e. from which perspective the margin squeeze test should be conducted.

Three options are available to determine if a dominant operator has been margin squeezing its competitors:

- **Equally efficient operator (EEO)** margin squeeze test stands for an efficient operator in the downstream market with the scale of the SMP operator, so the costs can be taken from the SMP operator's regulated accounts.
- **Reasonably efficient operator (REO)** stands for the margin squeeze test for an efficient operator in the downstream market, where the costs are based on a generic (alternative) operator which does not (yet) have the scale of the SMP operator.
- **Adjusted equally efficient operator (adjusted EEO)** margin squeeze test starts with the SMP operator's cost and adjusts it to the scale of the generic (alternative) operator for which the margin squeeze test is conducted.

If the tests are carried out correctly both (EEO and REO) employ efficient operation, the cost level used in the REO/adjusted EEO test tends to be higher than the EEO test due to a lack of economies of scale. The REO/adjusted EEO approach of allowing higher downstream

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<sup>8</sup> Reco. 56(a) and Annex II

<sup>9</sup> Cf. also below Chapter 6

<sup>10</sup> The following list is wider than the five parameters listed in the Recommendation, thus sometimes the reference to the Recommendation is limited.



costs facilitates market entry whereas the EEO approach emphasises preventing anti-competitive foreclosure.

The EEO relies on static efficiency while REO could be used as a transitory measure to enable market entry in a first phase or in a situation where dynamic efficiency is expected to overcome the static inefficiencies that could lead to (temporarily) higher end user prices. Whether static or dynamic efficiencies are stronger depends on the maturity of the market, the underlying infrastructure and the minimum efficient scale of the underlying infrastructure (i.e. to take account of sunk investments).

The Recommendation sets the level of efficiency as one of the parameters of the ex-ante economic replicability test. Downstream costs should be estimated on the basis of the SMP operator's own downstream business. So according to the Recommendation the definition of the level of efficiency for the relevant downstream costs should correspond to an equally efficient operator (EEO). The costs of the SMP should be audited and sufficiently disaggregated.

In certain circumstances, the Recommendation also allows adjustments to the EEO:

- when market entry or expansion has been frustrated in the past or;
- a market where low volumes of lines and their significantly limited geographic reach as compared to the SMP operator's NGA network indicate that the objective economic conditions do not favour the acquisition of scale by alternative operators.

In these cases NRAs may make adjustments for scale to the SMP operator's downstream costs (Annex II para. (i)).

## 2.2. Relevant cost standard

In Annex II paragraph (ii) of the Recommendation it is specified that the incremental cost of providing the relevant downstream service is the appropriate cost standard<sup>11</sup>. A LRIC+ model<sup>12</sup> should be used to calculate incremental cost (including sunk costs) and to add a mark-up for common costs related to the downstream activities. With the provision of a LRIC+ cost standard the Commission followed – at least partly – the BEREC Opinion<sup>13</sup> (para. 29) which suggested using “forward looking costs” thus enabling NRAs to use “higher cost standards such as LRIC or LRIC+” rather than *avoidable costs* (as originally foreseen in the draft recommendation). In addition, as the costing methodologies part of the Recommendation (Reco. 30 - 47) recommends the use of a bottom-up long-run incremental costs plus approach for the purpose of setting copper and NGA wholesale access prices, the use of a LRIC+ standard for relevant downstream costs in the ERT also facilitates consistency with regard to the setting of wholesale prices and measurement of retail costs.

In Recitals 27 to 29 of the Recommendation it is specified that the BU LRIC+ costing methodology provides the appropriate ‘build-or-buy’ signal and best meets the objective of ensuring transparency and consistency within the Union. By using this cost standard in the test for economic replicability it is ensured that even though price regulation is lifted, the before men-

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<sup>11</sup> Cf. to Annex A for the glossary of regulatory cost accounting terms etc. For a discussion of the relevant cost standard for the ERT for NGA networks cf. also *Jaunaux/Lebourges*, Economic replicability tests for next generation access networks, EUI Working Papers (FSR), RSCAS 2014/75.

<sup>12</sup> The term „model“ stands more widely for „methodology/approach“ as it would otherwise be in contradiction with using „audited costs“, but also allowing for the adjusted EEO test.

<sup>13</sup> BEREC Opinion on the Commission draft Recommendation on non-discrimination and costing methodologies, BoR (13) 41, 26/03/13.

tioned is still supported. On this basis, LRIC+ would be the relevant cost standard for regulated wholesale services/inputs as a starting point (see also below section 2.2.5).

According to the Recommendation, the costing methodology that best ensures transparency and provides for a consistent modelling approach for regulated wholesale access services is the bottom-up long-run incremental costs plus (BU LRIC+). This methodology models the incremental capital (including sunk) and operating costs borne by a hypothetically efficient operator in providing all access services on the basis of an NGA network and adds a mark-up for strict recovery of common costs. Therefore, the BU LRIC+ methodology allows for recovery of the total efficiently incurred costs.

### **2.2.1. Depreciation method in the margin squeeze test**

The telecommunications industry is a capital-intensive industry which requires significant network investments. An operator investing in a given network asset bears an upfront cost and expects that this asset will generate revenues over its useful life. Throughout its useful life, the value of this asset will naturally decrease as it ages. This loss of asset value throughout its useful life is reflected in the operator's profit and loss accounts as depreciation charges. In regulation, the cost of capital is also added to the depreciation charge to set regulated prices. Indeed, when making an investment, an operator will support financial costs related to the interests requested by its shareholders or the banks that are borrowing money to the operator. This financial cost must be considered within the calculation of the cost of capital to make sure that the operator is fully recovering its efficient costs. Usually the total investment cost (i.e. the capital costs and the depreciation charge) is spread over the lifetime of the asset with an annual amount called the annuity.

Regarding '*depreciation methods*' the Recommendation provides the following definition: "depreciation methods are methods for allocating the value of an asset over the life of the asset, thus influencing the profile of the allowable earnings for the asset owner in any given period" (Reco. 6(f)).

The Recommendation discusses the depreciation method in the economic replicability test in general terms in Annex II (para. (v), sub para. 2), where it sets out that the depreciation method used should be appropriate to the asset in question and the economic lifetime of the corresponding assets required for the retail operations (including network costs that are not included in the wholesale NGA access service) However, the Recommendation does not go into further detail and does not specify which different depreciation method(s), e.g. straight line, annuity, tilted annuity<sup>14</sup> etc., should be used.

### **2.2.2. Reasonable profit in the margin squeeze test (WACC; RoR)**

The Recommendation does not set out guidance on a reasonable profit. However, in Recital 61 it says that alternative access seekers should be able to economically replicate a downstream offer by the SMP operator. To BEREC's understanding, this implies that there should be a non-negative margin between the retail prices for an end-user product offered by the SMP operator and the total costs an efficient (downstream) operator would incur in order to replicate the end-user product. In this respect, the end-user product could be a single offer-

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<sup>14</sup> Cf. Annex A for an explanation of the terms.

ing or a bundle hereof. The margin could be expressed as an absolute value or a percentage share of the total costs or the retail price.

With regard to the costing methodology Recital 26 states that cost recovery ensures that operators can cover costs efficiently incurred and receive an appropriate return on invested capital.

In Annex II para. (v) the Recommendation mentions the Discounted Cash Flow (DCF) method as an example to evaluate the profitability of the flagship products (see below section 2.3).

### **2.2.3. How to break down the retail costs and calculate them**

The Recommendation defines in Recommend 6(f) '*downstream costs*' as "the costs of retail operations, including marketing, customer acquisition, billing, and other network costs, incurred in addition to those network costs already included in the wholesale access service", but does not specify further the splitting of retail cost, so the NRAs have some freedom as to how they disaggregate the relevant retail costs. The relevant cost categories may depend on the specific retail offer and the level of aggregation that is tested for economic replicability, e.g. a bundle including numerous retail products may typically cause additional retail costs compared to a pure broadband offering (see below section 3.2.3, also for next section).

### **2.2.4. Average user: the relation between wholesale and retail traffic and pricing**

The relationship between wholesale and retail traffic is usually taken into account when calculating costs and revenues. This includes inputs such as call minutes, download data or SMS included in a bundle.

The Recommendation does not specify how to take into account the relationship between wholesale and retail traffic. The fact that differences in the retail product and the corresponding retail traffic may induce different wholesale costs, could be taken into account when performing the test for economic replicability (see below section 3.2.4).

### **2.2.5. Relevant wholesale inputs and the relevant reference prices**

#### **2.2.5.1. Regulated wholesale costs**

Regulated wholesale costs are those related to regulated wholesale services/inputs. In a margin squeeze test performed in the context of broadband markets, the broadband wholesale access services (namely wholesale local access, wholesale bitstream access) are the main services taken into consideration as inputs to provide the relevant downstream services. However, the margin squeeze test may also need to consider some other regulated wholesale services (for unregulated inputs see below), especially in cases of bundles (e.g. fixed and mobile termination rates, wholesale line rental, etc.).

While this is not explicitly stated in the Recommendation, usually the NRA would impute the regulated wholesale access price into the test. The Recommendation sets out which reference wholesale price NRAs should consider when the relevant wholesale broadband input is

access regulated, but not price regulated.<sup>15</sup> For the latter Annex II paragraph (iii) of the Recommendation states that when identifying the relevant reference wholesale price, NRAs should consider the access price that the SMP operator effectively charges third-party access seekers for the relevant regulated wholesale input. These should be equivalent to the price charged to the SMP operator's own retail arm, i.e. non-discriminatory. In particular NRAs should take into account the presence of volume discounts and/or long-term access pricing agreements.

For guidance on how NRAs would take the presence of volume discounts and/or long-term access pricing agreements into account appropriately, reference can be made to the NGA Recommendation (2010/572/EU) which provides in its Annex I pt. 7 (Criteria to assess long-term access pricing in case of FTTH) and pt. 8 (Criteria to assess volume discounts in case of FTTH) a number of useful criteria to prevent that volume discounts and or long-term access pricing agreements would lead to a margin squeeze.<sup>16</sup>

With regard to the relevant wholesale product, Recital (67) of the Recommendation, states that “[i]n order to exclude cross-subsidisation between different products in a bundle or portfolio, NRAs should conduct only a **single-level test**, i.e. between the retail services and the **most relevant NGA access input for the access seekers** (for example fibre access at the cabinet, virtual unbundling)”, i.e. the perspective of the access seeker should be used for the ERT. Such an input may consist of an active input, a passive input or a non-physical or virtual input offering equivalent functionalities to a passive input. The choice of the most relevant regulated inputs take into account “the timeframe of the current market review period in view of the SMP operator's rollout plans, chosen network topologies and take-up of wholesale offers” (Annex II, para. (iii)). NRAs should undertake the *ex-ante* economic replicability test in order to assess the margin earned between the relevant retail product and the most relevant regulated input identified at the chosen NGA-based wholesale layer.

Nevertheless, Recital (67) and Annex II, para. (iii) also consider the possibility of the existence of a new NGA input which can in time become more prominent (for example fibre unbundling at the ODF). In such a case, “the economic replicability test should be run with reference to this new input instead of the input initially most used”.

Finally, as Annex II para. (iii) states “if the SMP operator's network characteristics and the demand for wholesale offers vary greatly throughout the territory of a Member State (for example in rural and densely populated areas), the NRA should assess the feasibility of differentiating the most relevant NGA-based regulated wholesale layer per geographic area and adapt the test accordingly”.

#### 2.2.5.2 Non-regulated input costs (incl. own network costs)

These costs represent the non-regulated “wholesale”<sup>17</sup> costs (incl. own network costs) that an operator would incur to provide retail services, such as own network equipment, costs of

<sup>15</sup> This is the only way to interpret the term “NGA-based *regulated* wholesale input” (emphasis added) used in Annex II, para. (iii), subpara. 4 where the Recommendation refers to “regulated wholesale input”, but at the same time asks NRAs to take account of the “NGA wholesale price *effectively* charged by the SMP operator” (subpara. 6, emphasis added), i.e. to take into account the presence of volume discounts and/or long-term access pricing agreements between the SMP operator and access seekers, which presumes an access obligation but obviously no price control obligation.

<sup>16</sup> Cf. below section 4.6

<sup>17</sup> As these inputs can also be bought from other operators on the »carrier market« the term »wholesale« is used here, but put in inverted commas to indicate that the Recommendation counts them as »downstream costs« (cf. definition in Reco. 6(f)). According to Annex II para. (ii) LRIC+ should be used as the relevant cost standard (cf. above section 2.2).

traffic across the different network layers, other additional costs for other services (IPTV, VAS, mobile services). These costs generally represent the costs of different elements of the (core) network (with the possibility of some parts of that network being based on different (non-regulated) “wholesale” products of other operators) of an alternative/efficient operator. Non-regulated “wholesale” costs can e.g. be divided into the following categories<sup>18</sup>:

- Other (incl. own) network costs (xDSL equipment, such as modem and DSLAM; backbone; VoIP platform/switches; operating and maintenance costs; common costs at the level of network infrastructure);
- Mobile service;
- IPTV or Satellite service.

Except for the first category of “other network costs”<sup>19</sup>, the non-regulated costs are not explicitly mentioned in the Recommendation. However, given the importance of bundles, they can represent a material proportion of downstream costs and therefore should be considered a relevant parameter in the margin squeeze test.

### 2.3. Relevant time period

Annex II para (v) of the Recommendation sets out guidance on the type of test and the relevant period for the test.

In relation to the type of test, the Recommendation says:

*“NRAs should evaluate the profitability of the flagship products on the basis of a dynamic multi-period analysis, such as the discounted cash flow (DCF) approach. NRAs should identify an adequate reference time period over which to assess whether the margin between the retail price of the flagship product and the price of the relevant NGA-based wholesale access input allows for the recovery of the downstream costs (including a reasonable percentage of common costs) calculated on the basis of (i) and (ii) above.”<sup>20</sup>*

In relation to the relevant period, the Recommendation says:

*“The relevant period for this ex ante economic replicability test should be set in accordance with the estimated average customer lifetime. Such average customer lifetime would be the period of time over which the customer contributes to the recovery of the (a) downstream costs that are annualised according to a depreciation method that is appropriate to the asset in question and the economic lifetime of the corresponding assets required for the retail operations (including network costs that are not included in the wholesale NGA access service) and (b) other downstream costs that are normally not annualised (typically the subscriber acquisition costs) and which the operator incurs to gain customers and should seek to recover over the latter’s average lifetime.*

*When estimating the average customer lifetime, NRAs should take due account of the different characteristics and competitive conditions of the provision of services over NGA networks compared to the legacy copper network, where these are likely to result in users of NGA*

<sup>18</sup> The list is not exhaustive.

<sup>19</sup> This follows from the definition of downstream costs in Reco. 6(f) in combination with the provision of Annex II para. (ii).

<sup>20</sup> Commission Recommendation of 11/09/2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment, C(2013) 5761 final, page 28, paragraph 3.

*networks having different average customer lifetimes compared to users of the copper network.*<sup>21</sup>

## 2.4. Relevant retail products

### 2.4.1. Flagship products

The Recommendation introduces in Annex II para. (iv) the term ‘*flagship products*’ which are defined as the most relevant retail products to be identified by NRAs on the basis of current and forward-looking market observation, looking in particular at retail market shares in terms of volume and value of products based on NGA regulated wholesale inputs. According to the Recommendation flagship products are likely to be offered as a bundle, so NRAs should pay particular attention to (variation of) bundles.

*“NRAs should assess the most relevant retail products including broadband services (‘flagship products’) offered by the SMP operator on the basis of the identified NGA-based wholesale access layer. NRAs should identify flagship products on the basis of their current and forward-looking market observations, in particular taking account of their relevance for current and future competition. This should include an assessment of retail market shares in terms of the volume and value of products based on NGA regulated wholesale inputs and, where available, advertising expenditure. Flagship products are likely to be offered as a bundle. NRAs should assess innovative variations of such bundles, if they are likely to replace the flagship product. In addition, NRAs should consider whether a particular retail product, which may not be among the most relevant retail products of the SMP operator, is particularly attractive to alternative operators that may focus on a certain niche or lower quality retail products. NRAs may decide to include such a product among the flagship products”.*

With the introduction of the so-called “*flagship products*” the Recommendation directs the tests to the most important offers. E.g. Recital 66 states that “*the NRA needs not to run the test for each and every new retail offer **but only in relation to flagship products** to be identified by the NRA*”, so it is up to the NRA to define the flagship product(s) for the ERT.<sup>22</sup>

### 2.4.2. Level of aggregation of products if defined by the Recommendation

The Recommendation does not specify the level of aggregation except that NRAs should focus on flagship products considered likely to be offered as a bundle. A margin squeeze test can be conducted for different aggregation levels: product-by-product or aggregation of (a group) of products or both (i.e. a combinatorial approach).

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<sup>21</sup> Commission Recommendation of 11/09/2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment, C(2013) 5761 final, page 28, paragraphs 4-5.

<sup>22</sup> Also, the Recommendation does not specify whether this applies only to residential users or also to business customers.

### **2.4.3. Bundles if defined by the Recommendation**

The Recommendation does not go into detail about how to analyse bundles of regulated and non-regulated services. However, the definitions of “new retail offers” and “flagship products” include bundles of services (Annex II, para. (iv) and (v)).

“New retail offer” means any new retail offer of services, including bundles of services, by an SMP operator based on already existing or new regulated “wholesale inputs”.

“Flagship products are likely to be offered as a bundle. NRAs should assess innovative variations of such bundles, if they are likely to replace the flagship product”.

Consequently, bundles must be subject to the replicability test. Nevertheless, NRAs should be aware of the existence of cross-subsidies between the different elements of the bundle.

### **2.4.4. Revenues / retail price**

NRAs need to decide on the appropriate parameter to use for the value of the retail offer.

### **2.4.5. Promotions and temporary discounts if defined by the Recommendation**

Sometimes operators offer temporary discounts or some other promotions in order to facilitate the acquisition of customers or get their loyalty. For instance, when a customer contracts a broadband service, it is usually offered at a lower price during the first months of the contract, or the equipment is subsidized. The content of these temporary offers can vary depending on the season (Christmas, “back to the school”, etc.), customer type, certain geographical areas, etc. These offers can also include free gifts, which are products that are given to customers at the moment of the subscription, generally depending on the length of the subscribed tariff plan. They mainly consist of mobile phones, tablets, or dongles.

NRAs can consider promotions – including temporary discounts and free gifts – as retail costs (as marketing costs), alternatively the discounts can also be considered taking into account that the retail price is lower for the specified limited period.

The Recommendation does not mention temporary discounts at the retail level.

## **2.5. Geographical segmentation: across country differentiation urban/suburban**

There are two possible ways of dealing with geographical differences in competitive conditions across a national territory. The first approach consists of differentiating geographical markets at the market definition stage. Those geographically differentiated markets are then analysed on their own, and conclusions on market power are drawn for each of them. The second approach consists of defining one market, analysing it and then differentiate remedies to take into account geographical differences.

The Recommendation provides some examples of the ways in which differences in geographical areas can be addressed at the remedies stage. In particular, the Recommendation notes (Recommend 50) that differences in the competition conditions between geographical areas may lead to a situation in which, for the non-competitive areas, some form of price control obligations needs to be imposed, whereas in other (more competitive) geographical

areas no such price control measures are necessary, as long as adequate safeguards are in place.

In the same way, regarding the economic replicability test, the Recommendation notes (in Annex II, para. (iii), sub-para. 5 and Recital 67) that, when undertaking the analysis, NRAs may need to adapt the test according to the differences in the competition conditions detected at geographical level, e.g. to take into account the fact that what is deemed to be the most relevant NGA access input needed to perform the test may be different in rural and densely populated areas.

“...If the SMP operator’s network characteristics and the demand for wholesale offers vary greatly throughout the territory of a Member State, the NRA should assess the feasibility of differentiating the most relevant NGA-based regulated wholesale layer per geographic area and adapt the test accordingly”.

### **3. Basic methodological choices of the ex-ante margin squeeze mechanics currently applied by NRAs (current practice)**

The ex-ante margin squeeze test is currently already used by a majority of NRAs, whereas approximately 40 % have never imposed any kind of such a test in existing regulation. In order to better understand how the ERT could be implemented, this Guidance document draws on the experience of NRAs who have ex-ante margin squeeze regulation already in place. Likewise, the best practices that this Guidance document proposes for public consultation have been arrived at by taking utmost account of NRAs’ existing practices.

The Guidance document established the current practice of NRAs on the basis of a questionnaire, which took into account (among other factors) the relevant parameters from the Recommendation as stated in Annex II and in Reco. 56(a). The questionnaire was answered by all 36 NRAs. The following output is based on the answers regarding current methodologies. The following chapter 4 then discusses the degree to which current practices may be (or are already) aligned with Annex II of the Recommendation and proposes best practices that NRAs should take into account when carrying out the ERT. The Guidance document therefore concentrates on current margin squeeze tests run in Market 4 “*wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location*” and Market 5 “*wholesale broadband access*” (Recommendation on relevant markets 2007/879/EC).

The results from the questionnaire show that 21 NRAs have already implemented the ex-ante margin squeeze test, while 15 NRAs have not yet implemented any kind of margin squeeze on markets 4 and 5.<sup>23</sup>

#### **3.1. Objectives/reasons**

The main objectives and reasons for implementing the ex-ante margin squeeze test can be categorised into five main groups:

There were two most common answers from NRAs: Enabling sustainable competition, with the assurance that the alternative operators are able to compete on the market and on the

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<sup>23</sup> The questions and results are provided in a short overview in Annex B. For an overview of NRAs’ practice cf. also *Gaudin/Saavedra*, Ex ante margin squeeze tests in the telecommunications industry: What is a reasonably efficient operator?, Telecommunications Policy 38 (2014), pp. 157-172.



same hand preventing market foreclosure; and ensuring non-discrimination. Others answers were: Using the test as a complementary regulatory tool; enhancing transparency and incentivising NGA investments.

Some of the NRAs also stated that they use the margin squeeze test as a complementary method to other price control mechanisms on the various markets or as an additional safeguard to existing pricing mechanisms on the regulated markets.

The objective of the margin squeeze test as a tool to offer greater transparency as well as legal certainty was also stated.

The majority of the NRAs have already introduced a margin squeeze test. They did so with the aim (*taken from the answers to the questionnaire*):

- to ensure that an SMP-operator in the upstream market does not leverage market power into the downstream market by foreclosure,
- to prevent discrimination in terms of prices (discrimination between internal wholesale prices of the SMP-operator and external wholesale prices charged to alternative operators),
- to guarantee or to stimulate competition by ensuring that alternative operators are able to replicate the retail prices offered by the SMP-operator and to compete with the SMP-operator at the downstream level;

With the objectives that:

- investments in NGA infrastructure are incentivised, but also in complementary facilities of alternative operators,
- pricing flexibility for retail prices and wholesale inputs allows the consideration of demand better and facilitates support for emerging competition and investment,
- Transparency and legal certainty for the market players are enhanced.

### 3.1.1. Margin squeeze test definition

Regarding the definition of the margin squeeze test, NRAs stated definitions as follows:

- Retail prices as a whole must be sufficiently high to ensure that total costs are covered.
- The ex-ante economic replicability test assesses whether the margin between the retail price of the relevant retail product and the price of the relevant regulated wholesale access input(s) covers the incremental downstream costs and a reasonable percentage of common costs.
- The test should indicate if a *reasonable* efficient operator could replicate the incumbents relevant retail offers and make a reasonably profit.
- In order to compete with the SMP operator's retail offer, the efficient operator has to set a price which covers its network costs (regulated and non-regulated) and its commercial costs.
- The difference between the retail price and the wholesale prices (including prices for services that alternative operators necessarily need to purchase from the SMP operator) need to be sufficient to cover the relevant downstream costs.

Even though NRAs set the formulas in different manners, they mostly show the same outcome, i.e. the difference between retail price and wholesale and retail costs, which must be higher than zero or the sum of the costs must not exceed the retail price of the operator used in the test. Regarding the general formula for the margin squeeze test nearly all NRAs take into account the following items:

- Retail price of the SMP's downstream service,

- Regulated wholesale costs needed to provide the downstream service charged by the SMP's upstream division,
- Non-regulated input costs (incl. own network costs),
- Retail costs.

All but one includes WACC already in the calculation.

### 3.1.2. Level of efficiency of the operator (EEO; REO; adjusted EEO)

The implementation of a margin squeeze test involves a certain number of key methodological choices. One of them is a choice of the level of efficiency of the operator used in the test. It must be decided if the efficiency level of the tested operator is comparable to the scale (and implicitly the efficiency level) of the SMP (incumbent) operator or to the scale (and implicitly the efficiency level) of the generic (alternative) operator that is from which perspective the margin squeeze test should be conducted.

As already mentioned before<sup>24</sup>, three options are available to determine if a dominant operator has been margin squeezing its competitors:

- **Equally efficient operator (EEO)** margin squeeze test stands for an efficient operator in the downstream market with the scale of the SMP operator, so the costs can be taken from the SMP operator's regulated accounts.
- **Reasonably efficient operator (REO)** stands for the margin squeeze test for an efficient operator in the downstream market, where the costs based on a generic (alternative) operator which does not (yet) have the scale of the SMP operator.
- **Adjusted equally efficient operator (adjusted EEO)** margin squeeze test starts with the SMP operator's cost and adjust it to the scale of the generic (alternative) operator for which the margin squeeze test is conducted.

If the tests are carried out correctly both (EEO and REO) employ efficient operation, the cost level used in the REO/adjusted EEO test tends to be higher than the EEO test due to a lack of economies of scale. The REO/adjusted EEO approach of allowing higher downstream costs facilitates market entry whereas the EEO approach emphasises preventing anti-competitive foreclosure. This needs to be assessed on a case-by-case basis depending on market conditions by the NRA.

For the Guidance document REO/adjusted EEO were taken as one category, EEO as the other one. A majority of the NRAs who answered the questionnaire and implemented a margin squeeze test, have replied that they use the REO/adjusted EEO test (12 NRAs), while 9 NRAs answered that they use the EEO test.

The reasons brought forward to use either EEO or REO/adjusted EEO are manifold (taken from the answers to the questionnaire):

#### Arguments for EEO are:

- Efficient entry: EEO does not lead to artificially high retail/downstream prices or low wholesale/upstream prices;
- Follow the non-discrimination rule "*The idea is to evaluate whether the SMP firm's downstream operation trade would be profitable if it had to pay for its own business production the wholesale price equivalent to its competitors*";

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<sup>24</sup> Cf. section 2.1.2.

- Takes account of real costs incurred by the regulated operator;
- The SMP operator is obliged to have a cost accounting system and to publish separated accounts; it could be more difficult to get information on the costs incurred by a REO.

Arguments for REO and for adjusted EEO are:

- To ensure that alternative operators are able to compete, i.e. obtain a positive margin;
- At the present time (even efficient) competitors could be faced with higher costs compared to the reference charges of the SMP operator, e.g. in terms of (temporary) lower economies of scale and scope. Notwithstanding it can generally be assumed that, in the long run, an efficient competitor has to be able to provide its services overall as efficiently as the SMP (incumbent) operator, because otherwise competitors could not survive permanently on the market;
- REO takes account of the alternative operators' real costs as they represent their competitiveness/efficiency compared to the SMP operator;
- To reflect lower economies of scale and scope of a new entrant;
- Long-run dynamic efficiency is expected to overcompensate static inefficiencies.

On the question of how would they define the generic operator to be used for an efficient generic operator in the case of using the REO, 5 NRAs answered that they defined the generic operator on the basis of market share: one 5%, one 15 %, two 25% and one descriptive: viable competitor. The level of the retail costs should be set at a level that ensures efficient competition in national markets supervised by NRAs.

### **3.2. Relevant cost standard**

When calculating the costs of providing the relevant downstream service incurred by the alternative/efficient operator, it is important to define the scope of cost elements to be included in the calculation. There are different cost standards<sup>25</sup> typically used for calculating and describing such costs. The most commonly used in regulatory accounting are LRIC+ and FAC.

The questionnaire showed that most of the NRAs use different combinations of cost standards, as appropriate for retail or relevant input (wholesale) costs.

Many NRAs use a similar approach when choosing the relevant cost standards. Retail costs are often assessed based on the FAC standard, while for margin squeeze tests between two wholesale products LRIC+<sup>26</sup> is considered more appropriate as it ensures a forward looking approach and promotes competition as well as consistency across wholesale products. LRIC+ also takes into account all incremental costs of starting to provide a service and includes a mark-up for common costs. Some NRAs calculate the mark-up using the EPMU method. Retail costs are typically calculated based on FAC/FDC for practical reasons as they can be extracted from the SMP operator's financial/audited accounts.

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<sup>25</sup> E.g. Average Variable Cost, Average avoidable cost, Long run incremental cost (LRIC) or Fully allocated costs (FAC/FDC), please refer to Annex A for a detailed explanation of the terms.

<sup>26</sup> FAC/FDC corresponds usually to a Top Down cost allocation approach while LR(A)IC+ usually refers to a BU LR(A)IC cost modelling approach in which only efficient costs are taken into account.

### 3.2.1. Cost base and depreciation method in the margin squeeze test

Most NRAs opt for the straight-line method in the margin squeeze test due to the simplicity of using data from the accounts of the operator.

NRAs who use economic depreciation pointed out that the reason for choosing this method is that it allows for more stable costs/prices even when volumes and asset prices are moving.

One NRA that uses tilted annuity explained that the reason for choosing this method is because the telecom industry is characterized by the consumption of assets that are subject to substantial price changes and the modified tilted annuity also considers the time it takes to introduce the asset into production.

### 3.2.2. Reasonable profit in margin squeeze test (WACC; RoR)

All but one NRA use WACC as the reasonable profit indicator, so WACC is clearly the preferred option.<sup>27</sup> In LRIC+ models a weighted average cost of capital (WACC) is included to ensure that regulated wholesale prices include a reasonable profit for the price regulated SMP-operator.

### 3.2.3. How to break down the retail costs and calculate them?

Retail costs are defined as specific costs needed to provide the service on the retail market. Most of the NRAs use the SMP operator's categorisations because they are audited and therefore are a reliable base for determining the appropriate break-down of retail costs. Some NRAs use industry's costs which are then compared internally and benchmarked externally.

Retail cost categories that NRAs generally include are:

- Customer acquisition and retention
- Customer care
- Marketing and advertising
- Billing
- Sales personnel salary/Sales commission
- Bad debt
- CPE/Distribution of CPE
- Product development/management
- Common costs.

Depending on the level of efficiency of the operator that is used in the margin squeeze test, costs may be estimated based on input from the SMP-operator and/or alternative operators.

Retail costs can be implemented as either a percentage mark-up on total network costs (regulated wholesale costs, non-regulated wholesale and own network costs) or as actual values that are added to total network costs.

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<sup>27</sup> The NRA that uses RoR explained that it does not use WACC as it is probably not relevant for downstream (retail) costs as these do not imply as important investments as upstream activities.

### **3.2.4. Average user: the relation between wholesale and retail traffic and pricing**

The relationship between wholesale and retail traffic is usually taken into account when calculating costs and revenues. This includes inputs such as call minutes, download data or SMS included in the bundle. Usage of out-of-bundle inputs by end-users is usually taken into account, sometimes on basis of an average user and in some cases on basis of end-users' actual consumption.

Most of the NRAs answers to the questionnaire showed that the relationship between wholesale and retail traffic is taken into account when calculating costs and revenues based on average user consumption. They state that out-of-bundle inputs (e.g. call minutes) are taken into account from both the revenue and wholesale cost perspective. This is important in order to reflect the full input and costs of a bundle or standalone service such that the offer is replicable and not causing a margin squeeze.

Some countries make a distinction between user classification depending on the type of product or service which they want to test. E.g. one NRA stated that for testing standard products/services they use the average user profile (includes all usages) and for testing tailor made products/services they use the actual user profile of the customer.

For retail offers with flat rate tariffs for one or more services (e.g. voice, SMS, data traffic from mobile, etc.), some NRAs calculate costs and revenues on the basis of the expected usage by end-users. The usage is gathered from data available for similar offers of the SMP operator, taking into account also an assumption of out-of-bundle usage.

### **3.2.5. Relevant wholesale inputs and the relevant reference prices**

With regard to the regulated wholesale costs, the approach shared by many NRAs is to use the prices of the reference offers (imputation). The questionnaire showed that LRIC+ and FAC or a combination are commonly used to evaluate unregulated input ("wholesale") and retail costs (the latter in accordance with regulatory accounting provisions of the SMP operator, see above).

#### **3.2.5.1. Regulated wholesale costs**

As stated above (see section 2.2.5) for regulated wholesale inputs the regulated prices from the SMP operator's reference offers should be used as the relevant reference prices.

These are the costs incurred by the (alternative) operator to buy wholesale services offered (only) by the SMP operator and are needed to provide retail services. Sometimes, there are different possible wholesale services for providing the same retail service (i.e. indirect access/ULL for xDSL retail offers, or indirect access/VULA/wholesale offer or conducts and ducts in case of NGA). Usually these costs are regulated: access costs, interconnection costs, etc. Moreover, in some countries various wholesale offers are provided depending on the geographical area considered. For example, in a lot of countries LLU is used more in dense areas while bitstream is preferred elsewhere for the provision of retail broadband services.

Where retail services can be supplied using various combinations of compatible wholesale offers, the test can be performed:

- For each type of wholesale input (with potential geographic differentiation). In this case, the test is carried out considering only one option for each needed wholesale service.

This does not mean that only one of the possible upstream inputs is considered, but that only one is considered at a time.

- On the basis of the appropriate wholesale input mix. Under this approach, the test is carried out considering a mix of the available wholesale products offered by the SMP through its upstream division. The costs associated with the mix of inputs are usually defined through a weighted average of the cost of each wholesale input. The definition of the weights to be associated to the single inputs can be complex. These weights (e.g. market shares or coverage) are probably not constant over time, as the weights of wholesale products will change as alternative operators develop.

As mentioned in section 2.2.5, when alternative operators commercialize bundles (e.g. double play bundles), they may need to purchase other wholesale regulated services supplied by the SMP operator, such as wholesale line rental, or origination/termination (on both fixed and mobile networks) wholesale prices. According to the questionnaire, NRAs consider the wholesale prices of these other regulated services as a cost element in their margin squeeze test.

According to the questionnaire, for calculating regulated wholesale costs, most of the NRAs indeed use the wholesale prices from the SMP operator's reference offers under a LRIC(+) cost standard approach, which is in line with the cost standards as discussed above.

### 3.2.5.2. Non-regulated input costs (incl. own network costs)

Where NGA-based bundles of retail services include IPTV or mobile services, it may be possible to assess the costs of these elements using the retail prices of the standalone products, when available. In such cases, the standalone price might be used as a first proxy to derive the cost of the service.

Alternatively the test could be conducted on the basis of the relevant cost standard. According to the questionnaire, some NRAs have implemented a BU-LRIC cost model for mobile services which should allow mobile costs to be calculated in a more relevant way.

On the other hand, costs of providing IPTV services can be calculated taking into account that program content costs can be higher for a smaller operator due to its lower bargaining power.

### 3.3. Test for evaluating profitability of products over time

This aspect concerns the methodological approach to calculating profitability and more precisely whether the firm's profits should be calculated on the basis of a static analysis or a dynamic analysis.

To carry out a static analysis, either a period-by-period or customer lifetime approach can be used:

- The **period-by-period approach** uses the observed revenues and costs as recorded in the SMP operator's accounts. This approach typically uses standard accounting techniques to amortise investment expenditure over an appropriate period and tests whether the firm is profitable in each sub-period being assessed (e.g. each year).
- The **customer lifetime approach** considers a group of customers that take the service in one particular period. It calculates the cost of acquiring those customers and sums these

costs with the total discounted ongoing margin earned from those customers over the average customer lifetime, assuming ongoing revenues and costs stay constant over time. If the resulting NPV is positive, then the test is passed.

For a dynamic analysis, the **discounted cash flow (DCF) approach** uses forecast data available at a point in time (for example, at the time of launching a product) to forecast the overall profitability of a business/project over the entire life of the business/project on a forward-looking basis. It calculates the net present value (NPV) over the entire period and so does not specify how costs should be recovered in distinct sub-periods.

For each of these approaches, it is necessary to identify the relevant time period for the analysis. As operators will generally incur costs that will generate revenue streams in the future, for example, advertising expenditure aimed to acquire new customers or capital expenditure on core network capacity, it is required to decide the time periods over which these investment type costs should be spread.

### Current practice

#### *Test for evaluating profitability*

When performing a margin squeeze test, the majority of NRAs perform a static analysis by using either a period-by-period approach or a customer lifetime approach. There are also some NRAs that use both a period-by-period/customer lifetime approach and a DCF approach. Only one NRA uses a DCF approach only.

The three approaches can offer different perspectives on the same question of cost recovery over time.<sup>28</sup>

The main advantage of the **DCF approach** is that it can take into account changes in unit costs and revenues (i.e. changes in profitability) over an appropriate period of time. This can be useful for assessing profitability in nascent, fast-growing markets where there may be circumstances where it might be considered reasonable for a firm to set a price that does not cover the full costs of serving early customers, but which is economically sustainable over a longer time horizon as future cost reductions materialize (i.e. penetration pricing).

A potential drawback of this approach is that it requires a number of forecasts and assumptions (e.g. volumes, cost-volume relationships, asset terminal values) and that the primary source of the forecasts and assumptions is likely to be the SMP operator.<sup>29</sup> In addition, even when a DCF analysis shows a positive NPV, it is not always clear whether positive margins are due to legitimate pricing or the exclusion of competitors. Finally, it is important to bear in mind that a DCF approach allows the SMP operator to incur substantial initial losses (that would be compensated in the future), which its competitors may not be able to absorb.

The main advantages of a **period-by-period approach** are the counterpoints to the disadvantages of the DCF approach. Namely, that it is based on actual data which means the reliance on forecasts and assumptions is limited and that it shows whether or not the SMP operator's offerings have been profitable in the short-run.

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<sup>28</sup> BERC notes that under certain conditions, these different measures of profitability (period by period, customer lifetime and DCF) will give the same result, e.g. where there are no changes in prices, costs or volumes over time.

<sup>29</sup> As a result, the outcome of the test risks relying on unreasonable forecasts of the SMP operator, thus potentially leading to a skewed result.

A shortcoming associated with this approach is that it typically uses straight line depreciation to amortise subscriber acquisition costs (see 3.2.1. which finds that the majority of NRAs currently use straight line depreciation). This can lead to distortions where profitability is being assessed in fast growing markets. When the number of subscribers and use of a network is low in the first years of a product's life, straight-line depreciation implies an equal recovery of the initial investment expenditure in each year of the specified life. This would result in a larger cost of capital employed in initial years than in later years. Irrespective of the development stage of the market, straight line depreciation does not discount cash flows in future periods and so does not take into account the time value of money.

The **customer lifetime approach** is also based on actual data but, unlike the period-by-period approach, does discount cash flows over the average customer lifetime. Another potential advantage of this approach is that because it measures profitability on a per customer basis, the cost and revenue stacks can be constructed on a 'bottom-up' basis (in contrast to the 'top-down' period-by-period approach, which typically takes costs and revenues directly from the SMP operator's accounts). A bottom-up method might be suitable where the SMP operator does not provide separate accounts for NGA-based broadband, or where an NRA wants the flexibility to test a subset of the SMP operator's product offerings, e.g. products available to new subscribers, certain bundles of products.

#### *Time period used*

All NRAs that specified the time period they apply in their testing use the average customer lifetime as the relevant period. NRAs have generally estimated the duration of the average customer lifetime on the basis of the conditions of the broadband markets in their respective member states. The average customer lifetimes NRAs use range from two years to five years. One NRA provided further detail, indicating that it calculated network costs by depreciating over the lifetime of the costs, and non-network costs (e.g. marketing, promotions) are depreciated over the average customer lifetime.

### **3.4. Relevant retail products**

#### **3.4.1. Flagship products**

When performing a margin squeeze test with two exceptions no NRA has currently defined or identified (a) "flagship" product(s).

One NRA uses the product with the highest revenue share.

The second NRA defines 'flagship products' as those products which, in descending order, represent in sum a revenue share of 70% of all retail broadband products of the SMP operator in the broadband market. To identify the most important retail products, broadband retail products (stand-alone broadband products or bundles that include broadband internet access) have to be listed according to their revenue share in a descending order. Additionally, all products which represent a revenue share of at least 10% are treated as flagship products.

#### **3.4.2. Level of aggregation of products**

When performing a margin squeeze test the majority of NRAs apply both a product-by-product and aggregation of products approach (i.e. a combinatorial approach). However, some NRAs just apply either a product-by-product approach or an aggregated approach.



There are a number of reasons underpinning the use of a product-by-product test in an ex-ante setting where an operator has SMP upstream to one or a number of wholesale inputs required to replicate an offer at the retail level. In particular, the use of a product-by-product approach ensures that each bundle/standalone offer is replicable and that there can be no form of cross-subsidy between bundles/standalone offers.

However, from an economic perspective, there may be efficiency gains that could be achieved through an aggregated assessment approach. For example, an aggregated approach may allow the regulated operator to have more pricing flexibility at the retail level at the individual bundle/standalone service level. This may allow for more competitive retail offerings to be made available to the end-user.

For those NRAs undertaking a combinatorial approach the flexibility of the aggregated approach is determined by the parameters of the product-by-product approach. For example, some NRAs use a lower cost standard when assessing the product-by-product than compared to that used in assessing the replicability of the aggregation of all products. This approach provides some pricing flexibility at the product level while ensuring that the overall “portfolio” is replicable.

### **3.4.3. Bundles: Treatment of standalone and bundle products**

If some bundled elements (e.g. IPTV) can be identified within the tariff structure it may be possible to remove these cost and revenues in order to test the – ‘standard’ elements of the bundle for example, broadband and voice services (double play).

Associated revenues are those incremental revenues which are directly attributable to the bundle/standalone service being offered. This could be e.g. non-recurring revenues such as installation/set-up charges. In general, NRAs’ treatment of such non-recurring revenues is to attribute such incomes over the customer lifetime or contract period. Further examples of associated revenues include opt in revenues such as monthly television subscription revenues and monthly film/television on-demand revenues. However, for such revenues BEREC notes that some NRAs have a different treatment of the level of aggregation when assessing a bundle’s replicability and may assess unregulated revenues and costs separately to that of the main bundle.

Three of the NRAs do not analyse bundle products that include non-regulated access. Hence, they focus their activity on stand-alone products or, alternatively, on bundles composed by regulated services. However, one of the NRAs points out that it is considering modifying the margin squeeze test methodology in order to include IPTV, because it considers that IPTV is gaining importance in the market.

Two NRAs do not consider either revenues or costs of the non-regulated component included in a bundle. These NRAs did not include additional services like TV or some other non-regulated elements, which are charged with an incremental fee. However, one of these NRAs indicates that it checks that the incremental revenues of TV are higher than the incremental cost.

In a similar way, another NRA applies the margin squeeze test only for the components of the bundle that are based on regulated wholesale products. Therefore, the revenues and costs of the non-regulated components of the bundle are not considered in the test. So, in the case where a bundle includes a retail element which is based on a non-regulated product, the stand-alone price of this element is subtracted from the price of the bundle.

Apart from the cases mentioned above, most of the NRAs carry out the margin squeeze analysis taking into consideration the revenues and costs of the whole bundle, including the ones relative to the non-regulated elements.<sup>30</sup>

IPTV services are frequently available to customers within bundles that include broadband. In some countries, a mobile service is also included as a part of a broadband bundle. Relevant revenues and costs can be derived from the following revenues and costs components when analysing the replicability of a bundle taking into consideration the revenues and costs.

#### Bundles including mobile service

The following revenues and costs are typically relevant for margin squeeze testing:

- Revenues:
  - Package revenues for those offerings with a mobile component,
  - Mobile service set-up fees (initial connection fee, charges for handsets etc.),
  - Out of bundle mobile revenues for services in excess of the included allowance (for calls, call types not in the allowance, SMS text, MMS text, data download and upload, roaming, etc.),
  - Incoming interconnection revenues;
- Costs:
  - Own network Termination costs (coming from the BU-LRIC cost model),
  - Payments to other operators (fixed and mobile),
  - Advertising, marketing and other incremental costs,
  - Transaction costs (ordering, number portability charges, completion costs etc.).

#### Bundles including IPTV service

The following revenues and costs are typically relevant for margin squeeze testing:

- Revenues:
  - TV package revenues;
  - TV service set-up fees;
  - All TV related revenues such as subscriptions to VOD services (film, sports events), or pay per use charges;
- Costs:
  - TV platform costs;
  - Program content costs (live TV, Video on demand etc.);
  - Set Top box (STB) costs;
  - Installation cost;
  - Transaction costs (ordering, jumpering, completion costs, etc.).

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<sup>30</sup> As it is difficult to allocate correctly common costs to the elements of the bundle, the general rule to ensure a subsidy-free allocation is that the common costs must be covered as a whole by the bundle, for the individual components at least the incremental costs (cf. *Faulhaber*, Cross-Subsidization: Pricing in Public Enterprises, AER Vol. 65 (1975), 966).

The answers provided by NRAs can be summarized as follows:

With regard to the current practice three main approaches are followed by NRAs:

- Most of the NRAs do not make a substantial difference between standalone services and bundles, in the case of bundles the non-regulated costs are mostly extracted from retail offers or even not considered, or considered as a combination of regulated and non-regulated costs.
- The second manner is the breakdown of each component of the bundle in terms of costs and revenues.
- The third manner is to take the standalone service with the addition of the increment or additional cost value.

#### **3.4.4. Revenues / retail price**

When performing a margin squeeze test all NRAs generally consider that the appropriate retail revenue to take into account is the headline monthly published price (for that bundle or standalone service) less discounts, together with any monthly “out of bundle revenue” and associated revenues directly attributable to the bundle/standalone service being sold/offered.

“Out of bundle revenues” are those revenues which are generated by an end-user/subscriber which are in excess of the bundle/standalone offer package. For example, additional traffic revenues from excess broadband usage or additional call revenues.

#### **3.4.5. Promotions and temporary discounts**

BEREC notes that there is currently a different treatment between some NRAs as to the allocation of promotions and discounts. Some NRAs directly reflect the promotional or discounted price in the margin squeeze test whereas others include promotions or discounts as costs in the downstream retail cost stack.

Most of the NRAs take into account the effect of promotions and temporary discounts in the relevant revenues or costs, when carrying out a margin squeeze test given that they could have a competitive effect. For example, some NRAs consider that the retail price is lower for a period of time. Alternatively, some NRAs use in their margin squeeze test an average price which includes the discounts.

According to the questionnaire, NRAs take into account promotions and discounts in the following ways:

- One NRA performs a very detailed analysis of promotions. That NRA approved each promotional offer within 15 days after their submission by the SMP operator. In addition, the NRA limits for the duration of the discounts to three months. The SMP operator informs the NRA, on a monthly basis of, the number of subscribers for each promotional offer provided.
- One NRA considers discounts in the margin squeeze test only if they are offered for a significant period of time, not only for some weeks.
- One NRA includes promotions and discounts together with marketing costs, and this is reflected in the margin squeeze test.

- One NRA considers promotions and discounts in a biannual test, in which all revenues and costs are considered in the MS test under an aggregation level based on three segments of retail customers. This biannual analysis complements the analysis which is performed when the commercialization of a new permanent offer is notified by the SMP operator. Likewise, another NRA applies two different verifications, a Discounted Cash Flow (DCF) analysis and a period by period test: DCF test is applied cumulatively to each retail offer and the set of promotions applied to the examined offer, whereas period by period is applied separately to each promotion or temporary discount.
- The rule applied by one NRA implies that when the SMP operator offers discounts at the retail level, it also has to provide discounts at the wholesale level.
- Some NRAs do not take into account promotions and temporary discounts in margin squeeze tests while others only analyse the replicability of promotions and temporary discounts in the cases of complaints by alternative operators.

Regarding free gifts, some NRAs take the retail price of the gifts into account in the margin squeeze test (e.g. the standalone price of a handset). Uplifts may be applied by the NRAs in order to take into account the negotiation power of the operator with handset manufacturers.

BEREC analysed the importance and influence of discounts and promotions in several documents, namely in the BEREC report on specific aspects of broadband commercialization<sup>31</sup>. The report shows that temporary discounts are present in all Member States, and are used by all operators (not just the SMP operator) as a powerful tool to compete on the market. In cases of aggressive long lasting discounts, combined with some other tools, like loyalty clauses by the SMP operator they could increase barriers to entry. This can result in negative effects on competition and the market itself, since the operator(s) cannot recoup initial costs during a longer period of time. Additionally when the alternative operators want to offer same kind of benefits to the end users, this implies an increase of their relevant wholesale costs, since these are generally not offered at the wholesale level.

### **3.5. Geographical segmentation**

The majority of NRAs do neither differentiate wholesale prices/costs nor retail prices depending on the geographical location, due to the fact that there is no geographical segmentation under the relevant market analysis.

One NRA mentioned that the margin squeeze tests takes into account geographical segmentation only in the case the incumbent differentiates its wholesale and/or retail prices geographically and the alternatives operators have to compete with the incumbent on those prices.

One NRA proposes a mix between LLU and bitstream wholesale offers as the reference upstream input to assess the existence of a squeeze in the entire national territory. Another NRA uses an average wholesale price according to different wholesale inputs.

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<sup>31</sup> BEREC report on specific aspects of broadband commercialization, BoR (11) 25 final, May 2011

## Geographical approach of dealing with bundles

When performing a margin squeeze test on bundled<sup>32</sup> offers, one NRA uses a weighted network input which reflects the cost/price of a hypothetical operator's use of the various wholesale inputs required to replicate the bundle given different combinations of wholesale access products used depending on the geographical area.

Another NRA, when performing a margin squeeze test to assess bundled offers, uses a geographical model whose main function is to map the existing exchanges in the country into a set of homogeneous sub-groups, called geotypes (the geotype contains all the exchanges with similar characteristics). The model calculates the network costs by the availability of wholesale services in each of the modelled region and recreates the reference operator network and demand according to each region. The geographical modelling of the reference operator is based on the SMP (incumbent)'s current network: in particular, availability of wholesale services at regional level, the location of the incumbent's exchange and the demand of services (e.g. lines and xDSL) at regional level. It calculates the lowest cost between direct and indirect access by geotype amongst the available technological options. This optimum approach permits the calculation of the efficient cost of providing the equivalent service.

### 4. Economic rationale and implementation of the ex-ante economic replicability test of the Recommendation in practice

This chapter sets out to align the current practice of ex-ante margin squeeze tests as applied by NRAs and the main characteristics of the recommended ERT.

#### 4.1. Primary objective of the ex-ante economic replicability test

The primary objective and the purpose of the ERT according to the Recommendation is:

- (i) *to establish whether alternative access seekers can economically replicate a downstream offer provided by the SMP operator with the regulated wholesale input available, in cases where wholesale price regulation should not be imposed, an NRA should undertake an ERT (Recital 61),*
- (ii) *to ensure, in combination with the other competitive safeguards introduced such as EoI, the technical replicability test, and a demonstrable retail price constraint resulting from a copper anchor or alternative infrastructures, that SMP operators do not abuse this pricing flexibility in order to exclude (potential) competitors from the market (Recital 62).*

As the Recommendation aims to provide SMP operators with more pricing flexibility, the purpose of the ex-ante margin squeeze test (= ERT) is to have a safeguard for competition, allow efficient market entry and promote efficient investment in NGA networks.

The five main objectives and reasons for implementing the ex-ante margin squeeze tests in the current NRAs' practice indicated in the questionnaire were specified as follows:

- Enabling sustainable competition,
- Ensuring non-discrimination,

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<sup>32</sup> Cf. also above section 3.2.5 on bundles and section 4.6 (ERG(09)07 discussion paper on margin squeeze tests for bundles).

- Using the test as a complementary regulatory tool,
- Enhancing transparency,
- Incentivising NGA investments.

The conclusion of the stated objectives from the Recommendation as well as from NRAs' objectives would therefore be:

*The primary objective of the ex-ante economic replicability test is to safeguard competition in cases where no other cost-oriented price regulation pursuant to Art. 13 Directive 2002/19/EC is imposed. Moreover, the ERT is used to ensure non-discrimination and transparency, preventing exclusion from the market.*

In that sense the ERT is an indirect (“lighter”) form of price control replacing the direct (strict) form of price regulation (i.e. the imposition of cost-oriented prices). Both are applied ex-ante. Additionally, NRAs may also use the ERT as a complementary test.<sup>33</sup>

#### 4.1.1. Definition of the test (recommended) to be used as a future practice

Definition of the ex-ante economic replicability test:

The Recommendation defines the ex-ante economic replicability as “... *the test which assesses whether the margin between the retail price of the relevant retail products and the price of the relevant NGA-based regulated wholesale access inputs covers the incremental downstream costs and a reasonable percentage of common costs.*”

*Definition of the ex-ante margin squeeze test:*

There is no standard definition of a margin squeeze. Based on the responses from the questionnaire, the margin squeeze test aims to assess whether the retail price of the SMP operator's downstream service covers the regulated wholesale costs needed to provide the downstream service charged by the SMP operator's upstream division, non-regulated input costs (incl. own network costs) and retail costs. In simple terms, margin squeeze occurs when the retail price of a given product (or a set of products) does not cover the sum of all the costs that are required to offer that product (or a set of products).

The conclusion of the stated definitions from the Recommendation as well as from NRAs would therefore be:

*The ex-ante economic replicability assesses whether the SMP operator's retail price of the 'flagship product(s)' or the products considered relevant by the NRA covers the regulated wholesale costs, non-regulated input costs (incl. own network costs) and retail costs (LRIC+).*

The formula for the calculation of the ex-ante economic replicability:

- $RP_{\text{smp}}$  = Retail price of the SMP operator's downstream service,
- $WC_{\text{reg}}$  = Regulated wholesale costs needed to provide the downstream service charged by the SMP's upstream division<sup>34</sup>,
- $WC_{\text{non-reg}}$  = Non-regulated input costs (incl. own network costs),

<sup>33</sup> Cf. ComReg 14/90 »Replicability Test – Further specification of the price control obligation not to cause a margin squeeze: Market 2 and Market 5«, Consultation and Draft Decision of 28/08/2014, in part. para. 48 -50; [http://www.comreg.ie/publications/replicability\\_test\\_further\\_specification\\_of\\_the\\_price\\_control\\_obligation\\_not\\_to\\_cause\\_a\\_margin\\_squeeze\\_market\\_2\\_and\\_market\\_5.583.104676.p.html](http://www.comreg.ie/publications/replicability_test_further_specification_of_the_price_control_obligation_not_to_cause_a_margin_squeeze_market_2_and_market_5.583.104676.p.html).

<sup>34</sup> or »effectively charged wholesale prices«, see above footnote 15, where the NGA wholesale input is only »access regulated«, Annex II, para. (iii), subpara. 4 and 6.

- RC = Retail costs.

The derivation of all observed items would therefore be:

$$\underline{RP_{smp} \geq WC_{reg} + WC_{non-reg} + RC.}$$

#### 4.1.2. Level of efficiency of the operator

According to the Recommendation the ERT should assess whether the SMP operator's own downstream retail arm is profitable on the basis of the upstream price charged to its competitors by the upstream operating arm of the SMP. For that reason the level of efficiency of the operator to be used according to the Recommendation is the equally efficient operator (EEO) test. But the Recommendation also foresees that NRAs may make adjustments for scale to the SMP operator's costs to ensure that there is a realistic prospect that alternative operators can profitably replicate the SMP operator's retail services. The reasonably efficient scale identified by the NRA should not go beyond that of a market structure with a sufficient number of qualifying operators to ensure effective competition, bearing in mind competition from other platforms.

Most of the NRAs who answered the questionnaire and implemented a margin squeeze test, have stated that they use the REO/adjusted EEO test (12 NRAs), while 9 NRAs answered that they use the EEO test.

While the pure EEO test relies on static efficiency any adjustments to this approach taking into account transitory disadvantages of even efficient competitors in terms of e.g. lower scale and volumes/density of lines draws on the benefits of (an improved) dynamic efficiency in a long-run perspective. So this approach is more suitable in a situation where dynamic efficiency is likely to overcompensate static inefficiencies resulting from (slightly) higher end user prices as the case may be. Thus the focus of the REO/adjusted EEO approach lies on promoting sustainable competition and with this fostering infrastructure investment of alternative operators as well.

The conclusion of the stated definitions from the Recommendation as well as the current practice of NRAs would therefore be:

*The majority of NRAs use the REO/adjusted EEO test as the preferential level of efficiency while the Recommendation starts with the EEO test, but allows scale adjustments if the SMP operator has frustrated the market entry or where very low volumes of lines and their significantly limited geographic reach as compared to the SMP operator's NGA network indicate that objective economic conditions do not favour the acquisition of scale by alternative operators.*

#### 4.2. Relevant cost standard

When calculating the costs of providing the relevant downstream service incurred by the alternative operator, it is important to define the scope of cost elements to be included in the calculation and the cost standard(s) used for the different cost categories: regulated wholesale costs, non-regulated input costs and retail costs.

In Annex II paragraph (ii) of the Recommendation it is specified that the incremental cost of providing the relevant downstream service is the appropriate cost standard. A LRIC+ model should be used to calculate incremental cost (including sunk costs) and to add a mark-up for common costs related to the downstream activities. The use of a LRIC+ standard for relevant

downstream costs in the ERT also facilitates consistency with regard to the setting of wholesale prices and measurement of retail costs.

Most of the NRAs use different combinations of cost standards, as appropriate for retail or relevant input (wholesale) costs. For practical reasons NRAs often use the FAC cost standard for calculating retail costs as they can be extracted from the SMP operator's financial/audited accounts (and adjusted for scale in case of REO/adjusted EEO).

For the evaluation of non-regulated input costs, a number of NRAs uses the SMP operator's costs (mostly LRIC+) as a proxy, but other approaches taking into account the relevant input costs of the alternative operator are also seen.

In those cases where a combination of cost standards is applied by the NRA<sup>35</sup> (e.g. LRIC+ for non-regulated input costs, FAC for retail costs) NRAs should ensure consistency and take into account the objectives mentioned above when implementing the test.

#### **4.2.1. Depreciation method**

In Annex II, the Recommendation sets out that the depreciation method used in the ERT should be appropriate when considering the asset in question and the associated economic lifetime. Given this broad definition, BEREC believes any relevant depreciation method such as economic depreciation, straight line depreciation, tilted annuity, and other depreciation methods can be used, depending on the circumstances of the markets in question. Most NRAs opt for straight line depreciation for practical reasons.

#### **4.2.2. Reasonable profit**

Seeing that the test for economic replicability should support efficient build-or-buy signals, BEREC finds that investments from alternative operators should be stimulated when efficient. In case alternative operators invest in own infrastructure this would imply that the alternative operators receives a reasonable return on their own investments. In this respect, investments could both be telecommunications infrastructure and other investments necessary to provide end-user products.

To BEREC's understanding, this implies that there should be a non-negative margin of the retail prices for an end-user product offered by the SMP operator and the sum of the costs necessary to provide the downstream service (see above), so an efficient operator would be allowed to earn a reasonable rate of return. The margin could be expressed as an absolute value or a percentage share of the total costs or the retail price. All but one NRA use WACC as the reasonable profit indicator, so WACC is clearly the preferred option.

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<sup>35</sup> to calculate the downstream costs as defined in Reco. 6(f).



### **4.2.3. Breakdown of retail costs**

The Recommendation mentions in Reco. 6(f) the following generic categories: marketing, customer acquisition, billing as the costs of retail operations. NRAs current practice includes also customer care, bad debt, CPE/distribution of CPE, product development/management as relevant costs of retail operations. Both include a reasonable mark-up for common costs in their definition.

The relevant cost categories may depend on the specific retail product that is tested for economic replicability, e.g. a bundle including numerous retail products may typically cause additional retail cost components compared to a pure broadband offering.

### **4.2.4. Average user: the relation between wholesale and retail traffic and pricing**

To the extent that differences in the retail product and the corresponding retail traffic induce different wholesale costs this could be taken into account when performing the test for economic replicability. When defining the relationship between wholesale and retail traffic and pricing, relevant parameters to consider are call minutes and download data. The relationship could be based on either call minutes/download data included in the retail product or an average end-user consumption profile.

### **4.2.5. Relevant wholesale inputs and the relevant reference prices**

The Recommendation suggests that the ERT is conducted on the basis of the most relevant regulated input identified at the chosen NGA-based wholesale layer and the most relevant retail products including broadband services called 'flagship products' (Annex II, pt. (iii) and (iv)). NRAs currently include a broader set of wholesale inputs in the test (used complementarily to the cost-oriented price control obligation).

Regarding the choice of the relevant wholesale access products it is important to take into account the change of the mix of legacy and NGA access products over time.<sup>36</sup> As the migration to NGA services is still relatively nascent the weighting of NGA inputs could initially be fixed and based on the assumption that those customers currently served via either LLU or line sharing, will all migrate to their current nearest equivalent NGA wholesale product.

#### **4.2.5.1. Regulated wholesale costs**

When performing the test for economic replicability, underlying wholesale services could be evaluated individually or as a mix of the relevant wholesale services. If a mix of relevant wholesale services is used, this should reflect the approach of an efficient operator on the

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<sup>36</sup> And consequently this could change the ex-ante test settings, cf. e.g. ComReg 14/90 »Replicability Test – Further specification of the price control obligation not to cause a margin squeeze: Market 2 and Market 5«, Consultation and Draft Decision of 28/08/2014, para. 22;  
[http://www.comreg.ie/publications/replicability\\_test\\_further\\_specification\\_of\\_the\\_price\\_control\\_obligation\\_not\\_to\\_cause\\_a\\_margin\\_squeeze\\_market\\_2\\_and\\_market\\_5.583.104676.p.html](http://www.comreg.ie/publications/replicability_test_further_specification_of_the_price_control_obligation_not_to_cause_a_margin_squeeze_market_2_and_market_5.583.104676.p.html).

specific national market, i.e. the mix of wholesale services that an efficient operator would chose to provide the downstream service. Thus only wholesale products relevant for the specific market should be included and each to an extent deemed efficient by the NRA.

For calculating regulated wholesale costs, most of the NRAs indeed use the wholesale prices from the SMP operator's reference offers under a LRIC(+) cost standard approach (imputation).

In cases where there is only an access obligation Annex II paragraph (iii) of the Recommendation states that when identifying the relevant reference wholesale price, NRAs should consider the access price that the SMP operator effectively charges third-party access seekers for the relevant regulated wholesale input. These should be equivalent to the price charged to the SMP operator's own retail arm, i.e. non-discriminatory. In particular NRAs should take into account the presence of volume discounts and/or long-term access pricing agreements.

#### **4.2.5.2. Non-regulated input costs (incl. own network costs)**

As mentioned at the beginning of this section, for practical reasons a number of NRAs uses the SMP operator's costs to assess the non-regulated input costs (mostly LRIC+). Where information is available on the network costs of the alternative operator, the calculation could be based on these costs. Alternatively the prices commercially agreed on the carrier market could be used.

### **4.3. Time Period**

The Recommendation states that profitability should be evaluated on the basis of a dynamic multi-period analysis, such as the DCF approach. We consider that it is appropriate for each NRA to determine the methodology for assessing profitability when undertaking a margin squeeze test. The choice of whether a static or dynamic approach is appropriate is likely to depend on a number of factors, such as the main objectives for carrying out the ex-ante margin squeeze test, the development stage of the market, and the availability of reliable data. These factors are likely to vary considerably between member states.

The Recommendation states that the relevant period for the ex-ante economic replicability test should be set in accordance with the estimated average customer lifetime. BEREC considers that this is the appropriate time period to use for the ERT and note that most NRAs are already using the average customer lifetimes that are relevant to NGA broadband in their respective member states when carrying out ex-ante margin squeeze tests.

However, in order to estimate the average customer lifetime, it may not be appropriate to use data on NGA broadband if the launch of such products is relatively recent. Churn rates are likely to be volatile in the early stages of market development while minimum contract terms which 'lock-in' customers for a certain period are likely to skew the calculation of customer lifetimes. A more useful indicator might be the average customer lifetime of copper broadband products. However, as noted in the Recommendation, the potential for differences in competitive conditions between the provision of NGA broadband products and copper broadband products should be taken into account when estimating the average customer lifetime.

In relation to the period over which to depreciate investment costs, a relevant consideration is the type of investment costs that are being depreciated. For customer related investment costs (e.g. marketing, connection, customer retention), they should be recovered over a period of time, reflecting the period over which a new (or retained) customer can be expected to generate positive cash flows for the operator. That is, these costs should be spread evenly over the expected average customer lifetime. For non-customer related investment costs (e.g. physical equipment), the useful economic life of the asset in question is likely to be an appropriate period over which to spread costs.

#### **4.4. Relevant retail products**

##### **4.4.1. Flagship products**

Currently, most NRAs consider it appropriate to submit a wider set of retail products to the margin squeeze test which is mainly used as a complementary tool (not as a ‘substitute’ as the ERT is intended to be used acc. to the Recommendation) whereas the Recommendation foresees that NRAs would (only) assess the most relevant retail products – the so-called ‘flagship products’. Two NRAs already identify ‘flagship products’ (not necessarily calling them flagship products) by using the product that generates the highest revenue share or the one with the highest market share. Other criteria to select the flagship products might be possible e.g. advertising costs as suggested by the Recommendation.

##### **4.4.2. Level of aggregation of products**

The Recommendation is silent on the level of aggregation to undertake the ERT (e.g. for each flagship product individually or for a portfolio of flagship products identified). For the reasons identified in section 3.4.2 BEREC believes that it is appropriate for each NRA to determine what the appropriate level of aggregation should be when carrying out the margin squeeze test in the light of the assessment of competition problems identified in the market analysis.

##### **4.4.3. Bundles**

The Recommendation establishes that bundles need to be considered in the ERT, especially when they constitute “flagship products”. The definition of bundles subjected to the margin squeeze analysis is not limited to those bundles which consist only of regulated components. From BEREC’s point of view, if bundled products are relevant in the market, they need to be included in the analysis and in any case all bundles containing regulated services are subject to the test.

Given that the Recommendation does not determine how to evaluate the non-regulated component, the NRAs would determine the way these components are taken into account according to national circumstances.

##### **4.4.4. Revenues / retail price**

BEREC considers that the current approach adopted by NRAs is consistent with the Recommendation to assess replicability. In order to determine if there is a margin squeeze between the upstream and downstream level that all downstream revenues and attributable

revenues to the bundle/standalone service should be considered in the assessment. In this regard it is important to take into account section 3.4.2 (level of aggregation) and 3.4.3 (treatment of standalone and bundle products).

#### 4.4.5. Promotions and temporary discounts

The Recommendation does not mention how to consider promotions or temporary discounts. However, they can be an important element to determine the actual retail costs. BEREC therefore considers that in order to test the replicability of a bundle or standalone service such discounts and promotions should be taken into account in the margin squeeze test<sup>37</sup>, but NRAs should have flexibility on how they take them into account (e.g. on the revenue or cost side), because the nature of the promotions/discounts and the strategies of the SMP operators incl. the competitive effects can be very different according to the level of development of the retail market or the national circumstances in general. Acc. to the BEREC report on specific aspects of broadband commercialization, NRAs should check whether “the SMP operator offers at the wholesale level to its own retail arm are the same than those offered to third parties and if these conditions do not threat competition in the retail market”<sup>38</sup>, thus ensuring a level playing field.

Promotions and temporary discounts can be considered previously to the commercial launch of the offer or, alternatively, after they have been launched to the market.<sup>39</sup>

The BEREC report on specific aspects of broadband commercialization provides some guidance on how to deal with promotions and temporary discounts. In case of appropriate price controls are in place, NRAs may wish to set an ex-ante communication obligation which entails that operators have to communicate in advance to the NRA the commercial tariffs and discounts, that they are about to launch to the consumers in order to ensure the sufficiency, including economic conditions, of wholesale obligations. The sooner the possible harm a discount or promotion can do the market is known, the better it can be dealt with to detect and avoid such practices.<sup>40</sup>

#### 4.5. Geographical segmentation

BEREC considers that it is appropriate that NRAs may analyse and determine the competitive conditions in the different geographic areas within the country, in order to decide whether is advisable to define a separate sub national market, or to impose geographically differentiated remedies on a sub national basis, even if markets are defined as been national in scope.<sup>41</sup> This is also in line with the Recommendation.

When performing a replicability test, the NRAs should examine the replicability of the relevant retail offer by taking into account the wholesale inputs used in the specific geographic areas (urban/densely populated areas and rural) bearing in mind the objectives to ensure competition and promoting NGA investments.

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<sup>37</sup> Cf. BoR (11) 25, para. 126.

<sup>38</sup> BoR (11) 25, para. 67.

<sup>39</sup> The point of running the test is a general procedural issue that is dealt with more extensively in Chapter 5.

<sup>40</sup> Cf. also below Ch. 5.

<sup>41</sup> Cf. also updated BEREC Common Position on geographical aspects of market analysis (definition and remedies), BoR (14) 73, June 2014, section 6.7.

#### 4.6. Relevant BEREC/ERG and Commission documents

The definition and other parameters of the ex-ante margin squeeze test were broadly discussed in other ERG, BEREC and Commission's documents. Relevant documents therefore are:

- Commission recommendation on regulated access to Next generation Access Networks 2010/572/EU (hereinafter: NGA Recommendation);
- Report on the Discussion on the application of margin squeeze tests to bundles, ERG (09) 07<sup>42</sup>;
- ERG Report on price consistency in upstream broadband markets, ERG (09) 21<sup>43</sup>;
- BEREC Common position on best practice in remedies on the market for wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location imposed as a consequence of a position of significant market power in the relevant market, BoR (12) 127 (hereinafter CP on WLA)<sup>44</sup>;
- BEREC Common position on best practice in remedies on the market for wholesale broadband access (including bitstream access) imposed as a consequence of a position of significant market power in the relevant market, BoR (12) 128 (hereinafter CP on WBA)<sup>45</sup>;
- BEREC report on specific aspects of broadband commercialization, BoR (11) 25 final, May 2011.<sup>46</sup>

The definition and usage of the ex-ante economic replicability test has been used for a number of years as the ex-ante margin squeeze regulatory tool. For the purpose of identifying a clear definition, this Guidance document now considers the existing definitions as used in the documents as follows.

The *ERG Report on the Discussion on the application of margin squeeze test to bundles* defines the margin squeeze situation as a situation where a vertically integrated firm with market power in a key upstream market, supplies rival firms in associated downstream markets and sets prices for the input and the downstream service in a way that renders unprofitable the activities of its competitors in the retail market. In other words, a margin squeeze takes place when the difference between the retail and wholesale price imposed by a vertically integrated undertaking for a given product is not sufficient to cover the product's retail cost by an efficient competitor, thus making it not possible for the competitor to recover all of its retail costs if it wants to compete profitably in the same retail market. This in turn means

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<sup>42</sup> ERG Report on the Discussion on the application of margin squeeze test to bundles (ERG (09) 07), March 2009

<sup>43</sup> ERG Report on price consistency in upstream broadband markets (ERG (09) 21), June 2009

<sup>44</sup> BEREC Common position on best practice in remedies on the market for wholesale (physical) network infrastructure access (including shared or fully unbundled access) at a fixed location imposed as a consequence of a position of significant market power in the relevant market (BoR (12) 127), Dec. 2012

<sup>45</sup> BEREC Common position on best practice in remedies on the market for wholesale broadband access (including bitstream access) imposed as a consequence of a position of significant market power in the relevant market (BoR (12) 128), Dec. 2012

<sup>46</sup> Cf. above section 3.4.5

that for margin test to be properly conducted, the most important element which needs to be assessed is the retail cost.

Further on, the same report defines the key focus of the margin squeeze as the difference between the upstream and downstream price, not on whether the prices are excessive, discriminatory or predatory per se.

The *ERG Report on price consistency in upstream broadband markets* states that there is no standard definition of margin squeeze, even though it gives some examples from the ex-post regulation. In the document itself are listed scenarios of various margin squeeze practices, where the economic replicability situation to be tested is the closest to a situation (Scenario 2 in the Report), which describes a price squeeze between a regulated wholesale service (LLU or WBA) and (unregulated) retail service that is provided via that input.

The *NGA Recommendation* defines a margin squeeze as a situation where the SMP operator's own downstream operations could not trade profitably on the basis of the upstream price charged to its competitors. The NGA Recommendation further on describes that in order to maintain efficient competition between operators not benefiting from the same scale and scope and having different unit costs, the REO test will normally be more appropriate. An estimated minimum operating scale necessary for an access seeker to efficiently compete in the market and the need to maintain a market structure with a sufficient number of qualifying operators to ensure effective competition<sup>47</sup> should be taken into account.

The *BEREC CPs on WLA/WBA* define the margin squeeze test also with regard to the minimum efficient scale: "The price squeeze test applied by the NRA should take into account the costs faced by an efficient operator with a minimum scale such that the minimum margin for this operator with relevant downstream services makes commercial sense."<sup>48</sup> When "[In] considering the minimum acceptable margin, NRAs need to strike a balance between short term efficiency, derived from the economies of scale and scope realisable by an SMP player, and the longer term benefits (assessed on a realistic basis) of a more competitive downstream market, brought about by new entrants which should, in due course and to a reasonable extent, be able to match those economies."<sup>49</sup> The CPs on WLA/WBA also deal with long-term pricing contracts and volume discounts stating that price reductions/differences should only reflect the risk reduction/differences and access prices cannot be lower than the efficient costs<sup>50</sup>, which is in line with the NGA Recommendation and as mentioned above<sup>51</sup> also provides criteria for the limits of price reductions in long-term pricing access pricing agreements and of volume discounts.

In the *ERG Report on margin squeeze in bundles*, two tests are described very usefully as follows: The first test (EEO) involves assessing whether the dominant/SMP firm's downstream operations could trade profitably if it had to pay an upstream price that was equivalent to that charged to rival competitors. In this case the test amounts to whether the following is satisfied:

$$P - r - w_{\text{smp}} \geq d_{\text{smp}},$$

where:

P = retail price of the SMP's downstream service,

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<sup>47</sup> NGA Recommendation Annex I, pt. 8, the Recommendation draws on this when defining the level of scale adjustments (cf. Recommendation, Annex II, pt. (i)).

<sup>48</sup> CP on WLA, Best Practice 49g

<sup>49</sup> CP on WLA, Best Practice 49a

<sup>50</sup> CP on WLA, Best Practice 55-59.

<sup>51</sup> Cf. section 2.2.5.

$r$  = regulated price if the regulated wholesale service needed by alternative operators to provide such downstream service,

$w_{\text{smp}}$  = SMP's other upstream costs,

$d_{\text{smp}}$  = SMP's operator's downstream costs.

The second test (REO) involves examining whether the difference between the vertically integrated firm's retail and input prices is sufficient for a "reasonably efficient" downstream competitor to make a "normal" profit. In this case the test amounts to the following being satisfied:

$$P - r - w_{\text{AO}} \geq d_{\text{AO}},$$

where  $d_{\text{AO}}$  denotes the downstream costs of a hypothetical "reasonably efficient entrant".

The primary difference between the two tests is that the first is based on the relationship between the vertically integrated company's retail price ( $P$ ) and its own (non-regulated) cost ( $d_{\text{smp}} + w_{\text{smp}}$ ), while the latter is based on the relationship between the vertically integrated company's prices and the alternative operator's costs ( $d_{\text{AO}} + w_{\text{AO}}$ ).

The *ERG Report on price consistency* states that there is no clear cut rule which imputation test the NRAs use for fostering the competition, while further on the report refers to the previously discussed *ERG report on margin squeeze in bundles* and states that the choice of the test mostly depends on the specific circumstances of the case and objectives of the NRA. Further on, the document sets out two possible examples where the NRA can decide for each test. First if the market is mature and the NRA's objective is to foster competition, there might be merit in using the REO test while the second option of picking the EEO test could prove to be more suitable under the concern of protecting the investment and innovation incentives for the SMP operator.<sup>52</sup>

On the issues of the choice of the margin squeeze test, the *CP on WLA* and the *CP on WBA* also consider the same two tests. In addition, they refer to the *ERG report on margin squeeze to bundles* and recommend that NRAs evaluate which imputation test (EEO, REO or combination of both) is better suited to attain the regulatory objectives pursued.

BEREC<sup>53</sup> notes that NGA deployments (either by the incumbent operator or by alternative operators) may significantly alter the competitive dynamics of broadband markets, including its effects on the potential definition of subnational geographical markets and on the obligations that may have been imposed with regard to the SMP operator's copper-legacy network. The roll-out of NGA networks by alternative operators, or the signing of co-investment agreements, could in this regard lead to increased infrastructure competition in some areas and thus, ultimately, to effective competition on the retail markets. This factor may in turn significantly influence the choices made by NRAs when deciding on the geographical segmentation of the market/remedies.

Moreover in this context, the *NGA Recommendation* notes that the deployment of NGA networks is likely to lead to important changes in the economics of broadband service provision and in the competitive situation. It goes on to recommend that NRAs carefully examine the evolution of competitive conditions resulting from the deployment of NGAs, including its effects on the potential definition of subnational geographical markets if substantially and objectively different conditions of competition which are stable over time are identified. The NGA Recommendation also indicates that NRAs may, as an alternative, consider imposing differentiated remedies and access products in situations where, despite the lack of substan-

<sup>52</sup> As seems to be the approach of the Recommendation, cf. Recital 64.

<sup>53</sup> "Review of the Common Position on geographical aspects of market analysis (definition and remedies)" BoR (14) 73, June 2014

tial differences in the conditions of competition, it is still necessary to respond to diverging conditions between different areas within a geographically defined market.

## 5. Procedural and transparency issues

In addition to the procedure of conducting the economic replicability test and spelling out its parameters, the Recommendation suggests in Recital 66 also some procedural and transparency issues:

*“The NRA should set out and **make public in advance in its adopted measure following a market analysis the procedure and parameters it will apply when running the ex ante economic replicability test**. The NRA may run the test **before the launch** of a new retail offer by the SMP operator, e.g. if the NRA considers it appropriate to align the timing of the economic replicability test with the technical replicability test if also undertaken before launch. **The NRA need not to run the test for each and every new retail offer but only in relation to flagship products** to be identified by the NRA. **An NRA may run the test at its own initiative**, for example in the initial stages of the implementation of a measure that allows pricing flexibility on NGA networks, particularly where regulated wholesale access prices were imposed in the past, or to respond to changes in the structure of the market, for example as a result of technological developments”.*

Moreover, there are some articles in the Recommendation referring to procedures:

Reco. 13 - 18, in relation with technical replicability;

Reco. 56 - 57, related to economic replicability;

Annex I: Specification of Lead time and provisions of information.

### 5.1. Procedure to conduct an ex-ante economic replicability/margin squeeze test

It is important that NRAs make transparent the procedure that is applied to a margin squeeze test. BEREC has developed a questionnaire on procedural and transparency issues to gather information on NRA experiences when running margin squeeze assessment.<sup>54</sup> Chapter 5 is based on the analysis of the responses in the light of the Recommendation provisions on procedural and transparency issues. This chapter intends to provide guidance on procedural and transparency issues when performing economic replicability assessment in accordance with the Recommendation.

One of the first things to consider when designing a margin squeeze test, is the ‘trigger event’ to start an MS investigation. A non-exhaustive list of trigger events can be identified in i) the launch of a new retail product; ii) the adjustment of the retail price or the corresponding wholesale price; iii) the launch of a promotion; iv) amendments to any components included in the relevant retail offer already on the market; v) modification to the quality of product/service included in the relevant retail offer; vi) market analysis. However, it is also possi-

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<sup>54</sup> The questionnaire on procedural and transparency issues was sent in June 2014 and received responses from 34 NRAs, among which 12 NRAs declared not to apply a margin squeeze test.



ble to test for a margin squeeze on a periodic basis (e.g. yearly, biannual), without the need for a specific event in the market. Another important question is whether the NRA can start a margin squeeze investigation at its own initiative or whether there needs to be a (formal) complaint from a market party. Finally, any procedure should be transparent on the timelines that apply.

Looking at the current practices of NRAs, different procedures for the margin squeeze test exist. Most NRAs apply *ex-ante* margin squeeze tests to ensure that the price of the wholesale product allows a margin between the wholesale and the retail price. In most cases, NRAs apply margin squeeze test with reference to the non-discrimination obligation or to the price control obligation imposed on the wholesale markets – generally market n°4 and n°5. A smaller group of NRAs apply *ex-ante* margin squeeze tests with reference to the price control obligation imposed on the retail market as a tool to verify if the price of the retail offer allows a margin such that alternative operators can compete on the retail market without incurring loss.

NRAs have considerable discretion in relation to when to conduct a margin squeeze test and can do so both at their own initiative and at the request of third parties (e.g. complaint). As explained in paragraph 5.2, most NRAs consider the launch of a retail product as the ‘trigger event’, but have no predefined time limits on when to start and conclude a procedure. Several NRAs also conduct a margin squeeze test on a periodic basis (e.g. each year, biannual), independent of wholesale or retail product launches. In general, for the design of the margin squeeze test, it does not matter much if the margin squeeze test has been imposed as a wholesale or a retail obligation.

In its Recommendation, the Commission stresses the importance of a transparent procedure. Recital 66 states: *‘The NRA should set out and make public in advance in its adopted measure following a market analysis the procedure and parameters it will apply when running the ex-ante economic replicability test’.*

Rec. 56(b) of the Recommendation prescribes the timelines that NRA’s should adhere to when conducting an economic replicability test with a retail product launch as ‘trigger event’: *‘the NRA can start the procedure on its own initiative or at the request of third parties, at any time but no later than three months after the launch of the relevant retail product, and will conclude it as soon as possible and in any case within four months from starting the procedure’.* In short, for an economic replicability test Rec. 48 - 56 describe a procedure that:

- has the launch of a new retail product by the SMP operator as ‘trigger event’;
- can be started on the NRA’s own initiative or at the request of third parties;
- has to start no later than three months after the launch of the retail product;
- has to be concluded within four months.

BEREC notes that the Recommendation does not clarify how to reconcile the last two points with the specific disposals related to flagship products which, according to Annex 2, point (iv), should be identified by NRAs *“on the basis of their current and forward-looking market observations, in particular taking account of their relevance for current and future competition. This should include an assessment of retail market shares in terms of the volume and value of products based on NGA regulated wholesale inputs and, where available, advertising expenditure”.* BEREC considers that it could be difficult to do such an assessment

(whether a certain product is a flagship product or not) in the three first months following its launch.

## **5.2. Obligation of communication (products, promotions) imposed to the SMP operator**

The NRA may request the SMP operator to communicate the launch of a new or modified retail offer in order to allow the NRA to perform the margin squeeze test. Such an obligation is particularly relevant in a case where the launch of a retail product is the trigger event for starting a margin squeeze investigation. Currently, about half of the NRAs which perform margin squeeze tests have such an obligation in place. An obligation to notify retail offers has been imposed by several NRAs in order to verify whether a margin squeeze test is passes either on the retail or on the wholesale market.

With regard to the time frame of such a communication, these vary widely across countries and are between 6 months before the launch of the relevant retail offer and 5 working days after the launch. On average, the time frame for communicating a new offer is about 30 days before the launch. Some NRAs differentiate the time period according to whether the offer corresponds to a new product, a modified product or a temporary promotion.

As far as the Recommendation is concerned, there is no reference to any obligation to notify the relevant retail offers subject to economic replicability assessment. This means that it is up to NRAs to decide whether to impose or not such an obligation on the SMP operator as a measure to verify compliance with economic replicability conditions.

## **5.3. “Authorisation” procedure**

In case of a margin squeeze test with a retail product launch as trigger event an NRA can have a procedure in place that forbids the SMP operator to launch until the NRA has determined that the new retail product complies with the margin squeeze test.

Currently, most NRAs (roughly 75%) do not require the SMP operator to wait for (formal) approval before launching the new retail product. Among those NRAs which require the SMP operator to wait for a formal approval before launching (or amend) the relevant retail offer, two situations may occur:

- the margin squeeze test is a remedy on the wholesale market;
- the margin squeeze test is a factual tool applied to assess replicability.

The first situation concerns those NRAs which apply a margin squeeze test to set the wholesale prices of the regulated inputs. The latter case concerns those NRAs that perform the margin squeeze test to assess replicability of the retail price before the launch of the relevant retail offer. In some countries, however, the SMP operator voluntarily asks the NRA for approval before launching the new product. This is to avoid the risk that the NRA will start an investigation, and possibly demand a withdrawal, after launch.

The Recommendation does not require that the launch of the relevant retail offer should be accompanied by an “authorisation” procedure.

#### **5.4. Request of additional information from the SMP operator about its costs and traffic**

In order to be able to perform the margin squeeze test on the basis of relevant parameters, NRAs should have a procedure to ask operators to provide the NRA with additional information or up-to-date information when running the ex-ante margin squeeze test.

Currently, all NRAs when conducting an ex-ante margin squeeze analysis can ask for additional necessary information from the SMP operator about costs and volumes. Usually, regulatory accounting information does not provide all necessary information on costs and volumes. In such cases, some NRAs request additional ad hoc information. Some NRAs have defined the period of asking additional information and in that period the proceeding times are suspended. NRAs can use additional information from the SMP operator to ensure the margin squeeze test is or has been performed adequately. NRAs are empowered under Article 10(1) of Directive 2002/20/EC to request operators to provide information in order to verify compliance with obligations imposed on the SMP operator. According to the Recommendation the right to request additional information in order to perform economic replicability assessment falls within the powers attributed under Article 10(1) of the Authorisation Directive.

#### **5.5. Consequences of a non-replicability situation**

In case a retail offer is deemed not replicable as a result of the *ex-ante* MS test, responses to the questionnaire have revealed that NRAs apply different approaches in order to re-establish competitive conditions on the market. The NRA can request the SMP operator to amend or withdraw the product which has failed the MS requirement.

The product price adjustment is the most adopted practice among NRAs. When the result of the margin squeeze test does not comply with the conditions set by the NRA, the SMP operator can on request of the NRA or on SMP operator initiative:

- i) increase the price of the retail offer;
- ii) lower the prices of regulated wholesale inputs;
- iii) adjust prices both at the wholesale and at the retail level.

Alternatively, the product can be withdrawn on request of the NRA or on SMP operator initiative. However, the SMP operator can, at a later stage, decide to amend the retail product in order to comply with the economic replicability requirement.

A smaller group of NRAs apply sanctions, which can result in substantial financial penalties where the SMP operator fails to comply with SMP conditions.

In relation to the Recommendation, point 56(c) states that when an *ex ante* economic replicability test is not passed the NRA should ensure compliance with all aspects of the imposed measures using the enforcement tools provided under the Regulatory Framework “*including where appropriate a request for the SMP operator to address the economic replicability issue in accordance with the NRA’s guidance and on the basis of the results of the ex-ante economic replicability test performed*”.

Moreover, “*where the NRA considers that a retail offer which is not economically replicable would significantly harm competition*”, the NRA “*should make use of its powers under Article 10 of Directive 2002/20/EC to request the SMP operator to cease or delay the provision of the relevant retail offer pending compliance with the requirement for economic replicability*”.

Following the provision of Article 10 of the Authorisation Directive, the NRA can require the SMP operator to cease the breach of the economic replicability obligation and “*shall take appropriate and proportionate measures aimed at ensuring compliance*”. In this regard, the NRA can request under Article 10.3 (b) “*to cease or delay provision of a service or bundle of services which, if continued, would result in significant harm to competition*”. In case the NRA finds that the SMP operator does not comply with the economic replicability conditions, the NRA shall communicate its finding and give the SMP operator the opportunity to state its views.

The above mentioned fragment suggests that the NRA can request the SMP operator to delay or withdraw the provision of the relevant retail offer. Delay in the provision of the relevant retail offer can result in most cases from the adjustment of the wholesale price or the retail price of the relevant retail offer or because the SMP operator may be required by the NRA to provide additional information in relation to costs and volumes of the non-replicable retail product. Article 10 of the Authorisation Directive empowers NRAs to apply sanctions in case the results of the *ex-ante* economic replicability test performed are not in compliance with NRA’s guidance.

## **5.6. Procedure in case of a complaint**

The Recommendation specifies that an NRA can perform an economic replicability test “*at the request of third parties*” and therefore it is relevant to foresee the possibility for alternative operators to lodge a complaint about the commercialisation of a product.

The responses to the questionnaire show that nearly all NRAs enable alternative operators to present a complaint about the commercialisation of a product (previously analysed by the NRA or not). The majority of the NRAs follow for those tests the same procedure as for the usual margin squeeze tests they perform. Other NRAs have a specific procedure in place in case of complaints or only perform a margin squeeze test following a complaint if no previous decision is available.

## **5.7. Transparency issues**

Transparency issues always recur when dealing with a margin squeeze. As a margin squeeze test is a measure often imposed to protect alternative operators from feasible dis-

criminy behaviour by the SMP operator. Alternative operators demand transparency in order to have appropriate guarantees in this sense.

In the Recommendation, as previously remarked, the European Commission stresses the importance of transparency. Recital 66 states: *The NRA should set out and make public in advance in its adopted measure following a market analysis the procedure and parameters it will apply when running the ex-ante economic replicability test*'.

The following Recital 67 prescribes that *"The economic replicability test set out by the NRA in advance should be adequately detailed and should include as a minimum a set of relevant parameters in order to ensure predictability and the necessary transparency for operators"*.

Moreover, Recommendation 57 states: *"The NRA should make public on its website the roadmap and the details of the ex-ante economic replicability test"*.

At the same time, however, NRAs have to take due account of the fact that the margin squeeze test is based on assessment of SMP's internal and confidential costs (and also on other confidential data), that cannot be made known to AOs for obvious reasons of commercial confidentiality.

Another aspect to be taken into account, when analyzing transparency issues related to the margin squeeze test, is the constraint the margin squeeze test puts on the retail prices of the SMP operator. If the alternative operators gain knowledge of the minimum retail price the SMP operator has to charge as a result of margin squeeze obligations, this would constitute an unfair competitive advantage.

NRAs should consider all these aspects when deciding the how to deal with confidential information relating to the margin squeeze test.

In general, transparency issues can be better addressed by distinguishing two different aspects, the general methodology of the margin squeeze test and the management of concrete cases.

With regard to the first aspect, most NRA's (around 85%) made known in advance their general methodology of the margin squeeze test, putting up for upfront public consultation a draft proposal including the most important parameters of the test. Even in the few cases where the margin squeeze test methodology has not been earlier consulted, it is published on NRA website. In this sense, there is a general and widespread transparency about the general principles and criteria of the margin squeeze test adopted by NRAs.

More complex and varied is the picture of NRAs current practices in managing a margin squeeze test concrete cases. First of all, almost all NRAs do not directly involve alternative operators in evaluation procedures, for a number of reasons:

- 1) the confidentiality of the SMP offer – when the test is performed before its launch;
- 2) the use of a methodology which is already known to alternative operators and earlier consulted with them;
- 3) the confidentiality of parameters used.

Particularly referring to the last point, the majority of NRAs (around 85%) consider confidential the parameters of the test, as they relate to the SMP operator internal costs or other strategic elements. So, typically, the general margin squeeze methodology is known by the market, but the detailed parameters of the test are covered by a confidentiality regime. That appears to be a viable compromise between the conflicting pressures. Around half of NRAs choose to publish the MS test results in specific cases, whereas the other half do not publish them.

## 5.8. Conclusion and future guidance

The Recommendation gives a clear message that an NRA should have a transparent procedure in place for conducting an economic replicability test. In the context of Reco. 48 – 58 of the Recommendation, this procedure should be included in the market analysis decision in which the NRA decides not to impose or maintain regulated wholesale access prices on NGA wholesale inputs. BEREC agrees that having a transparent procedure in place is important.

However, the Recommendation does not provide much guidance on the procedure itself, except for the timelines that apply to a procedure with a retail product launch as the ‘trigger event’. Therefore, the Recommendation implies that NRAs should have a certain degree of flexibility when designing their procedure. BEREC agrees with the Commission that the exact details of a margin squeeze test procedure would preferably be left to the individual NRAs. Imposing an obligation on the SMP operator to communicate to the NRA the launch of his retail offers is relevant in the context of the procedure of the economic replicability test as foreseen by the Recommendation, given that the latter one considers the launch of new offers as the trigger event for starting the procedure.

The Recommendation points out that Art. 10 of the Authorisation Directive 2002/20/EC empowers the NRA to ask operators to provide the NRA with additional information or up-to-date information on costs and volumes.

In case the result of the *ex-ante* economic replicability test is not compliant with economic replicability obligations, the squeeze must be eliminated. BEREC considers that the NRA should request the SMP operator to amend the wholesale and/or the retail price or to withdraw the retail offer. It is also possible that the SMP operator amends or withdraws the offer on its own initiative. Moreover, according to the Recommendation the NRA can – by using its powers of Article 10 of the Authorisation Directive – apply proportionate measures, including financial penalties to ensure compliance with economic replicability obligations. This allows NRAs to rectify a detected margin squeeze (e.g. by requesting a change of the retail price).

## 6. Margin squeeze in the context of competition law a. differences with the ex-ante approach

The following chapter sets out the differences of margin squeeze tests conducted according to competition law and ex ante sector specific margin squeeze tests. Generally, national competition authorities apply margin squeeze tests according to competition law ex-post while NRAs use their ex-ante powers to conduct the margin squeeze test. Some NRAs also have powers to apply margin squeeze tests ex-post.

### 6.1. Margin squeeze test in the context of European competition law

**Margin squeeze is not *per se* an infringement of Article 102 TFEU but constitutes an abuse of dominant position in the absence of any objective justification.** According to the European Court of Justice (ECJ), “the fact that a vertically integrated undertaking, holding a dominant position on the wholesale market (...), applies a pricing practice of such a kind that the spread between the prices applied on that market and those applied in the retail market (...) is not sufficient to cover the specific costs which that undertaking must incur in

order to gain access to that retail market may constitute an abuse of a dominant position within the meaning of Article 102 TFEU<sup>55</sup>. The ECJ ruled that the amount of the spread between the dominant undertaking's wholesale and retail prices is not one of the circumstances leading to conclude that the margin squeeze is abusive: "the unfairness [of a price squeeze] is linked to the very existence of the margin squeeze and not to its precise spread" and that "it is in no way necessary to establish that the wholesale prices (...) to operators or the retail prices (...) to end-users are in themselves abusive (...) "<sup>56</sup>. The scope of application of Article 102 TFEU cannot be limited by the existence of a regulatory framework in the electronic communications sector. It is also important to note that, according to the ruling of the ECJ, the scope of application of Article 102 TFEU cannot be limited by the existence of a regulatory framework in the electronic communications sector<sup>57</sup>.

**In order to assess whether a practice is abusive, the ECJ requires to take into consideration all of the circumstances of each individual case, but not necessarily its actual impact on competition<sup>58</sup>. This is especially true for margin squeeze practices.** In a general statement, the Court of First Instance ruled that: "for the purposes of establishing an infringement of Article [102 TFEU], it is not necessary to demonstrate that the abuse in question had a concrete effect on the markets concerned. It is sufficient in that respect to demonstrate that the abusive conduct of the undertaking in a dominant position tends to restrict competition, or, in other words, that the conduct is capable of having, or likely to have, such an effect"<sup>59</sup>. The European Commission therefore considers it does not have to demonstrate that the abuse in question had a concrete impact on the markets concerned nor that it had caused prejudice to consumers to establish an infringement of Article 102 TFEU<sup>60</sup>.

**The likely impacts of margin squeeze are not very different from other forms of anti-competitive behaviours.** The most likely impact is that even equally efficient competitors are not able to trade profitably in the downstream market on a lasting basis and are eventually forced out of the market. A possible outcome of margin squeeze is therefore an anti-competitive market foreclosure. This result is common to margin squeeze and other anti-competitive behaviours. As a consequence, different forms of anti-competitive practices are sometimes assigned in the same category. For example, in the 1998 Notice on the application of the competition rules to access agreements in the telecommunications sector, every form of abuse from an SMP operator which tend to foreclose markets (among which are excessive pricing, predatory pricing, price squeeze) was assigned in the same category<sup>61</sup>. Later, in the Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings, predation was however set apart from margin squeeze which is characterised as a particular instance of refusal to supply.

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<sup>55</sup> Case C-52/09 of 17 February 2011 *Konkurrensverket v. TeliaSonera*, § 112

<sup>56</sup> *Ibidem*, § 34 where the ECJ reiterated the position taken previously in the Case C-280/08 of 14 October 2010 *Deutsche Telekom v. Commission*

<sup>57</sup> Case C-295/12P of 14 July 2014, *Telefónica SA and Telefónica España SAU v Commission* § 128

<sup>58</sup> *Ibidem*, § 113

<sup>59</sup> Case T-219/99 of 17 December 2003 *British Airways v. Commission*, § 293

<sup>60</sup> Commission's Decision of 4 July 2007 relating to a proceedings under Article 82 of the EC Treaty (Case COMP/38.784 – *Wanadoo España vs. Telefónica*), § 543

<sup>61</sup> Commission's Notice of 22 August 1998 relating to the application of the competition rules to access agreements in the telecommunications sector, § 104 *et seq*

**Despite the potential common impact of some anti-competitive behaviour, there are differences between margin squeeze and other practices such as predation or prices forbidding economic replicability of downstream products.** Both predatory pricing and margin squeeze entail a products or time-periods cross-subsidy. But contrary to predatory pricing, margin squeeze necessarily involves vertically integrated undertakings, that is up-stream-downstream relationships, and does not necessarily incur short-term losses (referred to as a “sacrifice” for the dominant undertaking).<sup>62</sup> Both margin squeeze and anti-economic replicability prices (or penetration pricing strategies<sup>63</sup>) use the spread between retail prices and wholesale related prices as a lever. But contrary to penetration pricing, margin squeeze can result in a temporary loss and cannot imply a price rise for the end-users.

## **6.2. Differences between margin squeeze analysis in the context of ex post and ex ante regulation**

**Competition authorities and regulatory authorities may not take the same approach when it comes to margin squeeze.** Competition authorities have to ascertain whether dominant undertakings had abused their dominant position and therefore infringe Article 102 TFEU. It implies, first, that the dominant undertaking is a vertically integrated company dominant in the upstream market; second, that its competitors depend on its wholesale products to compete on a downstream market<sup>64</sup>; third, that it has a complete autonomy in its choice of conduct<sup>65</sup>. Regulatory authorities may collaborate with competition authorities to demonstrate past dominant undertaking’s misconduct in the sector they regulate. However, competition authorities penalise *ex post* behaviours while regulatory authorities’ primary task regarding margin squeeze is to prevent market foreclosure’s conducts from SMP operators, as well as encourage investment and competition with a forward looking approach. To prevent market foreclosure and encourage entry in the market, regulatory authorities may impose obligations to grant access to the SMP operator’s network or facilities and may forbid predatory pricing. This is the key difference between the application of competition law and the application of *ex ante* regulatory framework when using margin squeeze tests.

**To prevent penetration pricing strategies and in general market foreclosure related to new NGA-based retail offer for example, regulatory authorities test the *ex-ante* economic replicability of the SMP operator’s offer based on the same methodology, but not the exact same parameters, as in the margin squeeze test run by competition authorities<sup>66</sup>.** The *ex-ante* economic replicability test aims at deterring the SMP operator from using market foreclosure strategies in order to foster retail demand for NGA-based retail services when NGA-wholesale inputs are not subject to regulated access prices. The European Commission provides guidance on how this test should be run. The recommended method-

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<sup>62</sup> Commission’s Guidance of 24 February 2009 on the Commission’s enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings, § 63 *et seq*

<sup>63</sup> Commission’s Recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment, Recital 62

<sup>64</sup> Commission’s Decision of 21 May 2003 relating to a proceeding under Article 82 of the EC Treaty (Case COMP/C-1/37.451, 37.578, 37.579 - *Deutsche Telekom AG*), § 105-108

<sup>65</sup> Case C-52/09 of 17 February 2011 *Konkurrensverket v. TeliaSonera*, § 52

<sup>66</sup> Commission’s Recommendations of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment, § 56



ology is based on competition authorities' *ex post* margin squeeze test. There are nonetheless two main differences between the approaches followed by competition authorities and regulatory authorities, which explain the choice of different parameters for the *ex-ante* economic replicability test. First, regulatory authorities do not refer to the past but must adopt a forward-looking perspective of the SMP operator's strategy; second, the *ex-ante* economic replicability test is not applied in every circumstance but only when three criteria are met<sup>67</sup>: i) Equivalence of Input (EoI) obligations are already implemented or are in the process of being implemented, ii) technical replicability is ensured, and iii) retail products are based on NGA regulated wholesale access inputs. Despite these differences, the EC aligned to some extent the procedure used by regulatory authorities to the one used by competition authorities.

The main differences between margin squeeze tests as applied under competition law and in the context of *ex ante* regulation when applying the Commission's Recommendation on non-discrimination are summarized in the following table.

Table 1

	Competition Authorities (margin squeeze test such as used by the EC) <sup>68</sup>	Regulatory Authorities ( <i>ex ante</i> economic replicability test) <sup>69</sup>	Explanation of discrepancies between the two tests
Relevant timeframe and data	Based on past behaviours and time to take a decision takes longer	Focus on future behaviours (forward-looking approach) and time to take a decision on retail offers is short (typically, margin squeeze test applied before offers are in the market or in few months)	Competition authorities are focused on solving competition issues that have already occurred, while the focus of <i>ex ante</i> regulatory action is to prevent future competition problems and encourage investment and competition.
Relevant regulatory framework	General competition law	<i>Ex ante</i> sector specific regulatory framework	
Level of aggregation (relevant re-	A mix of the retail services marketed by the dominant undertaking	The most relevant retail products identified by the regulatory	To promote broadband investment and competition, regulatory authorities

<sup>67</sup> Annex II of the Commission's Recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment

<sup>68</sup> Based on the Commission's Decision of 4 July 2007 relating to a proceedings under Article 82 of the EC Treaty (Case COMP/38.784 – *Wanadoo España vs. Telefónica*), § 310 *et seq*

<sup>69</sup> Based on Annex II of the Commission's Recommendation of 11 September 2013 on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment.

<b>tail products)</b>	(aggregated approach)	authority (product by product) or on an aggregated basis	are focused on analysing the SMP operators' new products, relevant for current and future competition ("flagship products"); whole range of available retail services not excluded explicitly.
<b>Relevant wholesale inputs</b>	Upstream inputs of the dominant undertaking which must be used by an operator to replicate the relevant retail products		/
<b>Relevant downstream costs</b>	Costs estimated on the basis of the costs of the dominant undertaking / the SMP operator's own downstream business (i.e. Equally Efficient Operator test)	Costs estimated on the basis of the costs of the dominant undertaking / the SMP operator's own downstream business (i.e. Equally Efficient Operator test), adjusted EEO test to account for a realistic prospect	Facilitate market entry and promote competition
<b>Relevant cost standard</b>	Long Run Average Incremental Costs	Long Run Incremental Costs+	In some cases, regulatory authorities may want to favour new entries in a developing market (like NGA-based offers) over additional efficiencies and lower prices.
<b>Relevant time period</b>	Two methods are considered (on a case by case basis): in general, period-by-period method, although a multi-period method may be used as a complementary tool.	A multi-period method (such as the discounted cash flow approach) should be applied; it is unclear whether a period-by-period method is possible.	

## 7. Conclusions

The Guidance document provided a comprehensive overview of the Recommendation's provisions related to the ERT, and the current practice of NRAs when implementing an ex-ante margin squeeze test. While the ERT is specifically created for the purpose of the Recommendation it builds upon the margin squeeze test as known from ex-post competition law as well as ex-ante margin squeeze tests based on regulatory law. The ERT is an ex-ante sector-specific margin squeeze test with the purpose to safeguard competition when no cost-oriented wholesale access price obligation is imposed on NGA related products. It focuses on "retail flagship products" and the most relevant regulated input identified at the chosen NGA-based regulated wholesale input only thus limiting the scope. It chooses the EEO as the standard level of efficiency in order to support the SMP operators' investments in NGA networks" (Recital 64). NRAs may make adjustment for scale of the SMP's operator's downstream costs to ensure a realistic prospect when market entry and expansion was frustrated.

Currently most NRAs that already apply ex-ante margin squeeze tests use them as complementary regulatory tool. Thus the scope of both wholesale as well as the retail products subjected to the test is broader taking into account the interaction between different products and the impact on the competitive situation. A majority of NRAs applies the REO/adjusted EEO test to promote competition and to facilitate market entry with the prospect of gaining dynamic efficiency which in the long run overcompensates short term static inefficiencies. This approach also takes account of NGA investments of alternative operators while the Recommendation emphasizes the SMP's operator's NGA investment. Both the ERT and the current ex-ante margin squeeze tests of NRAs aim at ensuring competition.

The Recommendation foresees that a LRIC+ approach is used as relevant cost standard for downstream costs which are defined as retail costs and other network costs. NRAs use a combination of cost standards, as appropriate for retail or relevant input (wholesale) costs. For the latter they tend to use LRIC+ (drawing on the SMP operator's costs as a proxy) while for practical reasons FAC is applied for retail costs which can more easily be taken from the audited accounts of the SMP operator. From a regulatory accounting point of view it is important that combinations of cost standards are implemented consistently and with a view to the objectives pursued. For the economic replicability it is important to use a forward looking incremental cost approach that also takes into account sunk costs for the other network costs in order to ensure that alternative operators can compete in the downstream market on an equal footing.

Conceptually the ERT is a "lighter" test meant to provide more price flexibility to the SMP operator while the ex-ante margin squeeze tests currently applied by NRAs as a complementary tool are stricter with regard to the level of parameters within which NRAs would still be comfortable that alternative operators have enough space to breathe, i.e. if these limits are passed a margin squeeze is found (i.e. the test failed) and the price setting of the SMP operator would be considered anti-competitive and thus forbidden. The choice on how strictly the test is applied must be made by the NRA in the light of the regulatory objectives.

## Annex A Glossary of regulatory accounting terms

1. *Average Variable Cost (AVC)*: this option includes only the costs that vary with output. The incurred costs usually correspond to small, short term output changes;
2. *Average Avoidable Cost (AAC)*: this option covers the costs that can be avoided if the production of a given product is stopped i.e. variable costs and a proportion of fixed costs depending on the increment considered. If the time horizon is the short run, AAC are sometimes called Short Run Incremental Costs (SRIC). If the time horizon is the long run, AAC are equivalent to Long Run Incremental Costs (LRIC, see below).
3. *Long run incremental cost (LRIC)*: Long run incremental cost is the cost of producing a specific additional increment of a given service in the long run (the period over which all costs are variable) assuming at least one other increment is produced. It includes all the directly assignable variable economic costs of a specific increment of service, which is usually less than the whole service. In principle, there are an infinite number of different sized increments that could be measured. However, these increments can effectively be grouped into three different categories: 1. a small change in the volume of a particular service; 2. the addition of a whole service; or 3. the addition of a whole group of services.
4. *Long run average incremental cost (LRAIC)*: Long run average incremental cost is a form of LRIC where the Increment is a whole group of services. In the context of telecommunications, LRAIC has often been used to set interconnection charges with the increments usually defined as the whole group of services using the core network. These services (PSTN, leased lines, etc.) include those provided by the operator with significant market power, as well as those of interconnecting operators. The costs of the network providing this wider group of services are then divided by all traffic to produce the average incremental cost.
5. *LRIC and its several variations*: The LR(A)IC acronym is also used in conjunction with Forward-Looking (FL) and the plus sign (+). In principle this additions lead to a more specific description of all the elements which add up to the cost model as a whole. In this sense the FL would imply the bottom-up cost base according to a current cost accounting is used and the + would imply that joint and common costs are taken into account in the cost allocation process, too. Incremental costs are generally calculated for an efficient operator.
6. *Fully Distributed Costs (FDC), FAC (Fully Allocated Costs)*. Using the fully distributed cost or fully allocated cost approach, the total costs of a product or service are taken into account, i.e. the costs actually incurred by the operator. These include a share of the joint and overhead costs, arrived at by applying certain allocation bases. Thus, in contrast to the marginal cost approach, fixed costs independent of output are also taken into consideration. Usually also parts of joint and common cost are included in the calculation.

Please note that LRIC+ method uses costs (increment) of a single service plus a mark-up to the LRIC to reflect common costs while (pure) LRIC uses only the incremental costs of a single service (no mark-up). If pure LRIC is chosen, common costs, joint costs and corporate overheads are disregarded and hence these costs have to be recovered through other services. Mark-up in LRAIC+ (increment "+") means that the costs of corporate overheads are included. These costs are also known as non-network common costs and usually include costs such as:

- Costs of maintaining a corporate office which are incurred to support all functions and activities,
- Top management labour costs,
- Legal department,
- Internal audit etc.

The method traditionally used by NRAs to allocate these costs is the EPMU approach. Under this approach, each service is allocated a share of the corporate overhead costs in proportion to that service's share of total attributable costs. Although EPMU approach is relatively simple to implement, the main drawback of this approach is that it does not take into account efficiency considerations.<sup>70</sup>

**Table 2: Numerical example of the EPMU method (for illustrative purpose only)**

Corporate overheads cost allocation in a 3-service network (Voice, Internet, Leased Lines):		
•	Corporate overheads according to Top-Down:	10M€
•	Attributable costs (i.e. direct + indirect costs):	
–	Voice	32 M€
–	Data	53 M€
–	Leased Lines	8 M€

	Attributable costs			Corporate overheads	
Voice	32 M€	34%	⇒	Voice	3.4 M€ 34%
Data	53 M€	57%		Data	5.7 M€ 57%
Leased Lines	8 M€	9%		Leased Lin es	0.9 M€ 9%
	93 M€	100%			10 M€ 100%

**Annualisation methodology:** As capital expenditures are intended to create future benefits for the firm, they are annualised in firm's accounts by means of annualisation methodologies. Annualisation methodologies spread investment costs over time based on regulatory assets lives and, for every asset, they result in a series of annualised costs (called annuities), each of which corresponds to the portion of the investment cost allocated to the year.

The most commonly used annuity methods are: standard annuities, tilted annuities and adjusted tilted annuities. These annuities calculate at the same time the sum of the return

<sup>70</sup> The economic literature often presents *Ramsey-Boiteux pricing* as the most relevant approach for common costs recovery. However, although it takes efficiency considerations into account, most regulators recognize the significant difficulties in estimating Ramsey-Boiteux prices, in particular due to need for accurate estimates of cross-price elasticity. These mark-ups are almost never used by regulators for allocating joint and common costs.

on capital employed and depreciation. They allow the exact recovery of the initial investment.

**Standard Annuity:** The annuity methodology calculates the charge that, after discounting, recovers the asset's purchase price and financing costs in equal annual costs. At the beginning, the payment will consist more of capital payments and less of depreciation charges, while over time it will be the opposite, resulting in an upward sloping depreciation schedule (increasing depreciation charges). The standard annuity approach consists of calculating an annual charge called annuity, which is identical every year. This method calculates an increasing depreciation charge and a decreasing return on capital employed in such a way that the annuity remains stable over time. Because standard annuities (sometimes called flat annuities) do not take into account changes in the asset price, they do not reflect the market evolution of the asset value and therefore cannot be considered as appropriate economic depreciation for regulation purposes in electronic communication sector.

**Tilted annuity:** The tilted annuity methodology is an annuity methodology where the annuity value changes from year to year at the same rate as the price of the asset is expected to vary. When asset's price is expected to change over time, a tilted annuity methodology would be more appropriate than a standard annuity methodology. The tilted annuity formula is one of the most widespread formula used for regulatory purposes. It incorporates a tilt which enables the calculation of annuities that evolve in line with asset price changes (this is therefore a current cost approach): if an asset price increases by say 5% per annum, annuities will also increase by 5% per annum. It allows NRAs to replicate the annual charges that would be faced by an operator in a competitive market.

Even more important, tilted annuities allow a smooth evolution of annual cost despite price changes and despite investment cycles. At the end of the useful life of an asset, i.e. when the asset needs to be renewed, the annuities calculated with the tilted annuity method will be similar just before and just after the renewal of the asset. However, the tilted annuity may not be a good proxy for economic depreciation when the volume of outputs produced by an asset is not stable. This may be the case for new products or when demand is evolving fast. In this case, an adjusted tilted annuity method can be used.

It is possible to modify the tilted annuity formula to compute annuities that take into account the evolution of the number of outputs produced by assets. This is referred to as an **adjusted tilted annuity**. The annuity varies here with the number of outputs produced by the assets and with the price trend. When the asset produces a low number of outputs (e.g. FTTH in early years when there are few customers), the annuity is low at first and then increases when the number of outputs produced increases (e.g. FTTH penetration rate increases).

**Straight-line (linear) depreciation:** Straight line depreciation belongs to the family of constant depreciation methodologies. In these methodologies, the depreciation share is stable and the cost of capital share decreases over time which results in **decreasing annuities**. Constant depreciations not readjusted for price evolution are usually referred to as "linear depreciation".

**Depreciation methods** can be classified into two categories: *accounting* and *economic* depreciation methods. Within each category, a distinction can be made between those that take into account price changes, or in other words, those that are based on current costs and those that are not.

### Accounting depreciation methods

Accounting depreciation methods are used for preparing statutory accounts and can be further divided into following methods: HCA, CCA-OCM (Operational Capital Maintenance) and CCA-FCM (Financial Capital Maintenance) depreciation methods.

**Gross replacement costs:** Gross replacement costs (GRC) are the price that would be paid on a given date for an asset bought in the past. It is calculated based on the recorded technical progress rate for such asset. The net replacement cost is equal to the gross replacement cost net of accumulated depreciation.

**HCA:** In an historical cost accounting (HCA) approach, the actually incurred costs recorded in the regulated operator's statutory accounts, most often annualized following a straight-line depreciation methodology, are used in order to assess the relevant regulatory cost base. As historical costs may include inefficient investments, incorporate tax optimisation and may especially lack data of the pre-liberalisation era, adjustments might be applied.

**CCA:** In a current cost accounting (CCA) approach, the operator's asset base is annualised based on the gross replacement cost of the assets. CCA belongs to the family of constant annualisation methodologies where the depreciation share is stable and the cost of capital share decreases over time, resulting in decreasing annuities. Nevertheless, unlike historical cost accounting, in current cost annualisation methods the amortization is adjusted according to variations in the price of the assets being considered due to technical progress and general variations in price (inflation). Three main kinds of CCA exist:

- **FCM:** Financial capital maintenance (FCM): CCA FCM aims to maintain the enterprise's financial capital: whatever transpires the sum of the discounted annuities must be equal to the initial investment.
- **OCM:** Operating capital maintenance (OCM): under CCA OCM it is the gross replacement value, in other words the current price of an asset with the same productive output, expressed in constant Euros, which is amortised.
- **MEA:** Modern equivalent asset (MEA): refers to assessing costs of a network rolled-out today, i.e. reflecting modern least cost technology instead of legacy technology, as this would be the cost relevant in a competitive market.

### Economic depreciation methods

**Economic depreciation:** The economic depreciation methodology takes into account both price changes and output changes. It becomes more appropriate when, besides asset's price changes, there is an expectation of changes in output which may affect unit costs evolution. Economic depreciation is defined simply as "the period-by-period change in the market value of an asset. The market value of an asset is equal to the present value of the income that the asset is expected to generate over the remainder of its useful life."<sup>71</sup> In other words, while accounting depreciation allocates an investment for a period of several years in a systematic manner, economic depreciation calculates annuities that evolve with expected incomes generated by the asset over the asset's useful life.

In addition, contrary to HCA and CCA depreciations, economic depreciation ensures that two entrants buying the same assets but at different point in time will bear similar annui-

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<sup>71</sup> Source: Economic Depreciation in Telecommunications Cost Models, Alexis Hardin, Henry Ergas and John Small, A paper prepared for 1999 Industry Economics Conference Regulation, Competition and Industry Structure 12-13 July, Melbourne

ties. This is a key feature of economic depreciation and important feature for regulation purposes.

In practice, it is difficult to calculate economic depreciation since it requires estimating future demand, future operating costs, future asset prices, etc. Contrary to accounting depreciation which uses a specific and objective formula to calculate annuities, economic depreciation includes some choices.

The main drawback of this depreciation method is that it requires forecasts on the number of outputs produced by an asset over a long period of time. As a consequence, it is more subjective than other methods (even if the tilted annuity method is also somewhat subjective in setting long term price trends). However, it tends to give better economic signals than other depreciation methods when the number of outputs produced by an asset is not stable.

**Discounted Cash Flows (DCF):** the discounted cash flows methodology adjusts annuities based on the business model and the expected revenues of the operator.

### Reasonable profit indicator

The method usually used to calculate the return rate is the **WACC** (Weighted Average Cost of Capital). In order to calculate the return rate on equity with the Capital Asset Pricing Model (**CAP-M**), assumptions must be made on the following factors:

Risk-free return rate (e.g. return rate for 10 year treasury bonds)

Gearing: net debts in relation to the corporate assets

Debt risk premium: the difference between the risk-free return rate and the return of the corporate bonds

Taxation

The equity risk premium: share return in addition to the risk-free return rate

Beta: a share risk in relation to the entire stock exchange

The **risk-free return rate** is the return rate which an investor can expect to gain from investments in financial instruments which do not carry any risk, such as Treasury bonds. However, even risk-free investments can lead to various types of risks, such as:

- Market risk: changes in market return rates,
- Liquidity risks: risks linked to the inability of selling short-term financial instruments.

**Gearing** shows the degree of financial exposure of the company. It affects how the credit rating institutions rate the company's ability to pay interest and amortizations and strengthens the company's negotiating position in raising capital and achieving lower credit costs.

The gearing is calculated by dividing the net debt (interest-bearing liabilities minus liquidities) with the enterprise value (the sum of net debts and the company's market value).

The gearing = $\text{Net debt} / (\text{net debt} + \text{stock exchange rating})$
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The **debt risk premium** is the difference between the risk-free rate (the return rate on 10-year Treasury bonds) and the return on corporate bonds. The calculation is done using treasury and corporate bonds with a similar maturity. The debt risk premium is generally called the "credit spread" and shows the returns, in addition to the risk free rate, demanded to invest in corporate bonds. In addition to macroeconomic conditions the premium level also depends on the assessment of the companies' financial strength and credit



rating by the investors in corporate bonds. The logic is that the lower the credit rating the higher the premium, which consequently means that the return requirement increases for investments in riskier corporate bonds.

In the calculation of the return rate we calculate first a return rate including tax, because the calculation of the debt cost takes into account taxes, and then we calculate the return rate before **taxation**. This means that the decrease in corporate tax also affects the return rate before taxation.

The **equity risk premium** quantifies the extra return which the investors demand to compensate for the risk of investing in shares, compared with the risk-free assets and shows what the investors do about risk assessment at the market level. There is no generally accepted method for calculating the equity risk premium, however most models use historical data or market trends in order to determine the risk premium.

The financial market theory using the CAP-M takes into account the asset's sensitivity to non-diversifiable risk, called the systematic risk or market risk. It is represented by the **beta**, which is a measure of the stock's risk in relation to the entire stock market and thus represents the risk which the portfolio manager must handle. Beta measures the degree of correlation between the volatility of a particular stock, and the entire market in the form of an index.

The CAP-M, when adopted, provides the formula for the cost of equity ( $R_E$ ):

$$R_E = R_F + \beta_E * P_M$$

where:

$R_F$  = risk free rate;

$\beta_E$  = represent the risk of the regulated asset relative to market risk;

$P_M$  = market premium.

## Annex B Questionnaires and results

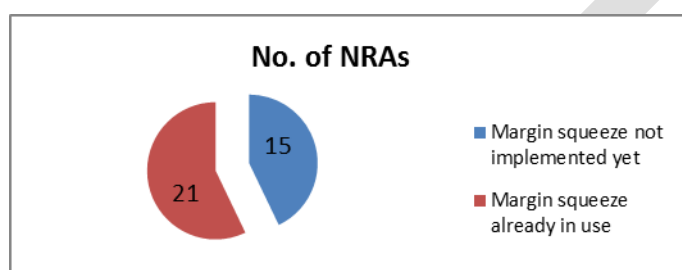
### Questionnaires and results

For the needs of the guidance document the drafting team in frame of RA EWG sent two questionnaires, first for the Guidance on the regulatory accounting approach to economic replicability test (ex-ante margin squeeze tests). The questionnaire was about to identify in what manner the margin squeeze is calculated and the reasoning behind the decisions of individual method.

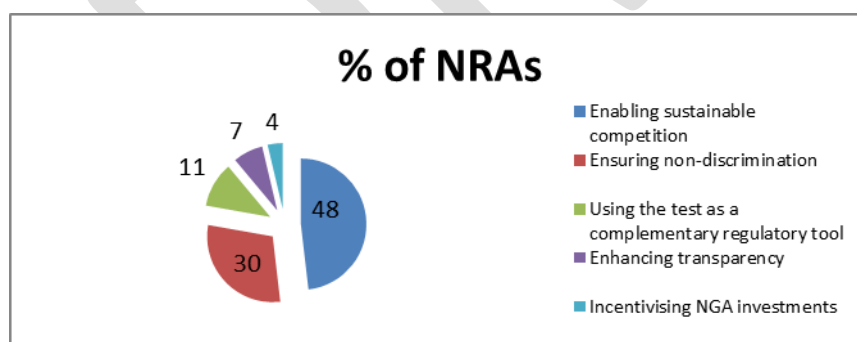
In the second questionnaire the procedural and transparency issues were discussed.

### The Margin squeeze questionnaire on current practice of NRAs

The questionnaire was fulfilled from all, 36 NRAs. From those, 42% did not implement the MS test yet, other 58% already did. The purpose of this Annex is to present questions asked and some graphic answers, while the interpretation is included in the text of the document.

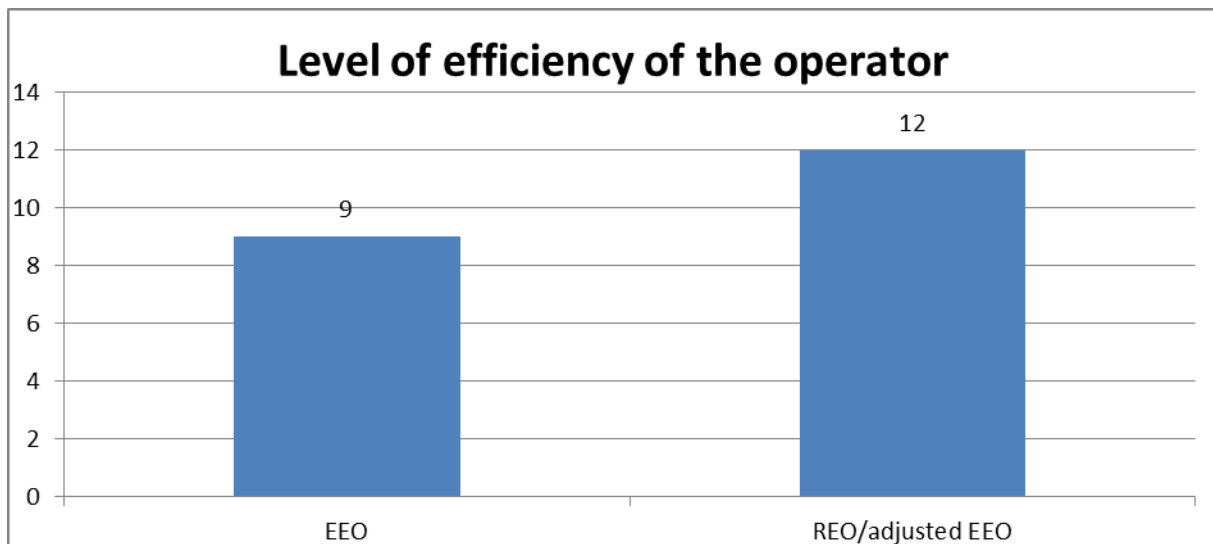


3.1. Objectives/reasons for implementing the MS test ; Description: What are overall the NRA's main objectives/reasons for implementing a particular type of ex-ante margin squeeze test and in how far does it depend on the market stage (in a mature and in a growing market)?



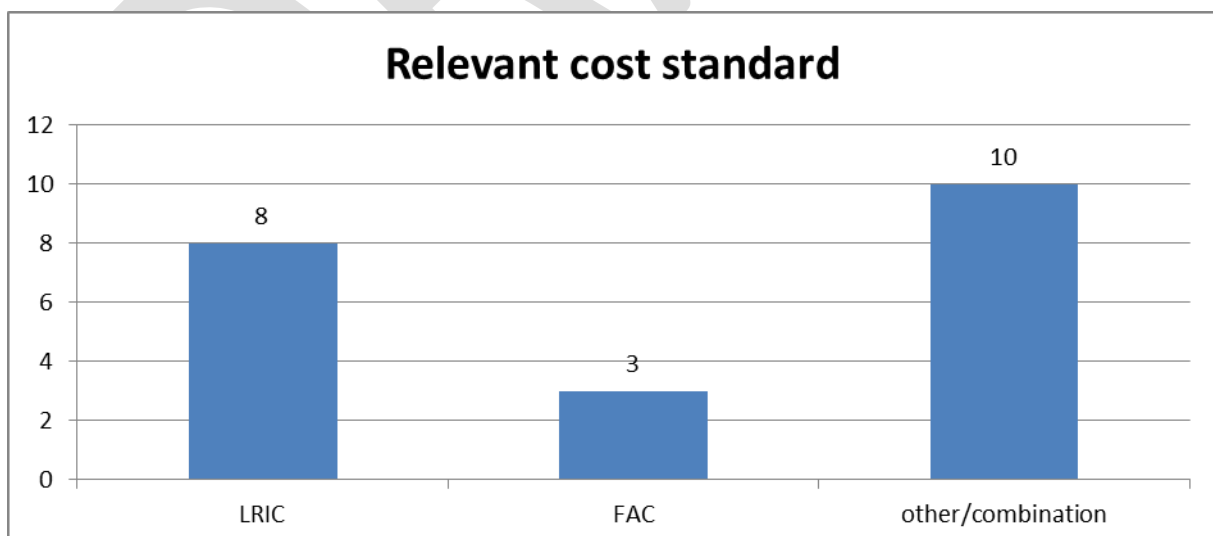
3.1.1. Margin squeeze test definition; Description: Please provide a short description of the margin squeeze test currently used (incl. general formula).

3.1.2. Level of efficiency of the operator (EEO; REO/adjusted EEO); Description: The costs used in margin squeeze test are either of an "equally efficient operator" (EEO – the SMP operator's costs) or of a "reasonably efficient operator" (REO – the efficient/ generic alternative operator or the real alternative operator's costs); or the adjusted EEO (EEO, the scale adjusted).

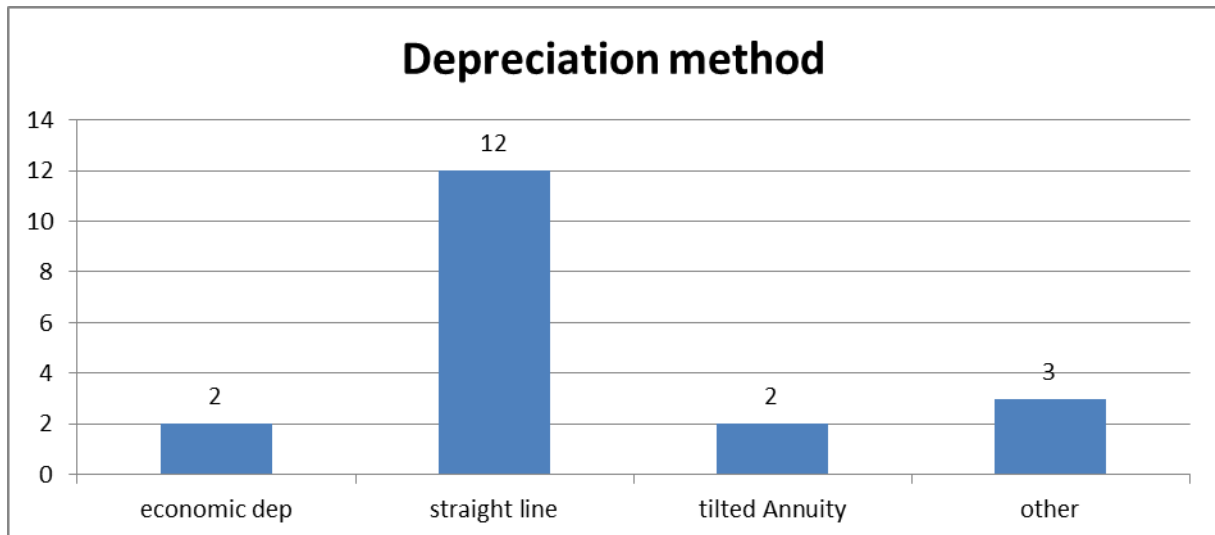


Definition of the generic efficient operator (if applicable): Description: Which market share would you consider appropriate to be used for an efficient generic operator? Do you see any other parameters defining the "generic operator" to be used besides its market share (e.g. retail costs, etc.)?

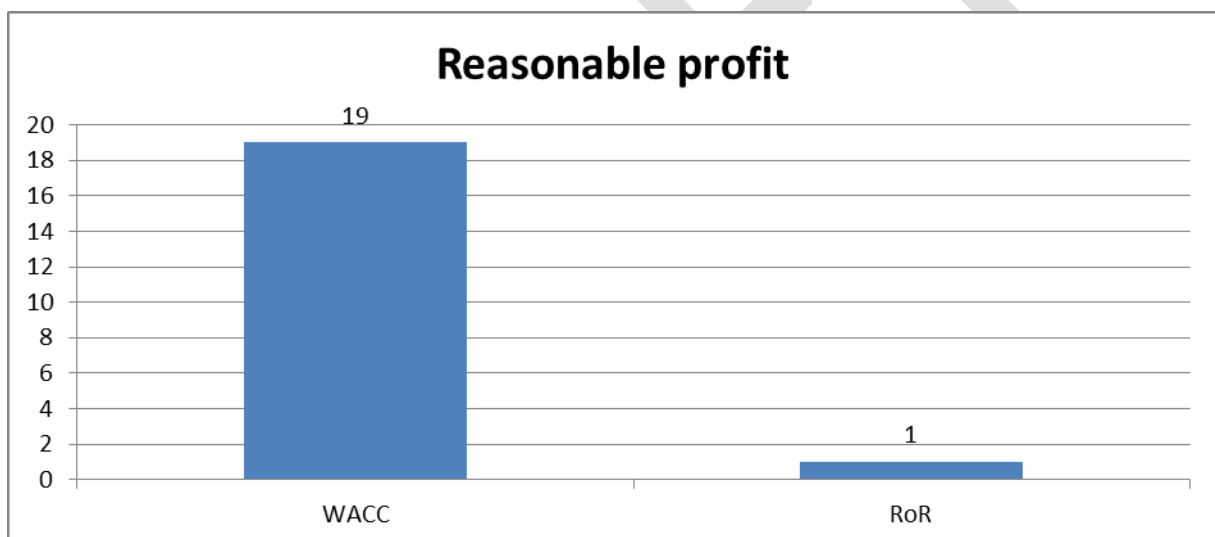
3.2. Relevant cost standard (FAC; LRIC); Description: Main approaches to define the costs standard and methodological considerations: FAC method which uses the accounts of the company, LRIC+ method which uses the costs (increment) of a single service plus a mark-up to the LRIC to reflect common costs, or (pure) LRIC which uses only the incremental costs of a single service (no mark-up). How do you calculate the mark-up and which costs do you include, which proxy do you use, do you audit it? If you use different cost standards for regulated and non-regulated wholesale costs and for downstream (retail) costs, please indicate the cost standard that you use for each of them. For the categories the Regulatory Accounting in practice report 2013 (BoR (13) 110) has been used, see page 8.



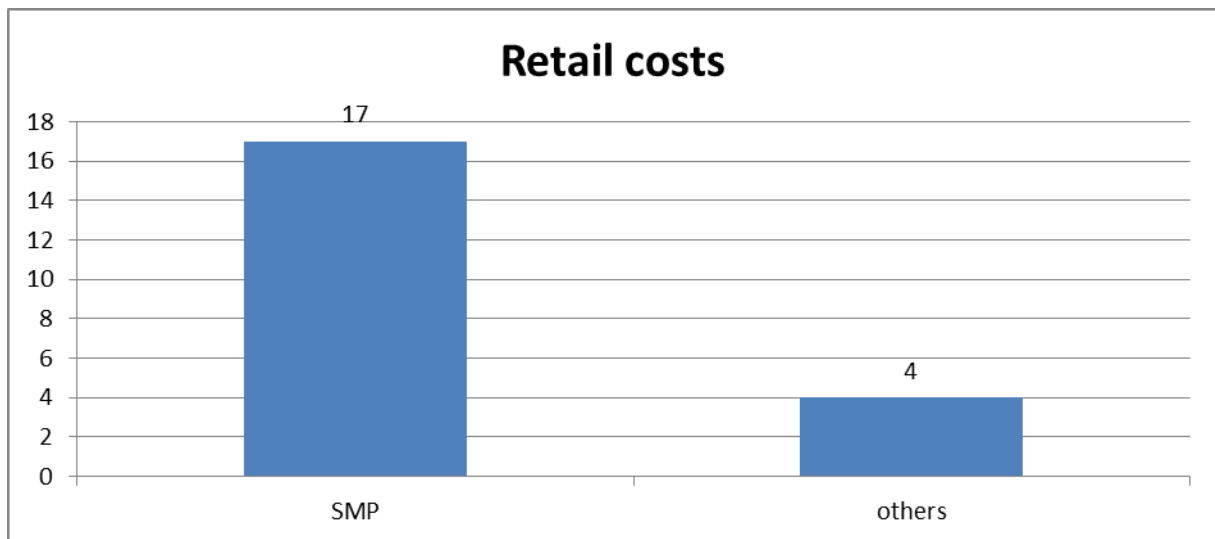
3.2.1. Depreciation method used in the margin squeeze test; Description: economic depreciation; in definition: only for non-regulated assets and retail assets. Which depreciation method do you currently use in the Margin Squeeze test? For definition see RA report 2013 p. 62



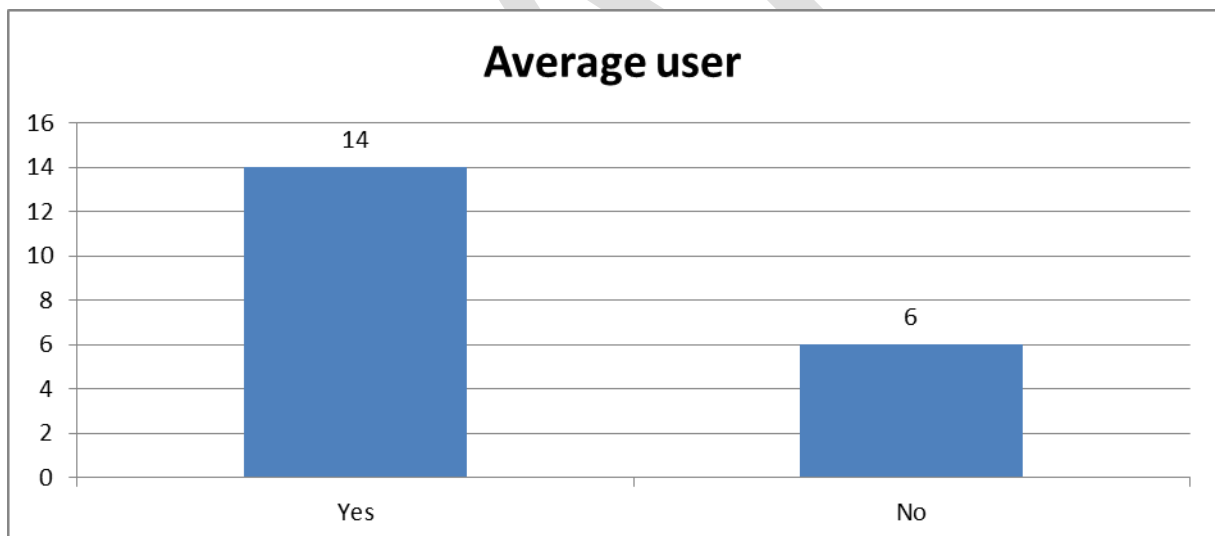
3.2.2. Reasonable profit in margin squeeze test; Description: What reasonable profit indicator would appropriately be used in the test? Two standards are used in practice: return on capital (WACC) and return on revenue (RoR).



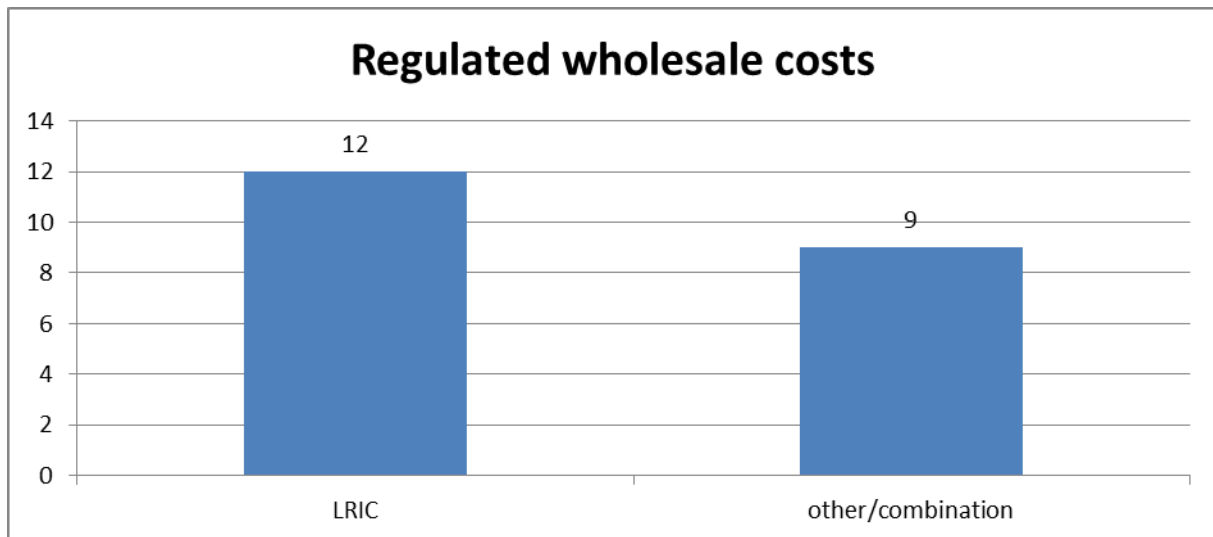
3.2.3. Retail costs; Description: How do you break down the retail costs and calculate them?



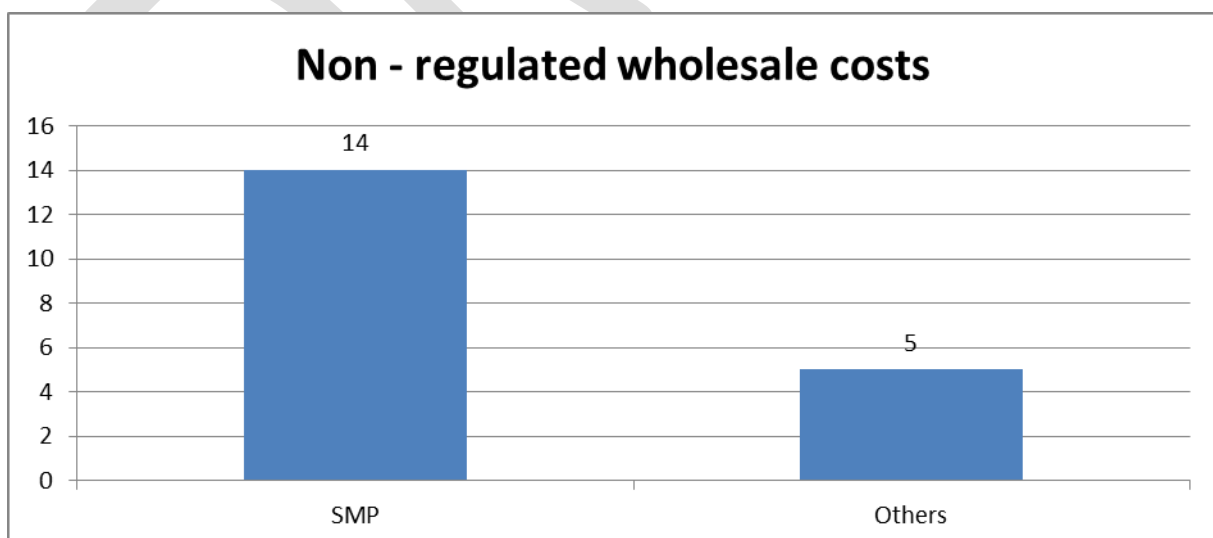
3.2.4. Average user; Description: Is the relationship between wholesale and retail traffic taken into account when calculating costs and revenues? Does this include inputs such as call minutes, download data or SMS included in the bundle and the usage of out-of-bundle inputs by end-users (e.g. when an end-user exceeds the number of call minutes included in the bundle)?



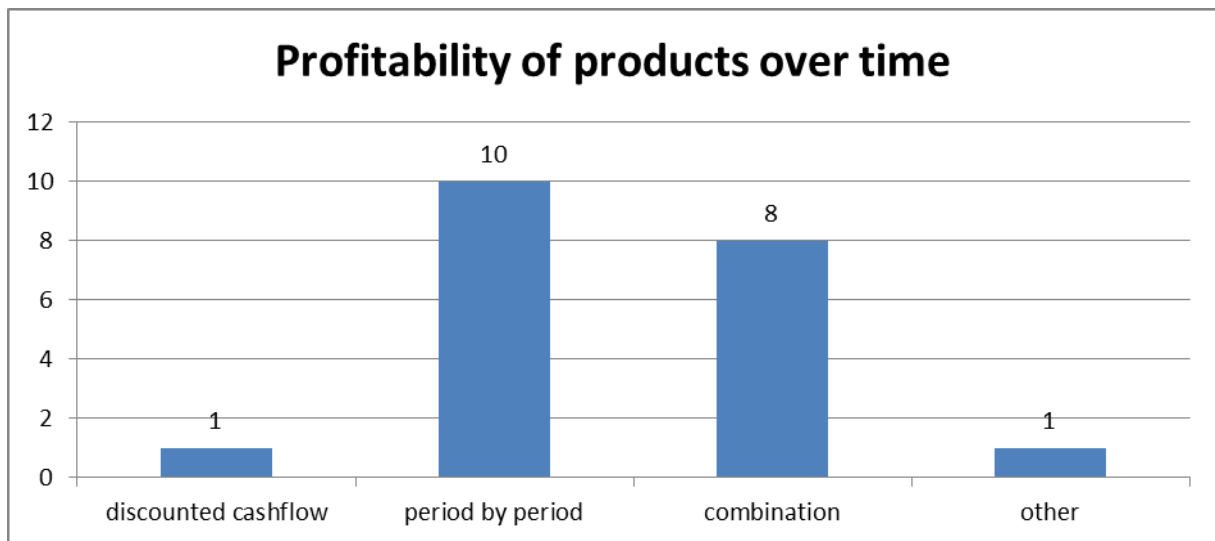
3.2.5.1 Regulated wholesale costs; Description: These are the costs incurred by the (alternative) operator to buy wholesale services offered only by the SMP operator and are needed to provide retail services. Usually these costs are regulated: access costs, interconnection costs, etc. Which approach do you use as the most appropriate to calculate regulated wholesale costs?



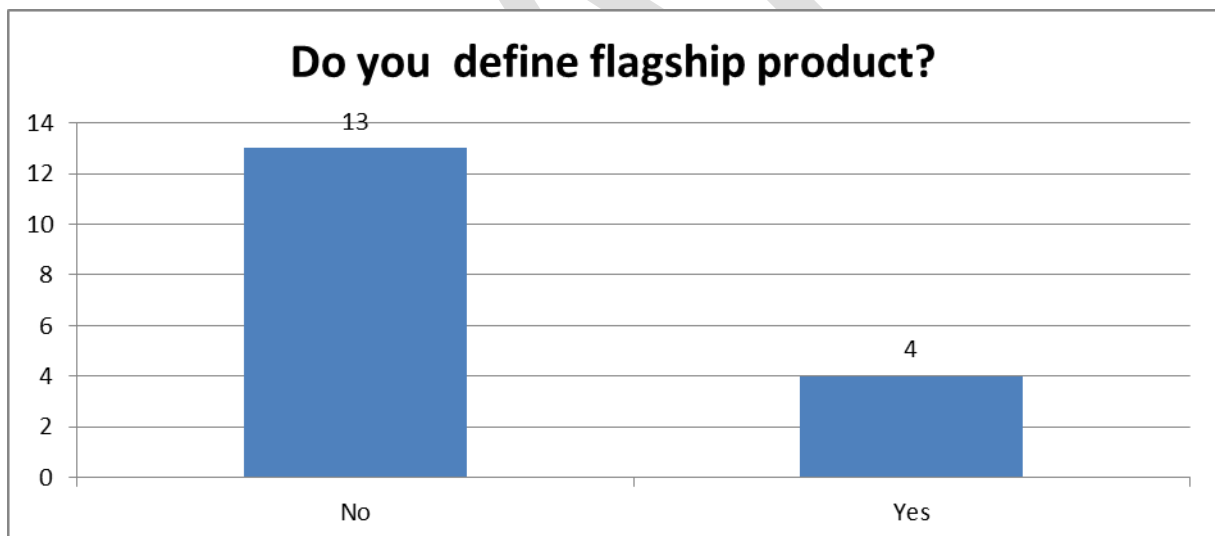
3.2.5.2. Non-regulated wholesale costs (incl. own network costs); Description: These costs represent the non-regulated wholesale costs (other network costs) that an operator would incur to provide retail services, such as own network equipment, costs of traffic across the different network layers, other additional costs for other services (IPTV, VAS, mobile services). These costs generally represent the costs of different elements of the (core) network of that particular operator (with the possibility of some parts of that network being based on different (non-regulated) wholesale products of other operators). Description of how the above costs are calculated and treated in the test. In the drop down menu please provide the source of data.



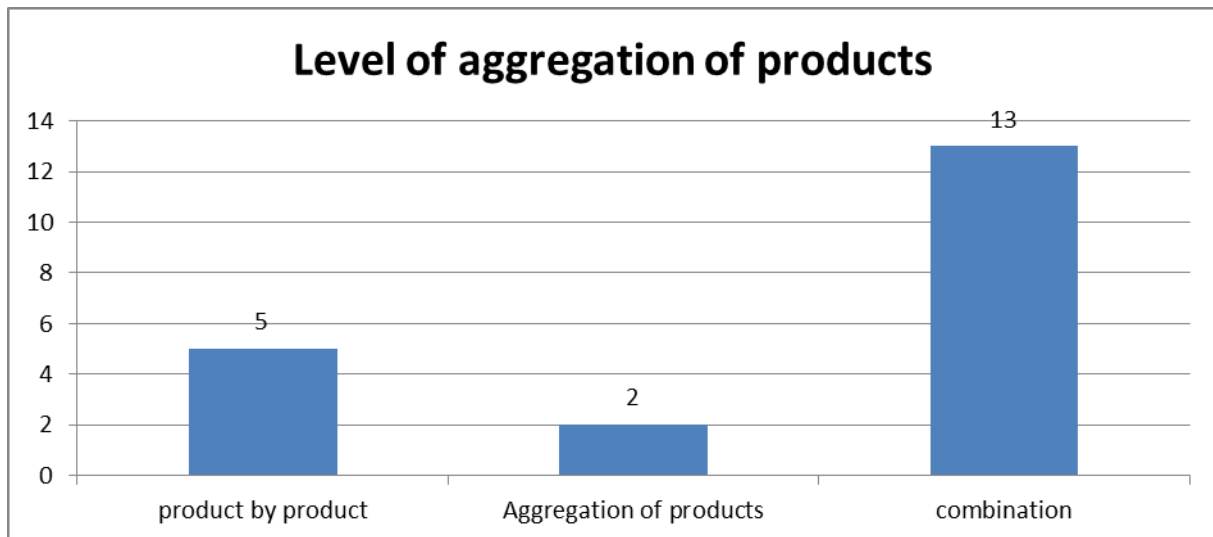
3.3. Test for evaluating profitability of products over time (DCF; PBP; customer lifetime approach); Description: discounted cash flow method based on expected cash flows (dynamic cost and revenues forecast) or period by period method (uses only static forecast for revenues over the lifetime of the customer).



3.4.1. "Flagship products"; Description: How do you define flagship products? Which products do you test at the moment?



3.4.2. Level of aggregation of products (product by product; aggregation of all products); Description: Methodological choice of using a different level of aggregation. There are two main options available: product by product means that each product is tested on a standalone basis and aggregation of products means that all products are considered at the same time as a whole.



3.4.3. Bundles: Treatment of standalone and bundle products; Description: The most relevant retail products are likely to be offered as a bundle. Bundles can include regulated and non-regulated services. What are the differences, if any, when implementing the margin squeeze test for bundles or for individual services? How do you evaluate the components of the bundle and determine their costs?

3.4.4. Revenues / Retail price; Description: Which revenues generated at the retail level do you consider in the test? Customer subscription revenues, traffic revenues, value added services revenues, discounts, promotions, treatment of extras, etc. Which approach do you use as the most appropriate to calculate revenues?

3.4.5. Promotions and temporary discounts (acquisition and retention offers); Description: Sometimes, operators offer temporal discounts or some other promotions (e.g. in order to get the customer's loyalty). The content of these offers can vary depending on the season (Christmas, "back to the school", etc.), customer type, certain geographical areas, etc. When does the NRA consider these promotions as a retail cost (as marketing costs) and when should they be put to the test as a product? For the purpose of the methodology, the meaning of product would be defined by the technical characteristics, while offer actually represents product retail price (taking into account also temporal discounts etc.) and product quality, so to say, the wholesale inputs can be the same, and differentiated by price and therefore representing different offers.

How do you treat this kind of offers?



3.5. Geographical segment: across country differentiation urban/suburban; Description: Do you use different wholesale prices/costs (or a combination of both) in the margin squeeze test depending on the geographic location or area? Do you differentiate wholesale prices across the country territory? How?

