Nasjonal kommunikasjons-myndighet

Annex 9

Principles for use of margin squeeze tests for local access to Telenor's fibre access network in Market 3a (VULA fibre)

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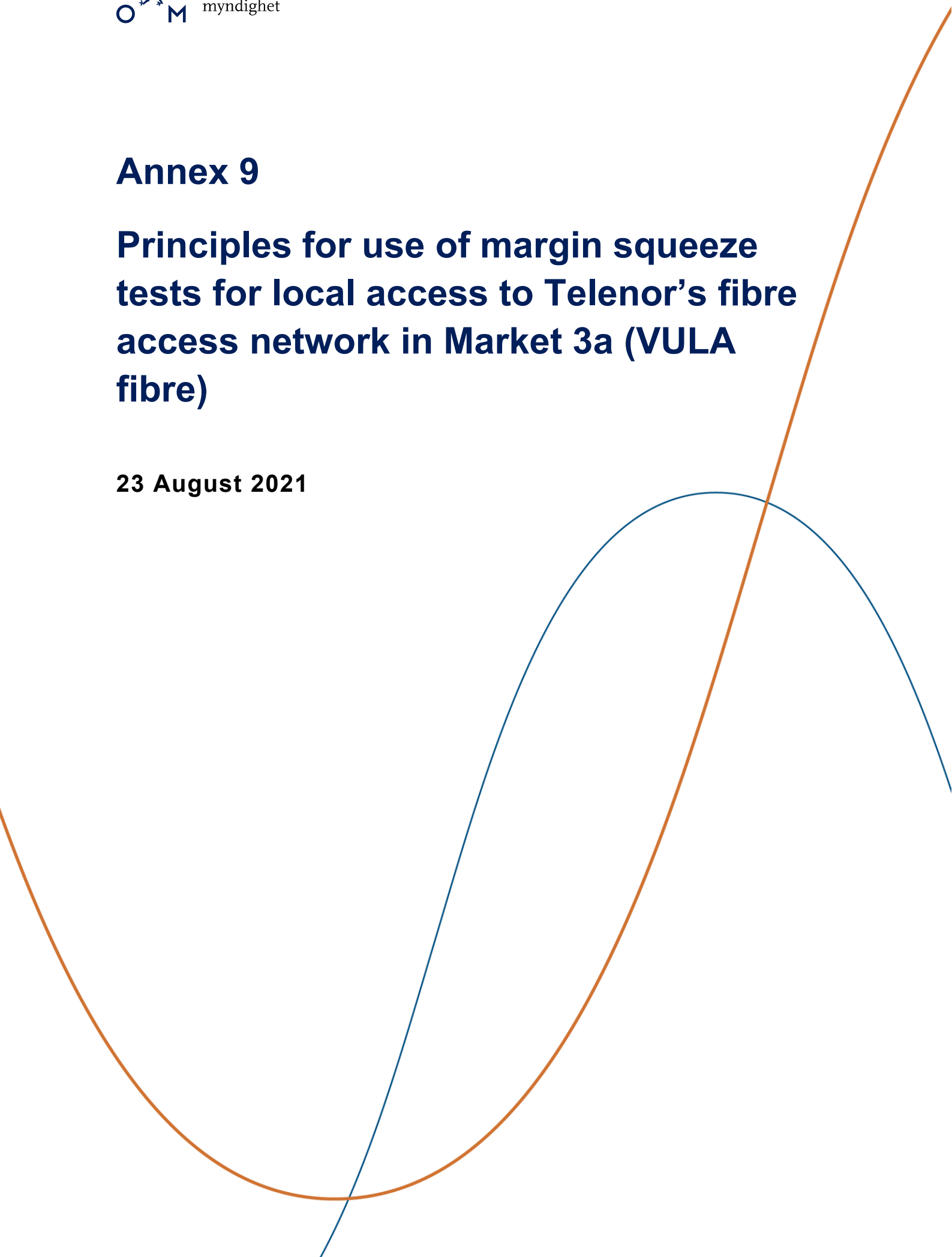

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1 Introduction

Telenor ASA has been designated as a provider with significant market power in the market for wholesale local access provided at a fixed location (Market 3a). Telenor has had an obligation imposed to provide local access to its fibre access network. This access obligation is supported by price controls in the form of a prohibition against subjecting buyers of access to a margin squeeze. In this annex, Nkom specifies the underlying principles for the use of margin squeeze tests that will be used as a tool for price regulation of local access to Telenor's fibre access network in Market 3a (VULA fibre).

The principles constitute an update of the principles that formed the basis for the margin squeeze tests for central access to fixed networks (Market 3b). At the same time, Nkom will continue using the model developed by Wik Consult, which has been used to perform the margin squeeze test for VUA fibre in Marked 3b. The model builds on the European Commission's Recommendation on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment (the Recommendation)[1] and BEREC's Guidance on the regulatory accounting approach to the economic replicability test (i.e. ex-ante / sector-specific margin squeeze tests, applied for NGA products, 5 December 2014)[2].

The margin squeeze test calculates the margin of an efficient alternative provider that buys fibre-based wholesaler access from Telenor and offers a portfolio consisting of Telenor's commercially most attractive retail products (flagship products). This means that a margin is estimated for the efficient alternative provider by calculating the retail revenues and associated costs of providing the retail products included in the portfolio. The overall objective of the margin squeeze test is to ensure that buyers of fibre-based wholesale access in Market 3a can achieve a reasonable margin by replicating the portfolio of flagships products.

2 Definition of margin squeeze[3]

BEREC says the following about a margin squeeze situation:

> *"A margin squeeze (also known as price squeeze) is 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."*[4]

[1] See the European Commission (2013).
[2] See BEREC (2014).
[3] See also WIK for ILR (2013).
[4] See ERG (2009), page 2. (ERG has now been replaced by BEREC).

A margin squeeze exists if competitors that buy access from the vertically integrated provider with significant market power (the SMP provider) cannot offer the same retail prices as the SMP provider and at the same time make a profit.

The margin squeeze test is passed if the retail revenues are equal to or higher than the total of the wholesale costs and the downstream costs, including return on invested capital.

Where there are complex price structures in the retail and wholesale markets, the relevant items may consist of a combination of product-related revenues and costs.

A margin squeeze test is passed if:

Retail revenues ≥

Wholesale costs + Downstream costs

Downstream costs include own network costs, retail costs and other costs (regulatory costs, costs for number portability, etc.).

3 Main principles for designing a margin squeeze test

3.1 Efficiency levels and scale adjustments

A margin squeeze test includes a methodical choice of the level of efficiency of the efficient alternative provider modelled in the margin squeeze test. A distinction is often made between the following three different approaches:

- In an Equally Efficient Operator (EEO) approach, the test assumes that the efficient alternative provider has the same scale and efficiency as the SMP provider. The data set of the SMP provider will thus be used as the starting point for the test.
- In a Reasonably Efficient Operator (REO) approach, the test uses the scale and efficiency of an efficient alternative provider and will thus use the data set for efficient alternative providers.
- An Adjusted Equally Efficient Operator (adjusted EEO) approach involves that the test assumes an EEO approach as a starting point, but allows for adjustment of the SMP provider's data. The adjustments will be associated with specific costs that occur only for access buyers and adjustments for efficiency in areas where an efficient alternative provider cannot be expected to achieve the equivalent economies of scope and economies of scale as an SMP provider.

According to the Recommendation, a lack of economic replicability can be illustrated by showing that the SMP provider's own retail operations cannot operate profitably on the basis of

the wholesale prices that the SMP provider demands from its rivals. The Recommendation's starting point is that an EEO approach should be used in margin squeeze tests.

In terms of the further contents of margin squeeze tests, article 56 of the Recommendation states a minimum number of parameters that must be set. The parameters are described in more detail in the guide in annex II to the Recommendation. The annex assumes that the downstream costs will be calculated on the basis of the cost of the SMP provider's own downstream operations (EEO approach). It should be noted, however, that national regulatory authorities can make scale adjustments to the SMP provider's downstream costs to ensure that economic replicability is realistic. The Recommendation refers to two situations in which deviation from a pure EEO approach is justified:

1. When market entry or growth have previously been prevented.
2. When there are indications that alternative providers do not have the incentives to increase their size due to objective financial circumstances, as illustrated by a low number of accesses and limited geographical distribution compared with the SMP provider's NGA network.

It is reasonable to assume that Telenor has economies of scope and economies of scale in the retail market for standardised broadband access that competitors cannot replicate. This means that Telenor is capable to offer and distribute NGA retail services more efficiently than its competitors.

Telenor uses its integrated core network and distribution channels to offer fibre connections. The economies of scope and economies of scale thus also apply to the specific fibre segment, in addition to the overall retail market for standardised broadband access. For the margin squeeze test for fibre to serve its purpose, Nkom therefore believes it is necessary to take into account the fact that Telenor has greater economies of scope and economies of scale than its competitors.

In Norway, most of the suppliers of fibre-based retail services are small energy companies. These kinds of companies serve end customers in a limited geographical area and often collaborate with other local energy companies regarding provision of fibre-based retail services such as broadband internet access, IPTV and telephony. It is expected that the majority of the local energy companies that distribute fibre-based broadband will not expand their business substantially beyond their current geographical area during the period covered by the analysis.

It can be argued that the situation in Norway is such that alternative providers have fairly limited geographical area of activity, meaning alternative providers do not have incentives to increase their scale on the basis of objective financial factors. In Nkom's opinion, these factors indicate that it is necessary to apply certain scale adjustments to Telenor's costs and revenues in order to ensure a realistic margin squeeze test.

Nkom concludes that the margin squeeze test should be based on an adjusted EEO approach. This means that the margin squeeze test will be based on data from Telenor. In cases where it

is necessary to make adjustments to Telenor's data set, this will be done in accordance with Sections 3.1.1 and 3.1.2. Adjustments may include items where alternative providers will not be able to achieve similar economies of scope and economies of scale as Telenor. The test will also include specific costs that only arise for alternative providers in their role as buyers of access.

3.1.1 Relevant market share

The adjusted EEO principle presupposes that the size, measured in market share, of the efficient alternative operator is taken into account.

In the market analysis of Market 3a, Nkom concluded that the geographical market is national. In order for the margin squeeze test to be consistent with the market definition, Nkom believes that the geographical market used to determine the market share of the efficient alternative provider must also be based on the assumption that the market is national.

In practice, a national geographical market will mean the geographical area covered by Telenor's fibre network where the required services for fibre access to the wholesale market are available. Telenor is required to offer VULA fibre in the company's GPON network. Data received from Telenor 1 March 2021 show that the smallest ODP where access buyers have established an agreement, has 313 connected subscribers. The collected data also show that there are several companies that have established an ODP connection after Nkom's decision to reduce ODP prices.

Since the number of connected subscribers is not constant over time, an access buyer may find it financially profitable to establish himself at a small ODP, if there is an expectation of growth. The decommissioning of the copper network, where access buyers want to migrate to copper customers over to Telenor`s fibre network, may also contribute to access buyers finding it profitable to connect to smaller ODPs. Based on this Nkom believes that it is realistic that an efficient, alternative provider will establish himself on ODPs with at least 100 connected subscribers.

The results of the margin squeeze test are affected by the assumptions that are applied regarding the number of subscriptions and associated market share that an efficient alternative provider has in the retail market. In general, national regulatory authorities use a market share of 15–25% to reflect the competitive position of the efficient alternative provider.[5] On the basis of the above and the current market situation for fibre connections in Norway, Nkom assumes that the efficient alternative provider has a market share of 15% of the available accesses to Telenor's fibre network, at ODPs with at least 100 connected subscribers.

3.1.2 Conducting margin squeeze tests and relevant scale adjustments

To ensure that price controls are effective in the sense that buyers of VULA fibre in Market 3a can replicate a portfolio of Telenor's commercially most attractive fibre-based retail products,

[5] See WIK for ILR (2013), page 7.

Nkom believes that as a general rule, it will be necessary to carry out margin squeeze tests twice a year. The tests will normally be conducted in March and September. Nkom may also carry out margin squeeze tests on its own initiative where appropriate; for example, if new wholesale products are introduced in Market 3a.

Nkom will collect data from Telenor in connection with each margin squeeze test conducted. Data will be collected on the number of subscriptions that Telenor has for its fibre-based broadband products and the retail prices. The data regarding the number of subscriptions will be used to determine which products make up the flagship products and are thus to be included in the margin squeeze test. The collection of data on retail prices is necessary to ensure that the margin squeeze test uses correct retail prices. Nkom may ask Telenor to confirm and, as applicable, update its list of retail prices at the time the test is going to be performed. Nkom will send Telenor a data collection form approximately two months before the margin squeeze test is going to be carried out. This form will normally be sent to Telenor in January and June.

At the second normal conduction of the margin squeeze test, i.e. in September, Nkom will in addition update all the relevant cost data in the margin squeeze test. In order to carry out this kind of update, Nkom will collect data from Telenor, based on the regulatory cost accounts that Telenor must submit by 1 July every year. The updated data will be used until Nkom receives new cost data the following year.

Nkom will send a data collection form to the alternative providers in June. The providers will have approximately two months to report the requested data. The purpose of this data collection is to obtain a basis for assessing whether it is necessary to make adjustments to the data reported from Telenor.

Nkom will review and ensure the quality of the reported data. Telenor's data will form the starting point for running the margin squeeze test. The data from alternative providers will be used to assess whether alternative providers have similar economies of scope and economies of scale as Telenor. In the assessment of whether Telenor's data sets need adjusting, Nkom will compare the average of the relevant alternative providers' data for a given cost component with Telenor's data. If the comparison shows a deviation compared with Telenor's reported data of 10% or more, Nkom will regard this as an adequate indication that the relevant alternative providers do not have similar economies of scope and economies of scale as Telenor. For these kinds of items, Nkom will adjust Telenor's data set in accordance with the procedure outlined below for the relevant item in subsequent margin squeeze tests.

In cases where it is necessary to make changes to Telenor's data, Nkom will make the adjustment using a weighted average calculation based on Telenor's data and the average of the relevant alternative providers' data. When calculating the adjustment, Telenor's data will be weighted 30%, while the average of the relevant alternative providers' data will be weighted 70%. Furthermore, Nkom will determine the percentage Telenor's data will be adjusted in the

subsequent margin squeeze tests, based on the difference between Telenor's data and the weighted average.

In connection with the margin squeeze test carried out in September, Nkom will determine which items and at what level Nkom finds there are grounds to adjust Telenor's data set. Nkom will use these adjustments until Nkom performs another corresponding assessment. The adjustments will thus normally apply for a period of one year. The adjustments come into effect from the margin squeeze test following the test where the need for adjustment was identified. This means that the adjustments are generally used for the first time in the margin squeeze test normally carried out in March.

For the sake of clarity, Nkom would point out that the margin squeeze test carried out in March will use the same cost data that Telenor submitted in its reporting of cost data for the previous year, cf. above. This means that the cost data will be the same as in the test in the previous September. In accordance with what is stated above about the data collection form for Telenor, the test will be based on an updated assessment of flagship products and retail prices.

In connection with the first margin squeeze test carried out after this decision takes effect, Nkom will use empirical data from previous margin squeeze tests when deciding which items in Telenor's data set need to be adjusted and by how much.

In Nkom's opinion, the described method ensures that the margin squeeze tests are conducted in an efficient and predictable manner for both Telenor and access buyers.

Principle 1

Nkom will use an adjusted equally efficient operator (EEO) approach.

The geographical area for the margin squeeze test is the whole of Norway. In practice, this means the area covered by Telenor's GPON network.

Nkom will use a modelled alternative provider with a market share of 15% of the available accesses connected to Telenor's fibre network, at ODPs with at least 100 connected subscribers.

As a general rule, Nkom will carry out margin squeeze tests twice a year, in September and March. Nkom may carry out additional margin squeeze tests whenever necessary.

As a starting point, Telenor's data will be used in the margin squeeze tests. For cost items where the discrepancy between Telenor's data and the relevant alternative providers' data is more than 10%, Nkom will adjust Telenor's data set. The test will include costs that are specific for access buyers. In cases where data from Telenor is lacking, market data may be used.

In connection with the margin squeeze tests carried out in September, Nkom will inform the providers about which items there are grounds to adjust and the size of the adjustment as a percentage. The adjustments will apply until Nkom has made an updated assessment of the need for adjustment. The adjustment will normally last for one year.

3.2 Business model

When working out the specifics of the margin squeeze test, it is first necessary to define the business models used in the margin squeeze test. In this context, business models are defined as the possible combinations of relevant retail and wholesale services.

3.2.1 Relevant wholesale products

In the Recommendation, the Commission specifies that national regulatory authorities should identify the most relevant regulated wholesale products based on NGA. Nkom finds it appropriate to use the fibre-based wholesale products Telenor is required to grant access to in Market 3a in the margin squeeze model. In practice this is VULA fibre in Telenor's GPON network.

3.2.2 Relevant retail services

Alternative providers that buy VULA fibre can offer a variety of retail services. These retail services are combinations of broadband internet access, voice services and IPTV services. Internet access is the most common retail service, but most of the end customers buy a combination of internet access and IPTV services. Voice service is also a relevant retail

service. This service is either bought in combination with internet access and IPTV services, or in combination with internet access only.

As a business scenario, it seems reasonable to assume that an efficient alternative provider that buys VULA fibre (including multicast as an add-on) will offer single, double and/or triple play services at the retail level. IPTV services are not subject to sector-specific ex-ante regulation. However, BEREC has expressed that costs for IPTV services may represent a significant proportion of the downstream costs and ought to be regarded as a non-regulated parameter in the margin squeeze test.[6]

Nkom concludes that internet access, voice services and IPTV are the relevant retail products in the margin squeeze test.[7] These three products may be offered to the end customer as individual products or as a bundle consisting of either two (double play) or three (triple play) products.

Alternative providers in the Norwegian electronic communications market provide services to customers in both the residential and the business market. However, services delivered to companies are usually more customised and are supplied along with other IT and communications services (e.g. software packages, other connectivity services, storage, security, networking solutions, support services, etc.).[8] Offerings to the business market will often be based on leased lines or data communication services.. The margin squeeze tests will, however, only include standardised residential and business products that can be offered based on VULA fibre in Market 3a.

[6] See BEREC (2013), Section 2.2.5.2 (page 13)

[7] In a statement on margin squeeze tests for VULA, Ofcom (2015) also concluded that IPTV (incl. content) ought to be included as part of the retail fibre bundle assessed in a margin squeeze test.

[8] See also Ofcom (2015), page 91.

Principle 2

Nkom will in the margin squeeze model use the fibre-based wholesale products Telenor is required to grant access to in Market 3a as the relevant wholesale products. In practice this is VULA fibre in Telenor's GPON network.

The relevant retail products in the margin squeeze test are internet access, voice services and IPTV. These three products may be offered to the end customer as individual products or as a bundle consisting of either two (double play) or three (triple play) products.

Standardised residential and business products that can be offered based on VULA fibre in Market 3a will be included in the margin squeeze test.

3.3 Flagship products

The Recommendation states that only the most commercially attractive products (flagship products) should be included in the margin squeeze test. Flagship products are defined as those retail products that have the highest relevance in terms of revenues, subscribers, and advertising expenses.[9]

When determining which of Telenor's fibre-based retail products are to be considered flagship products, Nkom will consider all the products that Telenor offers and that together constitute 70% of Telenor's sales revenue. In addition, all the fibre-based retail products Telenor offers, representing an income or subscriber share of at least 10%, are regarded as flagship products[10]. On determining flagship products, Nkom will apply revenue and the distribution of subscriptions from a date close to the performance of the test.

Nkom will also be able to define other products than those stated above as flagship products, if they are or can be expected to be important for the competition in the relevant retail market. Elements indicating that a product is to be considered a flagship product include:

- The retail product, measured by number of subscriptions or revenue, has grown considerably since the previous margin squeeze test.
- The retail product is expected to have a significant impact on the retail market relatively quickly.
- The retail product is sold with promotional offers to new customers or has been sold with promotional offers during the period since the previous margin squeeze test.

[9] The concept of using margin squeeze tests for flagship products was originally proposed by the European Commission (2013) in connection with wholesale pricing for NGA.
[10] See WIK for ILR (2013), page 5.

In these kinds of cases, Nkom will determine the number of subscriptions on the basis of a discretionary assessment and therefore also the product's significance in the portfolio of flagship products in a forward-looking perspective.

The flagship products will be determined on the basis of data provided by Telenor in connection with the margin squeeze test.

Principle 3

The margin squeeze test will be carried out for the most commercially attractive products (flagship products). A flagship product may be a standalone or bundled retail product based on fibre access.

Flagship products include the retail products with the highest revenues, which combined represent at least 70% of the total revenue in the relevant time period. In addition, retail products with a market share of 10% or more, measured by either number of subscribers or revenue, will also be classified as flagship products.

However, Nkom will also be able to define other products than those stated in the above section as flagship products, if they are or can be expected to be important for the competition in the relevant retail market.

3.4 Aggregation level

The aggregation level determines whether a margin squeeze test will be conducted for each flagship product individually or for a portfolio of identified flagship products. The Recommendation does not specify what aggregation level the test should be conducted on. BEREC (2014) finds that each national regulatory authority should decide the correct aggregation level in connection with the margin squeeze test in the context of identified competition problems in the market analysis.

If each flagship product is to be tested, no individual flagship products will be able to have a negative margin. By contrast, a portfolio test will use the combined margin for the group of flagship products being assessed. Using this kind of approach, some flagship products could have a negative margin, as long as other flagship products have a positive margin. Therefore, a portfolio test is less strict than a test of individual flagship products and allows the SMP provider greater flexibility in its pricing, compared with testing of individual products. A portfolio approach will therefore strengthen the regulated provider's incentives to invest.

The Norwegian fibre market is characterised by the fact that both Telenor and alternative providers mainly offer a broad portfolio of retail services.

In light of this, Nkom will use a portfolio approach in the margin squeeze test. The portfolio approach means that the identified flagship products will be tested as a combined group (portfolio). As regards subscription distribution, Nkom finds that this should be set using

Telenor's actual subscription distribution as a starting point, and that the flagship products ought to be given a relative weight that corresponds to the distribution of Telenor's customer base.

At least one of the flagship products shall be a standalone product. If this product is not included based on the selection of the most commercially attractive products, the largest standalone product will be used in the portfolio.

Principle 4

Nkom will use a portfolio approach in the margin squeeze test. The portfolio approach means that the identified flagship products will be tested as a combined group (portfolio). The subscription distribution is determined on the basis of Telenor's actual subscription distribution. The flagship products are given a relative weight that corresponds to Telenor's customer base.

At least one of the flagship products shall be a standalone product. If this product is not included based on the selection of the most commercially attractive products, the largest standalone product will be used in the portfolio.

3.5 Calculation of relevant revenue

All price elements, recurring and non-recurring, for the flagship products are included in the basis for the relevant revenues. Nkom will apply current prices at the time of the test. Non-recurring price elements (such as connection fees, for example) are normally distributed over a period corresponding to the average customer lifetime.

If voice services are part of the flagship products in the portfolio, the revenues from inbound call termination will also be included as part of the relevant revenues.

If the retail prices (listing rates) are discounted permanently or reduced temporarily in the form of promotions, such discounts will be taken into account for the current time period in the calculation of annualised, monthly revenues. The same rule also applies to promotions where individual price elements (for example, connection fees) are not charged or certain types of goods or equipment (for example, routers, modems) are provided free of charge. Discounts and promotions will be included in the margin squeeze test as a reduction in income. The monthly average discounts are calculated on the basis of the actual discounts and promotions that Telenor's customers have received in the last 12 months.

Principle 5

All the price elements for the flagship products included in the margin squeeze test are counted as relevant revenue. All relevant service revenues will be included, including recurring and non-recurring price elements.

If the retail prices (listing rates) are discounted permanently or reduced temporarily in the form of promotions, these discounts and promotions will be taken into account for the relevant time period in the calculation of the annualised, monthly revenues.

When determining the relevant income, Nkom may use further information provided by alternative providers or market data to complement the data provided by Telenor.

3.6 Relevant time period and test method

A margin squeeze test must be performed for a reasonable period of time. The test can be performed period by period or for multiple periods together. Period by period testing may use the financial year as the basis for analysis. This kind of approach compares revenues and costs as they arise for this period. This means that non-recurring costs and revenues will be included in the margin squeeze calculation for the year of payment or receipt, regardless of whether they are financially relevant to several periods.

In tests covering multiple periods, such as an approach focusing on discounted cash flows or a steady state, the test is performed once for the period in question. The test then requires that the costs and revenues generate a positive margin throughout the entire period being assessed.

According to the Recommendation, national regulatory authorities should consider the profitability of the flagship products on the basis of a dynamic multi-period analysis. Using a discounted cash flow approach, the cash flows for the retail products being assessed will be discounted.[11] The outcome of this approach is the net present value of the expected future cash flows for the service or product being tested. If the net present value is positive, delivery of the service or product generates value for the provider, whereas if the net present value is negative, delivery of the service results in a loss and a margin squeeze occurs. The relevant time period for this test is usually set in accordance with the estimated average customer lifetime. However, it is also possible to use a relatively long period that encompasses the entire product lifetime, or even multiple investment cycles.

In a steady state approach, costs and revenues are also broken down to a single time period. Costs and revenues are nevertheless allocated according to cost causation. This means that the investment costs are allocated according to their useful economic life. Where appropriate,

[11] For a comparison of the advantages and disadvantages of a discounted cash flow approach and period by period approach, see ERG (2009), page 14f.

non-recurring costs and revenues will also be allocated in accordance with the economic cost causation for the relevant time period, e.g. average customer lifetime or asset lifetime. Depending on the distribution, these amounts are first discounted to calculate the current value, and then distributed evenly over the lifetime using the annuity formula.

In a period by period approach, the margin squeeze test might reveal a margin squeeze in one period, and not in the next, even though nothing has changed in terms of costs, wholesale or retail prices, and distribution of customers. This will be related to a skewed distribution of non-recurring time costs and revenues over time.

Both a steady state approach and a discounted cash flow approach avoid this kind of accounting skew. This is especially important if large initial investments are required. By contrast, a discounted cash flow approach requires an estimation of the relevant parameters over a relatively long period of time.[12]

Nkom finds that a steady state approach is the most suitable approach in margin squeeze tests in Norway, because it provides information on margin squeeze for each individual period. At the same time, costs and revenues are properly allocated over time and discounted where appropriate. A steady state approach is very transparent and practical. A periodic margin squeeze test based on a steady state approach can also take market developments into account, as it provides Nkom with the opportunity to adjust subscription numbers, price changes, etc. in line with real market data instead of uncertain forecasts.

Principle 6

Nkom bases its margin squeeze tests on a steady state approach. Nkom finds this approach best suited since it provides information about margin squeeze for each individual period. At the same time, costs and revenues are allocated over time and discounted where appropriate. Furthermore, the method allows Nkom to adjust subscription numbers, price changes, etc. in accordance with real market data instead of uncertain forecasts.

3.7 Reference time frame

According to the Recommendation, the national regulatory authorities should identify an appropriate reference time frame for the margin squeeze test. The Recommendation states that an appropriate reference time frame is the period in which the end users contribute to covering two types of downstream costs, specifically:

- Downstream costs that are annualised according to a depreciation method and a useful economic life that is appropriate for the assets in question.

[12] See ERG (2009), page 15.

- Other downstream costs that are not normally annualised (typically sales and acquisition costs) and that the provider incurs to acquire customers and that should also be covered during the average customer lifetime.

Nkom understands the Recommendation to mean that the margin squeeze test must be designed such that it ensures that both costs that are annualised and costs that are not normally annualised are covered within the chosen reference time frame. In Nkom's opinion, the Recommendation does not provide specific guidelines on how categories of downstream costs are to be allocated when designing the margin squeeze test.

When carrying out a margin squeeze test based on a steady state approach, Nkom believes that it will be appropriate to annualise certain non-recurring costs, and that the average customer lifetime will be an appropriate reference time frame.

It is difficult to determine the precise average customer lifetime for fibre-based retail services. The Recommendation does not specify how average lifetime is to be calculated. Nkom has collected data on customer lifetimes for fibre from suppliers in the Norwegian market on several occasions. Reported lifetimes have varied considerably among the different providers and over time. There is also reason to assume that customer lifetime depends on whether the end customers buy only a broadband subscription, a double play subscription or triple play products as well as the level of competition in the retail market. In the absence of robust customer lifetime data for fibre-based retail services, Nkom has previously found it appropriate to refer to the customer lifetime for copper-based broadband services.

On the basis of information about the average customer lifetime for copper-based and fibre-based broadband subscriptions in Norway and other relevant market data, Nkom assumes an average customer lifetime for fibre-based broadband of 60 months in the margin squeeze model. This assumption means that the model does not assume a shorter average customer lifetime than that set by several regulators in Europe for fibre-based retail services. Nkom may set a different average customer lifetime if there is sufficient evidence to this end. In this case, Nkom will inform Telenor and alternative access buyers.

Principle 7

Nkom regards average customer lifetime as an appropriate reference time frame for the margin squeeze test.

The margin squeeze test will assume an average customer lifetime for fibre-based broadband for 60 months.

3.8 Relevant cost standard

The Recommendation suggests LRIC+ as the relevant cost standard.[13] This cost standard ensures that providers have all their incurred costs covered. LRIC+ is the change in total costs as a result of the production of an increment in the quantity of output plus a mark-up for the common costs and administrative costs for the service in question.

The LRIC+ standard is consistent with market entry decisions that require that all relevant costs are covered in the long term and can be calculated using bottom-up or top-down data.

In the margin squeeze model, Nkom will assume that all relevant costs are to be covered in the long term. The model will thus contain both variable and fixed costs. Nkom will collect cost information from Telenor and relevant alternative providers. In the model, fixed costs will be distributed over the corresponding lifetime.

Principle 8

In the margin squeeze model, Nkom will assume that all relevant costs are to be covered. The model will contain both variable and fixed costs. Fixed costs will be distributed over the corresponding lifetime.

3.9 Reasonable return on invested capital

The Recommendation does not set guidelines for reasonable return on invested capital, but it does specify a requirement that an efficient alternative operator that buys access ought to be able to economically replicate the SMP provider in the retail market.

The relevant return or margin in a margin squeeze context is usually identified indirectly using an approach with the weighted average capital cost (WACC) of the downstream operations. WACC represents the opportunity cost of capital invested in the business, and thus the return on the investment required to compensate for this opportunity cost. The margin between the retail revenues and the wholesale costs should be large enough that an efficient alternative provider can achieve an adequate return on invested capital.

[13] This is also in line with the BEREC Recommendation (2013), page 34.

Nkom will assume a WACC in the margin squeeze model based on Nkom's decision regarding the WACC for fixed networks at any time.

Principle 9

An efficient alternative provider ought to be able to achieve a reasonable return on invested capital. Nkom will assume a WACC in the margin squeeze model based on Nkom's decision regarding the WACC for fixed networks at any time.

3.10 Relevant downstream costs

Downstream costs can be divided into five different cost categories:

(1) Own network costs

(2) Costs of terminating voice traffic in other networks

(3) Other costs (regulatory, TV content, etc.)

(4) Retail costs

(5) Other common costs

(1) Own network costs

An efficient alternative provider's own network costs can be broken down into the following components:

- Customer premises equipment (CPE), i.e. fibre equipment
- Equipment at the point of co-location (IP switch, ports, ODF)
- Equipment maintenance and operating costs
- Backhaul and international capacity
- Operations for network services
- Capital costs of own infrastructure
- Common costs at the network infrastructure level

Network elements are dimensioned to represent the selected market share for the efficient alternative provider. In addition, an efficient network structure is assumed. Network equipment is depreciated according to the relevant useful economic life for the asset.

(2) Costs of terminating voice traffic in other networks

In the margin squeeze test, costs linked to terminating voice traffic in other networks are calculated on the basis of Telenor's reported volumes for calls and relevant prices. The relevant prices may be regulated or negotiated.

(3) Other costs (regulatory, TV content, etc.)

In addition to the above-mentioned downstream costs and retail costs, there may also be other relevant costs. Examples of these kinds of costs include expenses as a result of regulatory obligations and costs related to television content and Video on Demand (VoD). These types of costs will also be taken into account in the margin squeeze test.

(4) Retail costs

According to BEREC[14], retail costs include the following cost categories:

- Customer acquisition and retention
- Customer care
- Marketing and advertising
- Invoicing
- Salary and commissions for sales personnel
- Bad debts
- Deployed equipment (CPE) and distribution
- Product development and management
- Common retail costs

The Recommendation does not specify further splitting of retail costs. A natural approach would appear to be a category-by-category approach. This approach provides Nkom with detailed information so that we can assess, in combination with reference data or data from alternative providers, whether the submitted cost information is reasonable for an efficient provider offering similar retail services to Telenor.

(5) Other common costs

Other common costs are costs linked to administration and management that cannot be attributed to the individual services. Equi-proportional mark-up (EPMU) is the method that is generally used when modelling LRIC costs. A percentage is calculated as the ratio of total common costs to total incremental costs. Using this method, costs are evenly distributed across all relevant services using the same ratio. Nkom finds this method appropriate to calculate other common costs in the margin squeeze test.

[14] See BEREC (2014).

Principle 10

The following five types of cost categories will be used in the margin squeeze test:

(1) Own network costs

(2) Costs of terminating voice traffic in other networks

(3) Other costs (regulatory, TV content, etc.)

(4) Retail costs

(5) Common costs

For retail costs, a category-by-category approach will be used in line with the categories presented by BEREC.

Nkom will use an EPMU approach to include a mark-up for other common costs.

3.11 Relevant regulated wholesale products

Nkom will include all the price elements that an access buyer has to pay for when buying the relevant wholesale products in the margin squeeze test. This includes, inter alia, recurring and non-recurring costs, termination of service costs, service provisioning and service cancellation. Nkom will apply current prices at the time of the test.

Nkom will furthermore apply the highest volume discount that access buyers have achieved during the last 12 months in Market 3a.

Principle 11

Nkom will include all the price elements that an access buyer has to pay for when buying the relevant wholesale products in the margin squeeze test. This includes recurring and non-recurring costs, termination of service costs, service provisioning and service cancellation. Nkom will apply current prices at the time of the test.

Nkom will furthermore apply the highest volume discount that access buyers have achieved during the last 12 months in Market 3a.

4 References

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