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# Comparison of input data on retail costs

## PUBLIC VERSION

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### 1 Introduction

Following the data request, we have received inputs from the operators Telenor, Ice and Phonero on:

- the split of retail costs between fixed and variable expressed as a percentage of total costs
- the split of retail costs between residential and business segments expressed as a percentage of total costs.

The inputs are summarised below together with our initial analysis and conclusions.

**Note: This document has been redacted through the removal of confidential information which has been replaced by [X].**

### 2 Fixed and variable costs

We have compared the inputs from Telenor with:

- the margin squeeze model previously developed by Analysys Mason for Nkom where the retail cost inputs were based on a range of benchmarks gathered by Analysys Mason
- the inputs provided by Ice and Phonero
- the estimate for the total fixed costs provided by Phonero.

#### 2.1 Comparison with the previous margin squeeze model

##### *Input data*

To make sure that the inputs are meaningful in absolute terms, we have compared the retail cost inputs received from Telenor with the inputs that were used in the previous margin squeeze model developed for Nkom. Figure 1 shows the inputs for retail costs used in the previous model.

	Fixed costs (NOK million)	Variable cost (NOK/subscribe)
Acquisition and retention costs	-	730
Personnel expenses	-	110
Marketing	113	60
Billing and collection costs	27	11
Customer care costs	-	50
General & Administration	-	48
Service platforms (MVNO network costs)	-	104
<b>Total</b>	<b>140</b>	<b>1,113</b>

Figure 1: Cost items  
from previous model  
[Source: Analysys  
Mason, 2016]

### Comparability of inputs

To ensure a fair comparison, we have mapped the list of cost items from the current Nkom model and the previous Nkom model and we have identified costs present in both models to be included and items present in only one of the models to be excluded.

Figure 2 lists the cost items of the current model which are also present in the previous model, with the corresponding categories.

Figure 2: Mapping of cost items [Source: Analysys Mason, 2016]

Cost item in current model	Present in both models	Corresponding cost item in previous model
Mobile handsets	No	n.a. (excluded from analysis)
Number portability	No	n.a. (excluded from analysis)
Other costs	No	n.a. (excluded from analysis)
Sales	Yes	Acquisition and retention costs
Marketing	Yes	Marketing
Customer service	Yes	Customer care costs
Management & Administration	Yes	General & Administration
• Invoicing	Yes	Billing and collection costs
• Postage cost		
Project Management	Yes	Personnel expenses (although not perfect match)
Service platforms	Yes	Service platforms (MVNO network costs)
Depreciation	No	n.a. (excluded from analysis)
Cost of capital	No	n.a. (excluded from analysis)

### Like-with-like comparison

In order to compare the two sets of inputs we have considered fixed and variable costs and we have plotted total retail costs as a function of retail market share (i.e. the number of subscribers). The comparison of the cost functions is shown in Figure 3. Figure 4 and Figure 5 instead compare the monthly average cost per subscriber at, respectively, a 5% market share scale and the scale of Telenor. The figures show how the inputs provided by Telenor are similar to those used in the previous model but that Telenor's estimates of the percentage of costs that are considered fixed are

lower than those previously used. This means that lower retail costs are estimated at the 5% market share scale.

Figure 3: Retail cost function of margin squeeze models [Source: Analysys Mason, 2016]

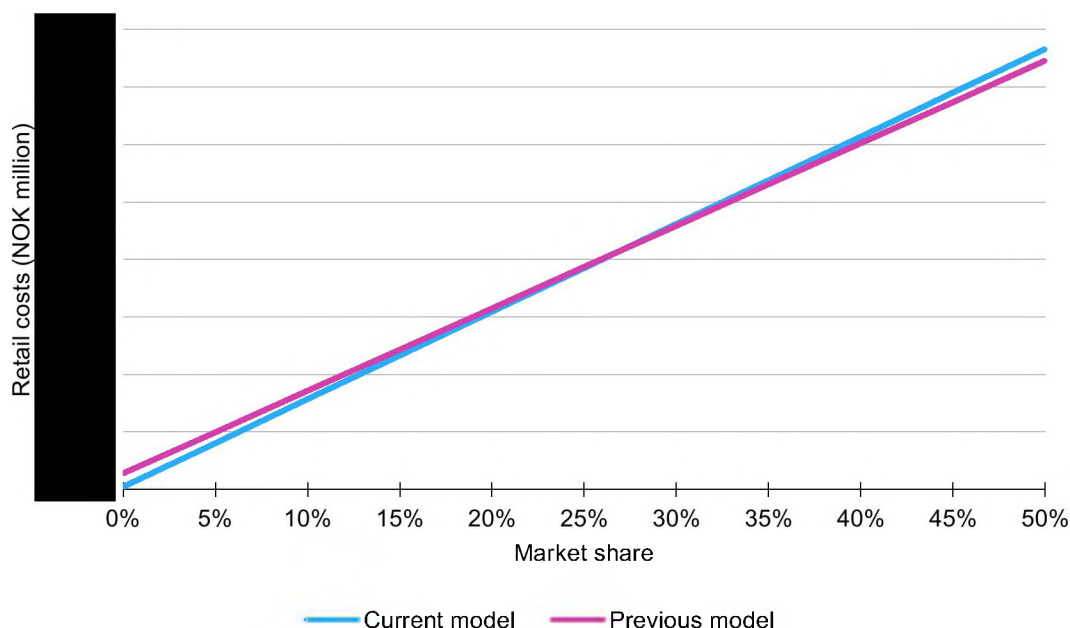


Figure 4: Comparison of inputs scaled at 5% market share scale, NOK per subscriber per month [Source: Analysys Mason, 2016]

[X]

Figure 5: Comparison of inputs scaled at Telenor's scale, NOK per subscriber per month [Source: Analysys Mason, 2016]

[X]

## 2.2 Comparison of Telenor's inputs with those of ICE and Phonero

The model uses retail costs sourced from Telenor's separated account submission. The test is however conducted at a different (smaller) scale than that of Telenor, which leads to a need to adjust these inputs for scale. This is done by splitting the costs between fixed and variable (applying a percentage split). The fixed costs are then kept the same (in absolute terms) regardless of scale, whereas the variable ones scale proportionally to the number of users.

### Input data

The reported split of retail costs between fixed and variable differs greatly across operators, as shown in Figure 6, with Telenor reporting a much lower share of fixed costs compared to Ice and Phonero.

Figure 6: Fixed and variable costs, as provided by the operators [Source: Analysys Mason, 2016]

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### Comparability of inputs

All else being equal, the scale of an operator influences the share of the costs that are fixed. This can be illustrated by considering a typical simplified fixed vs. variable cost equation as shown in Figure 7. The chart clearly illustrates how a larger operator has a lower share of fixed costs than a smaller one.

Figure 7: Example of different share of fixed costs for operators of different scale [Source: Analysys Mason, 2016]

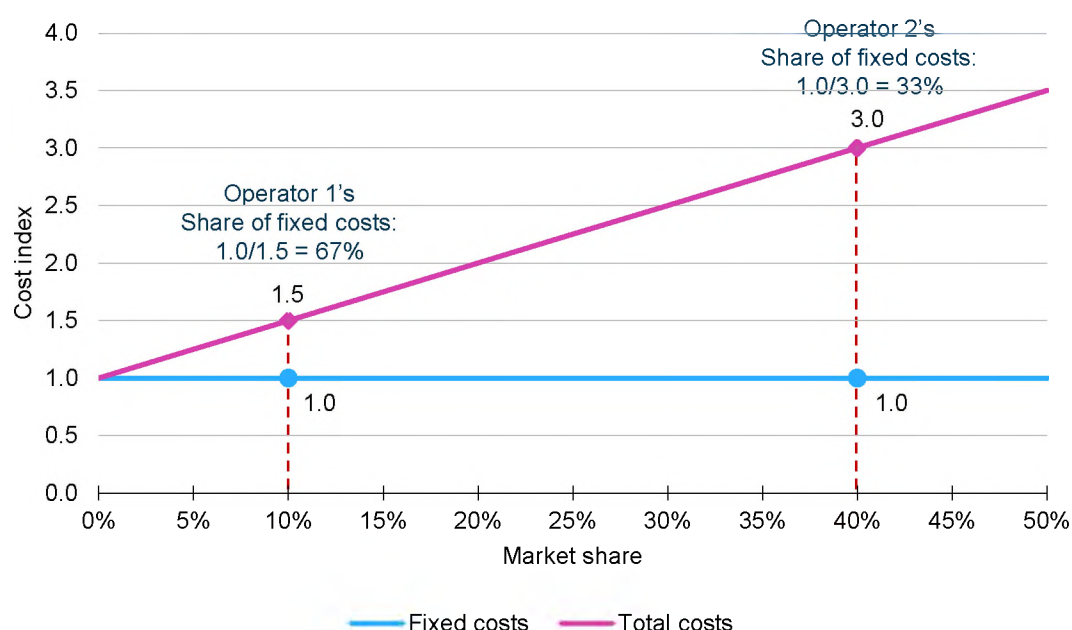


Figure 8 below shows the number of subscribers and market share of each operator at the end of 2014. The figures for Ice and Phonero are significantly lower than for Telenor, which influences their split of costs between fixed and variable. This means that we cannot directly perform a comparison using the inputs shown in Figure 6.

	Telenor	Ice	Phonero
Subscribers (million)	3.22	0.11	0.21
Market share	49.9%	1.7%	3.2%

Figure 8: Scale of Telenor, Ice<sup>1</sup> and Phonero [Source: Nkom, 2016]

### Like-with-like comparison

In order to compare the inputs from the smaller operators Ice and Phonero with those of Telenor, we need to take into account the difference in scale.

<sup>1</sup> For Ice, we have not included in the analysis the c.67 000 customers coming from the spin-off of Network Norway's B2B business.

We have done this using Telenor's total retail costs (see Figure 9). To these, we have applied the fixed vs. variable splits provided by Telenor and then re-scaled the results to the size (number of subscribers) of Ice and Phonero. We have then compared the results with the inputs provided by Ice and Phonero.

Figure 9: Telenor's total retail cost, NOK million [Source: Analysys Mason, 2016]

[3<]

The share of total costs that are fixed is calculated according to the below formula:

$$\%FC_{Telenor \text{ scaled to Ice}} = \frac{FC_{Telenor}}{FC_{Telenor} + VC_{Telenor}/Subs_{Telenor} \times Subs_{Ice}}$$

Where

FC = fixed cost

VC = Variable cost

In Figure 10 and Figure 11, we compare the resulting re-scaled fixed share of costs with Ice's and Phonero's inputs. In both cases, Telenor's re-scaled data implies a higher share of fixed costs than the inputs of Ice and Phonero.

Figure 10: Fixed costs, Ice inputs and scaled Telenor inputs comparison [Source: Analysys Mason, 2016]

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Note: The total figures for Ice have been calculated assuming the same contribution of single cost items as Telenor's.

Figure 11: Fixed costs, Phonero inputs and scaled Telenor inputs comparison [Source: Analysys Mason, 2016]

[3<]

Note: The total figures for Ice and Phonero have been calculated assuming the same contribution of single cost items as Telenor's.

## 2.3 Comparison of Telenor's absolute estimates with those of Phonero

Telenor has calculated its inputs for the share of fixed cost by estimating the total fixed costs that a minimum size MVNO would require. This has been based on two sources:<sup>2</sup>

- Chili Mobil, a small service provider in the Norwegian market with around 40 000 customers in 2014, has been used as the source for marketing, management and administration, IS, and project management. The total costs of Chilli Mobile were sourced from its official financial statement which showed NOK28 million, of which NOK14 million were COGS (i.e. wholesale charges) and thus not considered as fixed.<sup>3</sup> The remaining NOK14 million were

<sup>2</sup> Source: mail from Torbjorn Hauger from 26 November 2015.

<sup>3</sup> Source: <https://www.regnskapstall.no/regnskapstall-for-chili-mobil-as-103651356S1?view=full>.

considered as fixed and distributed across the cost categories mentioned above based on Telenor assumptions.

- Telenor's internal estimates for the fixed costs for MVNO platforms which indicated a total cost of NOK12 million, of which it was assumed by Telenor that NOK8 million were fixed.

We consider the methodology used by Telenor to be reasonable; it appears to reflect a minimum size national-reach<sup>4</sup> operator which is consistent with the objective of the volume adjustments that are required in the model. We do, however, note that Chili Mobil is only active in the residential segment, whereas the modelled operator is supposed to be active in both the residential and business segments which is likely to increase the fixed costs required. This is because business users will not buy their services from a consumer website or convenience store.

Phonero is active mainly in the business segment and has provided an estimated split between fixed and mobile costs to Nkom.<sup>5</sup> This estimate indicates that NOK[3<] million, [3<]% of their 2015 cost of NOK[3<] million, are fixed. Our assessment of this estimate is that it considers the specific situation of Phonero today and does not reflect the minimum size in a long-run, path independent manner. We have instead reviewed the costs of Phonero in 2009, which was its first full year of activity. In that year, it had total opex and depreciation of around NOK60 million.<sup>6</sup> Similar to Telenor's estimate for Chili Mobil, we have assumed that 50% of these costs are fixed.<sup>7</sup> In Phonero's case, this would include platforms to support business services such as necessary business calling solutions. We assume that the minimum (annual) fixed cost for a business-focused MVNO would therefore be NOK30 million, which is a similar order of magnitude to Telenor's estimate for fixed costs of the residential-focused MVNO.

## 2.4 Conclusion

We believe that the fixed costs should reflect an MVNO which, at a minimum size (i.e. one or two subscribers), can offer all of the services that Telenor offers in the retail market, and be present in all of the segments in which Telenor is present. Based on the assessment of the fixed costs provided by Telenor, which apply to a residential-focused MVNO, and those of a business-focused MVNO at its first full year in activity, we believe it to be reasonable to double Telenor's percentage estimates in order to reflect the presence MVNO in both segments.

<sup>4</sup> chilimobil.no has a nationwide online proposition and a distribution agreement with Reitan Convenience which stocks 7-Eleven, Shell and other nationwide outlets.

<sup>5</sup> Source: email from Arild Flystveit on 29 January 2016.

<sup>6</sup> Source: <https://www.regnskapstall.no/informasjon-om-phonero-as-privat-101488040S61>.

<sup>7</sup> The remaining 50% would be wholesale fees paid to Telenor, handset subsidies, interconnection costs, etc.

### 3 Residential and business costs

The model uses the retail costs sourced from Telenor's separated account submission, and adjusts the residential and business share of retail costs to the market average subscriber mix. The same adjustment to the market mix for other operators' data allows a comparison with Telenor's inputs.

#### 3.1 Input data

Telenor and Ice show relatively similar inputs for the split of retail costs between residential and business customers, while Phonero's inputs differ (see Figure 12).

*Figure 12: Residential and business costs, as reported [Source: Analysys Mason, 2016]*

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Note: The total figures for Ice have been calculated assuming the same contribution of single cost items as Telenor's.

#### 3.2 Comparability of inputs

The subscriber mix influences the share of costs of the residential and business segments. Figure 13 shows that Phonero's subscriber base is largely composed of business customers, which explains the difference with the other two operators, whose subscriber mix is relatively similar to the market average.

% of subscribers	Telenor	Ice	Phonero	Market
Residential	73%	76%	8%	76%
Business	27%	24%	92%	24%

*Figure 13: Residential and business subscriber mix [Source: Nkom, 2016]*

#### 3.3 Like-with-like comparison

The model (see "Retail costs&revs – Assumptions" sheet in the public version) already normalises the operators' inputs to the market mix of residential and business subscribers.

Figure 14 confirms that Telenor's and Ice's inputs are relatively similar for most cost items, with Telenor's inputs being slightly more oriented towards the residential segment. The normalisation of Phonero's inputs only works for cost items that were not equal to 0.

*Figure 14: Residential and business cost proportions normalised at the current market mix [Source: Analysys Mason, 2016]*

[X]

Note: The total figures for Ice have been calculated assuming the same contribution of single cost items as Telenor's.

### 3.4 Conclusion

Our analysis has shown that ICE has provided inputs for the share of residential and business costs that are, when normalised, similar to those of Telenor, while Phonero's inputs cannot be compared since several cost items are entirely allocated to business subscribers.

Therefore we believe it is reasonable to use Telenor's input data on segment retail costs assignment in the margin squeeze model.