Norwegian Communications Authority

Annex 1

Analysis of the market for access and call origination on public mobile telephone networks

1 July 2016

Summary

The Norwegian Communication Authority (Nkom) has previously issued decisions in the wholesale market for access and call origination on public mobile telephone networks (formerly market 15 - hereinafter referred to as the market for access and call origination on mobile networks) on 23 January 2006 and 5 August 2010.

This decision presents Nkom's assessment of whether there is still a need for sector-specific ex-ante regulation in the relevant market in the coming two to three years (three-criteria test) and an updated analysis of whether there are provider(s) with significant market power. The three-criteria test and the analysis of significant market power will provide the basis for applying sector-specific measures in markets in which a provider or providers with a significant market power is or are identified.

Chapter 1 contains a description of the background and framework for the analysis.

Chapter 2 contains Nkom's definition of the relevant market. After a new assessment which takes account of the market development, Nkom has found that the relevant market must include wholesale access in all public GSM, UMTS and LTE networks, and origination of voice, text messaging and data services for the following external access types:

- Access by national roaming
- MVNO access
- Service provider access

Both access to offer ordinary mobile services and access to offer machine-to-machine services (M2M services) are included. Co-location is included as a separate type of access within the relevant wholesale market. The geographical market is furthermore defined as Norway.

Chapter 3 provides an overview of the market development and operators on the supply and demand sides in the relevant market.

In Chapter 4, via the three-criteria test, Nkom has assessed whether the market is still susceptible to sector-specific ex-ante regulation. The three cumulative terms on which the assessment is based are:

1. The presence of high and non-transitory structural or regulatory barriers to entry.
2. The market structure does not tend towards effective competition within the relevant time horizon.
3. Competition law alone is insufficient to adequately address the identified market failure(s).

Nkom believes that the market for access and call origination on mobile networks continues to be characterised by high and non-transitory entry barriers in the form of very costly roll-out, a high percentage of sunk costs and substantial economies of scale for already established operators. On this basis Nkom has concluded that the first criterion has been met.

In the assessment of the second criterion, Nkom took account of structural changes and market behaviour since the previous analysis, and the impact this will have on the market dynamics within the time horizon of the analysis. In the retail market, Telenor has seen a small decline in market shares measured as the number of subscriptions since the previous analysis, but in terms of revenue the company's market share has increased slightly. Telenor had around 52 per cent of the number of subscriptions and 58 per cent of the total revenue at

the end of 2015. TeliaSonera's acquisition of Tele2 entailed that the biggest challenger of the two established operators became part of Telia Norge AS (Telia), and Telia has thereby increased its market share. Telia had 37 per cent of the number of subscriptions and 33 per cent of the revenue at the end of 2015. Overall, the two established operators control around 90 per cent of the retail market.

At network level, as of today there are two operators. After Telia's acquisition of Tele2, Telenor has a market share of 59 per cent of the traffic minutes, while Telia's share is 41 per cent. For data, the distribution is by and large the same. In Nkom's view, the development in market shares, both at retail and wholesale level, does not indicate that the market is tendering towards sustainable competition. On the contrary, the market has become more concentrated since the previous analysis.

ICE may become an aggressive operator in the retail market, based on the access agreement which the company has entered into with Telia, and traffic in its own network. However, Nkom does not have clear grounds to indicate that the company will be able to discipline the established network providers in the relevant wholesale market within the analysis' time horizon.

Several cases considered by Nkom recently indicate that Telenor is only disciplined to a little degree by other operators on the supply side in the relevant market. Rather, it seems that the sector-specific ex-ante regulation has been of significance to the establishment of agreements and the terms of access. In the assessment of the second criterion, Nkom has not found sufficiently clear evidence of market dynamics indicating that the market will tend towards sustainable competition without continued ex-ante regulation, and the second criterion is thereby fulfilled.

Reliable access to infrastructure is important to achieving the goal of sustainable competition in the market for access and call origination on the mobile network. Nkom believes that general competition law alone is not sufficient to achieve this reliability, and the third criterion is thereby also fulfilled.

On this basis, Nkom has concluded that the three criteria for sector-specific ex ante regulation are still fulfilled.

In Chapter 5, Nkom assesses whether one or several providers alone or together have significant market power in the relevant market; in other words whether any provider has economic strength to largely behave independently of its competitors, customers and consumers.

The assessment is based on the providers' market shares. Telenor's sustained high market share, both at retail and wholesale level, gives a strong indication that Telenor has significant market power alone. Nkom has therefore based the analysis on the criteria for individual dominance. The assessment of profitability, vertical integration and economies of scope support the conclusion that Telenor has significant market power. Nkom has also assessed whether there are disciplining factors which mean that the company nonetheless cannot act independently of competitors, customers and consumers within the time horizon of the analysis. Neither the assessment of buyer power nor potential competition indicate that there are sufficient disciplining factors.

On this basis, Nkom believes that Telenor can largely behave independently of competitors, customers and consumers during the period covered by the analysis, so that Telenor has significant market power in the wholesale market for access and call origination on mobile networks.

Contents

1 Background and framework for the analysis

1. The regulatory framework for electronic communications is based on five Directives adopted by the European Union (EU).[1] These Directives have been implemented in Norwegian law by Act no. 83 of 4 July 2003 relating to electronic communications (the Electronic Communications Act) and associated regulations, including the Regulation of 16 February 2004 on electronic communications networks and electronic communications services (the Norwegian Electronic Communications Regulation).

2. The regulatory framework must lay the foundation for the harmonisation of regulation in the EEA, limit entry barriers and facilitate sustainable competition for the benefit of users.

3. It follows from Sections 3-2 and 3-3 of the Electronic Communications Act, and Norway's obligations under the EEA Agreement, that identification of providers with significant market power must take place in accordance with the guidelines and recommendations prepared by the EFTA Surveillance Authority (ESA) under the new Framework Directive for electronic communications services:

- Guidelines on market analysis and the assessment of significant market power (hereinafter referred to as "the Guidelines")[2]
- Recommendation on relevant markets (hereinafter referred to as the "Recommendation")[3]

4. According to the Guidelines, an assessment of relevant markets and significant market power must be based on a market analysis. The assessment must be in accordance with competition law methodology. The Guidelines and the Recommendation, together with the provisions of the Electronic Communications Act, particularly Sections 3-1 to 3-3, will therefore form the legal framework for the market analysis.

5. ESA revised the original Recommendation[4] concerning relevant markets in 2008. The number of pre-defined markets for ex-ante regulation was then reduced from 18 to 7. However, the Commission has revised the list of relevant markets again and adopted a new Recommendation on 9 October 2014[5]. ESA has published an identical Recommendation for the EEA/EFTA countries 11 May 2016.

6. The wholesale market for access and call origination on public mobile telephone networks (previously market 15 - hereinafter referred to as the market for access and call origination on mobile networks) was one of the markets that was removed from the Recommendation in 2008. However, Nkom[6] is able to define markets departing from the

[1] Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services (Framework Directive); Directive 2002/20/EC on the authorisation of electronic communications networks and services (Authorisation Directive); Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive); Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive); Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications).

[2] EFTA Surveillance Authority Guidelines 14 July 2004.

[3] EFTA Surveillance Authority Recommendation of 11 May 2016 with the Commission's Explanatory Note.

[4] The EFTA Surveillance Authority Recommendation of 14 July 2004 was identical to the Commission Recommendation of 11 February 2003.

[5] COMMISSION RECOMMENDATION of 9.10.2014 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services.

[6] The Norwegian Post and Telecommunications Authority (NPT) changed its name to the Norwegian Communications Authority (Nkom) on 1 January 2015. In this draft decision, Nkom denotes the authority, including

Recommendation. For a market that departs from the Recommendation to be susceptible to sector-specific ex ante regulation, the three cumulative criteria (three-criteria test) specified in section 2 ff. of the Recommendation must be met.

1. The presence of high and non-transitory structural or regulatory barriers to entry.
2. A market structure which does not tend towards effective competition within the relevant time horizon.[7]
3. Competition law alone is insufficient to adequately address the identified market failure(s).

7. If the three criteria are fulfilled, a market analysis must be performed with a view to uncovering whether any service provider(s) has/have significant market power in the market. The term “significant market power” in the Norwegian Electronic Communications Act is very close to the competition law standard of “dominant position”.

8. In the document "Methodology for market analysis" (the methodology document) Nkom has elaborated on the criteria for the market analysis in certain respects. The methodology document is not legally binding, but expresses Nkom's understanding of the guidelines that Nkom is obliged to follow. The market analyses will therefore be undertaken in accordance with the views and assessments expressed in the methodology document. Should there prove to be discrepancies between the methodology document and the Guidelines or the Recommendation, the methodology document will be waived. The document in no sense regulates the Norwegian Competition Authority’s assessments in accordance with the Norwegian Competition Act. The methodology document is updated continuously, as the Guidelines and the Recommendation are amended. This analysis is based on the methodology document dated 11 June 2009.

9. Nkom has previously performed two analyses of the market for access and call origination on mobile networks, which are dated 23 January 2006 and 5 August 2010. In the analysis of 5 August 2010, Nkom performed the three-criteria test and concluded that the market was susceptible to sector-specific ex-ante regulation. Nkom also issued a new draft decision on 16 January 2014 with a related market analysis, which included the three-criteria test. Here, Nkom concluded that the market was still susceptible to sector-specific ex-ante regulation. The ongoing process of notification and determination of the decision was postponed, however, due to great uncertainty concerning relevant market conditions, including the outcome of the merger between Telia and Tele2's Norwegian activities. After the company merger was approved, subject to certain conditions, by the Norwegian Competition Authority on 5 February 2015, Nkom performed a new analysis and issued a new draft decision.

10. This decision will hereinafter be referred to as the market analysis and comprises Nkom's definition of the relevant market, an updated assessment of whether the three criteria are fulfilled, and an analysis of whether there are one or several providers with significant market power. The analysis is an annex to the draft decision in which Nkom imposes obligations on Telenor, which is assessed to have significant market power in the relevant market in question.

in references to decisions and processes applying to the period when the name was the Norwegian Post and Telecommunications Authority.

[7] The Recommendation uses the term “effective competition”. The Guidelines define this as a market in which operators with significant market power are absent, cf. section 19. This cannot be interpreted in an antithetical manner, i.e. that the presence of a provider with significant market power will prevent the market from becoming more effectively competitive. Odelsting Proposition No. 58 (2002-2003) p. 99 states *"If none of the providers has significant market power then there is assumed to be effective competition in the market".* The terms do not mean exactly the same, but Nkom nevertheless assumes that the terms will coincide for this purpose.

11. Market shares and other statistics in the analysis are based on Nkom's electronic communications statistics for 2015, unless otherwise specified.

12. The market analyses will be subject to regular review. In markets with frequent and comprehensive changes, such reviews will have to be carried out relatively frequently. These market analyses are therefore limited in the extent to which they are forward-looking, cf. section 20 of the Guidelines. This analysis has a time horizon of two to three years.

2 Definition of the relevant market

2.1 Market definition in general

13. In connection with the market analysis, Nkom must assess whether the markets predefined by ESA suit Norwegian conditions. It must also be assessed whether markets that are already regulated which are no longer included in the Recommendation are nonetheless susceptible to ex-ante regulation, on the basis of national conditions. On assessing whether the market is, in fact, susceptible to ex ante regulation in Norway, a definition of the product market and a definition of the geographical market must be given.

14. The definition of relevant markets must follow the same procedure as the market definition within competition law. However, in some cases, markets defined by the competition authorities may deviate from markets defined in ESA's Recommendation or by national regulatory authorities in accordance with Article 15, paragraph 3 of the Framework Directive[8]. The preparatory work on the Norwegian Electronic Communications Act furthermore makes clear that sector regulation can have a broader perspective for the market classification than competition regulation since it seeks to take further developments into account.[9]

2.1.1 The product market

15. The Commission has assumed that the natural starting point for identifying a market with a view to ex ante regulation is to define the retail market and then to derive the corresponding wholesale market. The Commission writes as follows in the Explanatory Note, p. 6:

> *"The starting point for the identification of markets susceptible to ex ante regulation is the definition of retail markets over a given time horizon, taking into account demand-side and supply-side substitutability. Having defined retail markets, which are markets involving the supply and demand of end-users, it is then appropriate to identify the corresponding wholesale markets which are markets involving the demand and supply of products to a third party wishing to supply end-users."*

16. The demand for services at wholesale level is naturally derived from the relevant market at retail level. Before definition of the relevant wholesale market, Nkom will therefore define the market for access and call origination on mobile networks at retail level.

17. The starting point for the definition of a relevant product market is an assessment of demand-side substitutability. Demand-side substitutability exists when two or more products in the market are, in the perception of the end-user, mutually exchangeable on the basis of characteristics, price and area of utilisation.

[8] Section 26 of the Guidelines and the Commission's Explanatory Note, p. 6.
[9] Odelsting Proposition No. 58 2002-2003, page 99.

18. If there is substitutability on the supply side, it may be relevant to consider this in the definition of the relevant market. Supply-side substitution will be relevant if it has the same immediate and direct effect as demand-side substitution. This assumes that, as a reaction to small, but significant and non-transitory changes in relative prices, the providers can redirect their production to the products or services in question, and market them in the short term without this entailing significant extra costs or substantial risk. If these conditions are met, the additional production will have a disciplining effect on the affected providers' competitive behaviour. Such immediate and direct effects will have equivalent effects to demand-side substitution.[10]

19. An acknowledged method of assessing substitutability is the "hypothetical monopolist test" (SSNIP[11] test), which seeks to find the most-delineated market in which a hypothetical monopolist can exercise market power. The SSNIP test is performed by assuming a marginal, but significant (in practice 5-10 per cent), non-transitory relative price increase for the relevant product. In isolated terms, the price increase will contribute to increasing the earnings of the hypothetical monopolist. However, the relative price increase can also be expected to lead to reduced sales of the relevant product. The key aspect of the SSNIP test is to assess the effect of the relative price increase on the revenue from the relevant product in order to evaluate whether the price increase will be profitable for the hypothetical monopolist. If the price increase leads to a loss of customers on a certain scale, this indicates that the product has close substitutes and that other products therefore belong to the same market.

20. The hypothetical assessment should be supplemented with actual information on behaviour on the supply and demand sides, to the extent that such information is available. In a retail market, factors such as the end-users' access to information, the costs of changing and other lock-in mechanisms should be taken into consideration on the demand side. On the supply side, account should be taken of a provider's actual potential to change production, as well as any regulatory conditions that prevent rapid market entry by competitors in the market.

21. The method depends on a significant amount of data that will often be difficult to provide. The Recommendation does not make use of the SSNIP test an absolute requirement of the market definition for the market analyses. The description of the SSNIP test in the Recommendation should be understood as a description of a procedure and a set of criteria for assessing the market definition. Other methods may therefore also be used. In the definition of the relevant product market in this analysis, Nkom has used the principles for the SSNIP test, but has not conducted a quantitative SSNIP test.

22. Products that don’t belong to the same retail market, but are related, might constitute a “closely related” product market. Significant market power in one market might strengthen the operator’s market power in another closely related market, according to the Electronic Communications Act article 3-1.

23. The purpose of the market definition of a wholesale market is to assess whether the access to substitution can contribute to limiting a hypothetical monopolist's opportunity to increase the price of a wholesale product by the buyers of the product choosing a related wholesale product. Not being able to demonstrate substitution between two products at the wholesale level will not necessarily be an indication that the hypothetical monopolist can price the various different services independently of each other. If there are other factors indicating

[10] Supplement to the Official Journal of the European Union, No. 28, 16.7.1998: Announcement by the EFTA Surveillance Authority regarding the definition of the relevant market within competition law in the European Economic Area (EEA), section 20ff.

[11] "Small but Significant Non-transitory Increase in Price". See the Guidelines, paragraph 40.

that a hypothetical monopolist cannot price the services independently of each other, there can still be reason to include the services in the same market.

24. One assessment criterion in market definition is also how the products are viewed by the operators on the demand side. If those demanding the products to a great extent view the pricing of the products on an overall basis, and it is therefore the overall price that has an impact on demand, any such common pricing constraint might indicate that the products are in the same market.

25. An approximation whereby the market is defined solely on the basis of substitution assessments can lead to products that are normally sold bundled and/or that cannot be used independently of each other, and must therefore be deemed to be closely complementary products, not constituting elements of the same market. A market definition based solely on assessment of demand and supply side substitution between, for example, access to the mobile network and origination of calls on the mobile network, will lead to these services not being part of the same relevant market. That products are not fully adequate substitutes, that they are complementary services and that the services are rarely consumed separately, may indicate that the definition of the relevant product market should be performed by identifying the services that are normally sold and consumed together.

26. The Commission opens up for other conditions to justify that products are included in the same market, even though this is not indicated by the substitution assessments. In the Commission's original Recommendation, the market for access and call origination on public mobile communication networks also included services that are not substitutable. In the Explanatory Note from November 2007, the Commission states that in some cases end-users may prefer to purchase a bundled product instead of purchasing the products separately, and that the bundled product is thus the relevant product market[12]:

> *"Communications companies provide a multitude of services to their customers, which are often sold as a bundle. In most cases the individual services in the bundle are not good demand-side substitutes for each other yet may be considered to be part of the same retail market if there is no more independent demand for individual parts of the bundle. On the supply side, bundling two or more components into one product is driven by savings in production, distribution and transaction costs, and the ability to improve the quality of the product. Bundling may also be related to the technology used where a given network can be configured to provide a large range of services."*

27. Reduced transaction costs from purchasing products together, plus the convenience of being able to receive many services via the same handset and SIM card, have been cited as factors for arguing that the bundled product constitutes the relevant product market.

28. However, the Commission emphasises that the bundled product will still not constitute the relevant product market if a sufficient number of end-users will purchase the products separately in the event of a marginal, but significant and non-transitory, relative price increase for the bundled product.

2.1.2 The geographical market

29. After the relevant product market has been determined, the geographical market is defined. In accordance with the Guidelines, paragraph 57, the geographical market may be defined as the area in which the relevant product is offered on virtually equal and sufficiently homogeneous competitive terms.

30. However, the Guidelines, paragraph 60, point out that geographical markets within electronic communications have traditionally been defined on the basis of the relevant

[12] Commission Explanatory Note ,13 November 2007, Chapter 3.2

network's area of coverage, as well as the effective boundaries (jurisdiction) of the legal regulation of the market.

31. Nkom can define regional or national markets. The jurisdiction for defining transnational markets is vested with the Commission and ESA.

32. It might make sense in the case of some product markets to divide them into geographical markets that are smaller than the nation-state, since there are local providers of the electronic communications services covered by the relevant product market, or to identify local variations in the competitive conditions.

33. BEREC[13] has drawn up "Common Position on geographical aspects of market analysis (definition and remedies)", which was published on 5 June 2014[14]. In this document, BEREC describes the recommended procedure for any geographical definition of the market.

34. If the SSNIP test suggests that there is sufficient demand and/or supply-side substitution between different parts of the country, this will be an indicator that it is not necessary to conduct a more detailed geographical analysis. Situations such as no products being offered that are priced differently or which are of different quality in different geographical areas, and that alternative networks have virtually national coverage, are also indicators that the competitive situation is sufficiently similar throughout the national market and that there is no need to conduct a more detailed geographical analysis.

35. The relevant question under the hypothetical monopolist test for geographical definition of the market is whether a marginal, but non-transitory price increase (5-10 per cent) in an area means that a sufficient number of end-users will move to a different area, or whether providers from other areas will begin to offer the product in the relevant area in response to the price increase, so that the price increase would not be profitable.

36. The Norwegian Electronic Communications Act applies presumptively to Norwegian land territory. In accordance with Section 1-3 of the Electronic Communications Act, cf. Regulation no. 882 of 4 July 2003, the Norwegian Electronic Communications Act also applies to Svalbard, Jan Mayen, the dependencies and Antarctica. In respect of Svalbard, exemptions have been made for Chapter 3 (significant market power), Chapter 4 (access) and Section 9-3 (consultation procedure).[15]. However, electronic communications on Jan Mayen, the dependencies and Antarctica are assumed to have very little significance for the market analyses Nkom carries out pursuant to the Electronic Communications Act.

37. In the following, references to Norway as a local jurisdiction refer to mainland Norway/Norwegian territory.

38. In Chapter 2.5, Nkom assesses whether there is a need for a detailed geographical analysis of the relevant market.

[13] Body of European Regulators for Electronic Communications (BEREC) was established under the Directive on 25 November 2009 and replaced European Regulators Group for electronic communications networks and services (ERG). In this analysis, BEREC is used to designate the group, also when there is reference to documents published under the ERG name.

[14] http://berec.europa.eu/eng/document_register/subject_matter/berec/regulatory_best_practices/common_approaches_positions/4439-berec-common-position-on-geographic-aspects-of-market-analysis-definition-and-remedies

[15] In Section 1, first paragraph, it is stated that the Norwegian Electronic Communications Act applies to Svalbard, cf. Section 3 of the Svalbard Act, but with the exception of Chapter 3 concerning significant market power, Chapter 4 concerning access, and Section 9-3 concerning consultation procedure.

2.2 Market definition in previous decision

39. In the analysis on which the current regulation of the market for access and call origination on mobile networks is based, the relevant product market at wholesale level was defined as:

- access and call origination (outgoing voice telephony) on public mobile networks at the wholesale level, including on 2G and 3G networks;
- access by prepaid cards/subscriptions and post-paid subscriptions;
- access for non-business customers/residential customers and business customers;
- inbound originating SMS volumes; and
- other mobile data services.

40. In the analysis, Nkom also found that the market did not include:

- access and origination on fixed networks;
- mobile broadband telephony; and
- international roaming.

41. The geographical market was defined as Norway.

2.3 Definition of the product market at retail level

42. As described in section 2.1.1, Nkom will first perform a definition of the relevant product market at retail level, and then derive the relevant product market at wholesale level. However, there is not necessarily a one-to-one relationship between the products in the relevant retail market and the relevant wholesale market.

43. The definition is based on the description of the market for access and call origination on public mobile communication networks in the original recommendations from ESA and the Commission, with the related Explanatory Note. Nkom also considered our assessments from previous analyses.

2.3.1 Bundled services

44. The end-users obtain access to the mobile network in order to make calls, receive calls, send text messages, and use data services for Internet access, etc. From the end-users' point of view there is thus no substitutability between connection to the mobile network and the aforementioned services. The end-users must, however, be connected to the mobile network and have access to the related services at the same time, in order to be able to use the mobile service. Access to mobile networks and the possibility to make use of the related services are sold as a bundled product. On this background Nkom believes that access to mobile networks and the possibility to make use of related services are in the same product market.

45. For some end-users, communicating via text message and data traffic may to a certain extent replace voice calls via the mobile network. As of today, however, text messaging and data are not fully substitutable for voice calls in the mobile network from a retail perspective. The fact that text messaging and data services are sold together to end-users, together with access to the mobile network, means that these services must be viewed as a bundled product with common price limitations.

46. Nkom's electronic communications statistics have shown that data traffic generated via mobile Internet access has been increasing strongly in the last few years. In 2009, the volume of data traffic related to ordinary mobile subscriptions was 397,727 GB. By 2015, the volume

had increased to 66 million GB, an increase by approximately 26 million GB from the previous year. Nkom expects continued growth in data traffic generated via mobile subscriptions in the coming years. Today, to a great extent the price of data traffic determines the market costs of a mobile subscription, since voice calls for domestic fixed and mobile networks and text messaging are often offered on an unlimited basis within packaged products. This means that prices for voice, text messaging and data must be viewed together.

47. On this basis, Nkom considers access to the mobile network, voice, text messaging and data to be part of the same relevant product market at retail level.

2.3.2 International roaming

48. At retail level, international roaming entails that the individual user can make and receive calls, send and receive text messages, and use data services via mobile phone outside the country in which the user has an established subscription. The opportunity to use a mobile phone abroad is normally sold together with the subscription for domestic use. [16]

49. As of today, international roaming is not a substitute for access and call origination of voice, text messaging and data services in national networks. These services have until recently been priced differently according to whether they are used domestically or abroad. However, as from 15 June 2017 new rules for international roaming will remove these price differences, so that it should not cost more to use a phone while travelling within the EEA than domestically. Some operators have already launched equal prices within EEA and at home for selected subscriptions. The new regulation is however only intended to apply to end-users during periodic travel abroad, and not for replacing national subscriptions with roaming services (permanent roaming). The rules' provisions for "Fair use policy" will be a measure for providers to prevent permanent roaming. In addition, during the period up to 15 June 2017, the Commission will assess the need for further measures to prevent this. International roaming will thus within the timeframe of the analysis not be a substitute for access and origination of voice, text messages and data services in national networks. On the other hand, the pricing of international roaming will be more closely linked to the national prices. A packaged product with consumption included must, for example, also apply to foreign travel without extra costs for end users.

50. In its original Recommendation, the Commission assumed that international roaming would, in a demand perspective, be assumed to constitute a separate retail market. In the revised Recommendation, however, it is assumed that international roaming is included as part of a wide retail market for mobile services, together with access, national and international calls and text messaging.

51. Nkom believes that the same conclusion as in the Commission revised recommendation must apply in Norway. International roaming is not a substitute for national subscriptions for end-users, but is closely related. Consumers expect to also be able to use their ordinary subscriptions during foreign travel. On the basis of the bundling of ordinary mobile subscriptions with international roaming, Nkom believes that international roaming is part of the relevant product market at retail level.

2.3.3 Access to mobile networks via various technological platforms

52. Another issue is whether in the definition of the relevant product market at retail level there is reason to differentiate in terms of the technology via which the relevant services are delivered. It is less important to the end-user whether the calls or the text messages sent are transmitted via GSM or the UMTS network. Mobile phones that support both of these technologies are common in the Norwegian market. At various times during the call, a single

[16] See information on the rules for international roaming at http://eng.nkom.no/market/telecom-services/regulations/international-roaming.

call can switch networks from GSM to UMTS, and vice versa. This takes place seamlessly, without the end-user noticing the switch. Access to the GSM and UMTS networks, respectively, must thus to a high degree be seen as substitutes, from the end-user's viewpoint. Access to such networks is also provided together and not as separate services. In Nkom's assessment, voice and text messaging via both the GSM and UMTS networks are therefore part of the same relevant product market at retail level.

53. Telenor ASA (Telenor) and Telia Norge AS (Telia)[17] increasingly offer access to data services in the LTE networks. The LTE networks are being expanded, and the coverage ratio is steadily increasing. In the auction on 2 December 2013, Telenor, Telia and ICE Communications AS[18] secured frequencies in the 800-MHz band that are suitable for the expansion of LTE. Telenor and Telia have implemented this band for LTE, which has increased the coverage ratio and increased traffic. ICE has also implemented this band in order to offer LTE networks to its mobile broadband customers. The 1800-MHz band, which was allocated together with the 800-MHz band, is also a relevant frequency band for LTE. The three aforementioned operators were also accepted for frequency resources in this band.

54. Access to data services in LTE networks is sold together with access to data in 2G/3G networks in ordinary mobile subscriptions. Both Telenor and Telia has mobile subscriptions which are differentiated according to data speed, but no separate subscriptions solely for LTE are offered. For the end-users to be able to use LTE for data services, this requires the end-user to have a handset which supports LTE in the frequency bands used for LTE in Norway. These handsets have been sold for a while, and the prevalence of handsets which support LTE is expected to increase in step with the expansion of LTE coverage.

55. Due to variations in the capacity for data transfer between GSM, UMTS and LTE networks, the quality of the services via the various mobile networks can be experienced differently. However, other factors besides technology may also affect the experienced speed and quality. For example, the number of users connected to the relevant base station and the topographical conditions where the user is located will be of significance.

56. End-users can also gain LTE access via dedicated mobile broadband subscriptions. Dedicated mobile broadband subscriptions are offered with access to GSM, UMTS and LTE, depending on the coverage offered in the area where the end-user is located.

57. LTE-Advanced (LTE-A), or 4G+ entail an upgrading of LTE where the transmission capacity is increased. LTE-A makes it possible to utilise several blocks on the same frequency, or blocks on different frequencies, at the same time. This e.g. means that the theoretical transmission capacity can be doubled, compared to LTE. Both Telenor and Telia have upgraded their mobile networks to LTE-A.

58. For end-users the services via LTE-A will be substitutable with services via the platforms included in this analysis. LTE-A is also backward compatible with older technologies, so that if the end-user moves out of a coverage area for LTE-A, the ongoing service will be continued within the framework of the technology, with coverage at any time. If the individual services in LTE-A were to lead to doubt as to whether they are substitutable in a retail perspective, this would have to be decided on the basis of a concrete assessment once the services have been launched.

59. In summary, Nkom does not find any basis to define separate product markets, depending on technology. LTE is offered both as part of ordinary mobile subscriptions and as part of access to data networks in mobile broadband subscriptions. Nkom therefore assumes

[17] Telia Norge AS is Telia AB's Norwegian activity. The company changed name from TeliaSonera Norge AS 1 March 2016. Until January 2011 the company's name was NetCom.

[18] Telco Data, which was accepted for the frequencies, has later changed name to ICE Communications Norge AS, as a sister company to ICE Norge AS. For the sake of simplicity, the companies are hereinafter referred to as ICE.

that access to mobile services via LTE networks is substitutable with mobile services via other technologies, from a demand perspective. The fact that access to LTE is sold together with access to GSM and UMTS also indicates that there is no basis to differentiate between these technologies. Nkom therefore finds that mobile services in LTE networks are part of the relevant product market at retail level.

60. In the same way, Nkom assumes that access to mobile services via LTE-A for an end-user will be substitutable with mobile services via other data carriers, or which are sold bundled with these services. If there is a need for more detailed assessment of special services via LTE-A, this would have to take place once the services had been launched and implemented.

2.3.4 Access and origination on fixed networks

61. Access and call origination are also offered via fixed networks, including broadband telephony. Broadband telephony is a telephone service that uses VoIP technology[19] to transfer voice calls via IP networks. Nkom has previously concluded that broadband technology arranged for all-to-all communication must be considered to be a public telephone service and thereby subject to the Electronic Communications Act's regulation of such services.[20]

62. In recent years, the total mobile-originated voice traffic has increased steadily, at the expense of voice traffic in fixed networks. In the first half of 2005, mobile-originated traffic amounted to just over 26 per cent of total voice traffic from landline and mobile phones. The corresponding figure for the first half of 2015 was 84 per cent. There is thus a significant degree of substitution from landline to mobile phone use.

63. However, the assessment focus of this market definition is whether a marginal, but significant and non-transitory, price increase for mobile telephony would entail a switch to landline telephony on a scale which made the price increase unprofitable. Norwegian end-users' patterns of use today do not indicate this scenario to be likely, however. Growth in both voice traffic and data traffic from mobile phones indicates that end-users will not replace their mobile phones and the services the mobile phones make available, with landline phones.

64. To a certain degree, broadband telephony can give mobility via Nomadic use. Nomadic use means that it is possible to connect via different physical fixed connection points. Users of these services may potentially obtain access to incoming and outgoing voice communication from any Internet access point throughout the world. During a call, however, the user is bound to the location, and thus does not achieve the same mobility as with mobile phones.

65. On this basis, Nkom finds that landline telephone services are not included in the relevant product market at retail level.

2.3.5 Mobile broadband telephony

66. When IP technology is used for calls via mobile handsets, this is often called mobile broadband technology.

67. Operators such as NextGenTel AS (the Telio brand) offer mobile broadband telephony in Norway. These solutions have normally required a program or application to be installed on the mobile phone. The mobile phone must also have an Internet connection. Some solutions require the end-user to be within an area with an available wireless access point (WLAN). Other services can also be used on accessing data traffic via mobile networks. Nkom is not

[19] VoIP (Voice over IP) involves digitisation and compression of voice in IP packages. These IP packages are transmitted via IP networks. The SIP (Session Initial Protocol) signalling protocol is used to find the correct recipient and to set up and disconnect the actual call.

[20] See Nkom's "Regulation of broadband telephony pursuant to the Electronic Communications Act" of 14 June 2006.

aware that there are currently any solutions for handover of voice between access via WLAN and mobile network (2G/3G network) during one and the same call. It is indicated, however, that this will probably be possible on the introduction of VoLTE, cf. Chapter 2.3.6.

68. A solution for mobile broadband telephony using WLAN does not give the same mobility as traditional mobile telephony and will therefore not be an adequate substitute from a retail perspective.

69. Broadband telephony solutions for mobile phones that can be used via the mobile network give the end-users the opportunity for greater mobility. Due to other conditions, however, in many cases these solutions will not be considered to be substitutable with traditional mobile telephony. If a solution for mobile broadband telephony cannot use mobile numbers, many end-users will not experience it as a substitute for traditional mobile telephony either, for example for end-users who are accustomed to an existing mobile number and who cannot transfer this number.

70. For solutions for mobile broadband telephony to be allocated eight-digit mobile numbers, the services must be described as full mobile telephone services. Nkom's document for the principles for allocation and use of numbers for land mobile services (the 4- and 9-series) for mVoIP and other new services indicate the requirements which must be fulfilled in order to be able to use mobile numbers for mobile broadband services.[21] One of the requirements made of a full mobile telephone service is that the end-user must only need to relate to one provider in order to receive the mobile telephone service, i.e. the customer must not need to have a separate subscription for access to land mobile networks (e.g. mobile broadband) in addition to a subscription for the voice and text messaging service.

71. On this basis, Nkom believes that mobile broadband telephony for which the use of mobile numbers is not permitted is not part of the relevant product market at retail level. The data traffic generated by VoIP via the mobile network is, however, part of the relevant product market.

2.3.6 VoLTE

72. Voice via LTE, called VoLTE (Voice over LTE) has been launched in several countries. VoLTE entails that voice traffic is transmitted as IP packages, like broadband telephony, as described above. The end-user will not have to install their own application to be able to use VoLTE, but must have a mobile phone which supports the technology. Most new mobile phones support VoLTE. However, end-users with older handsets will have to replace them, and it will therefore take several years for mobile phones which support VoLTE to be generally used by end-users.

73. For the end-user, VoLTE will among other things entail voice quality as HD voice (better sound quality and background noise is dampened), faster connection time, better battery capacity and 4G speed available for other services during a call.

74. VoLTE will also allow for handover of calls between wireless networks (WiFi) and mobile networks.

75. Telenor launched VoLTE during the winter 2016[22]. Their customers with new phones will only need to upgrade the mobile operating system and then make calls as normal. The mobile phone will choose whether voice is to be transmitted via LTE or 2G/3G, depending on which communication type gives the best connection. The prices will not change if the customer uses voice via LTE rather than traditional voice service.

[21] http://www.nkom.no/marked/nummerforvaltning/nummerforvaltning/nummer-for-landmobile-tjenester/_attachment/15744?_ts=14a387ec1c5
[22] https://www.telenor.no/privat/dekning/4g-tale.jsp?icid=p-151211_privatforside_4G-Tale_tile

76. On this basis, Nkom believes that voice via LTE in ordinary mobile subscriptions is substitutable with voice via 2G/3G for end-users, provided they have handsets which support the service.

77. Nkom thereby assumes that VoLTE is a service that is included in the relevant product market.

2.3.7 Machine-to-machine communication

78. Machine-to-machine communication (M2M) in mobile networks consist of automated or semi-automated exchange of voice, text messaging or data services between machines, and is a communication carrier that is necessary for a number of services. M2M communication services over mobile networks differ significantly from services that are offered via ordinary mobile subscriptions intended for communication between people. M2M communication via the mobile network is e.g. used to transmit information on stock inventories, automatic meter reading of power consumption, holiday cottage heating systems, alarms, emergency calls from vehicles and for making transactions via payment terminals.

79. From a retail perspective, voice, text messaging or data traffic for M2M-purposes via the mobile network will not constitute a substitute for voice, text messaging or data via ordinary mobile telephony subscriptions, since M2M is not used for communication between people. On the supply side, it is uncertain how quickly and at what price production can be switched from M2M to traditional mobile subscriptions. On this background, there is no basis to claim that supply side substitution will have sufficient effect on sale of traditional mobile subscriptions for these products to be considered to be part of the same market.

80. On this basis, Nkom believes that M2M communication via the mobile network is not part of the relevant retail market. A more thorough assessment follows in chapter 2.3.12.

2.3.8 Pre-paid subscriptions/cards and post-paid subscriptions

81. Both pre-paid and post-paid subscriptions give the end-user access to the mobile services which are part of the relevant retail market. On both the supply and demand sides, there is a high degree of substitutability between the two different subscription types at retail level. Flat-rate subscriptions whereby the subscription price is pre-paid, and only use beyond what is included in the package is post-paid, also entail that the distinction between pre-paid and post-paid is to some extent being eroded. On this basis, Nkom finds that the two product types are part of the same relevant market at retail level.

2.3.9 Business and residential subscriptions

82. Business and residential customers in principal require the same mobile services which were an important reason why Nkom in the two previous analyses have concluded that business and residential subscriptions are part of the same retail market. Meanwhile Nkom has indicated that there may be different competitive conditions in the two segments. ESA pointed out in the previous recommendation that it was uncertain whether households and businesses will be in the same market for mobile services. Nkom will in the following section do a new assessment on whether business and residential subscriptions are substitutable from the demand and supply side.

83. Business customers will to a larger extent require more complex and compound services than residential customers. This kind of services includes among others solutions for unified communications and switchboard solutions. Business customers will often also require fixed telephony services as a part of a total communication solution. Business customers have also other requirements to customer service, for example in terms of availability. Medium and large businesses normally negotiates own customized contracts that may include volume discounts. In the public sector contracts are entered into after public tenders.

84. Products offered in the residential market are on the other hand more standardized regarding characteristics and price. This means that in many cases business customers will not be interested in switching to residential subscription after a small but significant price increase. Sole proprietorships and small businesses would probably to a larger extent than medium sized and large businesses, be willing to choose residential subscription rather than business subscriptions. High penalties for early termination of contracts and longer contract terms are however often applied in the business market, making it less attractive to switch.

85. For residential customers there will not be an option to switch to business subscriptions since this requires that you have an organization number. Demand-side substitution indicates therefore that there is a reason for distinguishing between business and residential subscriptions.

86. If a provider wants to shift its production from the residential to the business market, it sets other requirements of knowledge about technological and market conditions to meet the requirements of more complex and partly customized services. Targeting the business market implies a far more comprehensive level of managing public tenders, contract negotiations, customer service and support. Such a change in market focus involves increased investments and increased costs. At the same time it must be noted that many business customers are in a contractual binding period, and thus it can be costly for a new operator to acquire these customers. In the opposite direction, providers who want to shift its production from business customers to residential customers, presumably have to increase their marketing expenses considerably for instance through television and cinema advertising to reach the mass market.

87. Network owners offer usually services to both residential and business customers. However, MVNO providers and service providers generally prefer to concentrate on one segment.

88. Table 1 shows the market shares in mobile telephony for residential and business segments in 2015, measured by the number of subscriptions and revenues.

		Telenor	Telia	Others
Residential	Subscriptions	49 %	44 %	7 %
	Revenue	52 %	43 %	4 %
Business	Subscriptions	60 %	16 %	24 %
	Revenue	68 %	15 %	17 %

Table 1 Market shares in mobile telephony for the residential and business segment in 2015 measured by the number of subscriptions and revenue.

89. The table shows that Telenor is the largest provider in both the residential and business segments, respectively 49 and 60 percent market share by the end of 2015, measured by the number of subscriptions. In the retail market Telia has relatively large proportion of the number of subscriptions, 44 percent by the end of 2015. The share is a little lower in terms of turnover. Lycamobile and Chili Mobil are the largest providers in the category Others, with approximately to 2 percent market share each. These providers are not present in the business market.

90. Telia is neither present in the business market to the same extent as in the residential market, the provider has 16 percent of the number of subscriptions in the business market. On the other hand, a higher proportion of other providers are present in the business market than in the residential market. Phonero, TDC and ICE are the largest alternative providers with respectively around 14, 4 and 3 percent market share. However, these providers have much lower market share based on turnover than if the number of subscriptions are the basis for calculating market shares.

91. Different presence of providers in the two segments indicates also that the competitive situation is different in the two segments.

92. On the basis of the above assessments Nkom believe that there are reasons for defining two separate retail markets, respectively, for business and residential subscriptions.

2.3.10 Conclusion concerning the retail market

93. Nkom has concluded that the relevant market at the retail level includes access, call origination, origination of SMS, other mobile data services and international roaming on public GSM and UMTS networks. Mobile services in LTE networks are also included. The relevant product market includes access by prepaid subscriptions / card and post-paid subscriptions. The retail market can be split into a business segment and a residential segment and are from now on referred to as the retail markets for bundled mobile services. Dedicated mobile broadband subscriptions and M2M communication services are not included in these retail markets.

2.3.11 Mobile broadband

2.3.11.1 Generally about the retail market for mobile broadband

94. Nkom believes as mentioned above that dedicated mobile broadband subscriptions are not a sufficient substitute for traditional mobile subscriptions consisting of voice, SMS and data. However, as voice over LTE (VoLTE), cf. chapter 2.3.6, become more widely available, the borders between the services could fade out.

95. From the supply side, the question is whether it will be relatively simple for an operator to switch from offering dedicated mobile broadband subscriptions to offering traditional mobile subscriptions. In such case, the underlying technology will be of significance. For a provider that bases its production of mobile broadband mainly on LTE, the introduction of voice via LTE will probably make such switching simpler than before. Yet this still requires the end-customer to have a handset which supports the technology and relevant frequency bands. Supply-side substitution will thereby probably take place to a greater extent over time. However, within the timeframe of the analysis Nkom does not believe that there will be sufficient supply side substitution.

96. Nkom has on this basis concluded that dedicated subscriptions for mobile broadband is not part of the same retail market as traditional mobile telephony and thus not within the retail markets as defined in chapter 2.3.10.

97. Dedicated mobile broadband subscriptions are produced in the same way as data services over ordinary mobile subscriptions, and constitutes as a starting point a separate closely related retail market.

98. The figure below shows the development in number of subscriptions for dedicated mobile broadband.

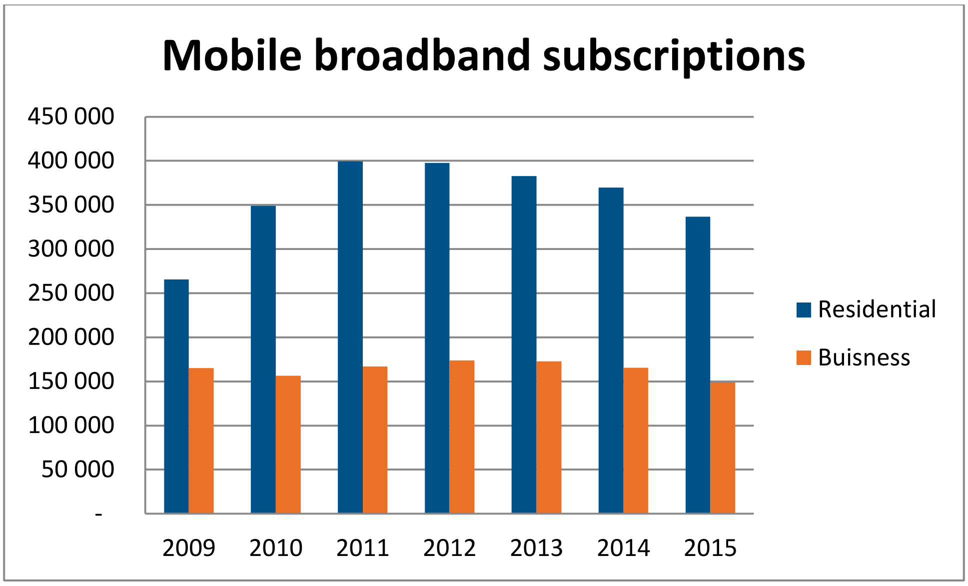


Figure 1 Development of the number of subscriptions for mobile broadband in the period 2009 to 2015.

99. The number of mobile broadband subscriptions increased each year until 2011. Since then there has been an annual decline. At the end of 2015 there were 486,000 subscribers, and 31 percent of these were business subscriptions.

100. The revenues from dedicated mobile broadband subscriptions amounted to approximately 1.25 billion in 2015. Revenues where nearly unchanged since 2014.

101. The figure below shows the market shares based on the number of subscriptions for mobile broadband.

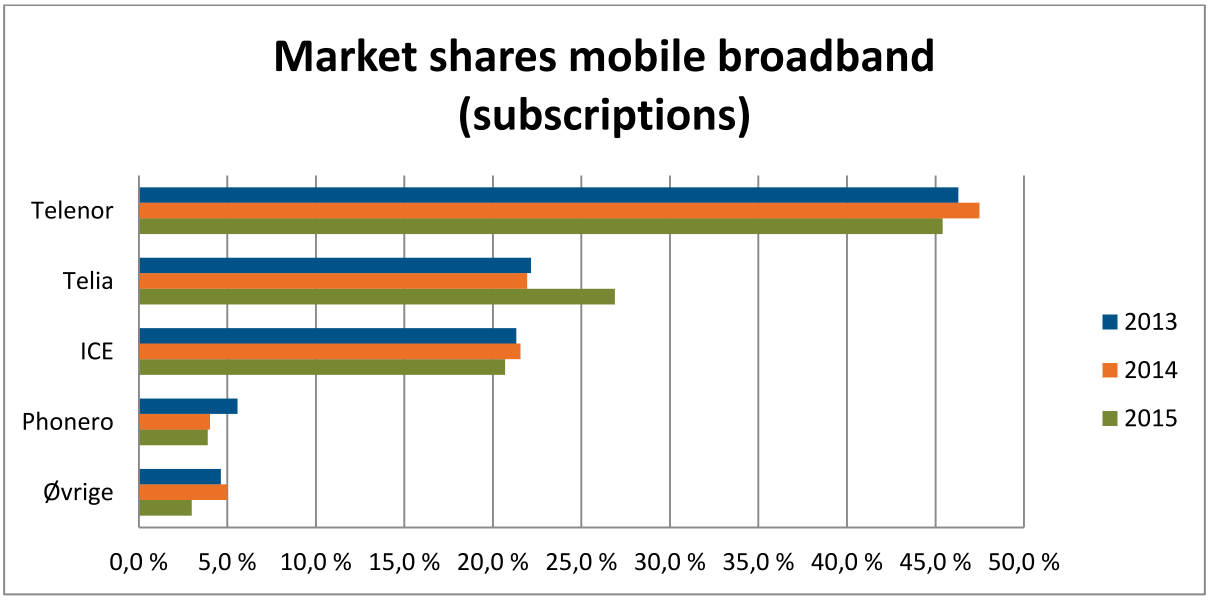


Figure 2 Development of market shares based on mobile broadband subscriptions for the period 2013 to 2015.

102. At the end of 2015 Telenor had just over 45 percent of the number of mobile broadband subscriptions. Telia was the second largest provider with more than 26 percent (after the acquisition of Tele2). ICE has had a stable market share in recent years at around 21 percent. Overall, these three players have over 93 percent of the number of subscriptions in this segment at the end of 2015. Other providers have only in modest degree managed to get an entry into this market.

103. From Nkom's point of view it will especially be data traffic over ordinary mobile subscriptions and fixed broadband which can have a disciplinary effect on mobile broadband. To which extent the retail market for mobile broadband is subject to disciplinary effects from these services are assessed below.

2.3.11.2 Disciplinary effects from ordinary mobile subscriptions

104. Data traffic over ordinary mobile subscriptions represents an increasing part of the total data traffic. Until 2013 dedicated mobile broadband subscriptions amounted to the largest share of data traffic, meanwhile at the time being most data traffic is generated from ordinary mobile subscriptions. The figure below shows this.

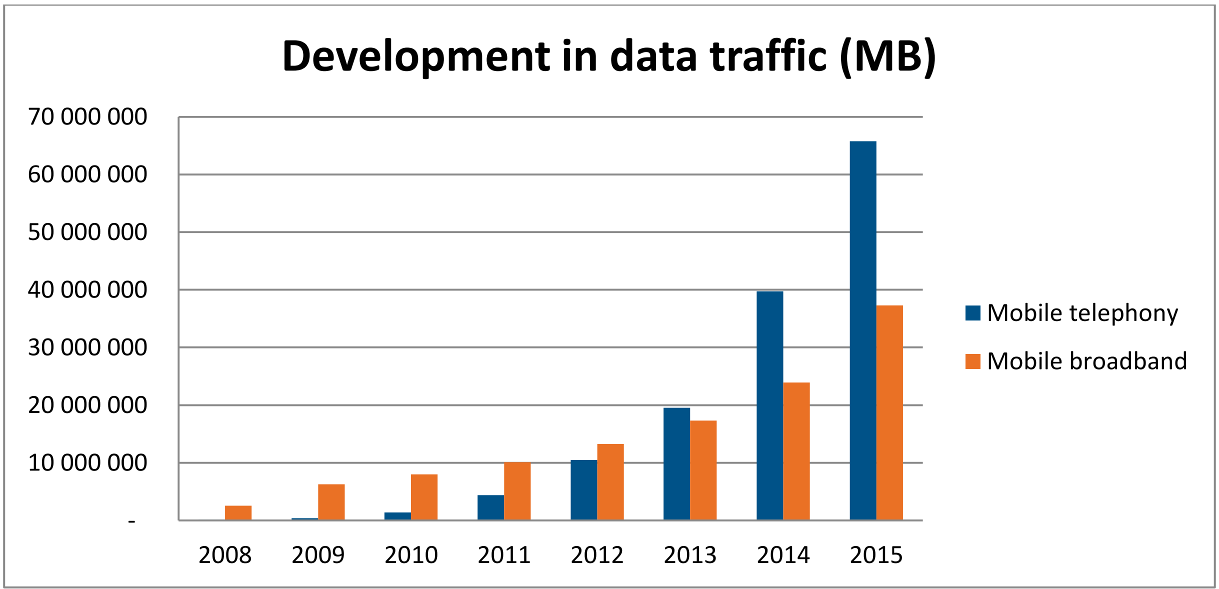


Figure 3 Development in data traffic for ordinary mobile telephony subscriptions and special subscriptions for mobile broadband.

105. More than 66 percent of the increase in data traffic from 2014 to 2015 was related to ordinary mobile subscriptions, and of the total traffic in 2015 63 percent was related to ordinary subscription. This can indicates a degree of substitution from dedicated mobile broadband subscriptions to data traffic over ordinary subscriptions.

106. It used to be large price differences per GB, where unit prices were much higher for ordinary subscriptions than for mobile broadband. This has evened more out, and as of today there is relatively little difference in unit price per GB for example for 20 to 25 GB per month. However mobile broadband subscriptions normally have much higher included data volumes than ordinary subscriptions. Telenor's mobile subscriptions include up to 60 GB per month while mobile broadband include up to 80 GB per month. Telia's mobile subscription includes up to 20 GB, while their mobile broadband include up to 200 GB. Nkom believes that the differences in the products characteristics meet different needs from end users. The providers will in Nkoms view have incentives to continue to distinguish between ordinary mobile subscriptions and mobile broadband.

107. There are also major differences in consumption patterns between mobile broadband and data traffic over ordinary subscriptions. The chart below shows the average consumption per user per month for mobile broadband and ordinary mobile subscriptions.

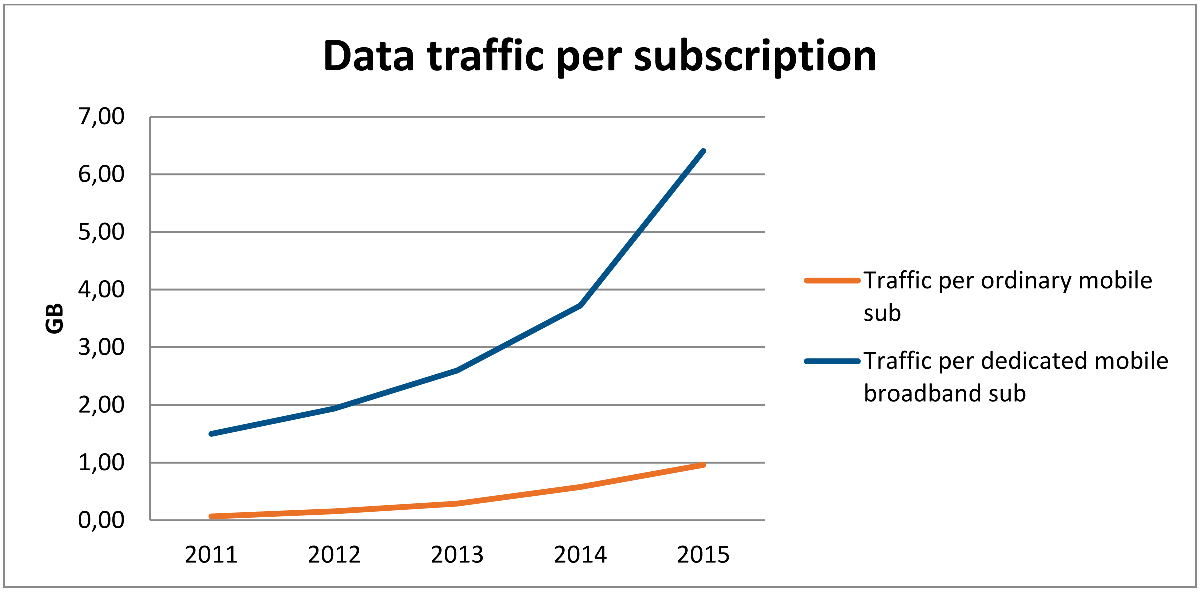


Figure 4 Development in data traffic over ordinary mobile telephony subscriptions and special subscriptions for mobile broadband.

108. The figure shows that mobile broadband customers use far more data in average per user than the average mobile customer of ordinary mobile subscriptions. Probably it should be taken into account that there are some mobile customers that use little or no data traffic over ordinary mobile subscriptions and thus pulls down the average. The consumption patterns among those who actually use mobile data, is probably more equally than in the figure.

109. These trends support the assessment that mobile broadband and data services based on ordinary mobile subscriptions meets different needs from end users. The trends also indicate a certain degree of increasing substitution form mobile broadband to ordinary mobile subscriptions. This suggests that the supply of ordinary mobile subscriptions has a diciplining effect on mobile broadband in the next years. At the same time there are still differences in product characteristics and use, that entails that the products cannot be considered to be substitutes during the timeframe of the analysis.

2.3.11.3 Disciplinary effects from fixed broadband

110. 81 percent of Norwegian households had fixed broadband at the end of 2015. The number of subscriptions exceeded 2 million this year. By comparison, there were around 486,000 mobile broadband subscriptions. This corresponds to less than 25 percent of the total number of subscriptions for fixed broadband.

111. The possibility of mobility constitutes an essential distinction between mobile and fixed broadband. Most end users with mobile broadband, has probably acquired this in order to explore the possible mobility. Therefore it is unlikely that a sufficient number of end users would switch from mobile to fixed broadband after a small but significant price increase.

112. Mobile broadband has often been acquired for cabins and holiday homes where fixed broadband connection have not been available or that it would be too expensive compared to its intended use.

113. There are also significant differences in consumption patterns between fixed and mobile broadband. Fixed broadband has normally unlimited amount of data and higher speeds

than mobile broadband, which also has limitations on monthly data volume. This implies that consumption would normally be far higher for fixed than for mobile broadband.

114. Against this background Nkom finds that fixed broadband to a limited extent will have a disciplinary effect on mobile broadband and those services are thus not substitutable from an end user's perspective.

2.3.11.4 Segmentation between residential and business

115. Like ordinary mobile subscriptions there are, several reasons why residential and business subscriptions are not substitutable to such an extent that they can be considered being in the same market. Residentials cannot buy business subscriptions, and business customers will in many cases not wish to purchase residential subscriptions, considering the requirements for available customer service, the ability to connect to multiple devices and to negotiate customized deals etc.

116. The presence of various providers in the residential and business segment also entail the competitive conditions for mobile broadband to be different in the two segments. The figure shows the market share based on subscriptions and revenues for residential and business mobile broadband subscriptions.

		Telenor	Telia	ICE	Others
Residential	Subscription	45 %	32 %	22 %	2 %
	Revenue	43 %	34 %	22 %	1 %
Business	Subscription	47 %	16 %	18 %	19 %
	Revenue	50 %	14 %	29 %	8 %

Table 2 Market shares for mobile broadband 2015.

117. The figure shows that Telenor is the largest provider of both residential and business subscriptions. Almost only Telia and ICE are present in the retail market in addition to Telenor. In the business market, other operators have close to 20 percent of the number of subscriptions, but a far lower proportion of turnover. It is mainly Phonero and TDC that constitutes "Others" in the business market.

118. Therefore Nkom believe there is a basis for defining two separate retail markets for mobile broadband, respectively, for business and residential subscriptions.

2.3.11.5 Conclusion

119. Nkom believe that dedicated mobile broadband subscriptions constitute a closely related market to the retail market which is defined in chapter 2.3.10. The market is to some extent disciplined by data traffic over ordinary mobile subscriptions and to a lesser extent by fixed broadband. The disciplining effects from ordinary mobile subscriptions are expected to increase. However in Nkoms view, the effect will not be sufficient to within the timeframe of the analysis to include mobile broadband in the same retail market as ordinary mobile subscriptions. Nkom believes there is a basis to divide the retail market for mobile broadband in a residential and a business market.

2.3.12 Retail market for machine-to-machine communication in mobile networks

120. As already described above, Nkom believes that subscriptions for M2M communication in mobile networks is not substitutable with ordinary mobile subscriptions and therefore not part of the relevant retail market which is defined in chapter 2.3.10. M2M-services via mobile networks are however closely related to the relevant retail market and are produced basically with the same input factors as ordinary mobile services that are included in the market.

121. M2M communication via the mobile network has become more prevalent in recent years. At the end of 2015, almost 1.22 million SIM cards were used for M2M communication. High volume increase for M2M-services is further expected, among others due to the upcoming obligations for all Norwegian households to have a power meter that automatically reports usage to the supply company within 1. January 2019.

122. Within the next two to three years, the retail market for M2M communication in mobile networks is expected to mainly consist of businesses that uses these services in advanced measures and control systems, within transport, trade industry, healthcare and manufacturers providing equipment for “smart homes”.

123. Telenor offer today two retail M2M products via the mobile network, M2M Basis and M2M Total. Both have a monthly fee and variable prices per SMS and per MB.

124. Nkom believes that it is important to facilitate competition for providing M2M services in mobile networks in the Norwegian market. As of today, Telenor is the absolute largest operator with more than 90 percent market share, Telia is the next operator with 4 percent market share measured in number of SIM-cards, while Com4 and Phonero have just above 1 percent each.

125. On the basis of the aforementioned, Nkom is of the view that the retail market for M2M communication via mobile networks constitute a separate retail market which is closely related to the retail market defined in chapter 2.3.10.

2.4 Definition of the derived wholesale market

2.4.1 Access to mobile networks for buyers of wholesale products

126. Access to mobile networks is a precondition for operators wishing to offer mobile telephony services to end-users. While mobile network operators (MNO) themselves control all of the infrastructure necessary to offer mobile network services to end-users, other operators will depend on being able to buy access at wholesale level, to be able to offer such services.

127. There are various means of accessing mobile networks at the wholesale level. The type of access that an access buyer wishes to use will generally depend on the extent to which the access buyer controls its own infrastructure. Four different types of access can generally be identified:

> 1) National roaming. This type of access is relevant for operators with their own frequency resources that have rolled out coverage in individual areas, but need to be able to buy access to mobile networks in areas where they do not themselves have radio coverage.
>
> 2) MVNO access. A buyer of MVNO access is referred to as a virtual network operator. An MVNO has its own core network and controls interconnection with other providers of telephony services, but does not control its own frequency resources and does not have its own radio network.
>
> 3) Service provider access. This has been a relatively common access type in Norway and entails that the access buyer does not control its own infrastructure.
>
> 4) Co-location: This form of access implies that a provider of mobile services within the relevant wholesale and/or retail market can request for access to place equipment in for instance masts an

128. All of the network operators in the Norwegian market also offer access for own service provider activities, also called "self-supply".

129. Nkom will also assess which access types are part of the relevant product market at wholesale level.

130. As stated above, buyers of wholesale access have various needs in terms of access to infrastructure, and they therefore require various access products. In contrast to service provider access, e.g. MVNO access assumes that the buyer has its own systems for e.g. interconnection. In contrast to the two other types of access, access via national roaming requires that the buyer also has frequency resources available. The fact that the various types of access reflect different needs, and entail different technical solutions, indicates that the various access types are not full substitutes for each other.

131. Overall, the production of the services offered at retail level still requires the same input factors. The differences lie in how the access buyers control these themselves to varying degrees. The services offered to end-users by access buyers are also the same (voice, text messaging and data), irrespective of the type of access. This indicates considering the various access types as part of the same relevant wholesale market.

132. New operators wishing to offer mobile services at retail level often wish to invest on a step-by-step basis ("the ladder of investment"). The current regulation of the market for access and call origination is intended to facilitate this opportunity to gradually climb the investment ladder. Tele2 and Phonero (formerly Ventelo) are examples of providers that have moved between various access types. This also indicates a certain degree of substitution on the demand side.

133. On the basis of the aforementioned, Nkom considers the relevant product market at wholesale level to include national roaming, access for MVNOs and access for service providers, including the network operators' own service provider level. The wholesale market includes access via the same technological platforms as the definition at retail level comprises, i.e. GSM, UMTS and LTE networks, including LTE-A. In terms of data transfer speeds, the market definition does not set any limits, but includes the speeds that can be achieved within the decision period using the aforementioned technologies.

134. Nkom believes that co-location is a form of access that naturally belongs in the market for access and call origination on mobile networks. Access to co-location in existing sites is especially important for newcomers building a mobile network. The close relation between access for national roaming and co-location, makes Nkom to conclude that co-location is a part of the relevant wholesale market.

135. With regard to internal sale ("self-supply"), Nkom refers to Chapter 3.3 of the Commission's Explanatory Note[23], the Recommendation of 9 October 2014 and BEREC's report from March 2010[24]. BEREC's report primarily discusses the regulators' treatment of self-supply in the wholesale market for broadband access (market 5), but also the treatment of self-supply in other markets. The report concludes that a majority of the European regulators take self-supply into consideration in both market definitions and the assessment of significant market power. Nkom therefore finds it necessary to include self-supply or use in order to give a correct picture of the market and relative strength at the wholesale level. Access that is supplied to MNOs' internal service provider level is therefore included in the same market as access bought by external providers.

2.4.2 Services at wholesale level

136. For buyers of wholesale products to be able to offer attractive services in the relevant retail markets, the access product must include voice, text messaging and mobile data

[23] http://ec.europa.eu/digital-agenda/en/news/explanatory-note-accompanying-commission-recommendation-relevant-product-and-service-markets

[24] http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/?doc=171

services. The access products that are currently offered by the established network owners, via purchase of service provider access, MVNO access and national roaming, comprise voice, text messaging and data in mobile networks.

137. If a service provider is to offer access to mobile data services with the help of an access agreement with another network owner[25] than the provider of voice and text messaging, this will require the services to be provided on different SIM cards. In Nkom's assessment, a solution whereby an end-user has to change SIM card to be able to use the various groups of services is not a full alternative to a mobile subscription which gives access to all services on the same SIM card.

138. At retail level, Internet access via the mobile networks is also offered as dedicated mobile broadband subscriptions, independently of voice telephony and text messaging, cf. the definition of the product markets in Chapter 2.3.. At wholesale level, however, the input factors used to offer data traffic in traditional mobile subscriptions are the same as to offer dedicated mobile broadband subscriptions. Mobile broadband products are not offered as a separate product at wholesale level. The access price for mobile data traffic is not related either to how the product is offered in the retail market.

139. If access is sold bundled with voice, text messaging and other data services at wholesale level, these services should be included in the same relevant product market.

140. In the aforementioned, Nkom has found that international roaming is part of the relevant retail markets for bundled mobile services. At the wholesale level, foreign network operators may require international roaming. International roaming constituted a separate market at wholesale level in the original Recommendation from the Commission and ESA. The experience gained by the national regulatory authorities and BEREC in conjunction with market analyses in this market showed, however, that it was not possible to address the competition problems in this market on an effective basis at national level. In 2007, the Commission therefore initiated a separate regulation for international roaming. This regulation was continued and expanded in new regulations in 2009, 2012 and 2015.[26] On this basis, Nkom believes that international roaming is not part of the relevant product market at wholesale level.

141. On the basis of substitution assessments, Nkom has found that M2M communication via the mobile network is not part of the relevant retail markets for bundled mobile services. At wholesale level, however, the input factors that are necessary to offer M2M services in the retail market are to a great extent the same as are necessary to offer ordinary bundled mobile services. Providers of M2M services in the retail market will thus to a great extent require the same services at wholesale level (both voice, text messaging and data services) as providers of ordinary mobile services. From a demand perspective, the wholesale products are thus substitutable.

142. There is also reason to assume that, in a forward-looking perspective, in some elements of the retail market M2M services will to a greater extent be sold together with ordinary subscriptions for voice, text message and data services. These circumstances advocate that access to M2M services be included in the relevant wholesale market.

143. On the basis of the aforementioned, Nkom finds that access which makes it possible to offer M2M services via the mobile network is included in the relevant wholesale market. M2M services can also be offered via other technologies, but Nkom does not see a need for any

[25] Experience from the Norwegian market shows that there are very limited opportunities to achieve access agreements with several network owners. There are a few examples, however, of service providers having parallel access agreements with several network owners.

[26] For more information, see http://eng.nkom.no/market/telecom-services/regulations/international-roaming

closer assessment of these technologies, since in this respect the relevant retail product is the bundled product consisting of voice, text messaging and data in mobile networks.

144. In addition, in principle all services offered to end-users in relation to voice, text messaging and data, and which are achieved via GSM, UMTS and LTE networks, are included in the relevant wholesale market. This includes voice via LTE.

145. Future services that can be achieved within the aforementioned technological platforms (the GSM, UMTS and LTE networks) will furthermore as a clear starting point be part of the relevant market. However, substitutability cannot be assessed until the services have been launched and the characteristics are known. If doubt should arise concerning future services as to whether they are part of the relevant market, this will have to be determined on the basis of a concrete assessment.

2.5 Definition of the geographical market

146. As stated in Chapter 2.1.2, geographical markets within electronic communications have traditionally been defined on the basis of the relevant network's area of coverage, as well as the effective boundaries (jurisdiction) of the legal regulation of the market. The markets have thus been viewed as national.

147. The right to use allocated frequencies varies in terms of whether they also include Svalbard in addition to the mainland.[27] As stated in Chapter 2.1.2, however, Chapter 3 of the Norwegian Electronic Communications Act concerning significant market power, Chapter 4 on access and Section 9-3 on a consultation procedure, do not apply to Svalbard. The market can thereby be defined in relation to Svalbard.

148. Different pricing or different product quality for wholesale services in various areas of the country are elements that might advocate division into several geographical markets. In Nkom's opinion, there are no material geographical differences with respect to either product quality or pricing in the Norwegian market. The fact that retail prices for mobile telephony are the same throughout the country and that mobile customers naturally move around, also indicates that the relevant market should not be divided into several local or regional sub-markets.

149. In Nkom's opinion, there are no diverging competitive conditions in stable and clearly defined parts of the country which indicate that a geographical division of the market is necessary. For this reason, Nkom believes that no further analysis is necessary regarding the question of whether the market should be divided geographically, and that a national approach to market definition and analysis is well-founded.

150. Nkom thus maintains that the geographical market for access and call origination on mobile networks is mainland Norway.

2.6 Conclusion concerning market definition

151. The relevant wholesale market includes wholesale access in all public GSM, UMTS and LTE networks, and origination of voice, text messaging and data services for the following external access types:

- Access by national roaming
- MVNO access

[27] In some cases there are separate licences for Svalbard

- Service provider access

152. Access to offer ordinary mobile services, access to offer mobile broadband and access to offer M2M services are included.

153. Access delivered to MNOs' internal service provider level ("self supply") is included in the same market as access purchased from external parties.

154. Co-location is included in the relevant wholesale market as a separate form of access.

155. The geographical market is defined as mainland Norway.

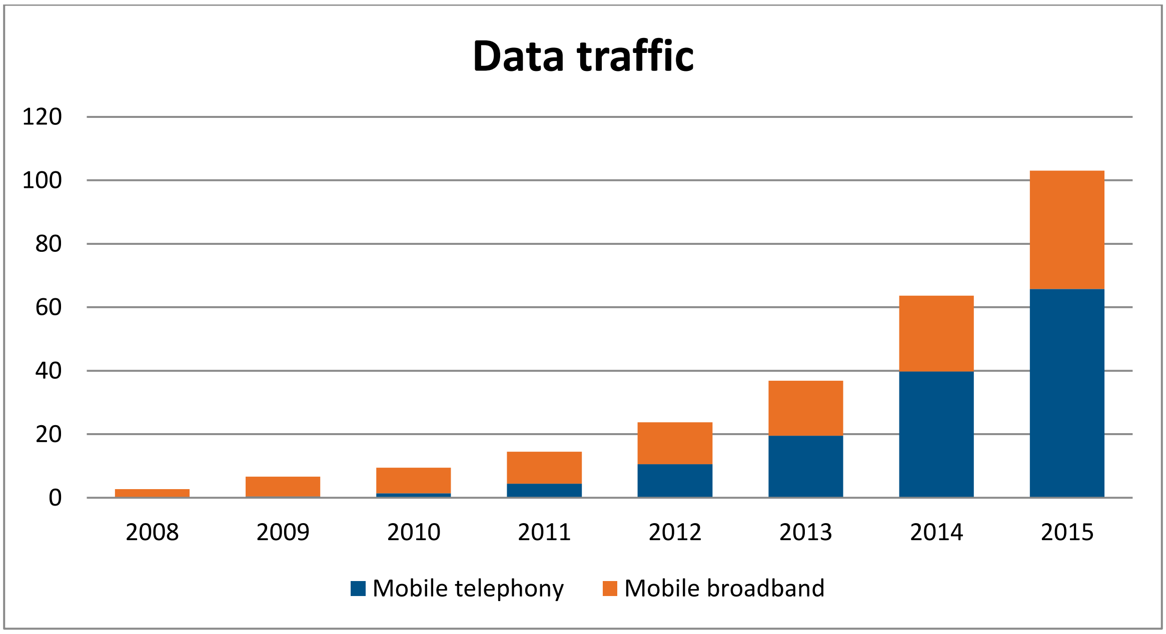
3 Overview of market development and market operators

156. Since the previous market analysis, the retail market has been characterised by sustained strong growth in data traffic, a transition to flat-rate products, and higher speeds and better coverage for mobile data. In this Chapter, Nkom gives a more detailed description of these central development trends in the retail market. Then an overview is given of the operators in the market.

3.1 Strong growth in data traffic

157. Nkom's electronic communications statistics show a strong increase in data traffic since the previous market analysis. The total data traffic (overall from ordinary subscriptions for mobile telephony and mobile broadband) exceeded 103 million GB in 2015. This is more than 16 times as much traffic as in the previous analysis.[28]

158. Figure 5 below presents the total volume of data traffic and growth in the last five years, distributed on dedicated mobile broadband subscriptions and ordinary mobile telephony subscriptions.



[28] In accordance with Nkom's electronic communications statistics for 2009, the total data traffic was 6.76 million GB.

Figure 5 Development in data traffic in the period from 2008 to 2015.

159. Most of the data traffic was previously generated from dedicated mobile broadband subscriptions. This share is falling, however, and traffic from ordinary mobile subscriptions accounted for around 66 per cent of the total data traffic in 2015. Flat-rate products and increasing sales of smartphones have been an important reason for this development.

160. There is little doubt that data will be an increasingly more important part of the services in the relevant market. Ericsson estimates annual growth in mobile data traffic of 45 per cent in the period from 2015 to 2021.[29]

3.2 Flat-rate products

161. Since Telenor launched the Komplett product portfolio in the spring of 2011, most providers have to a great extent switched from offering subscriptions based on unit pricing to offering subscriptions based on flat rates. The subscriptions which were launched during 2011, included a given traffic volume (voice, text messaging and data) at a fixed price. Only consumption in addition to what was included in the package was invoiced retroactively, based on unit prices for voice, text messaging and MB. According to Telenor, the transition to flat-rate products has contributed to increasing the average revenue per customer (ARPU).

162. In May 2013, Telia launched the Smart product portfolio which included unlimited use of voice, text messaging and MMS, where the price was solely determined by the size of the data volume included. Telia marketed the new products as a contribution to simplifying the price structures in the market.[30] Telenor and other providers quickly followed up by launching equivalent products.

163. The emergence of flat-rate products means that family and friend products are of less significance to the competition in the retail markets than in the previous analysis. To the extent that a flat-rate product contains so much traffic that the customer can also call or send text messages to family and friends within the package, the family and friends concept is of little significance.

164. With regard to mobile broadband (in the sense of mobile broadband access sold separately from traditional mobile subscriptions), the development since the previous market analysis has also been for packages to become larger and the range of packages to increase.

3.3 Over-The-Top services

165. The strong increase in the use of smartphones has paved the way for Over-The-Top (OTT) services such as Skype, Facebook, WhatsApp and many more, also in the mobile network. These services are probably important contributors to the extensive growth in data traffic from mobile phones. With these services, voice and messaging services can be delivered irrespective of network and by other operators than the traditional mobile operators. The OTT operators generally have other business models than the traditional telecom companies, which among other things is significant to how they price their services. There are typically no current charges related to their voice and messaging services. Global operators such as Google, Apple and Microsoft can thus take over services that have previously been important sources of revenue for mobile providers. The range of OTT services is expected to

[29] http://www.ericsson.com/res/docs/2015/mobility-report/ericsson-mobility-report-nov-2015.pdf

[30] http://www.insidetelecom.no/artikler/nextgentel-kjoper-kvantel/133121

continue to grow. This threat has undoubtedly exerted pressure on mobile operators with regard to future revenue.

166. To protect themselves from a loss of revenue, mobile providers in several countries have blocked services such as Skype for certain subscription types. Customers will then have to buy a more expensive subscription to be able to use the Internet without these limitations. Individual Norwegian mobile providers have previously stated in the media that they will also assess the introduction of such restrictions. As far as Nkom knows, however, no Norwegian providers have introduced this blocking. In several contexts Nkom has expressed how blocking e.g. Skype for some subscription types would be a breach of the Norwegian guidelines for network neutrality which Nkom has drawn up in collaboration with the consumer authorities and the industry.

167. The traditional mobile providers have referred to several possible strategies in order to meet the threat from OTT providers, cf. the wish expressed to introduce blocking of certain types of OTT services. However, it now seems that flat-rate packages have been an important instrument in this context. By including unlimited amounts of voice and text messaging in the subscription price, and thereby setting the subscription price solely on the basis of the size of the data package, the threat of free voice and text messaging from OTT providers is not as strong. Large portions of the Norwegian providers' customer base have now switched to these flat-rate packages. For both Telenor and Telia the focus on data traffic has been a clear strategy and in several contexts Telia has referred to itself as a data company.[31] Chapter 4.3.9 evaluates the potential competition from OTT operators in more detail.

3.4 Coverage, capacity and speed

168. Network coverage, capacity and speed have received greater marketing attention in recent years. These parameters may be a way of standing out from other providers in a market in which services are otherwise relatively homogeneous and price pressure is high. Both Telenor and Telia use coverage actively in their marketing of products at retail level. Both providers have made considerable investments in their networks in recent years, in order to improve capacity and coverage.

169. Telenor writes on its website that the company is building the best mobile and states that they invest more than NOK 4 billion annually in their network, in order to offer the best capacity, speed and coverage.[32] The company also promises that 99.8 per cent of the population will have 4G during the spring of 2018.

170. Via its commitment to the coverage block in the 800-MHz band, Telia has undertaken to expand the mobile broadband via 3G or 4G to 98 per cent of the population before the end of 2018. The company wrote on its website in November 2015 that they are building Norway's fastest mobile network and that 95 per cent of the population had gained access to 4G.[33] Telia has previously stated that the aim is for 98 per cent of the population to have access to 4G before the end of 2016. The company's "coverage boost" can be followed closely on their website.

171. A report from Ericsson[34] states that "network performance" is the most important driver of customer loyalty. Extent of coverage, capacity and speed are of twice as much significance for customers' loyalty as which price plans are offered, and improved customer service.

[31] http://www.mobilen.no/artikler/netcom-blir-et-dataselskap/133140

[32] http://www.telenor.no/privat/dekning/

[33] https://netcom.no/dekning/dekningsnyheter/artikkel/-/journal_content/56_INSTANCE_Zlb4/10156/2885877

[34] Ericsson Mobility Report, June 2013.

172. On several occasions, Telenor has expressed how marketing its coverage is an important parameter of competition for the company. When Telenor in December 2012 made a complaint to the Norwegian Consumer Ombudsman (CO) concerning OneCall's claim to be "just as good - just cheaper" the worst aspect, according to the company, was that the marketing spread misleading coverage information. [35] Telenor later in this instance also expressed how the coverage position is especially important for the company.[36]

3.5 Operators in the market

173. In the relevant wholesale market, a distinction can be made between operators that are providers of wholesale products, and buyers of wholesale products. All of the operators are providers in the retail markets.

3.5.1 Operators on the supply side

174. Telenor and Telia have GSM networks (GSM 900/1800) covering virtually all of Norway. In addition, both companies have UMTS networks, but with a somewhat lower coverage ratio than for GSM, and LTE networks which are being developed. Both of the companies operate as network operators, service providers and content providers and must thus be viewed as vertically integrated companies.

175. Telenor owns much of the electronic communications infrastructure in Norway, as fixed access networks, and as transport networks for transmission capacity, etc.[37] Telenor holds owner interests in a number of mobile companies in Europe and Asia. In the relevant wholesale market, Telenor offers access to national roaming, MVNO access, service provider access and co-location. In the Norwegian retail market, the company has the brand names Djuice, Talkmore and Dipper, in addition to its own brand name.

176. Telia Norge AS is Telia Company AB's Norwegian activity[38]. The company changed name from NetCom AS in January 2011. TeliaSonera also has mobile activities in several countries in Europe and Asia. The company covers the majority of the areas within the electronic communications sector.[39] The company has operated with the brand names NetCom and Chess in the Norwegian market. NetCom changed name to Telia from 1 March 2016.

177. In 2007, Tele2 Norge AS (Tele2) and Network Norway established the network company Mobile Norway AS (Mobile Norway), in which they each owned 50 per cent. In the autumn of 2011, the Swedish parent company of Tele2 (Tele2 AB) acquired Network Norway.

178. At the end of 2013, their network covered 75 per cent of the population, based on licences in both the 900-MHz band and the 2GHz band. Tele2 and Network Norway also had national roaming agreements with Telia and Telenor, respectively, to be able to give their end-users coverage throughout the country. However, the licences in the 900-MHz band expired on 31 December 2013, and Mobile Norway had to conclude its activities in this band within nine months of this date.[40] The remaining frequencies in the 2GHz band were not sufficient to continue operation of the network. The company thus could no longer operate its activity as a network owner. At this time, neither Tele2 nor Network Norway had wholesale customers. In

[35] http://www.insidetelecom.no/artikler/telenor-til-frontalangrep-pa-one-call/130133

[36] http://www.insidetelecom.no/artikler/telenor-seiret-over-one-call/137485

[37] A description of Telenor is found inter alia at http://www.telenor.no/om/.

[38] TeliaSonera AB changed name to Telia Company AB in April 2016.

[39] A description of Telia can be found at http://www.Telia.com/sv/om-oss/

[40] Tele2 leased frequency resources from ICE, however, so that the company could continue to use its own network up to 1 March 2015.

the retail market, the company operated with the brand names OneCall and MyCall, in addition to Tele2/Network Norway.

179. On 4 July 2014, Telia Company AB entered into an agreement with Tele2 AB for the acquisition of all shares in Tele2's Norwegian activities. The merger was approved by the Norwegian Competition Authority on terms set in a decision dated 5 February 2015.

180. So far, Telia is continuing the OneCall and MyCall brands, while the Tele2 brand has been phased out. The customer base under the Network Norway brand was sold to ICE as a condition for the approval of the merger. ICE does not use the Network Norway name, however, but sells all services under the ICE brand.

3.5.2 Operators on the demand side

181. ICE was established in 2003 and has offered mobile broadband in the retail market, based on its own network with CDMA technology in the 450-MHz band. The company has more than 75 per cent geographical coverage in this network.[41] The number of base stations using these frequencies is limited and they are designed to produce mobile broadband in areas that are characterised by scattered settlements and holiday properties. During 2015, ICE replaced its CDMA network with LTE and transferred its mobile broadband customers to this network. As of today there are no mobile handsets to support this frequency band, so that the network can only be used for dedicated mobile broadband.

182. ICE is owed by the American company Access Industries. At the frequency auction on 2 December 2013, the company was granted frequency resources in the 800-, 900- and 1800-MHz bands.

183. In addition to the sale of Network Norway's customer base, the conditions for the Norwegian Competition Authority's approval of Telia's acquisition of Tele2 were that ICE would take over parts of Mobile Norway's infrastructure, that the company would have access to national roaming and service provider access from Telia, access to co-location and the opportunity to acquire three Tele2 stores. In addition, Telia undertook to offer MVNO access for Norwegian operators.[42]

184. In November 2014, ICE thus entered into an agreement with Mobile Norway to buy a given number of base stations and options for an additional number. These base stations were also upgraded to solely constitute a 4G network.

185. Voice and text messaging was until last summer not a part of the retail offer from ICE. On 15 June 2015, however, ICE launched traditional mobile products based on the access agreement at Telia. All traffic to and from mobile phones was via Telia's network until June 2016. Before this, only dedicated mobile broadband subscriptions had traffic in ICE’s own network. However, the company started in June 2016 the process with moving parts of the traffic from mobile telephony customers to their own network. ICE had by the end of 2016 rolled out LTE in the 800-MHz band to cover 40 per cent of the population.

186. The company plans to offer voice via LTE (VoLTE) in the future.[43]

187. As of today ICE is not a provider in the wholesale market. Reference is made to Chapter 4.3.8 for a more detailed assessment of ICE's opportunities to be an operator on the supply side in the relevant wholesale market, within the analysis' time horizon.

188. Today, four providers purchase MVNO access. Since the autumn of 2005, TDC AS (TDC) has had an MVNO agreement with Telenor. In the same year, Ventelo also entered into

[41] https://www.ice.no/private/about/

[42] http://www.konkurransetilsynet.no/nb-NO/aktuelt/nyheter/20152/teliasoneras-kjop-av-tele2-tillates-pa-vilkar/ and https://www.dn.no/nyheter/2015/02/05/0902/TeliaSonera/grnt-lys-for-mobilkjpet

[43] http://e24.no/privat/neste-aar-faar-telenor-og-netcom-en-skikkelig-konkurrent-aa-bryne-seg-paa/23335292

an agreement on MVNO access with Telenor. Ventelo was bought up by Phonero AS (Phonero) with effect from 1 January 2015. In December 2009, Lyca Mobile entered into an MVNO agreement with Telia and launched commercial services in the Norwegian retail market in April 2010. Com4 AS (Com4) entered into an agreement with Telia in December 2012. The company sells subscriptions for machine-to-machine communication.

189. An MVNO invests in its own core network infrastructure (e.g. HLR/HSS, Switch, SMSC, MMSC, GGSN, IMS and EPS) and has all the technical systems necessary for interconnection with other network operators. In contrast to providers that require national roaming, an MVNO does not have its own frequency resources or its own radio network. As an MVNO, the provider will have its own IMSI code (International Mobile Subscriber Identity Code), its own network code (MNC) and offer its own subscription (SIM card) and services to end-users. An MVNO can also be a provider in the wholesale market by having its own service providers.

190. A service provider agreement gives providers without their own network a non-exclusive right to offer, market and deliver services to end-users via pre-paid cards or subscriptions. The end-user solely has a contractual relationship with the service provider. The service provider's calls are routed according to the network operator's or the MVNO's interconnection agreements and roaming agreements with other parties.

191. In the previous market analysis, there were less than 20 service providers in the market. Since then, the number of providers has been reduced, including as a consequence of bankruptcies, buy-ups and mergers. The total number of service providers was 15[44] at the end of 2015. Several of these are part of the Altibox collaboration.[45]

3.5.3 Summary concerning market operators

192. Table 3 summarises the development in the number of operators at various levels in the Norwegian market.

	2006	2010	2015
Network owners	Telenor Telia	Telenor Telia Mobile Norway	Telenor Telia ICE
Providers with national roaming agreements	Teletopia	Network Norway	ICE
Providers with MVNO access	Tele2 TDC Ventelo	Tele2 TDC Ventelo	Com4 Lyca Mobile Phonero TDC
Independent service providers	Less than 20	Less than 20	15

Table 3 Providers and buyers in the market for access and call origination on mobile networks.

193. As in the previous analysis, it is still only Telenor and Telia that offer products in the wholesale market exclusively based on their own infrastructure. In the previous analysis,

[44] Banzai 4G AS, Chili Mobil AS, Hello AS, Itum AS, Klepp Energi AS, Lyse Fiber AS, Mobitalk AS, NextGenTel AS, Notodden Energi AS, NTE Marked AS, PepCall AS, Phonect AS, Primafon AS, Telipol AS and Xito (Xito was phased out in May 2016)

[45] http://www.altibox.no/omaltibox/historien

Mobile Norway constituted the third network. As of today, ICE has taken over parts of their network and is becoming established as network owner in the relevant market.

194. Two new MVNO providers have become established in the market since the previous analysis, while the number of service providers has been reduced.

4 Three-criteria test

195. The market for access and origination on mobile networks is not included in ESA's current recommendation on relevant markets (the "Recommendation"). For a market that departs from the Recommendation to be susceptible to sector-specific ex ante regulation, three cumulative criteria (the three-criteria test) must be fulfilled, cf. Section 2 of the Recommendation The three cumulative terms are:

1. The presence of high and non-transitory structural or regulatory barriers to entry.
2. The market structure does not tend towards effective competition within the relevant time horizon.
3. Competition law alone is insufficient to adequately address the identified market failure(s).

196. The starting point in assessing whether the three criteria are fulfilled will be based on a "Modified Greenfield Approach". This means that the criteria will be assessed on the condition that the relevant market covered by the market analysis is not subject to ex ante regulation. A key issue will thus be the extent to which the current market conditions can be attributed to current obligations. Regulation in adjacent markets must be taken into account.

197. According to recital 7 of the Recommendation, the most central indicators in the assessment of the first and second criterion will be equivalent to those used in an analysis of whether there are operators in the market with significant market power.

198. Nkom will hereafter assess whether the three criteria are fulfilled for the Norwegian market for access and call origination on mobile networks, and thereby whether the relevant market is susceptible to sector-specific ex-ante regulation.

4.1 Further details of the performance of the three-criteria test

199. In 2008, BEREC published recommendations concerning the performance of a three-criteria test. One of the issues considered in the report is the evidence related to whether the criteria are fulfilled.[46] In the report, BEREC finds that the burden of proof in the three-criteria test cannot be deemed to be more stringent than the burden of proof to find significant market power in markets that have been part of a previous recommendation. BEREC furthermore points to how there is a mutual relationship between the first two criteria and analysis of whether there is a provider with significant market power, so that finding such a provider will often be sufficient to conclude that the first and the second criterion are fulfilled. BEREC also finds that the requirement of probability that the three-criteria test is fulfilled in previously recommended markets matches the requirement of the probability of finding, or not finding, providers with significant market power in markets that are still part of the Recommendation.[47]

[46] ERG (08) 21 ERG Report on Guidance on the application of the three criteria test. See: http://www.ictregulationtoolkit.org/en/toolkit/docs/Document/3661
[47] Page 5 of the report.

200. In BEREC's view, the burden of proof is lighter for markets that were previously part of the recommendation than for markets that were not included in the recommendation. BEREC bases this view on how the reasons for removing a market from the Recommendation are not necessarily applicable at national level. BEREC furthermore assumes that in order to prove that the three criteria are fulfilled, in principle it is sufficient to show that the considerations which justified removing the market from the Recommendation do not exist at national level.[48]

201. Like BEREC, Nkom believes that there is a clear mutual relationship between the first two criteria in the three-criteria test and the analysis of significant market power. Nkom furthermore agrees that finding a provider with significant market power may indicate that the first two criteria in the three-criteria test can be deemed to be fulfilled. Due to e.g. robustness, and without anticipating the assessments under the analysis of significant market power, Nkom has, however, found it most appropriate to undertake a complete, explicit analysis of all of the three criteria.

202. On performing the three-criteria test, Nkom's starting point is today's market conditions, in a forward-looking perspective. With regard to burden of proof requirements, Nkom assumes that on performing the three-criteria test there is no basis to deviate from the general starting point of an overweight of probability.

4.2 First criterion: High and non-transitory entry barriers

4.2.1 General comments on the first criterion

203. The first criterion to be investigated is whether there are high and non-transitory structural or regulatory entry barriers in the relevant market. Entry barriers limit competition by reducing new providers' opportunities to become established in the market, and may take different forms and occur for various reasons. In the Recommendation, ESA distinguishes between structural and regulatory entry barriers.

204. On assessing entry barriers, it will be necessary to state which type of establishment is relevant.

205. The decision by the Norwegian Ministry of Transport and Communications (SD) of 6 October 2006 shows that the regulation of market 15 is based on an objective of contributing to long-term, infrastructure-based competition, i.e. competition between several parallel mobile networks.

206. The establishment in question must therefore be of a nature that can influence the market dynamics in a way that is suitable to achieve the intentions behind the sector-specific regulation. Nkom assumes that this indicates establishment as an MNO with a national roaming agreement outside own coverage area. The extent of own coverage and the ratio of traffic that can be produced in the entity's own network will in this respect be central to the competitiveness of any such operator. Nkom has previously assumed that an MNO must have more than 75 per cent population coverage in order to be competitive.[49] Tele2 achieved just below 50 per cent of the traffic in its own network when the company's mobile network covered 75 per cent of the population. Tele2 had no external buyers of access in its mobile network at this time, and in Nkom's assessment was not a full operator on the supply side in the relevant wholesale market. On this basis, Nkom believes that an MNO must have population coverage exceeding 75 per cent, and more than 50 per cent of the traffic in its own network, to be a

[48] Pages 5 and page 18 of the report.

[49] Nkom's decision of 26 June 2012 after the request from Tele2 to amend the Norwegian Ministry of Transport and Communications' decision of 11 May 2011 concerning termination prices for Network Norway and Tele2 (case 1105804).

competitor to the established network owners in the relevant wholesale market. On this basis, Nkom considers the relevant starting point for the assessment under the first criterion to be the entry barriers which a mobile provider rolling its own infrastructure would encounter.

207. Below, Nkom will first discuss structural entry barriers and then regulatory entry barriers.

4.2.2 Structural entry barriers

208. In recital 10 to the Recommendation, structural entry barriers are described as follows:

> *"Structural barriers to entry result from original cost or demand conditions that create asymmetric conditions between incumbents and new entrants impeding or preventing market entry of the latter. For instance, high structural barriers may be found to exist when the market is characterised by absolute cost advantages, substantial economies of scale and/or scope, capacity constraints and high sunk cost."*

209. Nkom has assessed the following structural entry barriers:[50]

- Control over infrastructure that is not easily duplicated, including sunk costs
- Economies of scale and economies of scope
- Access to financial resources
- Access to sales channels

4.2.2.1 Control of infrastructure that is not easily duplicated

Introduction

210. If an operator controls infrastructure that is not easily duplicated, and this infrastructure represents an important input factor in the relevant market, this could represent a substantial entry barrier for potential competitors.

211. Without taking a position on whether the relevant infrastructure in the affected market could be seen as an "essential facility"[51] in terms of competition law, below Nkom assesses whether control of infrastructure not easily duplicated can be seen as an entry barrier in the relevant market.

212. It is necessary to either own or otherwise control physical infrastructure in the form of mobile networks in order to be able to offer adequate, nationwide access and origination on mobile networks. Control of this physical infrastructure will require considerable investment.

Investments and sunk costs

213. With its distinctive topography and scattered dwellings, rolling out mobile networks in Norway requires very large investments. Within Europe, only Iceland has a lower population density than Norway.

214. Establishing own access networks with base stations, masts and radio equipment requires a lot of resources. Establishment of base stations can typically be divided into the following three categories: Own base station, co-location at other operators, and placement at a third party, for example on the roof of an existing building. Access to already established locations will be of great importance to reducing time consumption and the costs of expanding

[50] The criteria are based on the criteria in ESA's Guidelines on market analysis and the assessment of significant market power, section 79. (http://www.eftasurv.int/media/esa-docs/physical/5543/data.pdf). Sunk costs are mentioned in footnote 86 of the Guidelines in particular.

[51] Cf. ESA's Guidelines on market analysis and the assessment of significant market power, section 82. In accordance with general competition law, a product or service will only be considered to be an "essential facility" if there are no potential substitutes for the input factor.

their own network. The need for co-location may increase as the network is rolled out. A greater need for co-location will mean that already established operators may influence any new operator's rate of establishment. In the same way, owners of existing buildings have a controlling influence on the roll-out rate, since whether permission is given, and on which conditions, is to a great extent determined by the property owner. Greater attention with regard to potential negative effects of an active base station, including fear of radiation, may influence the property owner's willingness to enter into agreements and the conditions for any location, and this might prevent or delay a new operator. There is also a tendency for property owners and site owners to require higher compensation for use of their property than before, and this may also contribute to increasing entry barriers.

215. Sunk costs are one of the most central entry barriers and are particularly relevant in the electronic communications sector, where there are significant infrastructure investments. Sunk costs are costs that have accrued and which cannot be reversed, e.g. by selling assets. In the electronic communications sector, sunk costs will, for example, consist of the costs of developing, building and establishing networks for mobile communication.

216. Costs related to the establishment of a brand and marketing costs are also considered to be irreversible costs. Building up a sufficient customer base for any new mobile network can be expected to entail considerable marketing costs.

217. Sunk costs are often presented as the antithesis of avoidable costs, including variable costs. Variable costs can be attributed to the actual use of the network, such as the costs of producing and transporting mobile communication, and will cease when use of the network is discontinued.

218. The company Hi3G's involvement in Norway illustrates how sunk costs can accrue without any business activities being initiated. In 2003, Hi3G paid around NOK 62 million for a licence in the 900-MHz band. An annual frequency charge also accrued, at around NOK 20 million. In March 2011, the company handed back its licence, despite considerable accrued sunk costs.[52]

219. Access to existing infrastructure can contribute to reducing entry barriers to some degree. It is relevant here to refer to the EU Directive on measures to reduce the cost of deploying high-speed electronic communications networks[53]. The Directive gives among other things instructions on access to physical infrastructure, coordination of civil works and in-building physical infrastructure. On the basis of this Directive, the Ministry of Transport and Communications sent out on national consultation 3 June 2016, a proposal to arrange for the development of high speed networks for electronic communications[54]. The proposed regulation might contribute to reducing the costs of duplication of infrastructure, and could reduce entry barriers for operators that intend to build infrastructure, by giving them expanded rights concerning access to existing infrastructure, via other regulations than the electronic communications regulations.

220. Nkom has used the LRIC modelling to estimate the costs which accrue for an operator wishing to take the step from being an MVNO to becoming a national operator with its own radio network covering 75 per cent of the population. The estimate includes investments in separate BSCs, MSCs and transmission capacity (E1 links) in order to link these up. The cost

[52] http://www.regjeringen.no/Upload/SD/Vedlegg/Telekommunikasjon/konsesjoner_frekvenstillatelser/brev_frekvenstillatelse_2011.pdf

[53] Directive 2014/61/EU, see e.g. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.155.01.0001.01.ENG

[54] https://www.regjeringen.no/no/dokumenter/horingsbrev---utkast-til-lov-om-tilrettelegging-for-utbygging-av-hoyhastighetsnett-for-elektronisk-kommunikasjon/id2502973/

of such an investment amounts to around NOK 2 billion[55]. In Nkom's view, an investment cost of this size will in all cases represent a considerable entry barrier.

221. The size of the sunk costs increases with the rate of network expansion and in Nkom's view represents a significant entry barrier. In some cases, frequency licences will set requirements of the roll-out and thereby impose a lower limit on the extent of the network. Mobile customers' expectations of quality and coverage will probably still have a great influence on how a new operator must dimension its mobile network. To be competitive, new providers of mobile communication must be able to offer nationwide service as from the entry date.

Development in Norway

222. In the 1980s, Telenor established the NMT mobile network and was able to recycle parts of this infrastructure when rolling out the GSM network, which gave the company an advantage compared to Telia. Through their virtually nationwide mobile networks Telenor and Telia have an advantage compared with new network operators.

223. With respect to other market conditions, the well-developed networks of Telenor and Telia have laid the foundations for high expectations of coverage and quality. Both providers cover close to 100 per cent of the population, distributed on 2G and 3G technology, while the geographical coverage is somewhat lower.

224. Telenor and Telia make ongoing improvements to the coverage and capacity of their mobile networks and provide information on the roll-out of coverage via their respective websites. See Chapter 3.4 for further information about the roll-out of coverage.

225. Telenor and Telia became established as network owners during a period in which the end-users had less opportunity to make high demands of coverage, and at the earlier stages the end-users had no alternative providers with better coverage. It seems reasonable to assume that today's end-users will expect the same high coverage with a new network provider as with Telenor and Telia. A provider that is considering rolling out a network today must thus be able to offer equivalent or almost equivalent coverage and quality to Telenor and Telia, in order to be a competitive alternative.

226. At the end of 2013, Tele2's network roll-out company, Mobile Norway, had expanded its 2G/3G network to cover 75 per cent of the population. The financial basis for the network expansion has been partly based on asymmetrical regulation of Network Norway and Tele2's termination prices. The regulation of the termination prices has been designed for the two companies to be able to achieve additional revenue of NOK 2 billion, which is equivalent to the investment costs of a mobile network covering 75 per cent of Norway's population. As stated, Mobile Norway has discontinued operation of the network due to a lack of frequency resources, cf. Chapter 3.5

227. ICE had an existing mobile broadband network based on CDMA 450, which contributes to simplifying establishment in the relevant market. In addition, as described in Chapter 3.5, the company has overcome some of the aforementioned entry barriers experienced by a newcomer by taking over existing infrastructure. However, this takeover is a special case for which any other new providers cannot expect to have the same opportunity. The company's extensive investments in frequency resources also showed that, irrespective of access to the existing infrastructure, there were major entry barriers in the market, which it required good access to financial resources to overcome.

Conclusion

[55] The calculation is based on Nkom's LRIC model, version 7.1. The estimate concerns the establishment of a third mobile network that will achieve 75 per cent population coverage by 2012 (in 2009 kroner).

228. The aforementioned indicates that control of infrastructure represents a significant entry barrier for new providers. Telenor and Telia own mobile networks that it is technically possible to duplicate. However, sunk costs relating to network investments will represent significant entry barriers. Furthermore, end-users' expectations concerning coverage and quality make completely different requirements of an operator who enters the market now than when these providers started rolling out their networks in the 1990s. To be able to provide competitive retail services, new providers must already from launch be able to offer virtually the same coverage and quality as Telenor and Telia have built up over time. ICE's takeover of elements of Tele2's infrastructure represents a partial takeover of the third mobile network in Norway, and in Nkom's view is a clear indication that new operators must consider coverage expectations and requirements in conjunction with the launch. Operators that might become established on the basis of gradual investment will depend on access to existing infrastructure, in order to become established as network owners.

229. On considering Telia's acquisition of Tele2's Norwegian activities, the Norwegian Competition Authority assessed irreversible investments and inter alia concluded that the establishment of base stations in itself constitutes a significant entry barrier in the wholesale market. The Norwegian Competition Authority's assessments of irreversible investments as part of entry barriers generally correspond to Nkom's assessments. Nkom believes that there is no doubt that the roll-out of a mobile network of sufficient size requires extensive resources and therefore represents a significant entry barrier.

4.2.2.2 Economies of scale and scope

230. Economies of scale exist when an increase in production leads to falling unit costs. This is characteristic of production with relatively high fixed costs and low variable costs. Economies of scale tend to strengthen the market power of established operators and can thus function as an entry barrier for new network operators. The established network operators have dimensioned their networks to achieve their optimum utilisation. A new network operator will need time to build up a customer base and traffic and cannot in the initial phase expect to derive economies of scale to the same degree as the established network owners. In this way, economies of scale contribute to creating an asymmetrical relationship between new and established providers, which in turn will weaken the competitiveness of a new operator.

231. The economies of scale of a network operator are primarily found in the access network, which consists of cost-intensive such as base stations, masts and radio equipment. Since Norway has a relatively small population, low population density and few large cities, in several geographical areas there may be low traffic volume, making it challenging to fully utilise economies of scale.

232. Economies of scope are a reduction of the average unit cost when more than one service is produced using shared means of production, for example a shared infrastructure or shared administrative systems.

233. Elements of the operators' infrastructure and support systems can be used for the production and delivery of various services. As a consequence of its broad product portfolio and large customer base within several electronic communications markets, a horizontally integrated operator will have increased economies of scope in the relevant market. In this context, reference is also made to the analysis of individual dominance in Chapter 5.6.

234. In order to determine cost-oriented prices for termination of voice calls in the mobile network, during several regulation periods Nkom has developed LRIC models which inter alia provide information on the relation between the unit cost of termination and the development in the market shares of Norwegian providers. One of the preconditions in the LRIC models is that, over time, network traffic develops to be evenly distributed on three networks. Previous sensitivity analyses have shown that the unit costs increase if the actual traffic volume is lower than forecast in the model. For example, a traffic volume just below 35-40 per cent of the

forecast volume would give significantly higher unit costs for all three network operators. Economies of scale are gradually exhausted as the providers fill the networks with traffic.

235. The LRIC modelling has shown that both Telenor and Telia have dimensioned the networks so that they utilise economies of scale to virtually the same degree. Consequently, they have virtually the same unit cost even though they have different market shares as a starting point. The current price regulation for termination of voice in the mobile network is based on the LRIC model for a generic, efficient operator. The modelled costs for a generic operator are approximately equivalent to the costs shown in the operator-specific models. Even though no explicit modelling has taken place subsequent to the merger between Telia and Tele2, there are no clear indications that this in itself is a factor which directly affects network costs. However, Telia reports positive synergies as a consequence of the merger, even though this appears to be particularly related to increased revenue.[56]

236. Nkom has not modelled the network structure with corresponding network costs for ICE. The general aspect of mobile networks with a high element of fixed costs and incentives to fill their own networks with traffic is, however, also expected to apply to ICE's network.

237. The impact of economies of scale can be reduced if new providers choose to start rolling out only in densely populated areas with the greatest traffic basis. How quickly and the extent to which a provider with a national roaming agreement will be able to benefit from economies of scale depends on how quickly the traffic is transferred to its own network and how much is produced via national roaming. Via structural conditions for the access agreement, however, the host operator will be able to influence the opportunity for an access buyer to utilise economies of scale. For example, this can take place via obligations in the agreement to purchase a certain traffic volume in the host network (volume commitments) and flat-rate elements. Volume commitments are an efficient way of keeping traffic in the host operator's network and an opportunity to influence how quickly new network owners can achieve falling unit costs as a result of increasing volume on their own network. In the same way, a significant, traffic-independent flat-rate element in the access agreement will mean that the savings on producing traffic in the operator's own network will not have the effect that it would otherwise have had if the traffic costs had been variable to a greater extent. Both volume commitments and price structure can therefore have a negative influence on the opportunity for an access buyer to utilise economies of scale.

238. Economies of scale and economies of scope can also be achieved in conjunction with sales, customer service, invoicing systems, administration, etc. but probably to a smaller degree than the economies of scale related to the actual network. Economies of scale related to such factors may, however, be of greater significance if an operator has activities in several countries and/or within several service types, and can therefore spread these costs across several units.

239. Even though the significance of economies of scale can be reduced if new providers start their roll-out only in densely populated areas, using national roaming in less populated areas, in Nkom's view economies of scale constitute a significant barrier to new entry to the Norwegian mobile market. Roll-out and operation of mobile networks in Norway entails high fixed costs. In combination with a relatively low population density, this means that unit costs can be disproportionately high unless a customer base of a certain size can be rapidly achieved.

240. A broad range of products for horizontally integrated operators will also give economies of scope which new providers would not be able to achieve in the same way, and would also impose entry barriers.

[56] http://www.teliasonera.com/sv/newsroom/pressmeddelanden/16612/7/teliasonera-delarsrapport-januari-juni-2015/

4.2.2.3 Access to financial resources

241. Access to financial resources will be of great importance to an operator's opportunity to enter markets requiring large initial investments.

242. As described above, it will be very capital-intensive to establish adequate alternatives to Telenor's or Telia's nationwide mobile network. A national roaming agreement can reduce the need for initial investments and can therefore to some degree reduce the importance of the access to capital.

243. Access to capital will also be significant to an operator's opportunities to achieve frequency resources. In the auction held in December 2013, minimum prices of NOK 50 million for 2x5 MHz in the 800- and 900-MHz bands and NOK 5 million in the1800-MHz band were required. The operators made bids for packages of frequencies in various bands and in total paid close to NOK 1.8 billion for the frequencies that were awarded.[57]

244. In summary, Nkom believes that good access to financial resources will be necessary to be able to become established as a real challenger in the market.

4.2.2.4 Access to sales channels

245. Access to the distribution and sales network is of great significance to winning customers in the retail market. Lack of access to these sales channels will impose a barrier for new operators intending to become established and achieve a significant market share. Operators that become established in the wholesale market for access and call origination on mobile networks will normally be vertically integrated and will depend on generating significant revenue in the retail market. Nkom therefore believes that it is relevant to include access to sales channels in the analysis of entry barriers in the wholesale market.

246. In this context, relevant sales channels may be either physical or network-based. If the establishment of distribution and sales channels entails significant costs, and if the existing providers already have well-established channels at attractive locations, this might lead to considerable inequality between new and established providers. This inequality would be a disadvantage for new operators that are becoming established in the market. While a moderate investment will be required to establish a network-based sales channel, physical sales channels for the mobile market will be costly to establish.

247. A mobile customer will be able to use several sales channels in one same buying process, in order to obtain sufficient selection and price information, so that network-based and physical sales channels would complement each other. Nkom believes that there is a basis to determine that a large proportion of customers wish to be able to contact a physical sales outlet, both in the buying situation and with regard to any defects and complaints. Handsets are becoming more and more complex and when they are replaced there may be a need for assistance in order to retain data concerning contacts, calendars, etc. Increased complexity can contribute to maintaining the need for physical sales outlets, for both the residential and business markets.

248. Large electronics chains such as Elkjøp, Expert and Lefdal account for a significant proportion of sales of consumer electronics. Based on information from several minor providers, in 2010 Nkom found that it was probably very expensive to get a footing with the large chains, and that it is thus difficult to get access to physical sales channels. Nkom's view is that this situation has not changed significantly.

249. Several of the providers have also established separate physical sales channels that seem to be increasing in importance as exclusive channels for their own products. Telia has

[57] Telia paid NOK 626.7 million, Telco Data paid NOK 705 million and Telenor paid NOK 453 million for the frequencies awarded to them.

64 stores which constitute a nationwide network of stores for the residential market, and also has 16 Telia Business Centres for the business market. In the same way, Telenor has nationwide stores for the residential market. Telenor also owns several distributor chains and in 2013 consolidated its sales channels. In June 2013, the Telekiosken store chain was integrated as part of the Telenor stores[58]. Kjedehuset, which is 49-per-cent owned by Telenor, is the franchise head office for the Nordialog, Telehuset, Telefast and mCare specialist chains, and focuses on the business market. The chain represents around 65 departments and 550 employees[59]. The Telering chain[60] is owned by Telenor at 47.5 per cent and has 115 distributors all over Norway, selling products from both Telenor and Telia. In December 2015, the Comunit chain was acquired by Telering and now claims to be Norway's largest in the SMB market[61]. Network Norway has established the Officer AS distributor chain, with 20 distributors throughout Norway. This distribution network was sold to ICE subsequent to the achievement of the merger between Tele2 and Telia. ICE received a time-limited offer to purchase Tele2's three stores, but chose not to use the purchase option. For ICE, the distribution channels acquired entail easier access to customers, and thereby an easier entry to the market.

250. The changes which have taken place in terms of the focus on physical sales channels show that the access to physical sales channels is important to winning and retaining customers in today's market. Establishing own, physical sales outlets is undoubtedly expensive, and access to good, central locations in Norway will present challenges for new entities that are becoming established.

251. Chili Mobil is an example of an operator that has managed to achieve a relatively large customer base without equivalent access to physical sales channels. However, these examples are few and far between. In the previous analysis, Ludo was named as an operator that had achieved a significant customer base via alternative sales channels, such as social media. As in the previous analysis, Nkom believes that it will still be necessary to have interaction between various different sales channels, in order to achieve a sufficiently large customer base. Alternative sales channels are thus a factor that can only reduce the significance of difficult access to physical sales channels to a certain degree. On the other hand, use of alternative sales channels can be appropriate for strengthening already established market positions, since a high degree of awareness of brand names can be assumed to be an advantage that will increase the effect of alternative sales channels.

252. In summary, Nkom believes that access to physical sales outlets represents an important barrier to entry. Access to physical sales outlets is undoubtedly necessary to attract and retain customers and also constitutes a significant cost for the operators. There are clear indications that established operators are focusing more and more on their own physical sales outlets. Sales via the Internet and other channels can on the one hand reduce the entry barrier, while at the same time non-physical channels can contribute to amplifying already established positions in the market. Nkom believes that the end-users' wishes and requirements of a physically accessible sales outlet for mobile phones will not change significantly within the analysis' time horizon, and therefore finds reason to determine that access to physical sales channels is a significant entry barrier.

4.2.3 Regulatory entry barriers

253. Regulatory entry barriers exist when market access is limited by regulatory conditions, for example official licences and authorisations, resource restrictions, e.g. concerning

[58] Telenor's press release of 26 June 2013: http://www.telenor.com/no/news-and-media/press-releases/2013/telenor-overtar-telekiosken/

[59] http://kjedehuset.no/

[60] http://www.telering.no/velkommen-til-telering/

[61] http://www.insidetelecom.no/artikler/telering-kjoper-15-forhandlere/197180

frequency resources, or restrictions with regard to health, environment or safety (direct regulatory restrictions). Furthermore, various forms of price regulation may also have entry-barrier effects, cf. recital 11 in the Recommendation. An assessment of whether authorisations, frequency access or price regulation can affect establishment is given in the following.

4.2.3.1 Authorisations and access to frequencies

254. No requirements are made of authorisation or similar measures to become established as a network owner in Norway. It is necessary, however, to have a licence to control and use frequencies to produce mobile services in one's own network. Frequency licences are considered to be a finite resource, and lack of access to frequencies can be a regulatory entry barrier.

255. Frequencies have varying qualities with respect to range and penetration capacity. On assessment of regulatory entry barriers it is thus relevant to not only examine whether there are available frequencies, but also which frequencies are available. An operator considering establishment in the relevant market must also take into consideration that frequency licences are given for limited durations. In addition, some frequencies will be allocated that are subject to conditions with regard to coverage requirements. The coverage requirements in the licences will often determine the required roll-out rate and require the licence holder to have the financial and actual capacity to undertake the required roll-out.

256. Frequencies with a long range and good penetration capacity are often viewed as more attractive for the production of services in mobile networks. The frequencies in the 800-MHz band (790-862 MHz), are of this nature. These became available when the last analogue broadcasting was discontinued in December 2009. The government has determined that these frequencies are to be used for mobile broadband. The frequencies were allocated at the auction on 2 to 10 December 2013. ICE, Telenor and Telia were each granted 2x10 MHz, while Telia received a coverage block which entails the requirement of 98 per cent population coverage within five years after the licence is awarded. For Telenor and ICE the roll-out requirement is 40 per cent population coverage in the course of four years. All available capacity in the 800-MHz band was allocated in the auction, and the licences have a term of 20 years.

257. To a great extent the frequencies in the 900-MHz band have the same characteristics in terms of signal dissemination, and the band is very suitable to cover large areas with fewer base stations than will be required for the utilisation of the 1800-MHz or 2.1-GHz bands, for example. Elements of the frequency resources in this band were allocated in the same auction as the 800-MHz band. In this case too, ICE, Telenor and Telia were granted licences of 2x5 MHz to each. In addition, Telenor and Telia already had 2x10 MHz licences, which expire in 2017. The band is allocated under a principle of technology neutrality and today is used for both GSM and UMTS. Up to 31 December 2013, Mobile Norway had 2x5 MHz in this band, but in the auction it was not granted any further use of frequencies in the band.

258. The auction on 2 December 2013 showed that there was competition for the allocation of frequency resources in the coverage bands (long-range frequencies). Mobile Norway's frequencies in the 900-MHz band were not renewed, nor did they win the competition for frequencies in the 800-MHz band. Nkom has begun the work of allocating the elements of the 900-MHz band for which the licence expires 31 December 2017. The auction will comprise 2x20 MHz in the 900-MHz band, which today is used by Telenor and Telia. Lack of access to frequency resources in the coverage bands must thus be seen as an entry barrier.

259. The 1800-MHz band is suitable for 4G/LTE. However, the frequencies in this band have a shorter range and poorer capacity to penetrate buildings than the frequencies in the 900-MHz band. The range of the frequencies determines how close the base stations have to be built. Shorter ranges will therefore be a disadvantage since the provider will have to

establish several base stations to achieve the same coverage. A greater need for base stations would also increase the need for building permits, which would further augment the entry costs. The disadvantage of a shorter range will be particularly evident in more sparsely populated areas. The 1800-MHz is nonetheless a very suitable capacity band. The band comprises 2x75 MHz in total and gives good opportunities to offer high capacity for mobile broadband. In addition, the propagation characteristics might be an advantage in densely built-up areas where there is no wish for wide geographical coverage from each base station. After the last auction in December 2015, Telenor has a total of 2 x 30 MHz in this band, Telia has 2 x 25 MHz and ICE has 2 x 20 MHz.

260. The operators are also dependent on end-user equipment that is compatible with the relevant frequency bands. A certain proportion of the end-user equipment (mobile phones which use 3G) cannot be used in the 1800-MHz band, although a significant amount of end-user equipment (e.g. Iphone 5 and 6) is also offered that can use 4G/LTE in the 1800-MHz band.

261. The 1920-1980/2110-2170-MHz frequency band (the 2-GHz band) is the core band for the production of third-generation mobile telephony and mobile broadband (UMTS and HSPA). Licences with an original duration until December 2012 accounted for 75 per cent of the total spectrum in the band. These were allocated again at the auction in November 2012 with a duration of 20 years. After the auction in 2012, the frequencies in the 2-GHz band were divided equally between Mobile Norway, Telenor and Telia. However, Telia has a licence to use the frequency resources in the 2G band that were previously awarded to Mobile Norway. The licence will expire 5 August 2016.

262. The Storting establishes the size of the frequency charge during the annual budget review. The Ministry of Transport and Communications collects the frequency charge for the 800-MHz band, the 900-MHz band, the 1800-MHz band and the 2-GHz band. Depending on the frequency band, the frequency charge for 2016 is between NOK 1.3 and 1.4 million per MHz frequency duplex available to the licence holder. The charge is not related to the provider's size or revenue and can thereby favour established operators and make entry less attractive.

263. Section 9-4 of the Norwegian Electronic Communications Act regulates the processing time for granting licences/allocations to normally six weeks, but this can in particular cases be expanded to a maximum of eight months, for example in a situation where auctions are held. In Nkom's assessment, the case handling time in relation to frequency management will generally not be seen as an entry barrier. The auction for the distribution of the 800-MHz band took longer time to complete than first assumed.

4.2.3.2 Price regulation

264. With respect to regulation of termination prices on mobile networks, Nkom and the Ministry of Transport and Communications have emphasised that existing infrastructure must be utilised efficiently via inter alia price index adjustment based on LRIC. If termination prices are fixed which are higher than underlying costs, this will generally have the effect that there is a transfer from small to large providers, inter alia as a consequence of unequal ratios of on-network/off-network traffic.

265. Previously, however, the authorities have given weight to reducing entry barriers for new providers by permitting them to set higher termination prices during a start-up period. This has applied in particular to Network Norway and Tele2, which via the price regulation regime received support to establish mobile networks.

266. As from 1 January 2013, however, the termination prices have been regulated symmetrically for all operators. Any new operators cannot expect asymmetrical regulation of termination prices.

4.2.3.3 Conclusion concerning regulatory entry barriers

267. No requirements are made of authorisation in order to become established as a mobile provider in Norway. With regard to frequency resources, as of today there are no available frequencies in the capacity band (1800 MHz and 2 GHz), and there has proved to be a lack of available coverage frequencies (800 MHz and 900 MHz). Access to frequencies thus constitutes an entry barrier.

268. In Nkom's view, price regulation, including maximum prices for termination, as such is not a regulatory barrier for newcomers.

269. On the basis of the aforementioned assessments, Nkom believes that in view of the shortage of relevant frequencies, there are high and to some extent non-transitory regulatory entry barriers in the relevant market.

4.2.4 Conclusion – first criterion

270. In Nkom's assessment, the Norwegian market for access and call origination on mobile networks is subject to high and non-transitory structural entry barriers. It is necessary to control own network infrastructure, and to have access to sales channels. Infrastructure is challenging to establish, including as a consequence of the need for considerable investments and a high element of irreversible costs (sunk costs).

271. The end-users' high expectations of coverage and capacity entail that newcomers must be able to offer approximately the same coverage and quality as the established providers, Telenor and Telia, in order to be competitive. ICE's takeover of elements of Tele2's infrastructure represents a partial takeover of the third mobile network in Norway, and in Nkom's view this shows that new operators must already consider expectations and requirements of dissemination and coverage at the time of launch.

272. Telenor's and Telia's considerable investments in upgrading their mobile networks are a factor which contributes to further increasing the entry barriers. Nkom cannot see any grounds to assume that the end-users' expectations of coverage and quality will diminish in the future, but rather that there is reason to believe that they will increase.

273. To some extent there are non-transitory regulatory entry barriers exist in the relevant market. As of today there are no available frequencies in the traditional frequency bands for public mobile communication for mobile roll-out. The frequency resource of approximately 2x20 MHz in the 900-MHz band which are held by Telenor and Telia until 31 December 2017, will be awarded again in an upcoming auction. It is uncertain which operators will hold these frequency resources after the auction, but they will, as a minimum, be distributed between two operators. As of today, the shortage of frequency resources therefore constitutes an entry barrier.

274. The regulation of termination prices is not in itself considered to be an entry barrier. Symmetrical regulation based on LRIC does, however, entail that new operators cannot expect revenue from termination beyond coverage of traffic-driven costs.

275. On the basis of the aforementioned, Nkom believes that there are high, non-transitory entry barriers in the relevant market, so that the first criterion is fulfilled.

4.3 Second criterion: The market is not tendering towards effective competition

4.3.1 Introduction

276. The Recommendation's recital 12 states that other structural conditions may lead the market to move towards sustainable competition, even though the market is affected by high, non-transitory entry barriers. The second criterion in the three-criteria test is thus whether the relevant market, behind the entry barriers, has characteristics which mean that it is not moving towards sustainable competition.

277. The assessment under the second criterion is forward-looking to a limited degree. The Explanatory Note states that the criterion is not fulfilled if there is sufficiently clear evidence of dynamics in the market during the analysis' time horizon which indicate that the market will tending towards sustainable competition without ex-ante regulation.

278. Whether the market can be seen to be moving towards sustainable competition without ex-ante regulation within this analysis' time horizon will have to be determined on the basis of a broad assessment of the market conditions. Neither the ESA's Recommendation nor BEREC's Guideline[62] is exhaustive with regard to the elements to be assessed and it is therefore up to the national regulator to assess which elements best illustrate the second criterion, taking due account of the conditions in the national market.[63]

279. The relevant market is a wholesale market (an upstream market). Since the competition at retail level will to a certain degree reflect the competition at wholesale level/network level, elements of the analysis under the second criterion will be related to the competition situation in the retail markets (downstream markets) for mobile services.

280. In the following chapters, Nkom will assess whether the relevant market is tendering towards sustainable competition on the basis of the following conditions:

- Development in market shares
- Market concentration
- Access to information, switching costs and lock-in mechanisms
- Market dynamics
- Price development and development in agreement terms at wholesale level
- Market behaviour
- Significance of a third mobile network
- Potential competition

4.3.2 Development in market shares

281. A natural starting point for the assessment of whether the market is tendering towards sustainable competition will be an analysis of market shares and their development. Section 76 of the Guidelines states that there is a presumption of significant market power for market shares exceeding 50 per cent, and furthermore that individual dominance will normally be

[62] ERG's Report on Guidance on the application of the three-criteria test, pages 12-13.

[63] Market shares, price development and provider behaviour, control of infrastructure that is not easily duplicated, diversification, expansion barriers and potential competition are elements named in the ERG's Report on Guidance on the application of the three-criteria test, pages 12-13.

found for providers with market shares exceeding 40 per cent.[64] The guidelines are related to the analysis of significant market power. Since there is a close relation between the second criterion and this analysis, Nkom assumes that the threshold values for significant market power are also relevant to the assessment of whether the market is tendering towards sustainable competition.

282. In the following, Nkom assesses the development in market shares at the retail and wholesale levels, respectively.

4.3.2.1 Development in market shares at retail level

283. The Figure below shows the development in market shares at retail level in the period from 2005 to the end of 2015. The period shows the development from Nkom's first analysis of market 15.[65]

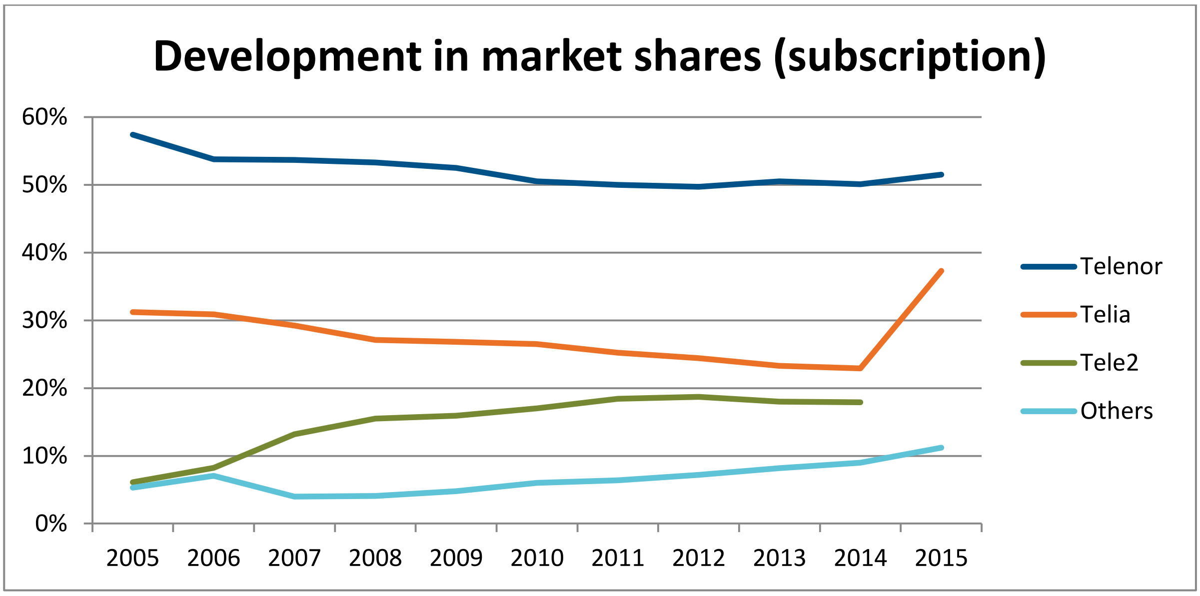


Figure 6 Market shares based on the number of subscriptions in the period from 2005 to 2015. Residential and buisness together.

284. At the end of 2015, there were more than 5.71 million mobile telephony subscriptions.[66] The subscriptions were distributed between the providers as shown by the above Figure.[67] The largest providers in the Others category are Phonero and Lycamobile, with 3.6 and 1.9 per cent, respectively, at the end of 2015.

285. Figure 6 above shows that Telenor's market share based on number of subscriptions was 51.5 per cent at the end of 2015 (residential and business together). The market share was close to 53 per cent in the previous market analysis, and has thereby decreased by around 1.5 percentage points since 2009. The reduction mainly took place during the first part of the period. In two periods, Telenor's market share has been just below 50 per cent, i.e. at

[64] According to established case law, very large market shares - in excess of 50% - are in themselves, save in exceptional circumstances, evidence of the existence of a dominant position.
[65] In the decision of 23 January 2006, the analysis was based on statistics up to and including the first half of 2005. In the decision of 5 August 2010, the analysis was based on statistics up to and including 2009.
[66] Mobile telephone subscriptions comprise active pre-paid cards, i.e. cards used in the last three months, and post-paid subscriptions.
[67] Network Norway's market share is included in Tele2's share and includes both OneCall and MyCall (Lebara changed name to MyCall in October 2012).

the end of the first half of 2011 and the end of the first half of 2014, but in both cases the full-year figures have shown market shares exceeding 50 per cent.

286. In the previous market analysis Telia had around 27 per cent of the number of subscriptions. At year-end 2014, the company's market share was 22.9 per cent, having fallen slightly. After the acquisition of Tele2, Telia's market share increased to 37.3 per cent in the end of 2015.

287. Tele2's market share, which includes subscriptions for all brands of both Tele2 and Network Norway, amounted to 17.9 per cent at the end of 2014. One of the conditions for the merger was that ICE acquired customers under the Network Norway brand. This share was around one per cent of the number of subscriptions.

288. The Table below shows the development in market shares based on the number of subscriptions at the end of 2015, and in the two previous analyses of market 15.

Subscription	First half of 2005	2009	2015
Telenor	56%	53%	52%
Telia	27%	27%	37%
Tele2	5%	16%	
Others	12%	5%	11%

Table 4 Market shares at retail level based on number of subscriptions in the first half of 2005, the full year of 2009 and 2015. Residential and business together.

289. For comparison, the market shares of the three largest operators in Sweden, TeliaSonera, Tele2 and Telenor, were 36 per cent, 27 per cent and 17 per cent, respectively, at the end of 2015, measured by the number of subscriptions.[68]

290. In Denmark, the largest operator, TDC, had a market share of 38 per cent measured by the number of subscriptions at the end of 2014. The next-largest provider was Telenor, with a market share of 24 per cent, while Telia was the third-largest operator with a share of 18 per cent.[69]

291. In Finland, the largest operator, Elisa, had a market share of 39 per cent measured by the number of mobile subscriptions at the end of 2015. The next-largest operator was TeliaSonera with a market share of 34 per cent, while the third-largest operator was the DNA company with a share of 26 per cent.[70]

292. Nkom notes that the largest operator in Norway, Telenor, has a far higher market share than the largest providers in these countries, where the regulatory authorities have concluded that the market for access and call origination on the mobile network is characterised by sustainable competition and is thereby not subject to sector-specific regulation.

293. The Icelandic regulatory authority discontinued regulation in market 15 in 2012. The main reason was that a third provider with its own mobile network, which entered the market in 2007, managed to become established in the market within a relatively short time. The company had achieved a market share of 24 per cent, measured in terms of the number of subscriptions, as of June 2011. At the same time, the two largest providers, Siminn and

[68] Source: PTS (Swedish Post and Telecom Authority) statistics portal, Swedish telecom market, 2015.
[69] Source: Telecom statistics, second half of 2014. http://erhvervsstyrelsen.dk/telestatistik-andet-halvaar-2014
[70] Source: https://www.viestintavirasto.fi/en/statisticsandreports/statistics/2013/marketsharesofmobilesubscriptions.html

Vodafone, had market shares of 40 and 31 per cent, respectively.[71] Nkom can note that also in Iceland, the market share of the largest operator is significantly lower than in Norway, and that a third operator has relatively quickly managed to achieve a relatively high market share.

294. The Figure below shows the development in market shares based on revenue in the retail market from 2005 until 2015 (residential and business together). The revenue figures comprise all services sold in relation to a subscription, including fixed and variable revenue for voice, text messaging and data. Revenue from termination and resale is not included.

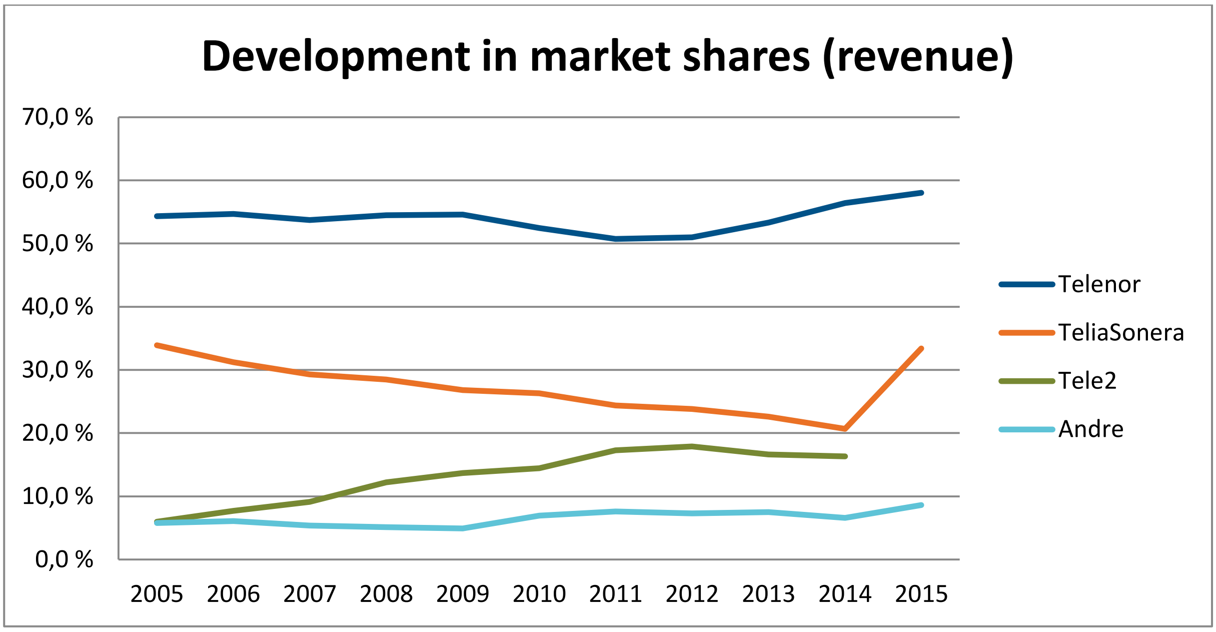


Figure 7 Development in market shares based on revenue in the retail market from 2005 until the end of 2015. Residential and business together.

295. Both in the previous analysis and at the end 2015, Telenor had a higher market share in revenue terms compared to the market share in subscription terms. Even though Telenor's market share based on number of subscriptions had remained relatively stable in the last two years, in the same period Telenor increased its revenue-based share.

296. For Telia the picture is the opposite, as the market share in revenue terms at the end of 2015 was lower than the market share in terms of the number of subscriptions.

[71] Source: Market Analysis Market 15, 20 February 2012.

Sales revenue	First half of 2015	2009	2015
Telenor	56%	55%	58%
Telia	27%	27%	33%
Tele2	5%	14%	
Others	12%	5%	9%

Table 5 Market shares at retail level based on revenue in the first half of 2005, the full year of 2009 and 2015. Residential and business together.

297. The Table above shows the development in market shares based on revenue in 2015, and in the two previous analyses of market 15. The Table shows that Telenor's revenue share in 2015 increased compared to the market shares in revenue terms in the two preceding analyses. In the period from the previous analysis in 2009 until 2014 Telia's market share decreased by 6 percentage points to 20.7 per cent. After the acquisition of Tele2, however, Telia's market share in revenue terms increased to 33 per cent. Tele2's market share in revenue terms was 16.3 per cent in 2014.

298. Table 6 shows the market shares within mobile telephony for the residential and business markets in 2015, measured in terms of number of subscriptions and revenue. The residential market is the largest with 77 per cent of all subscriptions.

		Telenor	Telia	Others
Residential	Subscription	48.8 %	44.0 %	7.2 %
	Revenue	52.2 %	43.5 %	4.3 %
Business	Subscription	60.3 %	15.7 %	24.0 %
	Revenue	67.7 %	15.0 %	17.3 %

Table 6 Market shares within mobile telephony for the residential and business segments in 2015, measured in terms of number of subscriptions and revenue.

299. The Table shows that Telenor has a larger market share of the residential market than Telia. Other operators overall have a relatively modest presence in the residential market, especially when revenue is taken into consideration.

300. On the other hand, Telenor has a significantly larger market share in the business market than the other operators, also when compared with Telia. Telenor is around four times as large as Telia in the business market, measured in terms of both number of subscriptions and revenue. However, other operators have a stronger presence in the business market than in the residential market. This applies inter alia to the MVNOs Phonero and TDC, which in this segment have market shares based on subscriptions of 10 per cent and 2 per cent, respectively, at the end of 2015.

301. One of the terms for Telia's acquisition of Tele2 was that Telia sold Network Norway's customers in the business market to ICE. This customer base amounted to around one per cent of the total number of mobile telephony subscriptions and thus changed the overall picture to a small degree.

302. Mobile data is an area that is expanding strongly and is thus an increasingly more important area. The Figure below shows the distribution of data traffic in the mobile network in 2015. The Figure shows that Telenor has the largest market share of around 44 per cent, distributed as traffic via mobile telephony subscriptions of 35 per cent and dedicated mobile broadband subscriptions of 9 per cent. After the acquisition of Tele2, Telia's market share is

around 45 per cent, distributed as 24 per cent via ordinary mobile telephony subscriptions and 21 per cent via dedicated mobile broadband subscriptions.

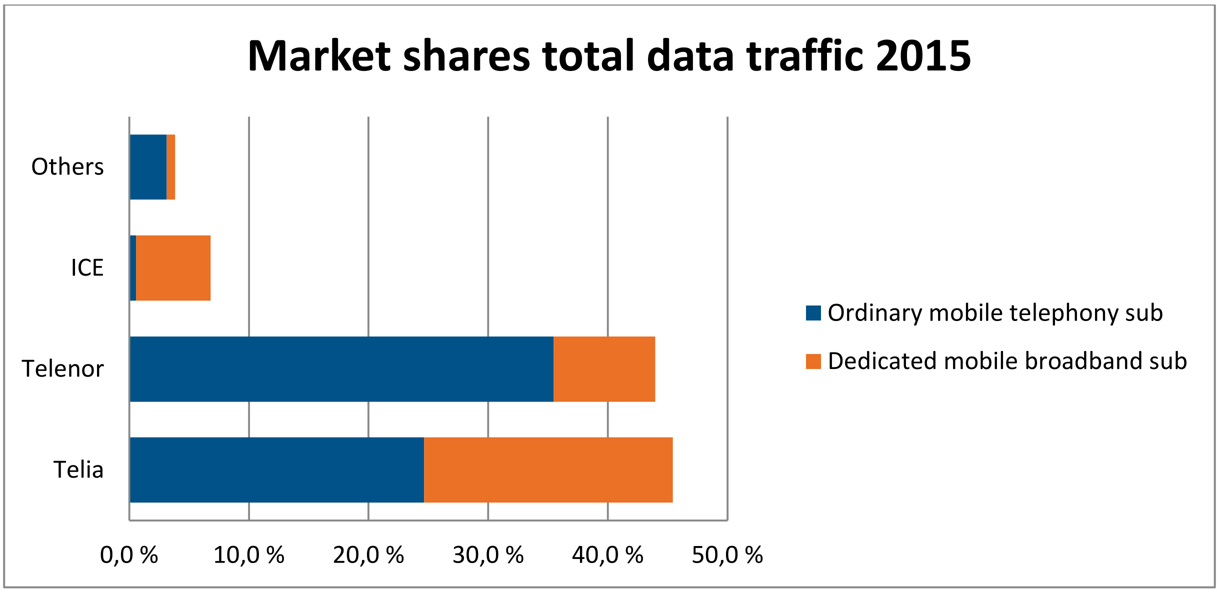


Figure 8 Market shares 2015 for total data traffic in mobile networks for both ordinary mobile telephony subscriptions and dedicated mobile broadband subscriptions.

303. Telenor's share of data traffic is somewhat lower than the company's market share measured by the number of ordinary mobile subscriptions. Telia, on the other hand, has a larger share of data traffic than the company's market share measured by the number of ordinary mobile subscriptions. Telia end-customers appear to generate more data traffic per subscription compared to Telenor's end-customers.

304. ICE, which up to the summer of 2015 had only competed in the retail market for dedicated mobile broadband subscriptions, accounts for around 7 per cent of the total data traffic in 2015.

305. Overall, Telenor and Telia account for around 90 per cent of the total data traffic in the mobile network in 2015.

306. Until 2011, the greatest annual increase in data traffic was linked to dedicated mobile broadband subscriptions. As from and including 2012, however, the increase in data traffic for ordinary mobile telephony subscriptions has been greater than the increase for mobile broadband subscriptions. In 2015, 36 per cent of the total data traffic was related to mobile broadband. The development shows that an increasingly smaller share of the overall data traffic is related to dedicated mobile broadband. This shows that the end-users are increasingly using their ordinary mobile subscriptions for services which were previously based on dedicated mobile broadband. Since the trend seems to be towards substitution from dedicated mobile broadband subscriptions to ordinary mobile subscriptions, Nkom believes that it is also relevant to consider the market situation in this market.

4.3.2.2 Development in market shares at network level

307. In order to assess market shares at network level, Nkom's starting point is the operators with their own mobile networks. The market shares are calculated on the basis of the number of originated minutes in the relevant mobile networks. Internal traffic is included as

part of the market and is therefore included in the calculation. Traffic from MVNO providers and service providers is included in the traffic of network owners.[72]

308. On the calculation of market shares at network level for 2014, it is necessary to take into consideration that part of Tele2's traffic was national roaming.[73] This traffic is referred to the host network.

309. As a consequence of Telia's acquisition of Tele2, the market shares in the wholesale market are affected. The acquisition terms included that Telia sold Network Norway's customer base in the business market, distribution network and frequencies to ICE. In addition, Telia was to offer ICE national roaming and service provider access. This entails that Telia's market share at wholesale level after the acquisition also includes traffic that was previously generated at Tele2. This also applies to the traffic generated by end-customers at ICE, since ICE has a wholesale agreement with Telia.

310. The Table below shows the distribution of market shares in 2014, taking national roaming into account, and for 2015, after Telia's acquisition of Tele2. Tele2's share of voice traffic in its own network in January 2015 is the basis for the calculation of national roaming in 2014.[74]

Traffic minutes	First half of 2005	2009	2014	2015
Telenor	71%	63%	64%	59%
Telia	29%	36%	28%	41%
Mobile Norway		1%	8%	

Table 7 Market shares at network level in the first half of 2005, the full years of 2009,2014 and 2015. Source: Nkom's electronic communications statistics and information from Tele2.

311. Telenor's market share amounted to around 64 per cent in 2014 and at this time was almost unchanged from the previous market analysis. As a consequence of Telia's acquisition of Tele2, the traffic share in Telenor's network was reduced to 59 per cent in 2015. The reduction is a consequence of how, after the acquisition, Tele2 no longer has traffic as national roaming in Telenor's network.

312. Telia had a market share of 28 per cent in 2014.[75] During 2015, the traffic share increased by around 13 percentage points as a consequence of the transfer of roaming traffic from Network Norway to Telia's network, while the traffic which previously used Mobile Norway's network was transferred to Telia's network.

313. Mobile Norway's market share amounted to around 8 per cent at network level in 2014.

314. Nkom has also calculated market shares at network level based on data traffic via ordinary mobile subscriptions in 2014 and in 2015, as shown in table 8. In this case too, traffic from MVNO providers and service providers is included in the traffic of network owners. Data

[72] For Telenor, the figures for 2014 and 2015 include the number of originated minutes at Ventelo, TDC, Phonero, Hello, Mobitalk, Phonect, Telipol, Chili Mobil, ACN Norge, Pepcall, Xito and Primafon. For Telia, ICE, Lycamobile, NextGenTel, Lyse Fiber, Notodden Energi, NTE Marked, Klepp Energi and Banzai are included. The figures for Mobile Norway for 2014 include Network Norway, Tele2, OneCall and MyCall.

[73] The basis for the calculations is that end-users at Tele2 roamed in Telia's mobile network and that Network Norway's end-users roamed in Telenor's network.

[74] E-mail from Tele2 to Nkom dated 2 February 2015. In January 2015, Tele2's share of voice traffic in own network was 44.2 per cent.

[75] The basis for the calculations for 2014 is that the share of voice traffic in own network was 44.2 per cent, while the remainder of the voice traffic is included in the calculation of Telia's market share.

traffic for Network Norway and Tele2, which was via national roaming in respectively Telenor's and Telia's networks in 2014, is taken into consideration in the calculation.[76]

Data traffic via mobile telephony subscriptions	2014	2015
Telenor	60%	60%
Telia	33%	40%
Mobile Norway	6%	

Table 8 Market shares at network level based on data traffic via ordinary mobile telephony subscriptions in 2014 and 2015. Source: Nkom's electronic communications statistics and information from Tele2.

315. Table 8 shows that the mobile data traffic is distributed relatively evenly in the two networks, compared with traffic minutes.

316. Data traffic via ordinary mobile subscriptions after the acquisition is distributed as 60 per cent for Telenor and 40 per cent for Telia. Telia's acquisition of Tele2 entails that the ratio for data traffic increases by 8 percentage points.

317. Access to data traffic in order to offer mobile broadband is also part of the relevant wholesale market. It is therefore relevant to see how the overall data traffic is distributed between the networks when data traffic via mobile broadband subscriptions is included. The table below shows the distribution of data traffic between the mobile networks of Telenor, Telia and ICE in 2015. In this case too, traffic from MVNO providers and service providers is included in the traffic of network owners.

Data traffic via mobile telephony subscriptions and mobile broadband subscriptions	2015
Telenor	47%
Telia	46%
ICE	7%

Table 9 Market shares at network level based on data traffic via traditional mobile telephony subscriptions and mobile broadband subscriptions in 2015.

318. The Table shows that ICE, achieves a market share of 7 per cent at wholesale level. Telenor and Telia achieve around equal market shares. After the acquisition, Telenor and Telia have thus become rather more equally matched in terms of the distribution of data traffic between the two mobile networks.

4.3.2.3 Overall assessment of the development in market shares

319. At retail level, Telenor has seen a decline of one percentage points, measured in terms of the number of ordinary mobile subscriptions, since the previous analysis, while in revenue terms the share has increased by 3 percentage points (residential and business together). Up to the end of 2012, Telenor's market share in revenue terms declined and approached the level of the market share in terms of number of subscriptions. From the first half of 2013, however, Telenor's market share in revenue terms increased. The market shares for number

[76] E-mail from Tele2 to Nkom dated 2 February 2015; in January 2015, Tele2's share of data traffic in own network was 43.8 per cent.

of subscriptions and revenue were 52 per cent and 58 per cent, respectively, by the end of 2015.

320. At end-user level, Telia saw a decline of 4 percentage points in the number of ordinary mobile subscriptions and 6 percentage points in revenue up to the end of 2014. After Telia's acquisition of Tele2, their market share in the retail market increased to 37 per cent based on the number of subscriptions, and 33 per cent based on revenue, by the end of 2015. The retail market for bundled mobile services is thereby dominated by two large mobile network operators. Other operators together account for only 11 per cent of the market (residential and business together), of which the largest providers have a market share of around 3 per cent.

321. At network level, Telia's acquisition of Tele2 has changed the traffic distribution in the networks since the previous analysis. The acquisition entails that Telenor's market share based on number of traffic minutes at wholesale level for 2015 is reduced to 59 per cent due to the discontinuation of national roaming from Network Norway. Telia's market share has increased to 41 per cent due to the transfer of Tele2's overall traffic to Telia's network. Market shares based on data traffic[77] are distributed as 60 per cent in Telenor's network and 40 per cent in Telia's network in 2015. After the acquisition, Telenor and Telia have thus become rather more equally matched in terms of the distribution of traffic between the two networks.

322. In the summer of 2015, ICE launched traditional mobile products in the retail market based on access to Telia's network. As described in Chapter 4.3.8, it is uncertain how aggressively the challenger, ICE, will be able to act over time, based on the access terms in the agreement. At the beginning of 2016, ICE had rolled out LTE in the 800 MHz band to cover 40 per cent of the population, but so far only used this network for mobile broadband. The ongoing strategy for the roll-out of ICE's infrastructure is not known, and it is therefore difficult to predict what effect ICE will have on the distribution of market shares at network level.

323. Overall, Nkom believes that after the acquisition of Tele2, the market shares of the two established network owners, both at retail and wholesale level, indicate in isolated terms that the market is not tendering towards efficient competition. At retail level, these operators cover around 90 per cent of the market, while at wholesale level there are no other operators present that offer access within the relevant market. It is not very likely that ICE will be able to become an attractive provider of access within the analysis' time horizon. Viewed in the context of the development in market shares during the last five years, Nkom assumes that market shares at network level are not likely to change significantly during the analysis' time horizon. In isolated terms, this indicates that the market will not tending towards sustainable competition during the analysis' time horizon.

4.3.3 Market concentration

324. In the assessment of the structural market conditions, traditionally various types of concentration indexes are used. The purpose of the concentration indexes is to give a picture of the intensity of the competition in the market. In this context, market concentration will be a measurement of the number of operators on the supply and/or demand sides in the relevant market, and their relative sizes. High market concentration will often be an expression of limited competition. The definition of high market concentration will vary between different markets.

325. Market concentration can be calculated according to different methods, of which the most common are the summary rate index, also called the concentration ratio (CR), and the Herfindahl-Hirschman index (HHI).

326. CR is typically used to indicate the scope of the market which is controlled by the largest providers in the sector. The concentration ratios vary from 0 to 1, where CR will

[77] Includes data traffic via ordinary mobile telephony subscriptions.

approach the value of 0 if there are many operators competing in the market. CR equal to 1 denotes a monopoly.

327. CR2 is stated as the sum of the two largest providers' market shares. Generally, CR2 is assessed on the basis that the higher the value, the lower the competition pressure in the market is generally assumed to be. On calculating CR2, however, no account is taken of the total number of providers in the market and the relative sizes of the two providers included in the index.

328. In principle, it appears natural to assume that the competition can be stronger in markets with several equally large operators. Therefore concentration is also stated with the help of the HHI index.

329. HHI is calculated by squaring the market share of each company competing in a market, and then adding up the resulting figures. Squaring the market shares gives relatively more weight to companies with large market shares than companies with small market shares. A higher index thus indicates a more concentrated market. Since there are many providers with a small market share, the index will approach 0.[78] On comparing HHI in two markets with equal numbers of operators, if one market has unevenly distributed market shares, while the operators in the other market are of equal size, HHI will be highest in the first-mentioned market. This market will thereby be most concentrated. A decline in the HHI index will generally indicate increased competition intensity and reduced market power.

330. The Table below shows the development in market concentration from previous market analyses in market 15. The calculations are based on originated traffic minutes for the network owners, whereby traffic originated with service providers or MVNO providers is included for the host operator. As for the assessment of market shares at network level, Nkom believes that the traffic produced by national roaming should also be attributed to the host operator. Traffic from national roaming in Telenor's and Telia's networks is therefore included in their figures for 2014.

Originated traffic minutes	First half of 2005	2009	2014	2015
CR2	1	0.99	0.92	1
HHI	0.59[79]	0.53[80]	0.49[81]	0.52[82]

Table 10 The HHI and CR2 concentration indexes for the wholesale market, based on originated traffic minutes.

331. CR2 in the above Table has the value of 1 in 2005 because at that time there were only two network operators, Telenor and Telia. Mobile Norway's entry to the market meant that CR2 was reduced. At the end of 2014, CR2 was equal to 0.92, which could indicate a greater degree of competition than before.[83] CR2 gets the value of 1 again after Telia's acquisition of

[78] https://www.regjeringen.no/no/dokumenter/nou-2012-7/id672264/ s107
[79] Based on the first half of 2005, when Telenor and Telia had market shares of 71 per cent and 29 per cent, respectively, based on traffic minutes. (0.71^2+0.29^2=0.58)
[80] Based on full-year figures for 2009, when Telenor, Telia and Mobile Norway had 63, 36 and 1 per cent, respectively, of the traffic minutes (0.63^2+0.36^2+0.01^2=0.53)
[81] Based on full-year figures for 2014, when Telenor, Telia and Mobile Norway had 64, 28 and 8 per cent, respectively, of the traffic minutes (0.64^2+0.28^2+0.08^2=0.49)
[82] Based on half-year figures for 2015, when the traffic minutes were distributed between Telenor and Telia's networks at 59 per cent and 41 per cent, respectively (0.59^2+0.41^2=0.52)
[83] Since CR is calculated on the basis of originated minutes, it is appropriate to take Telenor's and Telia's shares of traffic in the network as the starting point. CR3 will give the value of 1, and will not be able to say anything about the proportion of the market that is controlled by the largest providers.

Tele2, since once again there are only two network operators in the market. When ICE gradually transfers traffic to its own network, CR2 will be gradually reduced.

332. HHI is also reduced since the previous analysis and up to Telia's acquisition of Tele2. When traffic from national roaming in Telenor's and Telia's networks is included in their figures for 2014, HHI is 0.49. This indicates high concentration in the relevant market. In 2015, after Telia's acquisition of Tele2, HHI increases to 0.52. This indicates that the concentration in the market is increasing and that the competition intensity in the market is limited. The HHI index shows that after Telia's acquisition of Tele2 the relevant market has become more concentrated in Norway.

333. In Denmark, where in 2008 the regulatory authority concluded that there was effective competition in the relevant market, the corresponding HHI was 0.35 in 2005 and 0.33 for the first half of 2007 (four providers). In Sweden, in 2005 the regulatory authority concluded that there was effective competition in the relevant market. At that time, HHI had been steady at just over 0.35 for the last four years. In Iceland, in 2012 the regulatory authority concluded that there was effective competition in the relevant market. At that time, HHI had fallen steadily since 2008 and was 0.35 in 2010.

334. Based on the access agreement with Telia, ICE has launched mobile products in the retail market. The company has in June 2016 started the process with transfer of parts of the traffic to its own network. Nkom assumes, however, that during the analysis' time horizon ICE will probably not achieve a market share at the level of Tele2 prior to the acquisition.

335. If the market share of three network owners had been evenly distributed, HHI would have been 0.33. In Nkom's assessment, it is not very likely that within the analysis' time horizon HHI will reach values equivalent to Denmark, Sweden and Iceland at the times that it was concluded that the relevant markets were subject to effective competition.

336. In summary, Nkom registers that the concentration index measured by CR2 and HHI has been falling since the previous market analysis, which indicates greater competition intensity, but that these values are increasing again after Telia's acquisition of Tele2. The situation after the acquisition in the relevant market is still a high concentration measured by both these parameters. The market concentration measured by HHI after Telia's acquisition of Tele2 is considerably higher in Norway than in Denmark, Sweden and Iceland at the time that these countries concluded that there was effective competition. Overall, Nkom believes that the development in market concentration in the relevant market does not give grounds to believe that the market is tendering towards sustainable competition.

4.3.4 Access to information, switching costs and lock-in mechanisms

337. Various types of limitations or costs of switching provider can reduce the competition intensity at both the retail and wholesale levels. In this Chapter, Nkom assesses access to information, switching costs and lock-in mechanisms in the retail and wholesale markets, respectively, and the significance of these conditions to the assessment of the competition situation.

4.3.4.1 Retail markets

338. End-users face a large number of products and providers of mobile telephony. Nkom assumes that customers in principle have good access to information via the providers' websites. Comparison of the products presents challenges, however. There are several commercial price comparison services, but not all of them give full information on the options available. End-users' opportunities to make comparisons are also complicated by such factors as subsidised handsets and linking of mobile subscriptions with other services, such as access to music services and bankID. In addition, coverage and capacity are marketed actively by the providers, which make comparison of the products even more challenging.

339. In Nkom's view, the actual costs of switching in the residential market (retail level) cannot be said to be particularly high. The establishment costs of switching provider are generally low, and most providers offer free establishment and number porting. The procedures for number porting must also be considered to be relatively uncomplicated. The time window that must be available to the ceding provider for the technical performance of number porting is now only eight hours, according to the industry standard, Administrative Routines for Number Portability. Section 3-6 of the Norwegian Electronic Communications Regulation furthermore stipulates that porting must take place no later than at the end of the following business day after the ceding provider has received a correct request from the receiving provider. Porting between providers will therefore take from eight to 16 business hours. For the end-user, it may take longer, however, as this depends on how quickly he or she has access to a new SIM card.

340. Lock-in periods and family and friend products can have locking effects in the retail market. However, Section 2-4 of the Norwegian Electronic Communications Act requires maximum 12 months' lock-in period as a general rule, but with the opportunity for up to 24 months' lock-in period in special cases. The condition assumes that the provider gives the end-user a financial advantage. The opportunities to lock-in customers in the residential market are thereby relatively limited. Retaining customers during the lock-in period gives more scope for holdback and winback offers, which can have a competition-limiting effect. Overall, Nkom nonetheless does not believe that the use of lock-in periods in the residential market limits competition to any significant degree.

341. The requirements in Section 2-4 of the Norwegian Electronic Communications Act can be waived, however, outside consumer relationships, cf. Section 2-4, 5th paragraph, of the Electronic Communications Act. In the business market, a number of providers operate with lock-in periods of 24 months or longer, and early termination fees of around NOK 3,000, without gradual reduction. Operators wishing to gain customers in this market will often have to expect to pay out the customer, which increases the customer acquisition costs. However, offers without lock-in periods are also made in the business market, directly especially at small and medium-size enterprises. Nkom nonetheless believes that the use of lock-in periods and early termination fees has been and is a greater barrier to mobility in the business market than in the residential market.

342. Family and friend products, with various limitations, have existed for most providers in recent years. However, the importance of this type of service has been reduced significantly as a consequence of package deals with unlimited or almost unlimited call minutes and text messaging. As of today, family and friend products primarily give added value to a traditional subscription based on unit pricing, or being able to ring home with an empty pre-paid card. The lock-in effect of this type of service is thus reduced significantly and is expected to be of even less significance in a two- to three-year perspective.

343. The direct costs of switching in the residential market can to a small degree be said to impede competition. It can be challenging for consumers to navigate the market, however, which can limit mobility. In the business market, long lock-in periods and high early termination fees will impede mobility to a greater degree.

4.3.4.2 Wholesale market

344. At network level, buyers' access to information is more limited. In accordance with Nkom's decision of 5 August 2010, Telenor has been obliged to publish standard agreements for MVNO access and national roaming. The obligation to publish does not extend to information on prices, however. This information must be made available to providers that contact Telenor. Telia does not publish standard agreements for MVNO access or national roaming. In addition, both Telenor and Telia have historically required exclusivity during access negotiations. This entails that access buyers have not been able to compare several

offers with each other, in a negotiation situation. According to Telenor, this is no longer the company's practice, however.

345. Lock-in mechanisms can be established via agreements. For buyers of access, this entails that they lose the most important card in price negotiations, which is the threat of moving the customer base.

346. The requirement of exclusivity will, for example, limit opportunities to use other or additional networks. In its standard agreements and actual agreements for both MVNO and national roaming, Telenor has a requirement of absolute exclusivity. This entails that access buyers, or companies in the same Group as the access buyer, and any service providers and/or MVNO operators to which the access buyer may resell, cannot buy access from other parties than Telenor. This applies irrespective of whether the use of several networks is related to one or several SIM cards.

347. Lock-in period requirements are another factor which can be used to lock in customers. Telenor's standard agreements for both MVNO and national roaming now require an 18-month lock-in period. This is a significantly shorter lock-in period than was the practice some years previously. This increases opportunities for market dynamics, which Nkom believes to be a step in the right direction. However, it must be assumed that the standard agreement is drawn up on the basis of an official decision. Telenor has assumed an understanding of Nkom's decision of 23 March 2012, cf. the Ministry of Transport and Communications' decision of 20 December 2012, concerning inter alia equal terms of agreement between access buyers and access types. In Nkom's view, it is not certain that this agreement term would be offered in a market without ex-ante regulation.

348. Direct switching costs in relation to changing host network vary according to the type of access. Providers with national roaming agreements, and in most cases also MVNO providers, will have their own operator codes and will thus not have to change their end-customers' SIM cards on switching host operator. The host operators can have different technical profiles, however, due to different equipment providers, which can create a need for adjustments on any exchange, and thereby higher switching costs. For service providers, however, switching host operator will make a change of SIM card necessary for end-customers. This can be a relatively extensive process that must often be expected to lead to a certain loss of customers.

349. Switching costs can also arise if the host network has improved coverage in individual areas, at the request of the access buyer. This applies especially to MVNO providers in the business market with a need for coverage in given areas in order to fulfil their customers' requirements. In order to make the changes, the host network may require compensation and a lock-in period.

350. Changes in coverage and capacity on changing host operator are another factor that makes it less attractive to switch host operator. This can have a direct cost-based consequence, inter alia related to making the end-users aware of the change. In addition, end-users are entitled to terminate the agreement if the change is to the disadvantage of the user, cf. Section 1-8 of the Norwegian Electronic Communications Regulation. If switching host operator entails poorer coverage and capacity for end-users, this could entail higher switching costs. The end-users' perception of differences in coverage is another factor than can increase a provider's switching costs. OneCall's transition to Telia's mobile network, for example, led to many queries from customers who were negative about switching network. Providers with access to Telenor's network thereby used their coverage actively in marketing, in order to attract OneCall's customers.[84] If the provider believes that customers prefer coverage from a given operator, on the transition to another host operator it can be necessary to compensate

[84] http://www.insidetelecom.no/artikler/one-call-kundene-flykter/167584?utm_source=Insidetelecom

the customers, in order to reduce the loss of customers. The customers' perceptions of coverage seem to be particularly important for providers that have a large ratio of business customers. [Exempt from public disclosure: [redacted]

4.3.4.3 Conclusion

351. As Nkom sees it, as of today there are neither switching costs nor lock-in mechanisms in the residential market which are significant barriers to competition. The market must be said to be complex, however, and it can be challenging for the end-users to compare the various offers. This can reduce mobility in the market. In the business market, however, the direct switching costs are often higher, due to long lock-in periods and high early termination fees.

352. In Nkom's view, access to information, lock-in effects and switching costs at network level are of greater importance to the development of dynamics in the relevant market. At network level, the market is less transparent since price terms are not publicly available.

353. The lock-in period in Telenor's current standard agreement is reduced to 18 months. This is a significantly shorter lock-in period than in previous agreements and thereby provides for a greater degree of market dynamics. Yet there are other costs of switching host operator which in many cases can make this less attractive. This applies especially to the costs of changing coverage, including loss of customers.

354. The assessment of the access to information, switching costs and lock-in mechanisms thus does not lead to any clear conclusions as to whether the market is tendering towards competition or not.

4.3.5 Market dynamics

355. In the previous market analysis, Nkom referred to how Tele2 and Network Norway had changed host operator and that this could indicate some movement in the access market. In order to assess how the trend towards dynamics has developed, below Nkom describes the changes that have taken place since the previous market analysis, in terms of change of host operator, acquisitions, disposals and new entries.

356. Tele2 AB's acquisition of Network Norway in the autumn of 2011 and Tele2's transition from being an operator with an MVNO agreement to having traffic in its own network and a national roaming agreement at Telia represented a major structural change in relation to the previous market analysis. At the end of 2013, Tele2's network had a coverage ratio of around 75 per cent of the population, while the traffic share was lower than the network's coverage ratio would indicate.[85]

357. In the auction of frequencies in the 800- and 900-MHz band in December 2013, ICE was granted significant frequency resources, while Mobile Norway did not succeed and lost its licences in the 900-MHz band. In the spring of 2014, it became known that with effect from 1 July 2014, Telenor would be the host operator for the overall traffic of Tele2, Network Norway, My Call and One Call. This would entail that traffic which previously used Telia's network would now be gathered at Telenor. In July of the same year, however, Telia announced its acquisition of Tele2's Norwegian activities. In February 2015, the Norwegian Competition Authority approved the merger, on the condition of remedial measures that would make it easier for ICE to become established as a competitor with its own infrastructure.[86]

[85] See Request for change of the Norwegian Ministry of Transport and Communications' decision, from Tele2, of 16 March 2012, page 8.

[86] Further details of the merger between Tele2 and Telia and the remedial measures and transactions concerning ICE are described in the Chapter on the "Significance of a third mobile network".

358. Based on the agreement on sale of Tele2 to Telia, Tele2 undertook to have an MVNO agreement[87] with Telia with effect from 1 October 2014. Transfer of customers from Telenor's to Telia's network commenced in 2014 and continued in 2015. During the autumn of 2015, all Tele2 customers were transferred to Telia's subscription, so that the Tele2 brand was phased out.

359. In the spring of 2014, both Phonero and TDC entered into new agreements on MVNO access, but neither of them switched host operator. Both stayed with Telenor.

360. There has been some switching of host operator among the smaller service providers. Network Norway sold previous access to Telipol, Call Norwegian and Altibox. The first-mentioned now buys access from Telenor, while Call Norwegian has entered into cooperation with Talkmore on re-sale of their subscription. Altibox now purchases access from Telia. All changes of host operator at service provider level have thus been from the third mobile network to the two established network owners. The market shares of these access buyers are relatively small, however, so that these switches have not had any great impact on market shares at wholesale level. The fact that a relatively large proportion of Network Norway's traffic has been produced via national roaming in Telenor's network also contributes to the switching having had very moderate impacts on respectively Telenor's and Mobile Norway's market shares for traffic at wholesale level.

361. Two new MVNO agreements have been activated since the previous analysis. Lycamobile entered into an access agreement with Telia in December 2009. The company has activities in several European countries and, according to its website, has over 15 million customers[88] worldwide. After more than six years in the Norwegian market, the company has achieved a market share of around 2 per cent, mainly by offering pre-paid cards for the ethnic community segment that to a high degree require international calls. Com4 entered into an agreement with Telia in December 2012. The company commenced sales of M2M solutions in March 2013.

362. On the service provider side, a few new operators have entered into agreements and launched products in the retail market since the previous analysis. Xito entered into a service provider agreement with Telenor around the turn of the year 2009/2010 and at the end of the first half of 2015 had more than 7,500 pre-paid card customers. However, the company’s operations were phased out in May 2016. Chili Mobil launched sale of pre-paid cards for the residential market in April 2011, based on access to Telenor. By the end of 2015, Chili Mobil had around 75,000 customers. Banzai became established as a provider, based on a service provider agreement with Telia, in the spring of 2014. The company sells ordinary mobile telephony subscriptions and mobile broadband with voice and text messaging as supplementary services according to the pre-paid card principle. PepCall launched mobile subscriptions in the residential market in March 2015, based on an access agreement at Telenor and has approximately 5000 customers. In June 2016, one of the largest web shops for consumer electronics started up as service provider, also in Telenor’s network. The company focus on selling subscriptions with large data bundles combined with mobile phones.

363. In 2006/2007 there were several examples of small service providers growing relatively quickly and being bought up by the more established providers. For example, Telia acquired Chess in 2006, Telenor acquired Talkmore in 2007, and Network Norway acquired Lebara and OneCall in the same year. Ludo Mobil AS (Ludo), established in 2009, saw equivalent development. Ludo achieved more than 40,000 customers before it became known that the company was facing financial challenges. A large proportion of the customers left the company

[87] The agreement on MVNO access was a "fallback" solution if the company merger was not approved by the Norwegian Competition Authority.
[88] http://www.lycamobile.com/aboutus.html

as a consequence. When Chess acquired Ludo's customer base in February 2012, the company had around 22,000 customers.[89]

364. The above report concerning switching host operator shows that in the period since the previous market analysis, there have been few switches besides those related to Tele2. Other switches had little effect on the traffic distribution at network level. Tele2's departure from the Norwegian market has resulted in greater market concentration and has thus not contributed to increased market dynamics.

365. It can also be seen that there is a limited number of new providers in the retail market. The new MVNOs have become established in their selected market segments and do not present very much competitive power in addition to this. A few new service providers have been established, but overall there are still fewer service providers at the end of 2015 than in the previous analysis, cf. Chapter 3.5.

366. ICE recently launched mobile products at retail level and in the longer term will probably also be able to contribute to dynamics in the wholesale market. Further development of ICE's infrastructure is not known, and it is thus too early to predict what effect ICE will have on the market dynamics in a longer perspective.

367. On this basis, Nkom does not believe that there are dynamics in the relevant market that indicate with sufficiently clear evidence that the market will tend towards sustainable competition without ex-ante regulation within the analysis' time horizon.

4.3.6 Price development

368. The price development in the retail and wholesale market can indicate the extent to which there is competition in the market.

4.3.6.1 Retail market

369. For several years, the retail market for mobile telephony has been affected by falling prices. In the last few years, however, prices appear to have stabilised.

370. Figure 9 below gives a picture of the price development for the most reasonable subscriptions from Telenor and Telia in the last three years. The basis is OECD baskets, which represent a given use of mobile subscriptions for voice, text messaging and data.

[89] http://www.digi.no/890399/chess-overtar-ludo-kundene

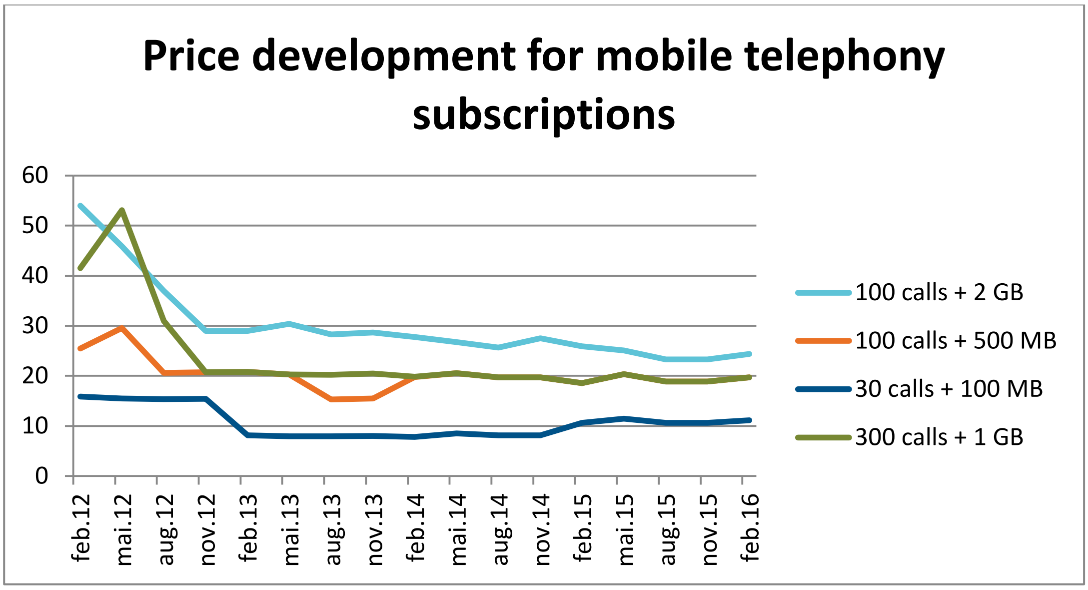


Figure 9 Price development for voice and data from February 2012 to February 2016 based on Telia's and Telenor's most reasonable subscriptions. Source: Teligen.

371. The Figure shows that prices fell at the beginning of the period, and then flattened out as from 2013.[90] The trend now seems to be that mobile subscriptions are not generally becoming cheaper, but that the amount of traffic included in each subscription is increasing. This impedes comparison over a long period, since consumption patterns quickly become outdated.

372. Comparison with other countries also indicates that the end-user prices in Norway are relatively low. The figure below shows the price development for mobile telephony from February 2012 to February 2016 for individual OECD countries. For consumption based on 100 calls and 2 GB per month, Norway ranks above Denmark, Sweden and Finland, but below such countries as the Netherlands and Germany. Towards the end of the period, mobile prices in Norway are at around the same level as in Iceland.

[90] The relatively short time interval is because there are no comparable curves for a longer period of time.

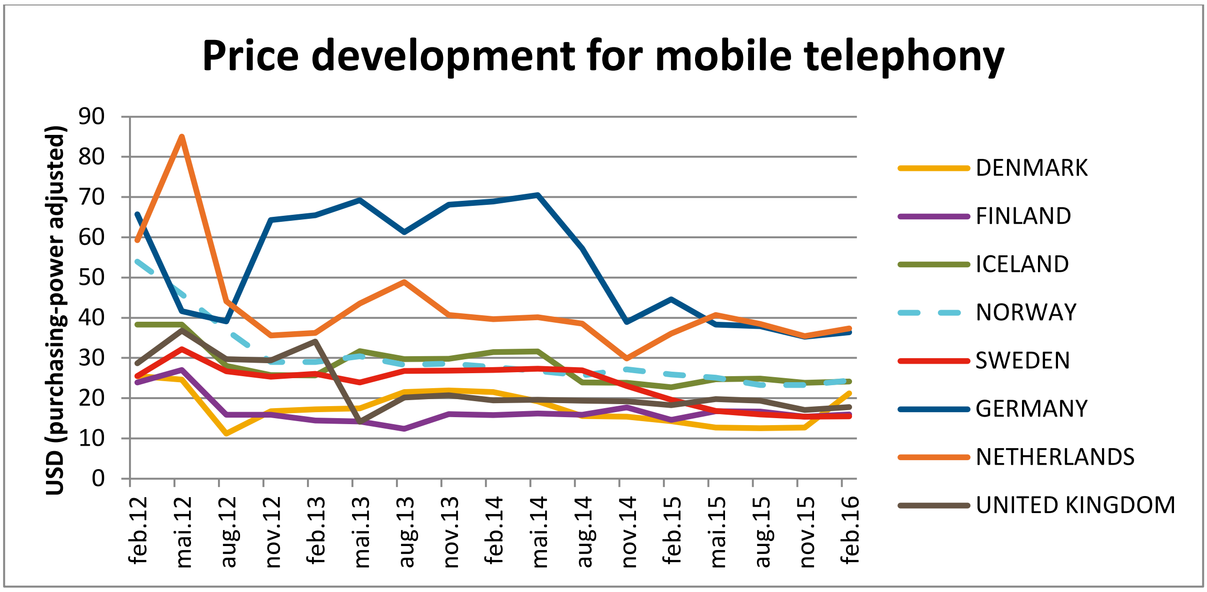


Figure 10 Price development for mobile telephony from February 2012 to February 2016 for selected OECD countries, based on consumption of 100 calls and 2 GB per month. Source: Teligen.

373. There is little doubt that there has been strong price pressure in the retail market in recent years. The introduction of flat-rate products appears to have given increased ARPU for network owners[91], while the price pressure on providers without their own nationwide networks has probably increased. The development towards more and more content in the packages is increasing this pressure.

374. In isolated terms, the price reductions indicate increased competition in the retail market. Furthermore, however, several factors are discussed which in Nkom's assessment show that the price development in the retail market cannot directly be used to substantiate a development in the direction of sustainable competition in the wholesale market without continued sector-specific regulation.

4.3.6.2 Price development at wholesale level

375. At wholesale level, the price terms in Telenor's access agreements have been changed in several instances. It is difficult to monitor the development in the price terms directly, among other things because the agreements' structures have changed over time. Furthermore, such elements as volume discounts and flat-rate components have made it necessary to apply a number of assumptions to any assessment of the development over time. The results of Telenor's reporting of accounting separation may, however, indicate the development in the access buyers' competitiveness.

376. During the regulation period in question Telenor has been subject to a requirement of non-discriminatory prices for MVNO access and national roaming. Telenor has thus been obliged not to take higher prices from external MVNO providers and providers with national roaming agreements than they would have taken from their own retail business, with the exception of any differences that can be justified by objective criteria.

377. The non-discrimination requirement is followed up with a requirement of interim and full-year reporting of accounting separation. A key purpose of the obligation to report

[91] http://www.insidetelecom.no/artikler/sterk-mobilvekst-i-telenor-norge/167551 and http://www.insidetelecom.no/artikler/netcom-tallene-ganske-sa-fornoyd/164483

accounting separation is to ensure that buyers of MVNO access and national roaming can overall achieve a reasonable margin if their activities are just as effective as Telenor's.

378. The accounting separation is designed to show the margin for Telenor's retail activities as if these were structured as an MVNO or as an operator buying national roaming. The reporting is therefore based on the terms in Telenor's standard agreement for MVNO access and national roaming.

379. The sector-specific regulation to which Telenor has been subject during the period thus entails that Telenor's retail prices and access prices are interrelated to a certain degree. If the margins in Telenor's retail activities are low, as a starting point, retail price reductions will normally have to be reflected in reduced access prices.

380. Table 11 shows the margin (before imputed interest) [exempt from public disclosure] calculated on the basis of the full-year reporting of accounting separation for MVNO access and national roaming from 2011 up to and including 2014.

Margin	MVNO	National roaming
2011	[redacted]	[redacted]
2012		
2013		
2014		

Table 11 Margin (before imputed interest) in per cent calculated on the basis of the full-year reporting of accounting separation for MVNO access and national roaming, 2011-2014.

381. Table 11 shows that the margin increased from 2011 to 2012 for both access types, but especially for MVNO access. The improved margin for MVNO access was an effect of Nkom's and the Ministry of Transport and Communications' decision after TDC's appeal concerning discriminatory access terms at Telenor from December 2010. See Chapter 4.3.7 for more information about the appeal.

382. The effect of the Ministry of Transport and Communications' decision was apparent from the reporting of accounting separation for MVNO access for the second half of 2012. The accounting separation for the second half of 2012 showed a considerable improvement in the margin in the report, compared to the first half of 2012. This meant that the margin in the full-year report for 2012 also improved compared to 2011.

383. The basis for the reporting of the accounting separation for national roaming for 2011 and 2012 is Telenor's agreement with Network Norway. In the period from October 2011 to November 2012, Network Norway was invoiced on an additional basis due to claimed breach. For the first half of 2012, Telenor also reported the accounting separation based on the prices used for the invoicing of national roaming (in addition to the standard agreement). The supplementary report showed a result that was considerably weaker compared to the report based on prices without additional invoicing. The margin for 2012, shown in table 11, would have been considerably lower if the reporting had been based on invoiced prices.

384. In a letter to Nkom of 8 November 2012, Telenor notified that the access prices in accordance with the additional invoicing were adjusted downwards with effect from 1 January 2012. Network Norway was not informed about the re-adjustment until in a letter dated 6 June 2012. Telenor justified the price reduction to Nkom with the company's wish to "avoid a discussion between the parties to the agreement concerning prices in relation to the principle of non-discrimination between own and external activities". Nkom believed that the access prices had been reduced to a level which Telenor considered necessary so as not to be in conflict with the non-discrimination requirement. At the same time, Nkom pointed out to

Telenor that the re-adjustment of access prices gives reduced predictability for access buyers concerning access terms, and thereby reduced opportunities to compete effectively.[92]

385. Table 11 furthermore shows that the margin was reduced from 2012 to 2013 for both access types. The main reason was significant changes in Telenor's standard terms for access buyers, with effect from the second half of 2013.

386. Telenor drew up new standard agreements for both MVNO access and national roaming in May/June 2013. In June 2013, these new standard agreements were presented and offered to relevant buyers of MVNO access and national roaming by Telenor. During the summer, Telenor conducted negotiations with relevant buyers of MVNO access and national roaming, which resulted in changes to the new standard terms with effect from 1 September 2013.

387. The terms of the new and revised standard agreements were the basis for Telenor's reporting of the accounting separation for the second half of 2013. The terms in the new standard agreements led to higher access costs for both MVNO access and national roaming. The interim reporting for 2013 showed that the access costs increased by over [exempt from public disclosur[redacted]for both types of access from the first half of 2013 to the second half of 2013. Nkom believed that the cost increase was mainly due to increased data traffic and the introduction of speed-based pricing of data traffic at wholesale level and that the changed price structure in the new standard agreements appeared to give a greater increase in access costs than the volume increase would indicate, in isolated terms. Telenor confirmed that the cost increase was mainly due to an increase in the data volume by [exempt from public disclosure [redacted], but that the increase in the number of subscriptions and increased data speed among Telenor's retail customers also contributed to increasing the access costs.[93]

388. In a letter to Telenor dated 4 June 2013, Nkom expressed concern about several conditions in the notified standard agreements, including that the prices for data traffic seemed to be increasing, among other things due to the introduction of speed-based pricing of data traffic. In connection with follow-up on the accounting separation,[94] Nkom also expressed concern regarding the access buyers' competitiveness in the retail market as a consequence of reduced margins.

389. The margin for 2014, both for MVNO and national roaming, is lower compared to the margin for 2013. Telenor's reporting in 2014 shows a continued significant volume increase in data traffic compared to 2013. This has increased the costs of data traffic. With effect from 1 July 2014, Telenor changed the price model for the calculation of the speed supplements in the standard agreements. This led to reduced access costs for speed. Reduced access costs as a consequence of a changed price model for speed supplements equalised increased access costs due to increased data volumes.

390. The interim reporting of the accounting separation for the first half of 2015 shows that the margin is somewhat lower compared with the second half of 2014, for both types of access. The accounts show an increase in total revenue, but that network operators' costs have increased more in relative terms, mainly as a consequence of increased data traffic.

391. With effect from 1 January 2015, Telenor reduced the prices for the speed supplements in the standard agreements for national roaming and MVNO access. In isolated terms, this led to a reduction of access costs for speed compared to the second half of 2014. This was partly set off by the increase in the number of subscriptions and increased average speed for the

[92] Nkom's letter to Telenor dated 16 January 2013.

[93] Telenor's letter to Nkom dated 20 June 2014.

[94] Nkom's letters to Telenor dated 9 July 2014 and 20 August 2014.

subscriptions, but the price reduction had most weight and gave lower access costs for speed in the first half of 2015.

392. As from 1 October 2015, Telenor again changed the price terms for speed supplements in the standard agreements for national roaming and MVNO access. A speed deduction has been introduced for speeds lower than 8 Mbit/s, while the speed supplement for speeds above 8 Mbit/s has been adjusted. The prices for speeds up to 25 Mbit/s have been reduced, while for speeds above 40 Mbit/s the prices have been increased. The average calculation of speed introduced in 2014 has also been discontinued. The overall effect of these changes appeared in the reporting of the accounting separation for the second half of 2015. These reporting shows that access costs for speed have increased compared with the first half of 2015. In addition, the reporting shows that increasing data traffic contributes to increased total cost for access. For this reason the margin for the second half of 2015 is significantly lower both for national roaming and MVNO access compared to the previous three years.

393. For service providers, the SIM charge has increased significantly in 2015, from [exempt from public disclosure [redacted] per MSISDN. At the same time, a speed deduction was introduced for speeds below 8 Mbit/s, as well as a lower speed supplement for higher speeds. The effect of this is that higher speeds give a lower price than before, while for low speeds the price has increased, since the increase in the SIM charge exceeds the speed discount given. This can be a very negative development for service providers. Some elements of their customer segment, such as pre-paid card customers, have low consumption, and the SIM charge thus has a high impact. Even though the prices for high speeds have fallen somewhat since the last price reduction, service providers claim that it is impossible to compete on offering higher speeds. However, Nkom does not have a full overview of the development in access prices for service providers, since this type of access has not been regulated.

4.3.6.3 Conclusion

394. In summary, Nkom believes that the terms in the new standard agreements in 2013, with increased prices for data at wholesale level and a development with increased demand for data traffic and higher data speeds in the retail market, would be able to reduce access buyers' competitiveness in a part of the retail market which is growing. In Nkom's view, the price pressure in the retail market thus cannot be taken to indicate that the market is tendering towards sustainable competition, without considering the development in the price conditions for access buyers. Several factors indicate that the sector-specific regulation appears to be a necessary disciplinary mechanism for Telenor's access terms at wholesale level. Overall, Nkom believes that the development in the terms for access buyers and the processes for changes to agreements do not indicate that the market for access and origination on mobile networks will move towards sustainable competition without sector-specific regulation.

4.3.7 Market behaviour

4.3.7.1 Introduction

395. On the assessment of the second criterion, in addition to structural indicators, it will be relevant to assess the actual behaviour observed in the market.

396. It is emphasised that observed behaviour mainly took place in the period prior to the merger between Telia and Tele2. After the merger, the market shares are more evenly distributed, at both retail and wholesale level, and it cannot be excluded that future market behaviour will be characterised by rather greater parity between Telenor and Telia.

397. When the Commission on a general basis concluded that the market for access and call origination on mobile networks was no longer susceptible to ex-ante regulation, weight

was given to how network owners enter into access agreements on commercial terms.[95] Nkom assumes that the Commission is first and foremost referring to how access agreements were entered into without the seller of access being obliged to enter into such an agreement due to sector-specific ex-ante regulation. On assessment of the second criterion, any such voluntary establishment of agreements will be considered to be a behavioural indicator.

398. As from and including January 2006, Telenor has been subject to specific obligations in market 15, including an access obligation, obligation to report accounting separation and a non-discrimination requirement. Consequently, the access agreements in Norway were entered into under a regulated regime. In the vast majority of EU member states, the national regulatory authorities have not found providers with significant market power in market 15, and have thereby concluded that there has been functioning competition in the market. The basis for assessment of the significance of the establishment of access agreements will thus be different in Norway to the basis used by the Commission when it found that, on a general basis, the market is not susceptible to regulation.

399. As of today, Telia is the only provider with an active agreement with buyers of national roaming. The agreement has been established as a remedial measure for the Norwegian Competition Authority to approve the acquisition of Tele2. It is not excluded that Telia wishes to retain ICE as access buyer, also for a period of time beyond the lock-in period. However, Nkom emphasises that the agreement was established in special circumstances and therefore cannot be used to confirm that there is competition to provide access at the wholesale level.

400. Telia has agreements with Com4 and Lyca as buyers of MVNO access. Furthermore, as part of the remedial measures, Telia has undertaken to have a standard offer for MVNO access. This offer was market-tested by the Norwegian Competition Authority in conjunction with their assessment of the remedial measures. As far as Nkom is aware, none of the established buyers of MVNO access at Telenor found the offer significantly more attractive than existing Telenor offer. Nkom has neither after the merger got indications from the market players that the offer from Telia is more attractive than the existing Telenor offer. It was also clear from Telia's proposal for remedial measures that the standard offer for MVNO access was dependent on the acquisition being achieved. Telia's presence as an provider of MVNO access may indicate a certain degree of competition for wholesale customers. However Nkom has no reason to believe that the newly-established standard offer has, that was proposed in order to achieve the aforementioned merger, has had effect on the market dynamics. This offer is therefore not in itself a sign of sustainable competition in the wholesale market.

401. With regard to the other access agreements established, Nkom believes that the sector-specific ex-ante obligations that have applied have been of significance to the establishment of access agreements, and furthermore, that the terms of the agreements must to some extent be considered to be influenced by the regime under which they were established. On this basis, in the assessment under the second criterion it will not be sufficient to note that access agreements exist and are established in the relevant market, but it will be both appropriate and necessary to also consider the more detailed content of the access agreements and the operators' conduct in the relevant market.

402. In a previous analysis, Nkom found strong asymmetry in the balance of strength between operators in the relevant market. In Nkom's assessment, an evaluation of the content of relevant access agreements and central operators' market behaviour will be appropriate to illustrate the balance of strength in the relevant market, including the extent to which there is disciplinary buyer power and the extent to which the relevant market is characterised by competition.

[95] Explanatory Note, 13 November 2007, page 4.

403. On assessment of the second criterion, Nkom assumes a medium time perspective and an assumption that the relevant market is not subject to sector-specific regulation. In a forward-looking perspective, it will therefore have to be assessed whether agreements could be expected to be established without regulation and whether buyers of access can be expected to achieve terms that give sufficient opportunity for market competition.

404. Telenor has been designated as a provider with significant market power in the period on which the assessment of market behaviour is based, and has been subject to several separate obligations. On assessment of the terms of access agreements and market behaviour, Nkom therefore considers it appropriate to take Telenor's and the access buyers' behaviour as the starting point. Nkom has not found it appropriate to undertake as detailed a review of the terms of the access agreements as in the previous market analysis. Individual access terms, and their development, will nonetheless be particularly suitable to illustrate whether the relevant market is tendering towards sustainable competition. A report on appeals and Nkom's assessments are also considered to be relevant.

4.3.7.2 Development in central access terms

405. In several regulation periods Telenor has been subject to an obligation to offer access on non-discriminatory terms. The agreement terms applying to MVNO access and to national roaming have been changed in a number of instances. The changes concern price terms (discussed in Chapter 4.3.6.3) and other terms such as volume commitments, sanction clauses and exclusivity clauses.

406. Agreement terms related to price structure varied for MVNOs and for national roaming until Telenor introduced new standard agreements in 2013. Until then, various different providers had different structures in terms of use-dependent and non-use-dependent price elements. When Nkom in 2012 noted a breach of the non-discrimination obligation and required correction of the agreement terms for TDC, Telenor decleared that the company was forced to offer access buyers identical terms and that it was not possible to adapt the price structure to the individual access buyer's needs. As part of the response[96] to new agreement terms, Nkom stated that any such static equal treatment is not laid down in regulation.

407. Obligations to buy a certain volume have been customary in Telenor's access agreements, both for MVNO and national roaming. Nkom has previously pointed out that volume commitments can tend to limit the market dynamics since such obligations serve the established network owners' needs, while providers that are in the process of rolling out networks may experience this as a barrier to transferring traffic to their own network. Volume commitments as the basis for lower prices are customary in access agreements in many markets, however, and Nkom does not disagree that this can be of value to the network owner in isolated terms. However, these commitments must be viewed in the context of other obligations in an agreement, and in conjunction with the price reduction achieved by the requester.

408. Since the national roaming agreement was established with Network Norway in 2008, Telenor has required that the company may not have access agreements with other network owners at the same time (exclusivity). The reason for this was that purchase of access in several networks would give the access buyer better coverage than the network owners individually, even though this did not entail coverage from several networks on the same SIM card. Prior to the establishment of the agreement, Nkom had taken a decision which specified that any such requirement was in conflict with Section 4-1 of the Electronic Communications Act. However, this decision was cancelled by the Ministry of Transport and Communications

[96] Nkom's letter of 4 June 2013

without discussion of its merits[97]. The exclusivity clause in Network Norway's access agreement (double roaming prohibition) was considered by Asker and Bærum District Court on 29 November 2012, when Telenor believed that Tele2 AB's acquisition of Network Norway would entail that all traffic for both companies would have to be purchased from Telenor so as not to entail breach of the exclusivity clause. In November 2012, the District Court ruled that Tele2's acquisition of Network Norway was not affected by the exclusivity clause and that the existence of the clause did not entail abuse of a dominant position.

409. In the current regulation period, Telenor has also introduced a requirement of exclusivity in the standard agreement for MVNO access. Nkom has notified that the requirement of exclusivity is not in accordance with current regulation and must be adjusted.[98] In its notification, Nkom believed that the requirement weakens access buyers' opportunities to exercise buying power and is likely to limit the market dynamics. Nkom believes that several conditions mean that the District Court's ruling is not directly comparable with the fact that Telenor has introduced a requirement of exclusivity in current standard agreements. Among other things, the District Court's decision was taken pursuant to the Norwegian Competition Act and applies to an actual case, in contrast to a general prohibition in all standard agreements for MVNOs and national roaming.

410. Nkom has also notified that Telenor will be required to adjust the term in the standard agreement concerning the right to unilateral access to make changes. Nkom believes that unconditional and unilateral access to make changes, as stated in Telenor's standard agreement, is an unreasonable term that can limit the access buyer's opportunities to compete with Telenor on equal terms.

411. The agreement with Network Norway also had a sanction clause that was assessed by the authorities. In conjunction with the consideration of the appeal from TDC, the Ministry of Transport and Communications supported Nkom's concerns regarding sanction clauses by among other things stating[99]: *"The Ministry believes that clauses of such a nature would hardly be likely to occur in a market with well-functioning competition, and can indicate abuse of market power."* And further: *"... the agreement clause can be equated with an attempt to make an agreement which moves away from mandatory legislation."* The Ministry also stated the following: *"An operator with significant market power in a market of which ex-ante regulation is necessary via sector-specific competition regulation does not have access to weaken other market operators' legal position by including clauses of this type."* This type of sanction clause does not exist in today's standard agreements.

412. Nkom believes that the history shows that the aforementioned agreement terms to a great extent appear to be dictated by Telenor and are to a lesser extent adjusted to the access buyers' requirements. Access buyers in an ex-ante regulated market will, however, have incentives to appeal the access terms, and it is very important that the authorities assess relevant terms on an objective basis. Nkom nonetheless believes that there are clear signs of an imbalance in the relative strengths of Telenor and access buyers, which supports the need for continued ex-ante regulation.

[97] Nkom's decision from 20 September 2007 was appealed by Telenor. Network Norway, which wished to have access to Telenor's network even though the company already had access to Telia's network, terminated the access agreement with Telia while the appeal against the decision was considered. The Ministry of Transport and Communications thereby cancelled the decision since there was no longer any basis for the appeal, without considering the appeal on its merits.

[98] Nkom: Notification – order to adjust Telenor's standard agreements for national roaming and MVNO access, 9 June 2015.

[99] The Ministry of Transport and Communications' decision of 20 December 2012

4.3.7.3 Appeals and decisions

413. At different times, TDC and Network Norway have appealed the access terms offered by Telenor. Below is a review of some of the appeal and conflict situations that have arisen during the regulation period.

Discriminatory behaviour and margin squeeze

414. In December 2010, TDC appealed discriminatory access terms at Telenor. TDC believed that they were exposed to discrimination compared to Telenor's internal retail activity, including margin squeeze, and suffered discrimination compared to other buyers of access to Telenor's mobile network.

415. In a decision of 23 March 2012, Nkom concluded that Telenor had discriminated against TDC, in conflict with the requirement of non-discrimination between external access buyers. Telenor was therefore required, within 30 days, to offer TDC an agreement on regulated access that was to be in accordance with the relevant non-discrimination requirement, including that the access costs were to be reduced by 20 per cent, and that TDC was to be offered an access agreement with a price structure and price adjustment mechanisms equivalent to Telenor's other agreements concerning purchase of regulated access.

416. In three instances, Telenor submitted updated offers to TDC, but these were assessed not to be in line with the adjustment requirement. Nkom therefore notified coercive fines on 9 September 2012, in order to enforce the adjustment requirement. On 24 September, i.e. around six months after the adjustment order was made, Telenor submitted an offer which Nkom considered to be in accordance with the order.

417. Nkom's decision was appealed by Telenor. In a decision of 20 December 2012, the Ministry of Transport and Communications upheld Nkom's assessment that Telenor had discriminated against TDC in conflict with the non-discrimination requirement. The Ministry of Transport and Communications also believed that TDC was entitled to maintain the original price structure and other agreement terms and that Telenor could not require changes to the access agreement in order to comply with the order to reduce TDC's access cost. With regard to the concrete adjustment requirement, the Ministry of Transport and Communications determined that the access cost was to be reduced by 19.8 per cent.

418. On the basis of the decision concerning breach of the non-discrimination obligation, in March 2013 TDC submitted a claim for reimbursement of the overcharged price. On 21 February 2014, Nkom decided that Telenor should reimburse around NOK 18 million as calculated overcharged price and interest. Telenor appealed the decision concerning reimbursement. On 16 March 2015, the Ministry of Transport and Communications decided to uphold the reimbursement claim, but adjusted the reimbursement amount to around NOK 16 million.

419. The part of TDC's appeal claiming discrimination between Telenor's internal retail activity and TDC, including the claimed margin squeeze, was concluded on 13 December 2013 by Nkom finding on the basis of margin squeeze tests that no such discrimination had taken place. TDC appealed the decision on 2 January 2014, claiming that the formal nature of the decision was an individual decision.

420. In July 2013, Network Norway also claimed breach of the non-discrimination obligation, claiming that they were subject to margin squeeze. Network Norway also appealed the price structure and believed that this was discriminatory for an operator that was rolling out its own network. The element of Network Norway's appeal which concerned discrimination in the form of margin squeeze was concluded on 13 December 2013 when Nkom on the basis of the margin squeeze tests performed did not find that such discrimination had taken place. On 3

January 2014, Network Norway appealed the decision and claimed that the formal nature of the decision was an individual decision.

421. Nkom's decisions to reject the appeals from Network Norway and TDC concerning margin squeeze were based on Nkom's decision of 13 December 2013 on the use of margin squeeze tests as the tool to follow up on the non-discrimination requirement. Network Norway and TDC appealed this decision on 29 January 2014. Nkom's decision was cancelled by the Ministry of Transport and Communications on 26 November 2014 due to lack of notification to ESA. On 4 June 2015, the Ministry of Transport and Communications decided that Nkom's decisions from 13 December 2013 were to be considered to be individual decisions. The Ministry also maintained the conclusion that there were no indications of breach of the non-discrimination obligation between internal and external activities.

422. Network Norway claimed in June 2013 that Telenor was in breach of the access obligation after Telenor had introduced a blocking in its mobile network which limited the maximum download speed that Network Norway could achieve in Telenor's network to 8 Mbit/s.

423. During consideration of the case, it emerged that all buyers of access in Telenor's network were subject to the appealed conditions, but that this had partly been corrected with offers of high speeds made in November 2013. On 18 September 2014, Nkom decided to issue an infringement charge of NOK 5 million to Telenor against the background that the company had not offered the same speeds to external buyers of access as to its own activities during the period from June 2011 to November 2013. The decision was appealed by Telenor. On 9 November 2015 the Ministry of Transport and Communications took a decision to maintain Nkom's decision for an administrative fine against Telenor. The Ministry of Transport and Communications believed that the breach of the non-discrimination obligation was serious and that the fine was therefore not too high. In the Ministry's view, the infringement had given Telenor unjustified competitive advantages.

424. In Nkom's view, it is reasonable to see Telenor's discrimination between external buyers of access as an indication that the relevant market does not tend towards sustainable competition. Furthermore, Nkom believes that Telenor's breach of the non-discrimination obligation by not offering buyers of access the same speeds as were offered to its own retail activity indicates the same effect.

Co-location

425. In November 2011, Mobile Norway claimed in an appeal that Telenor did not fulfil the obligation to meet reasonable requests for co-location and that the refusals did not fulfil the requirements of documentation and justification. Nkom was requested to be mediator in the case, and the appeal was suspended while the mediation was pending. Mediation did not lead to a solution, and in February 2013, Mobile Norway revised its appeal to concern five concrete locations. The parties reached agreement during April 2013 and Mobile Norway was offered co-location at the five locations. However, Nkom found that Telenor had breached the obligation to justify and document refusals of requests for co-location and adopted an infringement fee against Telenor in December 2013. The decision was appealed by Telenor, whereby Telenor inter alia claimed that the Norwegian Electronic Communications Act did not give any authority to order capacity expansions, so that no further reasons could be required for rejections due to a lack of capacity. The Ministry of Transport and Communications upheld Nkom's decision on 21 May 2015 and believed that Telenor should have understood that the company had an obligation to expand capacity at locations when the requests were reasonable. The Ministry of Transport and Communications furthermore believed that Telenor's conduct in the five request cases could not be characterised as formal errors, but on the contrary were of great significance to competition.

426. In Nkom's assessment, it is not obvious that the solutions which, after a long time, were found for the five concrete requests would have been achieved without the threat of regulatory intervention. On this basis, Nkom cannot see that Telenor's behaviour with regard to co-location is sufficiently disciplined by other operators in the market and believes that Telenor's behaviour in this case is an expression of how the relevant market does not tend towards sustainable competition.

Standard agreements

427. In May 2013, Telenor presented draft new standard agreements and in a letter of 4 June 2013 Nkom expressed how selected elements of the agreement terms were considered to be problematic in relation to Telenor's mandatory obligations. It was inter alia pointed out that absolute exclusivity, unilateral access to make changes and price structure could have a competition-limiting effect.

428. Both TDC[100] and Network Norway/Tele2[101] have appealed concerning access terms that were offered by Telenor via a new standard agreement. The appeal from Network Norway/Tele2 was maintained by Telia, which later expanded it, and individual elements were withdrawn. Elements of the appeal, including exclusivity and the right to unilateral access to make changes, are considered in Nkom's notification from 9 June 2015, which is described above. Other elements of the appeals were considered in Nkom's notification of 31 August 2015, in which Nkom notified that access buyers must be offered an alternative price structure to the price structure with a fixed charge per SIM, including for speed supplements per SIM, and that the SIM card fee in the migration phase was in conflict with current regulation.

4.3.7.4 Conclusion concerning market behaviour

429. As initially stated, the description in this Chapter mainly applies to the period prior to the merger between Telia and Tele2. The market was regulated during the period and access buyers also experienced discrimination in conflict with current obligations, both in terms of price and other conditions, lack of grounds and documentation related to refusal of co-location, and access terms which to a limited extent make it possible for buyers of access to compete with Telenor's own products in the retail market. This indicates that there are significant differences in strength between the operators and that Telenor has only to a small degree been disciplined by buyer power or other competitors.

430. Nkom has made a decision in most of the cases mentioned above, and these are in many cases upheld by the ministry. Based on this, it is expected that the same problems will not appear if the market continues to be regulated. However in a forward looking perspective without ex ante regulation of the market, Nkom believes that Telenor will not be disciplined to an extent that prevents the company from this kind of market behaviour.

431. Telia's presence has not been a sufficiently disciplinary force and it was only as part of gaining the competition authorities' acceptance of the company merger that Telia in 2015 launched a standard MVNO offer. Nkom believes that this indicates that buyers of access do not have sufficient buyer power to create dynamics and sustainable competition in the wholesale market without regulation.

432. In a limited forward-looking perspective, Nkom believes that even though, as a consequence of the company merger, Telenor and Telia achieve a more even distribution of market shares and can thus be claimed to be more equal, there is not sufficient evidence for access buyers' ability to achieve sufficiently favourable terms in a market without regulation.

[100] TDC's appeal of 11 April 2014.

[101] Network Norway/Tele2's appeal of 5 July 2013 and appeal of 19 December 2014.

4.3.8 A third mobile network

4.3.8.1 Background

433. Establishing a third mobile network that can contribute to promoting the objective of the Norwegian Electronic Communications Act by facilitating sustainable competition has long been a key objective of Norwegian mobile regulation. The objective is inter alia expressed in the Ministry of Transport and Communications' appeal decision in market 7 of 19 May 2009 to Network Norway, clause 3.13.1, in which the Ministry states:

> *"The Ministry of Transport and Communications refers to the telecom policy objective of affordable future-oriented services […]. The remedy for achieving this objective is sustainable competition, and the third network is crucial for achieving sustainable competition. The Ministry of Transport and Communications therefore believes that it is important for the development of the Norwegian mobile telephone market to establish a third network that can be a real competitor to the current two network providers."*

434. This goal also appears in the national plan for electronic communications from the Government from 2016, where it follows that: [102]

"The Government wants:

- *The sector specific competition regulation to facilitate for at least three competitive mobile networks."*

435. On the previous market analysis, Mobile Norway's mobile network was being rolled out. Mobile Norway was established in 2007 as a joint network company for Network Norway AS and Tele2, which then each owned 50 per cent. From this point in time, Network Norway had some traffic in its own network while the company also had a national roaming agreement to give its customers access to nationwide networks. At this time, Tele2 had an agreement on MVNO access, but in 2011 went over to a national roaming agreement.

436. In 2009, the companies put forward business plans which entailed the roll-out of a network with 75 per cent population coverage. This was assessed by the companies to constitute a competitive network.

437. In a letter to the Ministry of Transport and Communications of 19 September 2011, however, Network Norway and Tele2 stated that they had reassessed the previous business plan and that the companies believed that a third competitive mobile network had to be so large that national roaming could be switched off. This information was given in conjunction with the companies' request for an extended period with asymmetric termination prices. In relation to the statement concerning competitiveness, Nkom performed a limited competition analysis with the main emphasis on competition conditions related to national roaming. In the analysis, Nkom assumed that the concept of "full competitor" entailed a situation whereby the third network to a sufficient extent has the right conditions to be able to discipline other operators at infrastructure level. In this respect, Nkom stated that the assessment of whether the third network would be able to constitute a full competitor would mainly be related to whether Network Norway and Tele2, with 75 per cent population coverage in their own mobile networks, would to a sufficient degree be able to discipline other operators on the supply side in market 15. In this analysis, Nkom concluded that a third mobile network must have a higher degree of coverage than 75 per cent to be able to compete effectively with the established network owners.

438. At the end of 2013, Mobile Norway's network covered around 75 per cent of the population and 40-50 per cent of the companies' traffic was in Mobile Norway's network. At this

[102] Meld. St (2015-2016): Digital agenda for Norge, chapter 25.3

time, Mobile Norway did not have external buyers of access and in Nkom's assessment was not a full operator on the supply side in the relevant market.

439. Based on experience from Tele2 and Network Norway's presence as MNO, Nkom assumes that the competitiveness of a buyer of national roaming in the wholesale market is closely related to the share of traffic the company can produce in its own network and the network's coverage ratio. Nkom thus assumes that a third network must have more than 75 per cent population coverage in its own network and more than 50 per cent of the traffic in its own network to be a competitive operator in the wholesale market.

440. As stated in Chapter 3, Mobile Norway's network has been discontinued. Parts of the infrastructure have been sold to ICE.

4.3.8.2 ICE as the third mobile network

441. After the auction on 2 December 2013, ICE holds extensive frequency resources for mobile roll-out. In the 800-MHz band, Telia, Telenor and ICE have the same number of frequencies. In the 900-MHz band, Telia and Telenor have 2 x 15 MHz each, while ICE has 2 x 5 MHz. In the 1800-MHz band, 2 x 15 MHz was auctioned in December 2015, when Telenor won 2 x 10 MHz and Telia won 2 x 5 MHz. This entails that these operators in total have, respectively, 2 x 30 MHz and 2 x 25 MHz in this band, while ICE has 2 x 20 MHz. In addition, ICE has frequencies in the 450-MHz band.

442. In 2015, ICE upgraded its CDMA 450 network to LTE. The customer base for mobile broadband has been transferred to this network. As of today there are no handsets for traditional mobile services that support LTE in the 450-MHz band. The company has also launched traditional mobile subscriptions, but so far this traffic is in Telia's network.

443. Several of the remedial measures submitted on the merger between Tele2 and Telia are intended to contribute to ICE becoming an operator in the relevant market more quickly than otherwise. This especially concerns the agreement on sale of infrastructure to ICE; the terms of co-location for ICE; the national roaming and service provider access agreement; and the sale of customer base and distribution network.[103]

444. Below, Nkom assesses the extent to which ICE will be able to discipline the established operators in the retail and wholesale markets, respectively, during the time horizon of the analysis.

4.3.8.3 Significance of ICE's mobile network in the retail markets

445. The national roaming agreement entails that in coverage terms ICE can offer a full and complete package in the retail markets. According to the agreement, ICE must have access to all services that are available in Telia's network at any time, on a non-discriminatory basis.

446. The opportunities for aggressive competition will depend to a great extent on the price level for access compared to the price level in the retail markets. In the short term, Nkom believes that the access terms, for both service provider access and national roaming, are at a level which makes it possible for ICE to be able to compete at least as aggressively as other buyers of access which operate in the residential and business market. In the rather longer term, it is more uncertain how attractive the access terms will be and thereby how far the access terms will make it possible to compete aggressively.

447. On the assessment of the remedial measures, Nkom remarked to the Norwegian Competition Authority inter alia that the price co[redacted] in the period from 1 March 2015 to 1 March 2018. [[redacted]

[103] Reference is made to the Norwegian Competition Authority's decision V2015-1 - Telia AB (publ) - Tele2 Norge AS/Network Norway AS - Section 16, cf. Section 20 of the Norwegian Competition Act - intervention against company merger (clause 660) for a full list of measures.

[redacted]

448. As stated, the national roaming agreement includes a non-discrimination clause with regard to access to services, but there is no equivalent clause for access prices. To a certain degree, the price adjustment clause takes account of falling prices at the retail level and will thus to some extent fulfil the same function as a non-discrimination clause between Telia's internal service provider and ICE as access buyer. The effect of the price adjustment clause is limited, however, since it only applies to a relatively low number of customers.

449. On this basis, Nkom believes that it is uncertain how aggressively ICE will be able to compete based on the access prices in the agreement with Telia onwards during the agreement period. The agreement can be terminated within the time horizon of the analysis. The significance of this will depend on ICE having real alternatives for buying access, in practice from Telenor. Besides this, the traffic share in own network is a central factor to be able to compete effectively in the retail markets over time.

4.3.8.4 Significance of ICE's mobile network in the wholesale market

450. Theoretically, ICE can offer resale based on the access agreement with Telia. However, Nkom finds it difficult to see how ICE would be able to establish an attractive offer in the wholesale market based on this agreement. As Nkom understands the access agreement, a fixed charge per SIM card (SIM charge) at the high wholesale rate must always be paid. Even though the use-based prices are at a relatively low level, Nkom finds it difficult to see that the access terms overall are at a level which makes it possible to offer attractive wholesale prices.

451. In this regard, Nkom also refers to how several access buyers seem to believe that it is a drawback in coverage terms to offer services based on access in Telia's mobile network, and that they therefore expect a lower price, to be able to compensate for any such drawback. As stated, Telia has stated that the company will offer mobile broadband to 98 per cent of the population before the end of 2016. Within the analysis' time horizon, this perception among access buyers will probably nonetheless indicate that ICE would find it difficult to offer attractive wholesale products based on the terms of the access agreement from Telia.

452. However, ICE has in June 2016 started the process with transferring data traffic from their mobile telephony customers to their own network. ICE will use national roaming for traffic outside its own coverage area, and for voice in 2G/3G. In time, the company will offer voice via LTE (VoLTE).

453. As stated initially, Nkom assumes that a full competitor in the relevant wholesale market will depend on being able to produce a higher share of traffic in its own network than achieved by Tele2, that the company achieves a customer base that allows for relatively low unit costs, and that the company has access to national roaming on reasonable terms.

454. In Nkom's assessment, the national roaming terms which ICE would achieve with Telia appear to be relatively favourable in the short term, compared to the access terms of other access buyers in the market. In isolated terms, this indicates that based on the current access terms, ICE should be able to win customers in the retail market and thereby also increase traffic in its own network.

455. In the longer term it is, as stated, more uncertain how attractive the access terms which ICE has achieved will be, and whether they are favourable enough to be able to make an attractive offer in the wholesale market. Nkom points in particular to the unfortunate aspects related to how the agreement includes a fixed charge per SIM card. This charge entails that ICE will have a fixed cost per subscription that will persist for as long as the company depends on buying roaming. The charge can make it difficult to compete effectively in the relevant market, from a static perspective, but can also reduce the incentives to expand its own mobile network, as the effective price for purchase of national roaming will increase as the access buyer makes less use of roaming. The charge will not lapse until the access buyer no longer uses roaming. In Nkom's view, retail users' steadily increasing coverage requirements and expectations mean that a third mobile network will depend on national roaming beyond the next two to three years, in order to be able to offer attractive services in the relevant markets.

456. The size of ICE's traffic share in its own network will primarily depend on the roll-out rate. ICE has signed an agreement for the purchase of a given number of base stations from Mobile Norway and will use these together with upgrading its own base stations. At the beginning of 2016, ICE had 40 per cent population coverage via the 800-MHz band[104]. The strategy which ICE applies to further roll-out will thereafter be of great significance to the traffic share in its own network.

457. As stated, ICE has taken over Network Norway's customer portfolio with related rights. Some of these customers did not stay with ICE, however the company has acquired new customers, mainly in the residential market. At the end of 2015, ICE had just below 75,000 mobile customers (not including customers with dedicated mobile broadband subscriptions). This amounted to just above 1 per cent of the total number of subscriptions in the retail markets for bundled mobile services and can thereby in no way be considered to be a volume that is large enough to achieve sufficiently low unit costs.

458. For comparison, Tele2 already had close to a 9-per-cent market share (around 450,000 customers) when they established a joint network company with Mobile Norway in 2007. When the companies at the end of 2013 covered around 75 per cent of the population with their network, they together had a market share of around 18 per cent (approximately 1.055 million customers). It would be very difficult to achieve an equivalent customer base via organic growth within the time horizon of the analysis.

459. Since ICE can withdraw from the agreement with Telia within the time horizon of the analysis, at some time the company will be able to negotiate access with both Telenor and Telia. Since ICE has built up a customer base of a certain size, the company would have a certain degree of negotiating power vis-à-vis the aforementioned providers, and in this way be able to discipline their offers. However, the size of ICE's customer base at this time is subject to great uncertainty. Via the media, the company itself has communicated expectations of relatively moderate growth. A 5.5-per-cent market share in 2020 is stated as an objective for the company[105]. Nkom has no basis to expect that a buyer of access on this scale can discipline the established providers to any significant degree.

460. In summary, Nkom believes that several factors indicate that ICE will be able to develop into an operator that can offer wholesale access on competitive terms. How quickly this will take place will depend on the strategy that ICE applies to the further roll-out of its own network, transfer of traffic to this network, and growth in the customer base. Experience indicates that both the roll-out of its own network and organic growth take a lot of time.

[104] http://www.insidetelecom.no/artikler/ice-i-mal-med-dekningskravene/224324

[105] This target was set before the remedial measures were put in place and according to the company can be adjusted a little, as a consequence of the remedial measures.

461. In Nkom's assessment, the prevailing market conditions do not give sufficiently clear evidence that within this analysis' time horizon the third network would be able to discipline the established operators on the supply side.

4.3.9 Potential competition

462. In this context, potential competition relates to whether operators that are not in the market today can contribute to increased market dynamics within the relevant time horizon.

463. High prices in a market will make new establishment more attractive. The threat of increased competition from new operators will thereby be able to exert a disciplining effect on established operators' pricing. Nkom assumes that in this context potential competitors are operators that can offer access to the mobile network, or alternatives to access to the mobile network. In principle, access to mobile networks can be offered by network owners with nationwide networks, operators with national roaming agreements, or MVNO providers.

464. On assessing potential competitors at MNO level, Nkom assumes that Telenor and Telia are two well-established network operators in the relevant market. Up to taking over Network Norway's customers, ICE has not offered traditional mobile telephony, i.e. bundling of voice, text messaging and date, and has thus not been an operator in the relevant wholesale market. On ICE's takeover of Network Norway's customers and offer of traditional mobile telephony to them and other retail customers, based on purchase of access and, in time, own infrastructure, the company will fall within the relevant wholesale market. The significance of the company's mobile network for the dynamics in this market is considered in Chapter 4.3.8. So far there is uncertainty concerning how quickly dissemination and utilisation of ICE's network will take place, and the extent to which the company will contribute to disciplining the operators in the relevant wholesale market, within the analysis' time horizon.

465. Nkom believes that the relevant perspective on assessing the potential competition at MNO level is mainly whether other operators than these three can enter the market or otherwise challenge existing competitors.

466. Operators that do not have their own frequencies will have to fully base an offer of access on leased infrastructure. Nkom believes that a provider that is highly dependent on buying access has limited opportunity to itself offer an attractive access product. Operators that cannot themselves produce a large share of the traffic in their own network will therefore to a lesser extent be able to exert a disciplining effect on the offer in the relevant wholesale market. Nkom considers this assessment to be supported by how the two established network owners, Telenor and Telia, have accounted for the majority of all sales of access for external parties in the relevant wholesale market. As stated, Mobile Norway did not have wholesale customers in its network when it had a population coverage of 75 per cent and produced towards 50 per cent of the traffic in its own network.

467. Very limited access to available frequencies means that Nkom does not expect that other operators will be able to establish a competitive offer in the relevant wholesale market based on their own infrastructure, within the analysis' time horizon.

468. Potential competition may also come from new technology, such as from OTT services that were described in Chapter 3.2. Nkom does not have available data showing how many call minutes and messages are achieved via OTT services. However, flat-rate packages appear to have been a successful strategy on the part of the network owners, in order to maintain ARPU in a market in which growth in traffic for traditional services is diminishing. Flat-rate packages ensure that providers have a minimum income per subscription while at the same time the customers can achieve greater predictability for the costs related to the subscription. Since retail users mostly do not use all of the traffic included in the flat-rate packages and many of the packages have unlimited call minutes and text messaging (domestic), they will only to a limited extent be able to achieve lower costs by achieving parts

of their traffic as OTT services, e.g. international calls. The flat-rate products will thereby to a great extent be able to reduce the retail user's incentives to use OTT services.

469. Outside Norway, there are examples of how vertically integrated operators establish their own OTT offers in response to competition from external OTT operators. For example, the Spanish telecom operator Telefonica, with over 300 million customers worldwide, has established the TU Me[106] service, which is an application for Iphone or Android which enables free communication with other TU Me users, in addition to a number of functions that are otherwise available on social media networks. In the UK, via the O2 brand, Telefonica has launched the TU Go[107] application. This is a service that allows the retail user to take calls on other media than the telephone, such as tablets. The examples show that providers can have various strategies to meet the threat from OTT providers. In the longer term, it is possible that Norwegian mobile providers will seek to meet the threat from OTT operators by other means than offering flat-rate products.

470. In summary, Nkom does not expect that new providers will be able to establish a competitive offer based on own infrastructure in the relevant wholesale market. Experience furthermore indicates that providers that must base their offers solely on leased infrastructure can find it difficult to offer an attractive access product which can discipline the established operators' offers.

471. In terms of potential competition from new technology in the form of OTT services, Nkom believes that the effect has first and foremost contributed to an orientation towards sale of flat-rate products. However, Nkom has not seen that this threat has led to major effects in the relevant wholesale market and has no basis to conclude that competition from OTT providers will discipline the established operators to any significant degree.

472. In Nkom's view there is no basis to conclude that potential competition will discipline the established providers to a sufficient degree within the analysis' time horizon.

4.3.10 Conclusion - second criterion

473. Under the second criterion Nkom has examined whether the market has characteristics which mean that it does not tend towards sustainable competition. In the assessment, Nkom analysed market conditions with special emphasis on changes during the period after the previous market analysis, and in order to identify which indications this gives of the market's development in the future.

474. At the end of 2015, Telenor's total market share in the retail markets for bundled mobile services was close to 52 per cent, based on the number of subscriptions, which is a decline by around 1 percentage points since 2009. For Telia the share was 23 per cent at the end of 2014, a decline by 4 percentage points since 2009. However, Telia's acquisition of Tele2 meant that this challenger became part of the Telia Group, and the companies' overall market share at the end of 2015 was 37 per cent, based on the number of subscriptions. Overall, the two established operators thereby control around 90 per cent of the retail markets for bundled mobile services.

475. At network level, it has long been a central objective of mobile regulation to establish a third network that can compete with the established network owners on offering access. As of today, there are only two providers in the relevant wholesale market, Telenor and Telia. Telenor's market share remained stable during the period from the previous analysis and up to the end of 2014. Since Network Norway's traffic has now been transferred to Telia's network, Telenor's market share based on traffic minutes was reduced from 64 per cent in 2014 to 59 per cent in 2015. At the same time, Telia's market share increased from 28 to 41 per cent in

[106] See: http://www.tumeapp.com/en/

[107] See: http://www.pocket-lint.com/news/46401/o2-tu-go-app-calls

2015, as a consequence of the transfer of Tele2's and Network Norway's overall voice traffic to this network. Market shares based on data traffic are distributed as 60 per cent for Telenor and 40 per cent for Telia in 2015.

476. The development in market shares, both at retail and wholesale level, does not in isolated terms indicate that the market is tendering towards effective competition. On the contrary, the market has become considerably more concentrated. The concentration level in Norway far exceeds the levels measured in Denmark, Sweden and Iceland when equivalent markets were deregulated in these countries.

477. In contrast to most other countries in Europe, access agreements in Norway are established under a regulated regime. Nkom believes that the sector-specific regulation in Norway has influenced the establishment and terms of these agreements. This is illustrated by several cases that Nkom has worked on in recent years. For Nkom there is little indication that access buyers have a significant buyer market, or that Telenor is disciplined by other operators on the supply side in the relevant market. The cases are rather an expression of a market with limited market dynamics in which sector-specific ex-ante regulation has been of significance to the establishment and terms of access agreements. Nor can Telia's standard offer for MVNO access be said to express competition, since it was established as a consequence of the acquisition of Tele2. According to Telia, the offer was conditional on the acquisition's approval by the Competition Authority.

478. Conditions are favourable for ICE to be an aggressive challenger in the retail markets during the time horizon of the analysis. Since the company has good access to frequencies and has taken over elements of Tele2's infrastructure, in addition to its own locations, they also have a good starting point for the further roll-out of a third network. How quickly ICE can become an attractive provider of access in the wholesale market will, however, depend on the company's roll-out strategy, how quickly they can obtain a significant customer base, and the national roaming terms over time. There are several elements of uncertainty in this respect which mean that Nkom cannot assume that ICE to a sufficient degree will be able to discipline the established operators on the supply side in the relevant wholesale market within the analysis' time horizon.

479. On this basis, Nkom believes that there is no sufficiently clear evidence of dynamics in the market within the analysis' time horizon which would indicate that the market will tend towards sustainable competition without ex-ante regulation. The second criterion is therefore fulfilled.

4.4 Third criterion: General competition law is insufficient

4.4.1 General comments on the third criterion

480. The third and final criterion that must be considered is whether general competition law alone is sufficient to remedy market failures in the market for access and origination on mobile networks. The assessment is based on existing and potential competition problems. Sector-specific regulation can only be applied when general competition law alone is not sufficient to avert competition problems in the market.[108] An assessment must thus be made of the relative efficiency between two regimes, respectively sector-specific ex ante regulation pursuant to the Electronic Communications Act, and follow-up on infringements of the provisions of competition legislation in the wake of any infringement.

[108] Cf. Recommendation no. 2 (c).

481. The Recommendation's Explanatory Note states that ex-ante regulation will be necessary if general competition law does not have instruments to achieve sustainable competition, or the instruments available under competition law are not sufficiently effective.[109] Explanatory Note and the ERG Report on Guidance on the application of the three-criteria test[110] point to elements which indicate that competition legislation will not be sufficiently effective to alleviate the competition problems, including whether:

- there is a need for frequent or rapid regulatory intervention;
- there is a need for comprehensive/detailed regulation;
- non-competitive behaviour brings about irreparable damage in related or connected markets; and
- it is particularly important to create regulatory predictability in the market.

482. The assessment of whether available instruments pursuant to competition legislation are sufficiently effective, should, according to the Recommendation and Explanatory Note, be based on an assessment of appropriateness. The crucial aspect is thus whether the general competition law will be able to address the structural problems in the market on a sufficiently effective, appropriate and predictable basis.

483. The fact that ex-ante regulation can be less resource-intensive to achieve than intervention under competition legislation is not a relevant element of the assessment of whether general competition law is sufficiently effective to address the competition problems.[111]

4.4.2 Relationship between sector-specific regulation and competition legislation

484. The sector-specific regulation is based on any findings of a provider or providers with significant market power in the relevant market. The assessment of significant market power is based on competition law methodology and the competition law concept of “dominant position”. At the core of the concept of dominant position is that the operator has a market position in the relevant market which entails that the operator can act independently of other operators to a significant degree.

485. Section 11 of the Norwegian Competition Act prohibits one or more undertakings from abusing their dominant position. The two main categories of abuse of dominant position that are affected by the prohibition are exploitative or exclusionary behaviour, respectively. Nkom believes that in the market for access and call origination on mobile networks it is most relevant to consider the prohibition of exclusionary behaviour in the form of refusal of access. A dominating operator's refusal to give competitors access to its own mobile network is a type of behaviour that would be affected by Section 11 of the Norwegian Competition Act. Unreasonable prices or unreasonable terms related to access may also be considered to be refusal of access affected by Section 11.

486. In its Guidance Paper[112] the Commission expresses how margin squeeze can be a type of refusal of access. Margin squeeze normally includes cases where a company sells commodities or service in an upstream market and is at the same time active in the downstream market for the resulting products or services. The abuse would consist of the vertically integrated, dominating provider setting prices in the retail and wholesale markets,

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[109] Page 10.

[110] ERG (08) 21, pages 12-15. See http://www.irg.eu/template20.jsp?categoryId=260346&contentId=545222

[111] Cf. The Recommendation’s Explanatory Note, p. 11.

[112] See Guidance on the Commission’s Enforcement Priorities in Applying Article 82 EC Treaty to Abusive Exclusionary Conduct by Dominant Undertakings, clause 79.

respectively, which do not give scope for competing operators in the downstream market to achieve a reasonable margin.

487. In accordance with Section 12 of the Norwegian Competition Act, the Norwegian Competition Authority can impose any measures necessary to terminate the infringement of Section 11. The provisions of the Norwegian Competition Act may therefore also be used to resolve competition problems in the relevant market.

488. The Recommendation's Explanatory Note[113] states that sector-specific ex ante regulation and general competition legislation are complementary tools for achieving the objective of sustainable competition in the relevant market.

489. Intervention pursuant to the competition legislation assumes abuse of dominant position to exist. Orders pursuant to competition legislation are thus conditional on the occurrence in the market of behaviour which infringes Section 11. The prohibition of abuse of dominant position must, however, be assumed to have a preventive effect that can be appropriate to disciplining dominating operators from undertaking unlawful behaviour.

490. Ex-ante regulation is based on pre-defined markets with the possibility of defining deviating markets on a national basis. The prohibitory provisions of the competition legislation will apply in the electronic communications sector as such and may be applicable in all electronic communications markets. On assessing the need for ex ante regulation it will not be sufficient that the competition legislation can avert one or more specific competition problems in the market. The crucial consideration for the assessment is whether during the analysis' time horizon the competition legislation is likely to rectify the competition issues that may arise in the relevant market, to the extent that the objective of sector-specific regulation is achieved.

491. Effective handling of the actual and potential competition issues in the market assumes that the authorities are able to intervene quickly and effectively. In order to intervene against a competition problem within competition law, it is necessary to define the relevant market and to find that one or several undertakings have a dominating position. It must also be determined that the dominating operator has abused its position. An assessment of whether specific behaviour actually entails abuse of dominant position might thus be extensive and time-consuming. Under the sector-specific regulation, the market is defined and any designation of a provider with significant market power is made in advance. The conditions for rapid and thereby effective intervention to resolve competition issues in the market for access and call origination on mobile networks are therefore far more extensive pursuant to electronic communications legislation than pursuant to competition legislation. Nkom believes that the opportunity for rapid intervention might be of great significance in the period covered by this analysis, in order to achieve the objective of sustainable competition.

4.4.3 Assessment of whether general competition law is sufficiently effective in the market

492. The analysis of the first and second criteria shows that there are structural problems in the market for access and call origination on mobile networks. As a general starting point, the competition legislation will be less suitable than sector-specific regulation to achieve competition in markets that are characterised by structural problems which require rapid and frequent intervention, because the obligations can, as stated, only be imposed ex post. In Nkom's opinion, the structural problems in the market might also entail that the lack of ex ante regulation would lead to a deterioration in the terms offered for access to the necessary infrastructure. The authority therefore believes that denial of access and behaviour that has the same effect as denial of access are key competition problems in the market for access and call origination on mobile networks.

[113] Explanatory Note, page 7.

493. As stated above, denial of access and behaviour with an equivalent effect might be affected by Section 11 of the Norwegian Competition Act. On the assessment of whether general competition law is sufficiently effective, it will be relevant to assess whether extensive, detailed regulation is necessary, whether there is a need for rapid intervention, whether insufficient regulation can lead to irreversible damage, and whether predictability is of great significance.[114]

494. In Nkom's view, denial of access in the relevant market will be likely to impair the ability to achieve sustainable infrastructure-based competition in the market. In Nkom's assessment, this indicates that it is important to ensure access buyers reasonable and predictable terms for achieving the objectives behind the regulation. Nkom believes that denial of access or other misuse with the same effect as denial of access might lead to irreversible damage in the market. If a provider in an unregulated market is denied access to infrastructure, it will potentially take a long time for an infringement to be found under competition law. With ex-ante regulation, clear obligations can be imposed in advance, which are suitable to effectively prevent denial of access. If the obligations are nonetheless infringed, rapid intervention will be possible, so that regulation is effective.

495. During the current regulation period, Nkom has had a number of appeal cases related to regulation, including co-location, price discrimination, discrimination concerning other issues besides price, margin squeeze and appeals concerning Telenor's new standard agreement. Nkom's consideration of the appeal cases is described in Chapter 4.3.7 on market behaviour. The appeals have partly been upheld and have led to legal requirements and infringement fines for Telenor due to excessive charges and denial of access. Nkom considers this to express a need for close follow-up of the market, with the possibility of frequent intervention. Nkom believes that general competition law is less suitable to follow up the market on an appropriate basis, in order to achieve the purpose of regulation.

496. For new operators to become established as network operators, it is vital to have predictable access to national roaming and co-location. Within the analysis' time horizon, ICE will have access to national roaming and co-location at Telia since this was included in the terms for the achievement of the merger with Tele2. In this respect, Nkom expressed how the conditions for national roaming seemed to be at a level that would make it possible for ICE to compete at least as aggressively as other access buyers, but that in the rather longer term it was more uncertain how attractive the access terms would be[115]. On this basis, Nkom believes that regulated access is important for ICE to be able to have a predictable alternative to the agreement established with Telia. The national roaming agreement could be terminated within the analysis' time horizon. For ICE to have some negotiating power towards Telia, it is vital that a real alternative exists.

497. With regard to co-location, a network operator normally requests co-location from several providers, depending on which locations are needed, in terms of the overall radio planning. Nkom notes that in the current regulation period it has been difficult to achieve sufficient co-location, based on the long case processing time for applications, and that in some cases the reasons for refusal of co-location have been inadequate.

498. Nkom thereby finds that there is still a need for predictable access to national roaming and co-location, and that this gives a need for ex-ante regulation.

499. If vertically integrated providers impose a margin squeeze on access buyers, this could have a very negative impact on the market. Nkom believes that ex-ante regulation, in contrast to competition law, can set up obligations in advance to limit the risk of margin squeeze

[114] Cf. The Recommendation's Explanatory Note, pages 10-11.

[115] Nkom's response to the question from the Norwegian Competition Authority concerning proposed remedial measures, dated 14 January 2015. Case 1404595-11.

arising. This creates predictability for both buyer and seller of access, since the obligation is specified in advance. The regulation will also make it possible to establish margin squeeze at an early point in time and to react quickly, so as to limit the negative consequences as far as possible. Nkom will also have greater flexibility on designing margin squeeze tests than is the case for general competition law, when the competition authorities must normally consider the principle of "equally efficient operator". In Nkom's assessment, the aforementioned indicates that any margin squeeze found in the market for access and call origination on mobile networks could be handled more effectively under an ex-ante regime than by follow-up ex-post.

500. The assessment of whether general competition law will be sufficient to avert the consequences of denial of access must in Nkom's opinion be considered in the light of the damage potential of any such behaviour. A lack of access and margin squeeze as described above, and other conduct with the effect of denial of access, could lead to irreversible damage, and at worst that buyers of access disappear from the market. In Nkom's view, denial of access in the market will thus be to the likely detriment of the opportunity to achieve sustainable, infrastructure-based competition in the market for access and call origination on mobile networks. Nkom therefore believes that it is important to ensure access buyers reasonable and predictable terms for achieving the objectives behind the regulation. If a provider in an unregulated market is denied access to infrastructure, it will potentially take a long time for an infringement to be ruled under competition law. With ex-ante regulation, clear obligations can be imposed in advance, which are suitable to effectively prevent denial of access. If the obligations are breached nonetheless, rapid intervention will be possible, so that regulation is effective. In the light of the aforementioned, Nkom considers it vital that the market operators are ensured the regulatory predictability that is provided for via ex-ante regulation. In Nkom's view, this special need for predictability is not covered by general competition law alone.

501. Section 12, fifth paragraph, of the Norwegian Competition Act gives authority to take a provisional decision to terminate the assumed infringement of Section 11 of the Act, and can thus alleviate some of the problems with ex-post regulation described above. The provision has a narrow scope, however, and is rarely used in Community law and in Norway. Even if a decision in accordance with Section 12, fifth paragraph, can be taken before an infringement is deemed to exist, Nkom believes that there are better conditions for rapid follow-up by using ex-ante regulation with obligations that are defined in advance. Nkom therefore considers the competition authority's opportunities to take temporary decisions pursuant to the provision to be limited.

4.4.4 Conclusion concerning the third criterion

502. Nkom assumes that in order to achieve sustainable competition, it is very important to ensure predictable access to the infrastructure for providers in the market for access and call origination on mobile networks. On the basis of the aforementioned, Nkom finds that general competition law is not sufficient to create sustainable competition in the market for access and call origination on mobile networks. The third criterion is therefore fulfilled.

4.5 Conclusion concerning the three-criteria test

503. In Chapter 4 Nkom has shown how there are high, non-transitory entry barriers in the market for access and call origination on mobile networks, that the market does not tend towards non-transitory competition without regulation, and that general competition law is not sufficient to create sustainable competition in the market. The three criteria for ex ante regulation are therefore fulfilled.

5 Analysis of the market - individual dominance

5.1 Legal basis

504. In accordance with Section 3-3 of the Electronic Communications Act, the authority must regularly[116] perform market analyses of relevant product and services markets in order to examine whether the markets are subject to effective competition. If the markets are not subject to effective competition, Nkom must identify providers that alone or together with other providers hold significant market power.

505. Significant market power is defined in Section 3-1, first paragraph, of the Electronic Communications Act, which has the following wording:

> *"A provider has significant market power when the provider individually or jointly with others has economic strength in a relevant market affording the provider the power to behave to an appreciable extent independently of competitors, customers and consumers. Significant market power in one market may result in a provider having significant market power in a closely related market."*

506. Section 19 of the ESA Guidelines:

> *"In respect of each of these relevant markets, NRAs will assess whether the competition is effective. A finding that effective competition exists on a relevant market is equivalent to a finding that no operator enjoys a single or joint dominant position on that market….. When NRAs conclude that a relevant market is not effectively competitive, they will designate undertakings with SMP on that market …."*

507. The preparatory work on the Norwegian Electronic Communications Act also states:

> *"Sustainable competition is defined as a situation where no operator has significant market power, and/or is able to exploit its position to the detriment of competition."*

508. Thus, according to the regulatory framework, there will be a necessary correlation between the absence of effective competition in a relevant market and the existence of significant market power.

509. Above, Nkom has defined a relevant wholesale market and concluded that the relevant market is susceptible to ex-ante regulation[117]. Below, Nkom will assess whether there is a basis for designating one or several providers with significant market power.

5.2 Method and indicators of significant market power

510. Section 3-1 of the Norwegian Electronic Communications Act states that a provider "individually or jointly with others" may have significant market power. When a provider has significant market power alone, this is referred to as individual dominance, while it is referred to as collective dominance if several providers together can to a great extent act independently of customers, competitors and consumers.

511. In Nkom's decisions of both 23 January 2006 and 5 August 2010, Telecom has been identified as a provider with individual dominance.

512. In the three-criteria test, Nkom has concluded that there is no basis to assess that the relevant market will tend towards sustainable competition in the absence of ex-ante regulation.

[116] Cf. also section 9.3, second paragraph, of the Electronic Communications Act.

[117] Chapter 2 on definition of the relevant market and Chapter 4 on the three-criteria test.

In the assessment, Nkom has inter alia analysed market shares at wholesale level. The analysis shows that Telenor has had a stable market share exceeding 50 per cent. A market share that is so high, i.e. over 50 per cent, is a strong indicator of individual dominance, cf. ESA's Guidelines, clause 76, cf. Chapter 4.3.2.

513. On the assessment of significant market power, Nkom will on this basis apply the Guidelines' criteria for individual dominance, and Nkom's method document, and assess whether Telenor still holds significant market power alone.

514. A company with a high degree of market power is characterised according to competition theory[118] by how it is not exposed to effective competitive pressure. Market power is defined as the opportunity to influence prices, innovation, selection of goods and services, or other parameters of competition during a relevant period of time.

515. As shown above, Nkom's analysis of individual dominance has a time perspective of two to three years. In the analysis, Nkom assessed the following indicators:

- Market shares
- Profitability
- Vertical integration
- Economies of scope
- The undertakings' total size
- Customers’ access to information, switching costs and lock-in effects
- Access to sales channels
- Entry barriers and potential competition
- Negotiating strength/buyer power

516. Several of the elements for assessment of individual dominance correspond to the elements considered under criteria 1 and 2 in the three-criteria test. In this analysis, the elements that are also considered in the three-criteria test are assessed in order to discover whether any provider has significant market power,

517. The relevant market is a wholesale market, cf. the market definition in Chapter 2. The competition at retail level will, however, to a significant degree reflect the competition at wholesale level. Most of the sale on a wholesale basis at both Telenor and Telia is internal sale to own retail activity, cf. Chapter 2.4.1. This means that factors relating to the retail markets will also affect the competition in the wholesale market. One example of such factors at retail level is the switching costs for retail users, for example in the form of coverage changes.

[118] DG Competition, Discussion Paper on the application of Article 82 of the Treaty to exclusionary abuses, page 23.

5.3 Market shares

5.3.1 In general concerning market shares as an indicator of significant market power

518. Market shares are the basis for assessment of market power and the indicator given most weight by the Commission.[119] Nkom's analysis of significant market power is based on the providers' market shares.

519. High and stable market shares over time may indicate significant market power. If a provider has a stable market share exceeding 50 per cent, there is a legal presumption of significant market power. However, individual dominance will normally be found for a provider with a market share exceeding 40 per cent[120].

520. ESA writes in clause 76 of the Guidelines:

> *"According to established case-law, very large market shares – in excess of 50 per cent – are in themselves, save in exceptional circumstances, evidence of the existence of a dominant position. An undertaking with a large market share may be presumed to have SMP, that is, to be in a dominant position, if its market share has remained stable over time. The fact that an undertaking with a significant position on the market is gradually losing market share may well indicate that the market is becoming more competitive, but it does not preclude a finding of significant market power."*

521. On using market shares as an indicator of significant market power, it is necessary to consider which measurement parameters are most relevant for the purpose. ESA writes in clause 78 of the Guidelines:

> *"The criteria to be used to measure the market share of the undertaking(s) concerned will depend on the characteristics of the relevant market. It is for NRAs to decide which are the criteria most appropriate for measuring market presence."*

522. It follows that there are characteristics of the relevant market that will determine the choice of measurement of market shares. It is up to the national regulator to consider which measurement is most appropriate for assessment of significant market power. Market shares can be measured by revenue, number of customers (subscriptions) or volume.

523. As described in Chapter 2.4.1, Nkom believes that it is natural to include vertically integrated companies' internal use in the calculation of market shares in the relevant market, and thereby in the basis for assessment of providers with significant market power. Market shares at wholesale level thereby include sale in the retail market from internal retail activities, and external wholesale activities. There is thus a close relation between the wholesale market and the related retail market.

524. Even though market shares are a central measure of market power, any conclusion concerning significant market power cannot be based solely on market shares. Clause 79 of the ESA Guidelines:

> *"It is important to stress that the existence of a dominant position cannot be established on the sole basis of large market shares. As mentioned above, the existence of high market shares simply means that the operator concerned might be in a dominant position. Therefore, NRAs should undertake a thorough and overall analysis of the economic characteristics of the relevant market before coming to a conclusion as to the existence of SMP."*

and clause 80:

[119] The European Commission's guidelines, pages 75 and 78.

[120] Clause 76 of the Guidelines.

"A dominant position can derive from a combination of the above criteria, which taken separately may not necessarily be determinative."

525. A conclusion concerning significant market power would thus have to depend on an overall thorough assessment of several criteria besides market shares. The Guidelines furthermore state that whether significant market power exists can be derived from a combination of various criteria included in the overall assessment, whereby the individual elements as such will not necessarily be decisive. Even if structural elements are accorded the greatest weight in the assessment, behaviour that helps to create or maintain competitive advantages might bolster the conclusion concerning significant market power. An overall approach to assessment of significant market power is also shown by Nkom's practice in previous market decisions and has been stated by the Ministry of Transport and Communications to be a correct approach.[121]

5.3.2 Market shares at retail level

526. In 2014, the total revenue for mobile telephony was close to NOK 16 billion. The figure below shows the development in the largest operators' market shares at retail level (based on revenue) in the period from 2005 to 2015 (residential and business together).

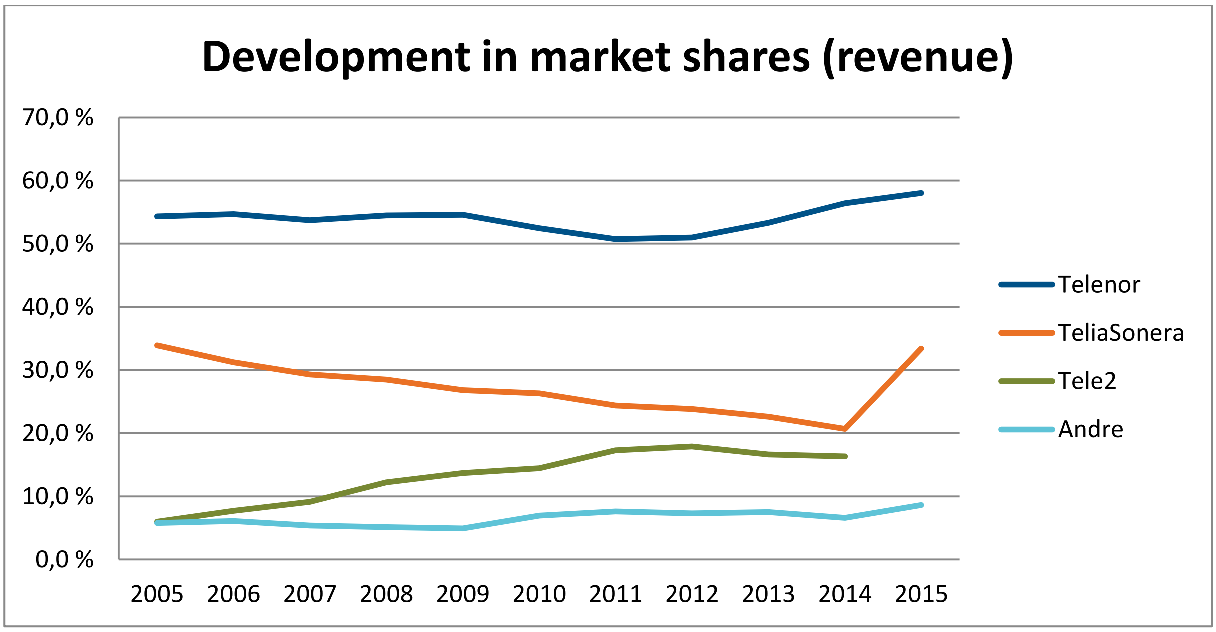

Figure 11 Development in market shares for mobile telephony measured by revenue (residential and buisness together).

527. Telenor's market share measured by revenue has been stable throughout the period, at over 50 per cent, and in 2014 exceeded 56 per cent. Figures for 2015 show an increase to 58 per cent. Since the previous market analysis in 2010, Telenor's market share based on revenue has increased by more than 3 percentage points.[122]

[121] The Ministry of Transport and Communications' decision of 6 October 2006 concerning Telenor's appeal against Ncom's decision of 23 January 2006.
[122] The market analysis from the decision on 5 August 2010 was based on full-year figures for 2009.

528. Telia's market share has declined steadily since 2005 and up to 2014. Since the previous analysis, Telia's market share has fallen from 27 per cent to 21 per cent.[123] At the end of 2015, after Telia's acquisition of Tele2, Telia's market share had increased to 33 per cent.

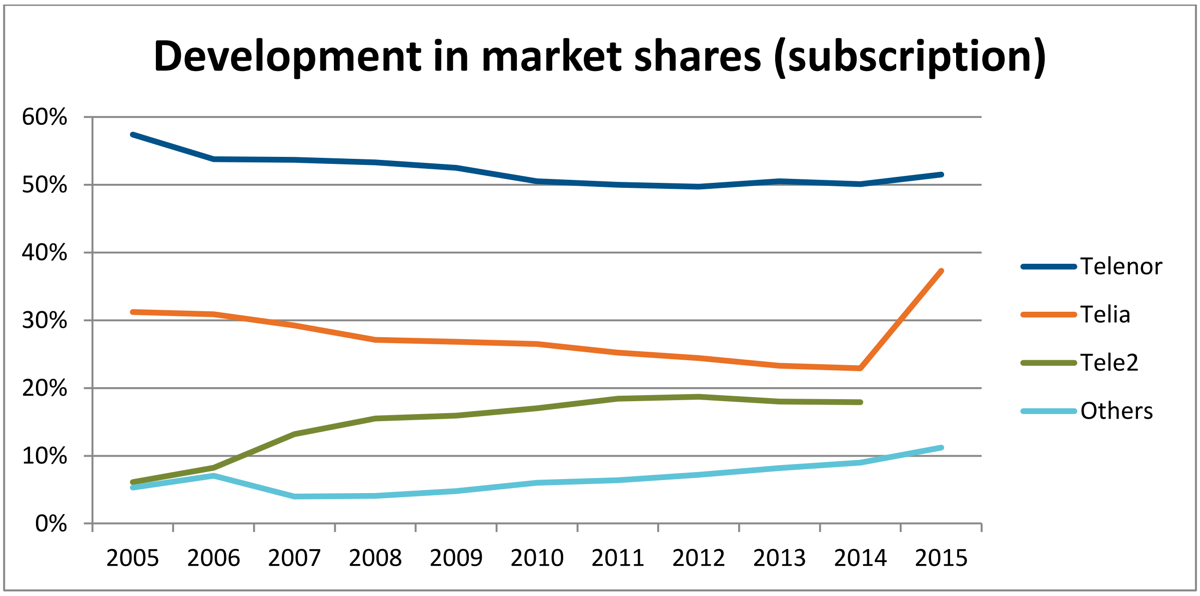

Figure 12 Development in market shares for mobile telephony measured by number of subscriptions (residential and buisness together).

529. With regard to the number of subscriptions for mobile telephony at retail level, the difference between the established operators is smaller than market shares based on revenue. The figure above shows that Telenor's share of the number of subscriptions in the market has remained stable at just over 50 per cent since the previous market analysis. At the end of 2015, the company's market share based on the number of subscriptions was 52 per cent. Telia's share has been falling steadily, to 23 per cent at the end of 2014. After the acquisition of Tele2, Telia's share had increased to 37 per cent at the end of 2015. At the end of 2015 there were more than 5.7 million mobile telephony subscriptions.

530. Telia has seen a steady decrease in market shares, measured both in terms of revenue and number of subscriptions, since the previous market analysis and up to the acquisition of Tele2. Telenor, on the other hand, has managed to maintain a market share, measured by the number of subscriptions, of more than 50 per cent, while at the same time the share in revenue terms has increased, especially after 2012.

531. A characteristic feature of the distribution of market shares at retail level is that Telenor has larger market shares based on revenue than measured by the number of subscriptions. This shows that Telenor achieves higher revenue per subscription than the other operators, which is also supported by the assessment of the operators' profitability below. In Nkom's view, market shares measured by revenue give a better picture of the relative strengths of the providers in the mobile market than market shares measured by subscriptions.

532. Telenor holds a larger share of the business market compared with other operators, a market characterised by less mobility than the residential market. In contrast, Telia (and

[123] Cf. Table 4 under the three-criteria test in Chapter 4.3.2.

previously Tele2) hold larger market shares within the residential market than in the business market. This may be an expression of the significance of coverage and that business customers assess Telenor to have better coverage than Telia. The difference may also express Telenor's opportunity to draw on horizontal integration in a segment of the market that is more demanding in terms of technical solutions and bundling of services across various technologies. In addition, Telenor has high market shares within the markets for mobile broadband and machine-to-machine-communication at respectively 45 (residential and business together) and 90 percent at the end of 2014. Nkom sees this as an expression of how Telenor has a market position which enables the company to maintain its market share at retail level.

5.3.3 Development in market shares at retail level

533. In accordance with the share purchase agreement established on 4 July 2014 between Telia AB and Tele2 Sverige AB, Telia has acquired all shares in Tele2 Norge and Network Norway. The merger was approved by the Norwegian Competition Authority on terms set in a decision dated 5 February 2015. Reference is made to Chapter 3.5.1 for further information. The merger entailed an increase in market shares for Telia. At the end of 2014, Telia held 26 per cent of the number of mobile telephony subscriptions, while at this time Tele2 held 18 per cent of the number of subscriptions. One of the conditions for the merger was that ICE acquired customers under the Network Norway brand. This share was around one per cent of the number of subscriptions.

534. Figures for 2015 show, however, that the market shares of the combined company are lower than the figures for the companies individually at the end of 2014, even when taking account of the customers transferred to ICE[124]. Overall, at the end of 2015 Telia had a market share of 37 per cent of the number of mobile telephony subscriptions. This indicates that the company has lost some of the customer base that was transferred in conjunction with the merger.

535. The same development applied to revenue. At the end of 2014, Telia held a market share in the retail market for bundled mobile services of 21 per cent based on revenue (residential and business together), while at the same time Tele2 had a market share of 15 per cent. For 2015 the combined company's market share was 33 per cent based on revenue, which is lower than the overall market share based on full-year figures.

536. Porting figures from the first five months of 2015 already showed that there would be some loss of customers on the transfer of customers from Tele2 to Telia. According to Tele2, the migration of customers began early in 2015. There were major stories in the media about a big loss of customers, especially from the OneCall brand. Nkom performed an analysis of inward and outward porting[125] from the OneCall brand. The analysis covered the first five months of 2015 and showed that the number of outward portings was more than double the level of the first five months of 2014. Around 74 per cent of the outward portings were to Telenor's brands. The number of inward portings to OneCall was more than halved in the first five months of 2015 compared to the first five months of 2014. In addition, the number of inward portings to OneCall was considerably lower than the number of outward portings in the first five months of 2015.

537. It is not unusual to lose customers on a change in coverage, etc. and the consequential customer loss was probably to a great extent taken at in the the first half of 2015. In the second half of 2015, Telia’s market share has been stable. Telia has, however, as shown, had a falling trend, see Figures 8 and 9 in this analysis, but this can be changed as a consequence

[124] Based on figures for 2014 and taking into account that one per cent of the customer base was to be transferred to ICE, the overall market share would have been 40 per cent.
[125] Information from the National Reference Database.

of the coverage investments that are now being made. Nonetheless, the company has increased its market share as a consequence of the acquisition since the previous analysis.

538. A central question is whether increased market shares for Telia gives an indication that the company's market strength vis-à-vis Telenor is increasing, and in the same way whether Telenor has lost strength. Nkom believes that there is reason to give some weight to the change in market shares that is a consequence of acquisitions and not organic growth via competition for retail users in the market. On the acquisition, Telia maintained, however, that the equalisation of Telenor's advantageous size would give the company a basis to compete with Telenor more effectively. If the company at the same time implements a coverage boost in order to develop a network that is more equivalent to Telenor's network, this will lead to a more balanced division of strength between them, over time. Nkom's assessments of future effects of the merger are stated in Chapter 5.11 below.

5.3.4 Market shares at wholesale level

539. Table 12 shows market shares at wholesale level calculated on the basis of the distribution of mobile telephony subscriptions, originated minutes and data traffic via mobile telephony subscriptions between the network owners in the relevant market. The shares are based on figures for 2014 and 2015, and both own retail activity and access buyers are included. The Table shows the shares both before and after Telia's acquisition of Tele2.

540. Nkom believes that a relevant parameter in the assessment of the operators' relative strengths would be the network owners' shares measured in revenue terms. However, Nkom does not have revenue figures at wholesale level for internal use and thereby uses shares measured as the number of subscriptions, which reflects the entire bundled product with voice, text messaging and data. The assessment of market shares at retail level has shown, however, that Telenor has higher revenue per customer than Telia and Tele2, and since most of the wholesale activity is internal sale, the same should apply at wholesale level. This entails that using subscriptions as a parameter for market shares at wholesale level gives a conservative picture of the relative strengths of these operators.

541. Before Telia's acquisition of Tele2, Tele2 acquired national roaming from both Telenor and Telia. On using the parameter of the number of mobile telephony subscriptions in the various networks, national roaming will not be taken into account. In the decision from 2010, Nkom therefore assumed the number of originated minutes in the assessment of relative strength at wholesale level. Since data traffic constitutes a more and more important element of the relevant wholesale market, Nkom believes that market shares based on data traffic may be just as relevant as the number of originated minutes in the assessment of the operators' relative strengths. The data traffic figures are therefore included in the Table.

542. In the previous market analysis, which was the basis for the decision in 2010, Telenor's share accounted for 63 per cent of the originated traffic minutes. After Telia's acquisition of Tele2, there will be no buyers of national roaming in Telenor's network. Telenor's share of the traffic minutes is thereby reduced to 59 per cent, while Telia's share increases from 28 per cent to 41 per cent, cf. table 12.

	Mobile telephony subscription		Originated minutes		Data traffic via mobile telephony subscriptions	
	2014	2015	2014	2015	2014	2015
Telenor	56%	58%	64%	59%	60%	60%
Telia	26%	42%	28%	41%	33%	40%
Tele2	18%		8%		6%	

Table 12 Market shares at wholesale level, both before and after Telia's acquisition of Tele2, for mobile telephony subscription, originated minutes and data traffic via mobile telephony subscription, based on figures for 2014 and 2015.

543. Taking Telia's acquisition of Tele2 into account, the number of mobile telephony subscriptions is distributed as 57 per cent in Telenor's network and 42 per cent in Telia's network. This generally corresponds to the market shares calculated on the basis of originated minutes.

544. The ratio of mobile telephony subscriptions in Telenor's network was 58 per cent at the end of 2015. Of this, 7 per cent can be attributed to other access buyers. Telenor's "self supply" corresponds to the market share measured as number of subscriptions at retail level, which is 51 per cent.

545. Telenor's reduced share of originated minutes is overall due to the acquisition and the consequence that there will be no buyer of national roaming in Telenor's network. In the same way, Telia's shares increase because Tele2's overall traffic will be via this network. The changes in shares for originated minutes and data traffic therefore cannot be attributed to competition to attract access buyers.

5.3.5 Summary concerning market shares

546. Nkom can note that Telenor has retained its market shares, measured in both revenue and number of mobile telephony subscriptions, at retail level since the previous decision, and the market shares exceed the threshold value for significant market power. Telia's acquisition of Tele2 entails shifts in market shares, but the changes are a direct consequence of acquisitions and not organic growth via competition for retail users in the market. On the acquisition, Telia stated that erosion of Telenor's advantageous size would give the company a basis to compete with Telenor more effectively, but there are also indications that Telenor will be able to maintain its market shares in the retail markets. Telenor's significant presence both in the residential and business markets for bundled mobile services and the markets for mobile broadband (residential and business) and machine-to-machine communication segments are also elements which support an assessment that the company has significant market power.

547. At wholesale level, Telenor’s market share has been reduced since the previous decision. However, the reduction is not due to competition to attract access buyers, but to how after the acquisition there are no longer buyers of national roaming in Telenor's network. Telia's share increased as a consequence of the acquisition of Tele2.

548. Telenor's market shares, both at retail level and at wholesale level, are still at a level which indicates a presumption of significant market power. The ability shown by Telenor to maintain market shares above 50 per cent indicates that the company will to a significant degree be able to retain its market shares, at both retail and wholesale level, within the

analysis' perspective. In Nkom's view, Telia's market share for 2015 is in principle not extraordinary to the extent that it gives a basis to derogate from any presumption of significant market power for Telenor. Loss of customers in the transfer period also indicates that Telia's market share after the merger of Tele2 not necessarily will persist. The assessment of market shares thus gives evidence for Telenor's significant market power. However a conclusion regarding significant market position must be based on a broad assessment of more criteria than market shares.

5.4 Profitability

549. High profitability over time may be an indicator of significant market power in that the operators have been able to maintain prices that are higher than they would have been in a market with effective competition. However, high profitability can also be related to other factors, such as rationalisation gains or innovation.

550. Table 13 gives an overview of the development in revenue, operating profit before depreciation (EBITDA) and EBITDA margin in the period from 2009 to 2015 for Telenor's Norwegian activity.[126] Both the mobile and the fixed-network activities are included in the figures.

		2009	2010	2011	2012	2013	2014	2015
Telenor (MNOK)	Revenue	26 249	28 047	25 165	25 408	25 071	26 186	26 542
	EBITDA	10 476	11 035	9 973	10 802	10 758	11 255	11 088
	EBITDA margin	39,90 %	39,30 %	39,60 %	42,40 %	42,90 %	43,00 %	41,80 %

Table 13 Revenue and operating profit before depreciation (EBITDA) in NOK million, and EBITDA margin for Telenor's Norwegian activity, including both mobile and fixed-network activities.

551. Revenue from mobile activities amounted to NOK 15.1 billion in 2015, or around 57 per cent of Telenor's total revenue. This is an increase in mobile revenue of around 4.5 per cent, compared with 2014. Telenor explains the increase as being a consequence of increased data use.

552. The EBITDA margin was relatively stable in the period from 2009 to 2011 for Telenor's Norwegian activities, with an increase of 2.8 percentage points in 2012. Since then, Telenor's reporting has shown yearly EBITDA margin around 42 per cent.

553. Telenor's reporting for the fourth quarter of 2015 showed an EBIDTA margin of 41.8 per cent for full year 2015. Compared with 2014, the EBIDTA margin is reduced with 1.2 percentage point. Increased retail revenue from the mobile activity in the second half-year was set off by a reduction of wholesale revenue and revenue from fixed-network telephony.

554. Table 14 gives an overview of the development in revenue, EBITDA and EBITDA margin in the period from 2009 to 2015 for Telia's Norwegian mobile activity.[127] The figures are from TeliaSonera's interim reports without conversion to Norwegian kroner.

[126] http://www.telenor.com/no/investor-relations/rapporter/
[127] http://www.teliasonera.com/en/investors/reports-and-presentations/

		2009	2010	2011	2012	2013	2014	2015
Telia (MSEK)	Revenue	8 977	8 597	8 314	7 582	7 056	6 864	9 165
	EBITDA	3 156	3 046	2 891	2 409	2 144	2 130	2 761
	EBITDA-margin	35.20 %	35.40 %	34.80 %	31.80 %	30.40 %	31.00 %	30.10 %

Table 14 Revenue and operating profit before depreciation (EBITDA) in SEK million, and EBITDA margin for Telia's Norwegian mobile activity.

555. Telia's (including Chess) EBITDA margin had a downward trend until 2012 and has since then been around 30-31 per cent.

556. Telia's reporting for the fourth quarter of 2015 showed an EBITDA margin of 30.1 per cent for the full year 2015. This is about one percentage point lower than for the year 2014. The decrease in EBITDA margin was greatest in the first quarter of 2015, which TeliaSonera attributed to the acquisition of Tele2. The acquisition increased the number of subscriptions by 64.6 per cent, while revenue only increased by 28.1 per cent. However, Telia expects further synergy effects beyond 2016. The report for first quarter 2016 showed EBITDA-margin of 32.7 per cent.

557. Telenor does not publish profitability figures for the Norwegian mobile activity alone. The figures for Telenor and Telia are thereby not directly comparable. As stated above, Telenor's revenue from mobile telephony accounted for around 57 per cent of the total revenue, and Telenor has over several years ascribed increased revenue and improved EBITDA margin to its mobile activity. Nkom therefore assumes that the profitability figures for Telenor at any rate do not give an overvalued picture of the profitability of their mobile activity, but actually a rather conservative view. The trend in the profitability picture is also increased profitability over time for Telenor, except a small decrease in 2015. This is in contrast to negative development for Telia's mobile activity in recent years, with the exception of a marginal increase in 2014.

558. Table 15 shows the development in ARPU[128] for Telenor's and Telia's Norwegian mobile activity. Telenor had a decline in ARPU in the period 2011-2013, but an increase in 2014 and 2015. Telia has experienced falling ARPU throughout the period from 2009 to 2013. After an increase in 2014, the ARPU was again reduced in 2015. The Table shows that Telenor generally has a higher ARPU compared with Telia. The difference between the companies increased during the period. Telenor's customers thereby seem to generate more income per subscription than Telia's customers, which is reflected in Telenor's profitability.

ARPU	2009	2010	2011	2012	2013	2014	2015
Telenor (NOK)	307	306	290	296	285	305	320
TeliaSonera (SEK)	309	291	259	248	243	254	245

Table 15 Development in ARPU for Telenor and Telia, 2009 to 2015.

559. Good profitability gives good opportunities for infrastructure investments. Telenor invests around NOK 4 billion annually in the fixed and mobile networks in Norway. Investment figures obtained by Nkom concerning the electronic communications statistics show that Telenor's investments in the mobile network from 2012 to 2015 [redacted] Chapter 5.5 on vertical integration further discusses the significance of future investments.

[128] ARPU – average revenue per user

560. Telia's objective with the acquisition of Tele2 is to safeguard the customer base as the basis for further net investments.[129] Via the acquisition, Telia will achieve a larger customer base on which to distribute the investment costs, which can be expected to have a positive effect on the company's profitability. It is uncertain, however, how great this effect will be within the analysis' time horizon.

561. As a consequence of Telia's acquisition of Tele2, Telenor loses wholesale income from national roaming. In the spring of 2014, Tele2 wished to gather all national roaming and entered into an agreement with Telenor. The agreement had an estimated annual value of NOK 750 million.[130] However, the lapse of wholesale revenue has not affected Telenor's results to any significant degree. Total revenue from mobile telephony had an increase of about four per cent from 2014 to 2015. Increased revenue from retail subscriptions and traffic generally outweighed the loss of wholesale revenue from national roaming.

562. **Summary and conclusion:** Telenor has significantly better profitability than Telia. Telenor's profitability figures have been stable over time and show an improvement from 2012, which is attributed to the mobile activity. However, the margin had a small decrease in 2015. On the other hand, Telia's EBITDA margin has developed negatively, with the exception of a marginal increase in 2014, followed by an equal decrease in 2015. It is uncertain to what extent the effect of the acquisition of Tele2 will affect Telia's profitability in the coming years, but a certain positive effect is expected. For Telenor the reduced wholesale activity has had a small effect on overall revenue. Revenue from the mobile activities had an increase from 2014 to 2015.

563. The assessment of profitability thus supports the conclusion that Telenor has significant market power.

5.5 Vertical integration

564. A vertically integrated undertaking is characterised by having gathered several production levels in its activity that could have been controlled by different undertakings. The company can thereby via its position in various input factor markets, or in the retail market, keep competitors out or behave in a anti-competitive way towards existing competitors, and in this way strengthen its market power. Achieved market power can be transferred both from the wholesale market to the retail market, and vice versa.

565. In principle, a vertically integrated company can make it difficult for new operators at retail level to gain the network access required at a competitive price, in the absence of regulation. It can therefore be challenging for a new operator in the retail market to compete effectively with an integrated company, unless it has its own rolled-out radio network.

566. In the analysis of individual dominance at wholesale level, the question is whether, and to what extent, providers can derive specific advantages from being vertically integrated that can strengthen their market power in the relevant wholesale market.

567. Both of the established network operators in the Norwegian market are vertically integrated providers. This entails that the companies' wholesale activity via internal sale offers wholesale services to its own retail activity. Their retail activity thus has a very different approach to input factors than other competitors in the retail markets that are not vertically integrated. For example, the retail activity of network owners may have greater flexibility to undertake product differentiation than external access buyers.

[129] Notice of merger, TeliaSonera AB/Tele2 Norge AS and Network Norway, dated 18 July 2014.

[130] http://www.insidetelecom.no/artikler/one-call-kunder-raser-mot-flytting-til-netcom/166700

5.5.1 Significance of quality and coverage in the mobile network as input factor

568. Up until today, the perception in the market has been that Telenor had the best rolled-out network. On the acquisition of Tele2, Telia also expressed that there was "significant asymmetry between Telenor and TSN"[131]:

> *"Today there is significant asymmetry between Telenor and TSN when it comes to coverage, capacity and speed - the 'quality' in the networks. This is probably part of the explanation for why Telenor appears to have the most loyal customers - the most quality-conscious customers are loyal to Telenor."*

569. However, Telia argued that the acquisition would make the company more equal to Telenor and increase incentives to develop a network equivalent to Telenor's network in terms of capacity, coverage and speed.

570. Nkom has performed coverage calculations based on data from Nkom's Finnsenderen service.[132] Exempt from public disclosure: [redacted]

[redacted]

[redacted]

573. The forecasts for investment and coverage during the next two to three years are naturally subject to uncertainty. In addition, there may be different calculation methods which mean that the figures are not completely comparable.

574. The fact that both MNOs invest heavily in their networks can be interpreted as a result of a situation where no operator can act independently of the other, including Telenor. Nkom acknowledge that Telenor's level of investments to a certain extent might be a result forced by Telia's "coverage boost". The central aspect in this context is, however, how the customers experience and weight any future differences in quality and coverage, and the impact on the operators market power.

575. A market perception that Telenor has the best network will give Telenor's retail and wholesale activities an advantage with regard to gaining and retaining customers. OneCall's transition to Telia's network showed, as stated, that many customers had a strong preference for Telenor's network. In the business market, the preference for Telenor coverage seems to be even stronger than in the residential market. An illustrating example is in Nkoms view, the loss of customers ICE has experienced while taking over customers from Network Norway. Exempt from public disclosure: [redacted]

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[131] Notice of merger, TeliaSonera AB/publ/Tele2 Norge AS and Network Norway dated 18 July 2014.

[132] Based on data as of 31 March 2015

[133] Historical figures obtained from the providers for Nkom's economic communications statistics. Investment forecasts were obtained separately for this analysis.

576. Telia has launched major marketing campaigns with the objective of killing the "myth of poor coverage". It seems however clear that Telenor is putting large resources in keeping its coverage position. Telenor is investing more in its network than Telia. The high investments means that Telenor is putting more resources into a network that already is preferred by customers and therefore also buyers of wholesale access. Further Nkom refers to statements from the company where it is expressed that the company will not lose its coverage position. Whether Telia within the timeframe of the analysis, will succeed in challenging Telenor’s position as the preferred network is uncertain.

577. ICE has upgraded its CDMA network to LTE technology and uses this and LTE in the 800-MHz band to offer mobile broadband. The company has rolled out around 40 per cent population coverage in the 800-MHz band, and it is expected that the company will start to transfer data traffic from mobile handsets to this network relatively quickly. Voice will be in Telia's network until the company launches VoLTE. The company will probably depend on buying access to nationwide networks where they do not themselves have coverage within the analysis' time horizon, which will limit the importance of being vertically integrated.

5.5.2 Significance of ownership and control of the network for transmission capacity and other input factors

578. Telenor has ownership and control in several infrastructure markets. Telenor owns a large part of the networks that are used for transmission capacity in Norway, and has been designated as a provider with significant market power in the wholesale market for transmission capacity up to and including 8 Mbit/s (market 6). For transmission capacity over 8 Mbit/s, including dark fibre, there is no regulation after Nkom in 2012 terminated the previous regulation for Telenor in this part of the transmission capacity market.[134]

579. Transmission capacity is a necessary input factor in the production of mobile services. Telenor could have incentives to discriminate between its own mobile activities and other network operators on the sale of transmission capacity in the wholesale market. However, the opportunities for vertical transfer of market power are limited via such obligations as cost orientation, non-discrimination and cost accounts for transmission capacity up to and including 8 Mbit/s.

580. To achieve high data speeds in mobile networks, the development is towards a larger share of fibre to the base stations, which after the last market decision are not regulated. Telenor is making considerable investments in fibre for base stations, also to more remote base stations for which laying fibre is very expensive. It is thus Telenor's investment in fibre that to a large extent determines whether retail users have access to 4G[135].

581. Telia does not own its own fibre network and is therefore dependent on buying this transmission capacity from others. In principle, fibre for base stations can be purchased from several providers, but none of them has as well-developed a network as Telenor. For some sections, Telenor is the only provider. Telia will thus be completely dependent on buying transmission capacity from Telenor for these sections. It is also reasonable to assume that it is required to limit the number of providers of transmission capacity, and Telenor is once again the most relevant provider.

[134] Nkom: Termination of obligations for Telenor in the wholesale market for transmission capacity over 8 Mbit/s, 20 April 2012.
[135] Cf. Computerworld 13.1.2014 and 10.11.2014, http://www.cw.no/artikkel/telekom/fiber-utfordringen-4g-mobil

582. Furthermore, Telenor owns Norkring, which owns and operates transmitter stations for terrestrial broadcasting in Norway.[136] Norkring offers placement of antennas and equipment in its transmitter stations to Telenor and other mobile operators. Their infrastructure could thus be an input factor for production of mobile services in Norway. Telenor's ownership of Norkring and this company's infrastructure can be advantageous for Telenor's mobile activities.

5.5.3 Summary and conclusion concerning vertical integration

583. In the Norwegian market, as of today there are two vertically integrated network operators, and ICE is establishing itself as a vertically integrated provider. Telenor's retail activities and their wholesale customers have access to a network that as of today is seen by many customers and other providers as the best network, especially with regard to coverage. Telia is in the process of undertaking an upgrading of coverage to achieve a network that better matches Telenor's in order to be able to change the customers perceptions. Forecasts obtained by Nkom also indicate, however, that Telenor will continue a consistently high investment level in order to continue to improve quality and coverage in its network. Telenor puts large resources in keeping its position in terms of coverage and quality, this is also confirmed by public statements from the company.[137] Both factors implies that it will be challenging for Telia to change the end users perception of Telenor having the best network.

584. Against this background, Nkom is of the view that it is likely that Telenor to a large extent will be able to maintain its position as the preferred network within the timeframe of the analysis. Nkom believes that coverage is a competitive parameter which is expected to give Telenor's retail activities, as well as the company's wholesale activities, an advantage in relation to other vertically integrated operators. Nkom also believes that Telenor's ownership and control of underlying input factors (infrastructure for transmission capacity, location sites, etc.) can also give the company advantages that other operators cannot achieve.

585. Overall, Nkom believes that vertical integration is a factor which supports a presumption that Telenor has significant market power.

5.6 Economies of scope

586. Economies of scope are achieved in cases where it is cheaper to produce two or more products or services together than to produce them separately (in different operations). Production costs per unit can be reduced, for example, when more than one service is produced using shared means of production, e.g. infrastructure or administrative systems. In the retail market, marketing and customer service are activities which can lead to economies of scope. A provider that is present in several markets will be able to spread the shared costs on several products/services.

587. Both Telenor and Telia have activities in several Nordic countries, and this can give the companies a certain synergy effect.

588. Telenor is a market leader in most electronic communications infrastructure markets in Norway, including the fixed network, broadband, cable and satellite TV markets (through its ownership of Canal Digital), terrestrial broadcasting (Norkring) and digital broadcasting (Telenor owns on third of Norsk Televisjon). Telenor thus holds a unique position compared with previous monopoly holders in other countries and, as stated in Chapter 5.5, can benefit from elements of this infrastructure in the production of mobile telephony.

[136] Norkring owns 2,100 transmitter stations for terrestrial broadcasting spread throughout Norway. Norkring provides installation of antennas and equipment from broadcasters, mobile operators, broadband customers, public bodies, etc. at these stations, cf. http://www.norkring.no/tjenester/innplassering/

[137] http://www.insidetelecom.no/artikler/dekningskampen-er-ikke-over/347505

589. In addition to being a market leader at the infrastructure level in most electronic communications markets, Telenor is also present in the associated retail markets. Telia does not hold market positions in other Norwegian markets that can be compared with Telenor. Tele2 previously had a fixed-line telephony product, mainly based on Telenor's wholesale product, but Telia sold this customer base to Phonect after the merger. Telenor is a market leader in the retail markets for both fixed-line telephony and broadband. There is little doubt that the massive presence of Telenor's brands in various retail markets will give economies of scope that no other operators achieve.

590. Telenor's presence and position in the retail markets can give synergy gains in relation to administration, customer service, etc. In addition, Telenor's market position in several retail markets could give advantages related to brand awareness and thereby a reduced need for marketing compared to other operators that might be active in a market.

591. **Summary and conclusion**: Nkom believes that no other operators in the relevant market have the same broad range of services as Telenor has in Norway. The company controls the infrastructure in several electronic communications markets and also has a strong position in related retail markets. This gives Telenor a unique basis for economies of scope and synergy benefits.

592. Even though both network owners are vertically integrated and can benefit from their presence in several Nordic countries, Nkom believes that Telenor's breadth in the Norwegian market distinguishes this company from Telia. The criterion supports the conclusion of individual dominance for Telenor.

5.7 The undertakings' total size

593. If an undertaking, or the Group of which the undertaking forms part, is significantly larger than the competitors, this may comprise a competitive advantage through, inter alia, economies of scale and scope (see also Chapters 5.5 and 5.6) and access to financial resources, procurement, distribution and marketing. These advantages may appear outside the relevant market being analysed, but could nevertheless be of significance.

594. Chapter 5.3 concerning market shares shows that Telia has become a relatively large provider as a consequence of the acquisition of Tele2, with around 38 per cent of all mobile telephony subscriptions. Telenor is, however, still the largest mobile provider, with around 51 per cent of all mobile telephony subscriptions. Telenor is also a market leader at both infrastructure level and in related retail markets in most electronic communications markets, cf. Chapter 5.6. In a Nordic context, however, both Telenor and Telia are large telecom groups, with ownership interests in mobile activities in several other countries.

595. In a mature mobile market in which basic services such as voice, text messaging and data are not very suitable to distinguish providers from each other, it is reasonable to expect that bundling with other services will become increasingly important. Large providers can, for example, benefit from negotiating with third parties. Telenor's agreement with Google Play can serve to illustrate this. On the basis of this agreement, Telenor's customers can buy content from Google Play and pay for the items via the mobile account.[138] Nkom finds it reasonable to assume that the possibility of Google entering into such an agreement with the smaller providers is significantly lower. In the same way, it is likely that a provider of Telenor's size will probably be able to negotiate good agreements with third parties with regard to e.g. bundling of mobile subscriptions with music services. After the acquisition, Telia also has a customer

[138] See: http://www.digi.no/913908/betal-via-mobilregningen

base of such a size that they must be expected to have by and large equivalent advantages to Telenor in negotiations with third parties.

596. **Summary and conclusion:** Telenor is still the largest provider of mobile services in Norway. After Telia's acquisition of Tele2, however, the gap to Telia is far narrower than before. Nkom cannot see that the difference in size in itself could give Telenor significant advantages over Telia beyond what has already been shown in this analysis. In Nkom's view, benefits of size are thus not a factor that, in isolated terms, indicates nominating Telenor alone as holding significant market power.

5.8 Access to information, switching costs and lock-in mechanisms

597. Restrictions or costs at the retail or wholesale levels for switching provider can act as entry barriers and help providers with significant market power to retain that power. In Chapter 4.3.4, Nkom assessed access to information, switching costs and lock-in mechanisms in the retail and wholesale markets, respectively and the significance of these factors to the assessment of the competition situation.

598. In the residential market, Nkom finds neither direct switching costs nor lock-in mechanisms which are significant impediments to mobility. A non-transparent market in which product comparisons can present challenges can, however, contribute to limiting mobility and thereby contribute to established providers retaining their position in this part of the retail market for bundled mobile services. In the business market, however, lock-in periods and early termination fees are not uncommon, and are thereby a greater impediment to mobility.

599. As described in Chapter 4.3.4, the wholesale market is in principle not very transparent with regard to price terms, since these are not normally published. There have also been cases of network owners requiring exclusivity during negotiations, so that access buyers cannot compare several offers with each other. Telenor's standard access agreements, both for national roaming and MVNO access, also require absolute exclusivity, or exclusivity at Group level, during the agreement period. This prevents a buyer from being able to hold agreements with several network owners, and all traffic for Group companies is locked to using the same network. Telia's access agreement with ICE is subject to equivalent limitation.

600. Telenor's standard access agreements now require an 18-month lock-in period. Established agreements will thus expire during the analysis' time horizon, so that they do not prevent changing host operator during this period. Telia's national roaming agreement with ICE could also be terminated within the analysis' time horizon. All access agreements could thus be re-negotiated during this analysis' time horizon.

601. However, a change in coverage on switching host operator is a factor that might have major consequences for access buyers and could make switching less attractive, cf. the description in Chapter 4.3.4. The significance of quality and coverage in the network are discussed further in Chapter 5.5 concerning vertical integration. Several providers expressed how Telenor's network is seen by many customers as the best network in terms of quality and coverage. Nkom does not have sufficient evidence for any change in this perception within the analysis' time horizon. This entails that access buyers at Telenor must probably expect to lose customers if they change host network, or must compensate for retaining them by other means. Nkom thus believes that the customers' perception of coverage and preferences for Telenor coverage are a factor which contributes to Telenor maintaining its position in the relevant market.

602. **Summary and conclusion:** Nkom believes that access to information, lock-in mechanisms and direct switching costs do not give strong evidence with regard to the assessment of significant market power. However, switching costs in relation to changes in

coverage are a factor which indicates that Telenor can maintain its strong position in the wholesale market and can thus indicate significant market power for Telenor.

5.9 Access to sales channels

603. Nkom concluded in Chapter 4.2.2.4 that access to physical sales outlets is expensive and difficult to achieve, and therefore constitutes an entry barrier. Lack of access to distribution and sales channels will primarily be a competition problem in the retail market. On the other hand, well-established sales channels might contribute to vertically integrated providers being able to maintain or increase their market shares at both retail and wholesale level.

604. In the previous analysis, Nkom assumed that Telenor was more strongly represented at physical sales outlets than Telia and Tele2, and that the company was represented in various online stores to a far greater extent. With regard to online sales, it seems that several of the large online stores are no longer selling telephones with subscriptions. Neither Elkjøp, Lefdal, Expert, Komplett nor mpx.no sell telephones with subscriptions in their online stores. Sale of subscriptions and possibly subsidised telephones via own websites is probably also an important sales channel. In this respect, brand awareness will undoubtedly set the basis for competitive advantages.

605. As handsets become more and more complex, it is reasonable to assume, however, that many customers wish to be able to contact a physical sales outlet to make the actual purchase and in the event of repairs, etc. Subscriptions from both Telenor and Telia are represented in the large electronics chains such as Elkjøp, Expert and Lefdal. In addition, the established providers are now focusing on their own physical sales outlets, cf. Chapter 4.2.2.4. Prior to the acquisition, Tele2 had three stores, which were all offered to ICE as a remedial measure in conjunction with the acquisition. Both Telenor and Telia have almost nationwide store networks. Telenor has 91 Telenor stores[139], while Telia has just over 60 NetCom stores for the residential market[140] and 16 business centres[141]. Telenor thus has a rather larger rolled-out network of stores, but Nkom cannot see that this gives a basis for a significantly different assessment of the established network owners' market position.

606. **Summary and conclusion:** Nkom believes that different access to sales channels is of significance to the providers' position in the retail markets. The development with regard to the telephones' complexity and the trend for the establishment of own sales outlets indicate that a combination of several sales channels is important to gaining and retaining a larger customer base in today's market.

607. With regard to physical sales outlets, both Telenor and Telia are represented in the large chains and in addition have established a well-developed network of own stores. On this basis, Nkom cannot see that access to sales channels is a factor that is a suitable basis to designate Telenor alone as a provider with significant market power.

139 http://www.telenor.no/telenorbutikken/?gclid=CIaYxoWOw8QCFQazcgod12sAIQ&s_kwcid=AL!285!3!59184325720!e!!g!!telenor%20butikk&ef_id=VGnI0AAABI-fphT3:20150325084222:s

140 https://telia.no/butikk

141 https://telia.no/bedrift/forhandler

5.10 Entry barriers and potential competition

608. In a market with considerable entry barriers, established operators will to a great extent be protected from potential competition. The disciplining effect that the threat of competition could otherwise have will consequently be dramatically reduced or absent. The existence of high entry barriers will thereby be central to the analysis of significant market power in a forward-oriented perspective.

609. In the assessment of the first criterion in the three-criteria test in Chapter 4.2, Nkom concluded that there are high and non-transitory structural entry barriers. The conclusion is mainly based on how the mobile network infrastructure is not easily duplicated, as this will require considerable investments and entail a high level of irrevocable (sunk) costs.[142]

610. In the assessment of the second criterion, Nkom assessed the importance of the third mobile network and potential competition from operators that are not in the market as of today, and the extent to which these can contribute to disciplining the established network owners. Nkom thereby concluded that there is no clear evidence that the third network would be able to sufficiently discipline the established operators on the supply side in the relevant market within the analysis' time horizon. Nkom could not see either that competition from other operators that are not within the market would be able to discipline the offers from the established operators.

611. With regard to the analysis of whether Telenor has individual dominance within the relevant market, the assessments of entry barriers and potential competition mean that within the next two to three years the company will very probably not be disciplined by operators that are not providers in the relevant market today. In Chapter 5.11 below it is inter alia assessed what significance Telia's offers in the relevant market have for the opportunity to exert buyer power within the same period.

5.11 Buyer power/countervailing buying power

612. Countervailing buying power is a factor that can discipline a provider's market behaviour. Buying power may be said to exist when a defined buyer or group of buyers of a product or service is so important to the seller as to be able to influence the price the seller charges for the product or service.

613. Buyer power is not an absolute concept, but refers to the relative strength a buyer holds on bargaining with a seller for a given goods item or service. The degree of buyer power will thus vary according to the particular constellation of buyers and sellers. The question here is whether, in the short or medium term, one or several existing buyers will be able to exert sufficient influence on prices and other terms for Telenor to nonetheless not be considered to hold significant market power.

614. The buyers of access and call origination on mobile networks are described in Chapter 3.5 concerning operators on the demand side. As of today, Telenor has no buyers of national roaming, but two buyers of MVNO access, TDC and Phonero, and nine buyers of service provider access.

615. A threat not to buy is a strong means of pressure on the part of the buyer. The effectiveness of this means of pressure will inter alia depend on how attractive the buyer is to the seller, and whether there are alternative providers with which to enter into agreements, and

[142] Sunk costs are costs that have accrued and cannot be reversed, e.g. by selling assets.

how attractive they are. In addition, the requirement of exclusivity may limit the opportunities to exert buyer power.

616. As stated in Chapter 4.3.4.2, both Telenor and Telia have historically required exclusivity during negotiations on national roaming access. This prevents buyers from comparing several offers, and in this way the access buyers have no opportunity to exert buyer power already from the start of access negotiations. Telenor has expressed how this is no longer the practice. Nkom nonetheless believes that this illustrates a lack of buyer power in this market.

617. Telenor's agreements on MVNO access and service provider access also include a requirement for exclusivity at Group level within the agreement period. This entails that e.g. Phonero or TDC, or companies in the same Group as these, cannot buy MVNO access from any other parties than Telenor. On this basis, the access buyers have limited opportunities to exert buyer power vis-à-vis Telenor within the current agreement period. The agreement term in Telenor's agreements is, however, reduced compared to previously. The agreement term in the current agreements is now 18 months. In Nkom's view, the length of the agreement thus does not present a significant barrier to exercising buyer power.

618. As of today, Phonero is the largest buyer of access from Telenor, with a market share of around 3 per cent, based on number of mobile telephony subscriptions. TDC has a market share of just below 1 per cent. Up until today, Nkom has not seen any signs that these providers have been able to exert buyer power vis-à-vis Telenor to a sufficient degree to be able to discipline the company's wholesale offers. This is e.g. substantiated by TDC's appeal concerning discrimination, cf. Chapter 4.3.7.3. The question in this respect is, however, to a greater extent whether these providers can exert buyer power in the future.

619. Nkom assumes that the degree of buyer power will depend inter alia on the revenue potentially generated by an access agreement, which in turn will depend on the access buyer's customer base. After Phonero's acquisition of Ventelo, the company's market share is, as stated, around 3 per cent. In Nkom's view this is not an increase which would indicate that the company will have significantly greater buyer power in the future. TDC's acquisition of Get, and Get's possible focus on mobile telephony, is a factor which means that TDC can come to increase its overall access purchase. Experience from organic growth in the Norwegian market nonetheless indicates little probability that within the analysis' time horizon the company will be able to increase its customer base to an extent that enables the companies to exert significant buyer power vis-à-vis Telenor. [Exempt from public disclosure: [redacted] Service providers in Telenor's network do not have a volume which indicates that they would be able to exert sufficient buyer power within the next two to three years.

620. On the other hand, the fact that Telenor no longer has buyers of national roaming in its network gives increased incentives to retain remaining access buyers in order to fill up available capacity.

621. As of today, only Telia is an alternative to purchase of MVNO access, [redacted]

622. Whether the asymmetry in the two networks' quality and coverage will persist within the analysis' time horizon is discussed further in Chapter 5.5 concerning vertical integration. Nkom concluded in this Chapter that it is likely that Telenor to a large extent will be able to keep its position as the preferred network within the timeframe of the analysis.

623. As of today, Telia has two buyers of MVNO access in its network, Com4 and Lycamobile, in addition to ICE and buyers of service provider access. ICE will be able to withdraw from the agreement within the analysis' time horizon. Their buyer power will thus also to a certain extent depend on the volume which the company can offer. As of today, the company's opportunities and strategy for growth within a two- to three-year perspective are uncertain. The fact that the share of roaming traffic can be expected to be reduced as the company rolls out its own coverage, while the company becomes a stronger competitor for the established network owners, also indicates that the company will have limited buyer power. Nkom thus has no basis to claim that ICE will be able to discipline Telenor's access terms to a sufficient degree within the analysis' time horizon.

624. With regard to Com4 and Lycamobile, these are access buyers that can be attractive for Telenor, but both of these companies also have limited volume[143], which makes it not very likely that they will have stronger buyer power than other equivalent providers. This also applies to service providers in Telia's network.

625. Telenor's wholesale revenue constitutes a relatively small share of the company's total revenue, compared with the retail sales revenue. Telenor's incentives to pursue and achieve competitive advantages in the retail market, rather than selling wholesale access, must thus be assumed to be strong. Since Telenor is widely present in various retail s (business, residential and M2M), in most cases all types of access will entail direct competition with own retail activities. On this basis, Telenor must be assumed to have limited incentives to compete with Telia on providing access, since terms that are too attractive will increase the competitiveness of access buyers at the retail level. In the same way, Telia will also encounter increased competition at the level by giving too advantageous access terms to external parties, and it must be assumed that Telia will not have any significantly stronger incentives than before to compete with Telenor in giving access.

626. **Summary and conclusion:** Assessment of buyer power shows that access buyers have limited opportunities to exert buyer power in the relevant wholesale market. Nkom has no evidence that the MVNOs TDC and Phonero (Ventelo) have been able to exert buyer power towards Telenor during the relevant regulation period. The same applies to buyers of service provider access. Nor does Nkom expect that within the analysis' time horizon these operators will increase their customer base to such an extent that this entails significantly increased negotiating power. With regard to ICE, their buyer power will also to a certain extent depend on what volume the company can offer when the company can withdraw from the agreement with Telia. In addition, the fact that the share of roaming traffic can be expected to be reduced as the company rolls out its own coverage, while the company becomes a stronger competitor for the established network owners, will also indicate that the company will have limited buyer power. Nkom thus has no basis to claim that ICE will be able to discipline Telenor's access terms to a sufficient degree within the analysis' time horizon.

627. Nkom has no evidence either that, within a period of two to three years, the competition from Telia will be significantly stronger than before.

628. On this basis, Nkom believes that access buyers will not be able to exert buyer power towards Telenor that can discipline the company to such a degree that the company cannot act independently of competitors, customers and consumers within the analysis' time horizon.

[143] Lycamobile had 2.5 per cent of the number of subscriptions at the end of 2014, while Com4 had below 5 per cent of the number of SIM cards for machine-to-machine communication.

5.12 Summary and conclusion concerning significant market power

629. At retail level Telenor had around 52 per cent of the number of subscriptions and handled around 58 per cent of the revenue for bundled mobile services (residential and business together) in 2015. This constitutes a decrease of 1 percentage points in the number of subscriptions from the previous analysis, and an increase of 3 percentage points measured as share of revenue during the same five-year period. After the acquisition of Tele2, Telia's market share is around 37 per cent, based on the number of subscriptions in 2015, and around 33 per cent based on revenue.

630. At wholesale level, Telenor had a stable market share of around 64 per cent of originated minutes in the period from the previous market analysis[144] up to the end of 2014. However, Telia's acquisition of Tele2 entailed that Telenor lost large elements of its wholesale traffic, so that the market share was reduced to 59 per cent in 2015 (59 per cent of the data traffic in mobile telephony subscriptions). This nonetheless entails that a presumption of significant market power is still strongly present.

631. The two operators' profitability development has also differed considerably during the period. Telenor has had a stable and increasing EBITDA margin, except a small decrease in 2015. The figures for Telia's mobile activities have developed negatively since 2010, but with a small improvement from 2013 to 2014, and then a decrease in 2015. The gap between these two established operators has thus been widening over time. It is uncertain to what extent the acquisition of Tele2 will affect Telia's profitability in the coming years. A certain positive effect must be expected in the next reports. For Telenor, reduced wholesale activity has so far had little effect. Revenue from the mobile activities increased in 2015.

632. Both Telenor and Telia are vertically integrated providers. This entails that the companies' retail activities have access to the necessary input factors in another way than providers that are not vertically integrated. A perception among several customer groups that Telenor has the best network in coverage terms gives the company advantages in both the retail markets and the wholesale market when it comes to attracting and retaining customers. Nkom assumes that to a certain degree, Telia's "coverage boost" will contribute to eliminating the actual differences between the networks during the next two to three years. At the same time there are factors indicating that Telenor will continue a high and steady level of investments to be able to further improve quality and coverage in its network. The crucial aspect for the analysis will be whether the customers' perception of coverage will change sufficiently during the period. Nkom believes that it is likely that Telenor to a large extent will keep its position through the time horizon of the analysis, as the preferred mobile network.

633. Telenor furthermore has ownership and control of underlying input factors such as transmission capacity and locations which can give the company advantages in the relevant market, compared with the other operators. Nkom furthermore believes that no other operators have a breadth in their range of services like Telenor's in Norway. The company controls the infrastructure in several electronic communications markets and also has strong positions in related retail markets. This provides a basis for economies of scope to an extent that no others can achieve within the analysis' time horizon, and thus strengthens the assessment of significant market power for Telenor.

634. With regard to buyer power, Nkom believes that today's buyers of access from Telenor will have very limited opportunities to exert buyer power, both due to exclusivity clauses during negotiations and during the agreement period, but also due to a very limited customer base, which means that a threat to switch host network will probably not have any particular disciplinary effect. ICE will be able to switch host network within the analysis' time horizon.

[144] The figures were then based on PT's (Norwegian Post and Telecommunications Authority) electronics communications statistics for 2009.

Their buyer power will also depend on the volume which the company can offer. As of today, the company's opportunities and strategy for growth within a two- to three-year perspective are uncertain. Nkom thus has no basis to claim that ICE will be able to discipline Telenor's access terms to a sufficient degree.

635. On this basis, Nkom believes that the presumption concerning significant market power for Telenor is strengthened by several aspects. The sum of the factors described above, together with the conclusion from the three-criteria test, is the basis for concluding that Telenor can to a great extent act independently of competitors, customers and consumers in the period covered by the analysis. On this basis, Nkom has concluded that Telenor still has significant market power in the market for access and origination on mobile networks.

636. The existence of individual dominance precludes the possibility of ascertaining collective dominance. This analysis therefore does not include any assessment of collective dominance.