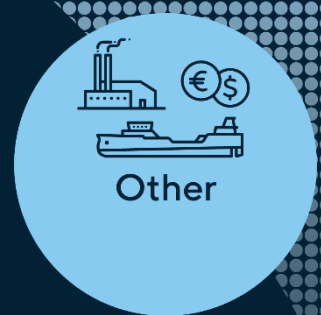


2020 - 2021

Nasdaq Salmon Index Robustness Assessment



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1 Summary

The characteristics of the contributors to NQSALMON with respect to the size composition, geographical spread, and different methods for sales is regarded a strength to NQSALMON. Currently, NQSALMON's coverage of spot sales of fresh head-on gutted superior salmon exported from Norway is estimated to be between 55% and 60%. Although the coverage of NQSALMON is satisfactory, the index would benefit from additional contributors and additional coverage of European markets to further strengthen the integrity of the benchmark.

In 2021, the total Atlantic salmon exported from Norway was nearly 946 thousand tonnes¹. Of this, 83% went to the European markets covered by NQSALMON.

When comparing NQSALMON with two other indices which also measure spot prices for Norwegian salmon, Fish Pool European Buyer Index and Kontali's Farmers, a strong co-variation in prices is revealed. The relatively low standard deviation supports the finding that NQSALMON is a solid representation of the actual weekly European spot prices for fresh gutted superior quality Norwegian salmon, confirmed by contributors operating in the same weekly market.

Kontali Analyse conducts contributor audits regular basis on behalf of the administrator of NQSALMON, Nasdaq Copenhagen. The audits completed in 2021 found strong competence among the contributors and commitment to report correctly. Based on the calculations, assessments, and comparisons completed in this report, Kontali Analyse finds NQSALMON to be highly representative for the spot market for fresh head-on gutted superior quality salmon sold from Norway to the European market.

The index contributors show satisfactory knowledge of the reporting procedures and demonstrate detailed expertise on the internal procedures and systems to meet the reporting criteria. Some minor inconsistencies were discovered during the audits, but they were of no significant consequences to the integrity of the benchmark.

¹ Both superior and ordinary quality salmon, measured in product weight

2 Nasdaq Salmon Index

NQSALMON is a family of eleven commodity benchmarks with the index product fresh Atlantic salmon of superior quality, head on gutted (HOG), transported from Norway to Europe.

Nine of the 11 benchmarks in the NQSALMON represent nine weight classes (1-9+ kg) which mirror the product classification used by Norwegian salmon exporters and salmon producers. In addition to the nine weight classes, Nasdaq Copenhagen calculates one benchmark with the grand total across all weight classes and one benchmark with the average prices of the 3-6 kg classes weighted 30% 3-4 kg, 40% 4-5 kg, and 30% 5-6 kg. Each benchmark includes the volume weighted average prices per its weight class.

NQSALMON is calculated based on actual physical transactions where the volume and prices are reported to Nasdaq by a panel of ten Norwegian exporters and salmon producers with an export licence. NQSALMON is considered the most accurate assessment of the European spot prices in the fresh salmon market. Prices are reported in Norwegian kroner (NOK) and calculated to FCA Oslo, defined as the index point of delivery.

NQSALMON is currently used by analysts, academia, journalists, and as 95% of the underlying benchmark for the Fish Pool derivatives contracts. It has also become the industry standard as a price reference in the bilateral physical contracts. NQSALMON is also the key performance indicator for buyers and sellers and works as a decision-making tool for financial investors in the salmon industry.

Nasdaq is the Benchmark Administrator of NQSALMON and responsible for that the benchmark administration is conducted in accordance with BMR which among other things include drafting methodology, validating input data, calculating and distributing the NQSALMON in accordance with the public Benchmark Methodology (including Key Elements) Nasdaq Salmon Index Family. Nasdaq Benchmark Administrator is yearly audited to ensure the benchmark provision of NQSALMON is in compliance with the EU Benchmark Regulations for commodity benchmarks.

NQSALMON

Product

- Fresh Atlantic Superior Salmon, head-on-gutted (HOG)
- Weight classes 1-2 kg, 2-3 kg, 3-4 kg, 4-5 kg, 5-6 kg, 6-7 kg, 7-8 kg and 9+ kg
- Exported from Norway
- Transported by truck
- FCA Oslo, standard transport fees, currencies, export fees and toll

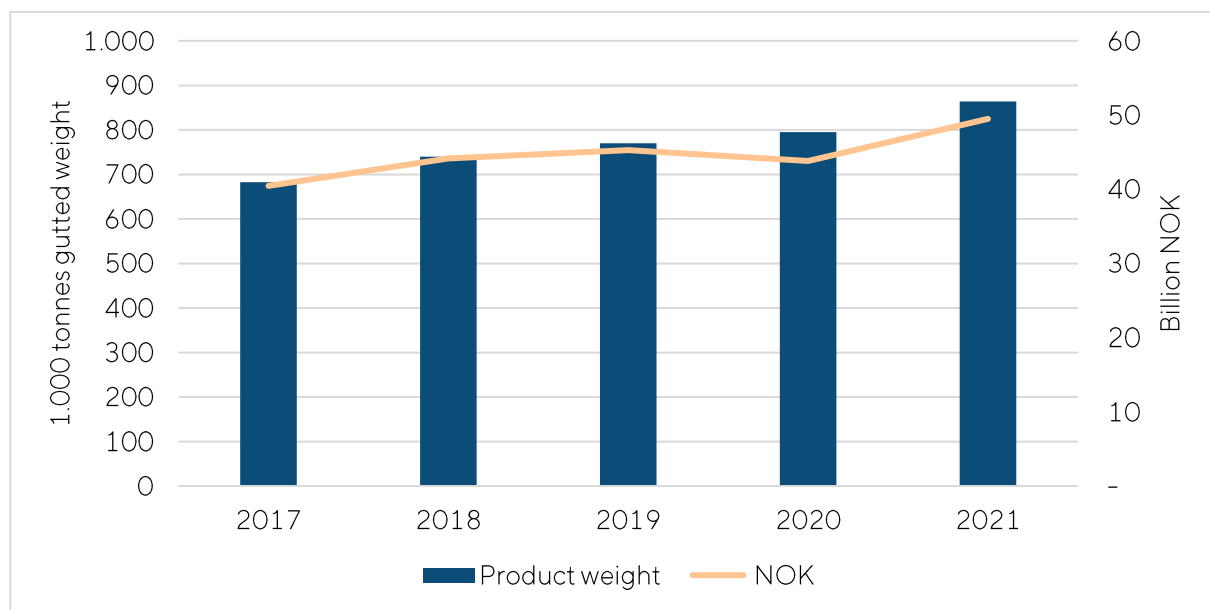
Weekly Benchmarking (prices in NOK/kg)

- The volume weighted average prices across weight classes (Index Value)
- Volume weighted average price per weight class
- The % weight distribution per weight class
- NQSALMON benchmark 3-6kg, weighted average of 3-4 kg, 4-5 kg, and 5-6 kg. Weighted 30/40/30

3 Market Trends in 2020 and 2021

In 2020, sales of fresh whole salmon from Norway were highly impacted by actions/measures imposed in the main salmon markets in order to limit the spread of COVID-19. While Norwegian salmon producers managed to keep supply chains to European markets open and operational, pandemic anti-spread measures led to closure of the large HoReCa² segment medio March 2020. Following the lock-down, a significant change took place in the distribution of salmon to the EU market, with the retail sector (grocery stores and large-scale retailers) replacing most of the sales to the HoReCa sector. This pandemic-triggered change restricted sales to high paying market segments and increased the concentration of buyers in the EU market. Reduction in air freight capacities to overseas markets put pressure on spot prices in large parts of 2020 (figure 2). Despite market challenges, supply volumes of fresh gutted salmon to the EU market remained relatively high, with an increasing share of salmon sold to EU member states specializing in processing salmon for the retail sector.

Figure 1 Export trend for fresh gutted salmon from Norway to markets covered by NQSALMON

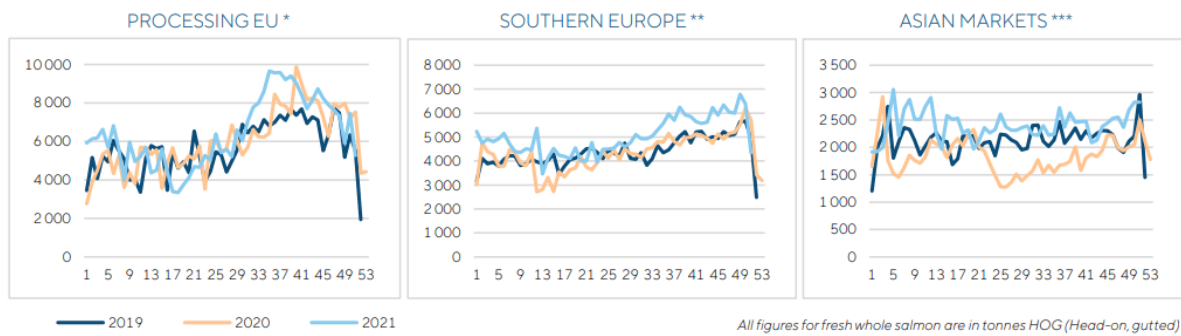


Source: Statistics Norway

A large degree of recovery was observed for 2021 compared with the situation prior to the COVID-19 pandemic. The market conditions were positively impacted by lifting of several social distancing measures in many European countries, allowing restaurants to re-open.

² Hotels, restaurants, and catering sector

Figure 2 Norwegian export volumes of fresh gutted salmon to different market segments (volume in tonnes)



Source: Kontali Weekly Salmon Outlook, published in week 52 2021.

Charts above shows exports of fresh whole salmon from Norway to selected regions.

* Processing EU consist of Poland, Denmark, and Lithuania,

** Southern Europe consist of Spain, Portugal, France, Italy, and Greece,

*** Asian Markets consist of China, Hong Kong, South-Korea, Thailand, Taiwan, Singapore, Vietnam, and Japan.

There were strong increases in sales volumes and values to processing markets in the EU, traditional EU consumption markets, and to Asian markets from 2020 to 2021, the latter due to increase in air freight capacities. According to trade statistics, prices for fresh gutted Norwegian salmon sold on the European market did not fully recover in 2021. High harvest volumes in parts of 2021 and lower contract prices contributed to some pressure on market prices. From 2020 to 2021, export volume from of fresh gutted salmon from Norway to EU markets (NQSALMON markets) rose by close to 9% while export value (measured in EUR) rose by 19%. Compared with 2019 (pre-COVID-19), export volume was up 12% and value up 6%.

Another factor impacting on prices for fresh gutted salmon on European markets in 2021 was strong increase in supply volume from other European producers. According to preliminary trade data, exports of fresh gutted salmon from other European producers (UK, Faroe Islands, and Iceland)³ to NQSALMON markets increased by more than 40%.

Due to high production capacity utilization in Norway in 2021, the outlook for growth in salmon supply in 2022 is very limited. The same outlook applies for other European salmon producers. In the current situation where COVID-19 restrictions are about to be lifted and where there is limited room for production growth, this will likely drive European market prices up to pre-pandemic levels (if not higher). Medio February 2022, NQSALMON averaged approximately 8 EUR/kg on relative high supply volumes.

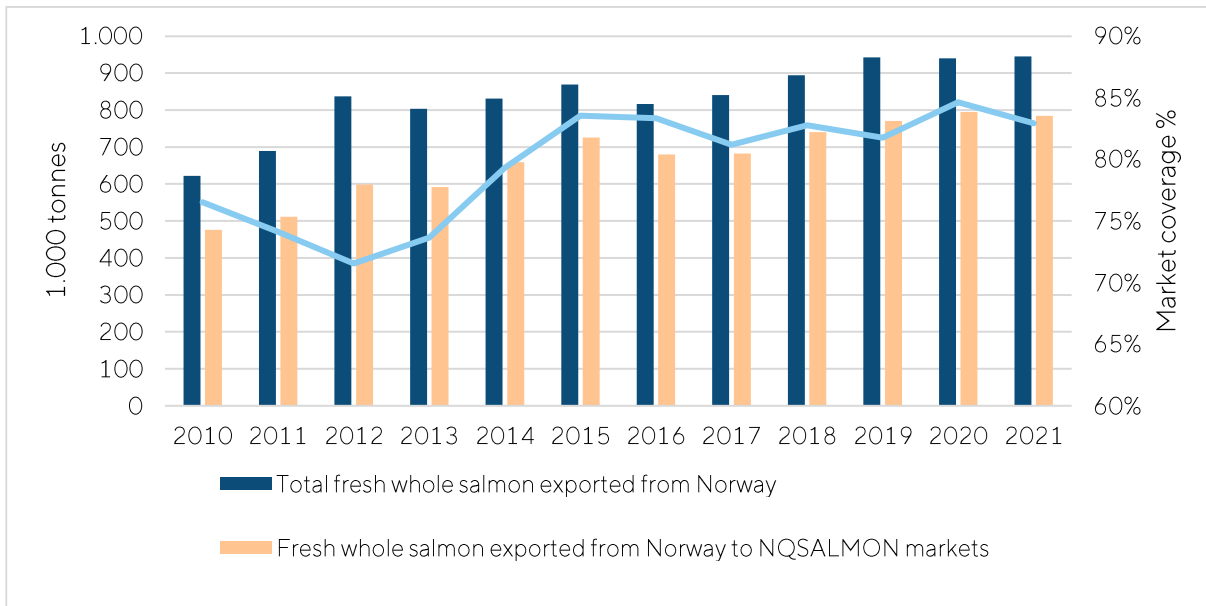
³ Ireland is not included as production only consist of organic certified salmon

4 NQSALMON Coverage

It is estimated that NQSALMON covers 55%-60%⁴ of all spot sales.

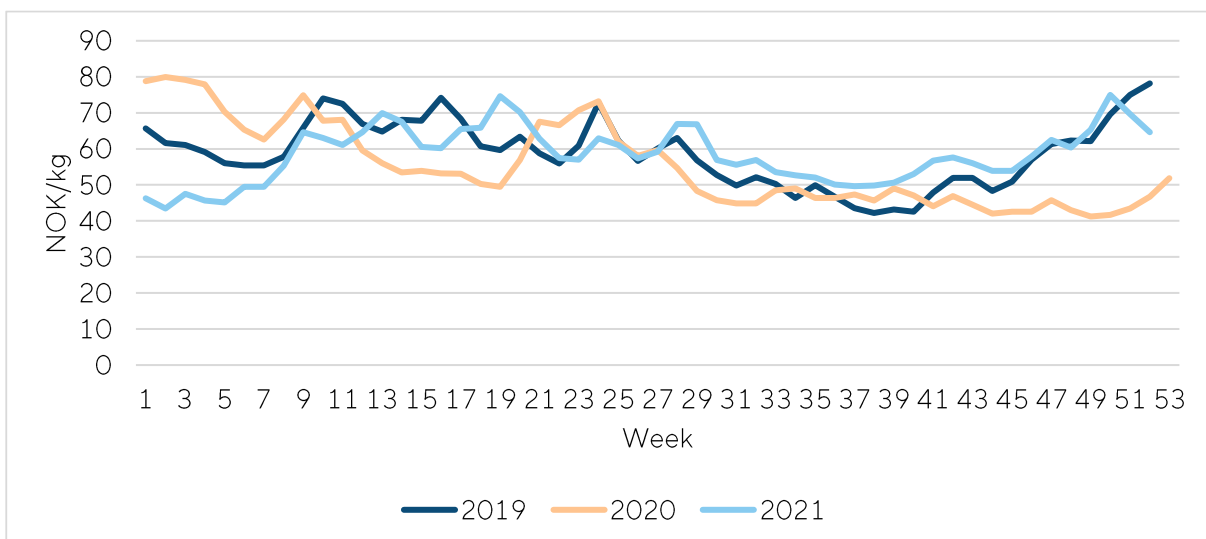
In 2021, the total Atlantic salmon exported from Norway was nearly 946 thousand tonnes⁵. Of this, 83% went to the European markets covered by NQSALMON. The coverage of NQSALMON is lower than this, as it only covers spot sales of superior quality, not contract sales or sales of the quality ordinary. It is estimated that roughly 30% of sales of Atlantic salmon were contracts with third party customers and integrated processing entities. In total, nearly 250 thousand tonnes were reported to NQSALMON in 2021, an increase of 3% since 2020.

Figure 3 Exports of fresh whole Atlantic salmon from Norway



Source: Kontali Analyse based on data from Statistics Norway

Figure 4 Prices reported by NQSALMON 3-6 kg



Source: NQSALMON

⁴ Kontali estimates are based on volumes reported by SSB adjusted for share of other qualities, special qualities, contract sales, internal sales, and Nasdaq markets. This estimate is based on 2020 numbers, as the exporting companies annual reports were not available at the time of publication.

⁵ Both superior and ordinary quality

4.1 Contributors

NQSALMON panel contributors consist of large and medium-sized salmon exporters. The criteria for becoming a contributor are holding a valid export licence as well as a minimum annual sales volume of 5.000 tonnes of salmon. The panel of contributors consists of both exporters and exporting producers with different sales volumes, geographical distribution, market focus, company structure, contract shares, and sales policies/strategies.

The ten contributors to NQSALMON represent integrated companies, farmers, and pure exporters, which is a representative mix of all segments of Norwegian salmon exporters. In sum, the export volume from the contributors covers 55-60% of total Norwegian fresh export, making NQSALMON representative. However, adding new contributors to the panel may improve the overall credibility, but is expected to have limited effect on the actual benchmark values.

4.2 Standard Deviation

In 2021 the average standard deviation between the contributors for 3-6 kg was NOK 1,189, which was 10,28% higher than the average of 1,079 in 2020. However, the standard deviation for the contributors during the first semester in 2021 was NOK 1,267 only 0,72 % lower than the same period of 2020. The larger increase in standard deviation can be attributed several larger deviations at the end of the year.

The relatively low standard deviation supports the finding that NQSALMON is a solid representation of the actual weekly European spot prices for Norwegian salmon, confirmed by contributors operating in the same weekly market.

5 Control Indexes and Statistics

A powerful quality verification and external control procedure for NQSALMON is to use similar indexes/benchmarks for control of correlation. Two such benchmarks are:

1. Fish Pool Buyers Index
2. Kontali Farmers index

Both of these indexes measure the identical spot prices for the 3-6 kg salmon as is done by NQSALMON 3-6. The 3-6 kg is the industry sizes fitting all processor machinery (filets, smoking, ready meals etc).

These benchmarks give us valuable controls of the correctness of the final result in our benchmark assessment:

1. Same targeted price
2. Two additional independent administrators with their own control procedures
3. No overlap of price sources/contributors

In addition, an analysis of correlation with the official toll statistics made public through Statistics Norway (SSB) and the Norwegian Seafood Council (NSC) is done. Although SSB and NSC also reports the export of fresh salmon, there are several data differences to be considered in the analysis.

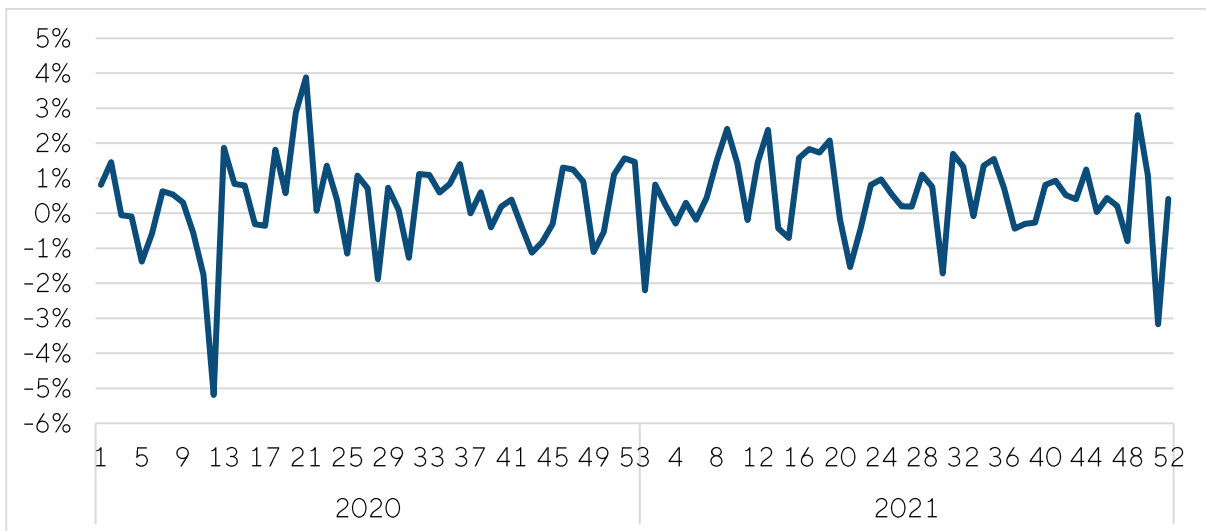
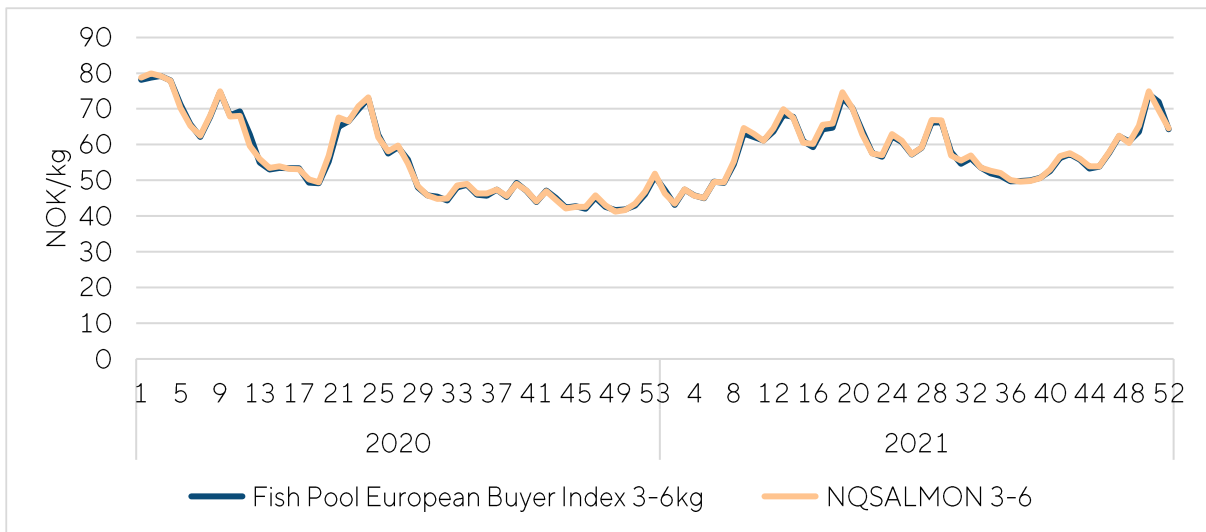
5.1 Fish Pool European Buyer Index

The derivatives exchange, Fish Pool ASA, calculates an index based on input data from approximately 40 European buyers. The index serves as a KPI tool for buyers in different countries.

The Fish Pool European Buyers Index (FPEBI) is not a benchmark under BMR, and they have no external audit. Post BMR implementation, the FPEBI is not a part of the Fishpool Index (FPI), the underlying for derivatives trading. FPEBI use more or less identical reporting procedures like Nasdaq. FPEBI serves as a KPI service towards European salmon buyers and the input data is the buyer side of the sell side invoices reported to NASDAQ.

FPEBI is a weekly index. As with NQSALMON, invoices in different currencies are converted to NOK based on standard FX rates for the week. Standard freight rates are used to produce a NOK spot price FCA Oslo, Superior, fresh, HOG, 3-6 kg.

Figure 5 NQSALMON 3-6 kg vs. Fish Pool European Buyer Index 3-6kg by price (top) and percent of difference in price with NQSALMON 3-6 kg as reference (bottom).



Source: Fish Pool and Nasdaq

The average difference between the two benchmarks in 2020 was 0,29% and 0,49% in 2021. On average, NQSALMON showed slightly higher prices than FPEBI.

There are 2 characteristics that explain most of the differences between the benchmarks:

1. FX calculation
 - a. NQSALMON use a FX rate adjusted to the time of the actual sales being made, 40% on Friday prior to invoicing week and 60% the average of Monday-Thursday in the invoicing week
 - b. FPEBI use an average of Monday-Friday in the invoicing week
2. Panellists/contributors
 - a. NQSALMON contributors are ten exporters selling to large and small/niche clients and cover the total price range of salmon sold from Norway to Europe
 - b. FPEBI contributors are mainly large processors who continuously purchase large volumes, often full loads (whole trucks). As such, the FPEBI has a conscious bias towards the largest purchasing countries.

The differences in FX calculations means the NQSALMON will react earlier to shifts in FX rates. The outliers between the two benchmarks can be explained by the FX differences. The weakening of the Norwegian krone during March 2020 was reflected in NQSALMON, but not to the same degree in FPEBI.

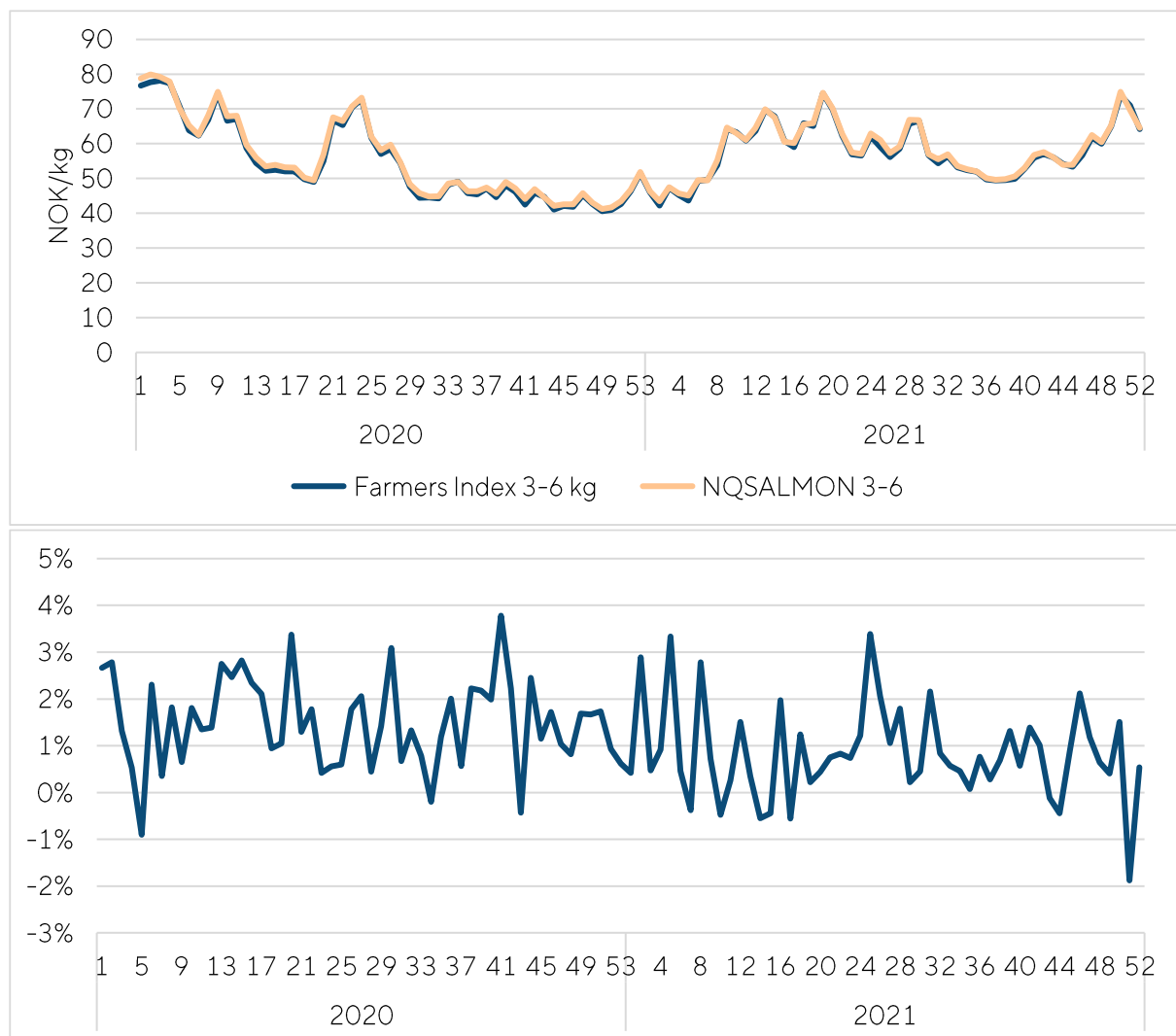
The FPEBI bias towards full load invoices will normally result in lower prices. Although part-loads generally generate more profit, they reflect a smaller part of the export.

These systematic differences between NQSALMON and FPEBI is likely to explain much of the difference of 0.29% and 0.49%.

5.2 Kontali Farmer Index

Kontali Analyse AS offers a KPI service to Norwegian farmers selling salmon through the network of exporters. Kontali report prices received at packing stations and produce an independent weekly index. The panel consist of 7 farmers based on a different composition of contributors than NQSALMON. Overall, the Farmer Index contains approximately 50% of the volumes in NQSALMON. The Farmers Index is not a benchmark under BMR and is not subject to an external audit.

Figure 6 NQSALMON 3-6 kg vs. Farmers Index 3-6kg by price (top) and percent of difference in price with NQSALMON 3-6 kg as reference (bottom).



Source: Kontali Analyse

The average difference between the two benchmarks was 1,5% in 2020 and 0,83% in 2021, NQSALMON being slightly higher in the beginning of the period.

NQSALMON and Kontali Farmers Index measure the same market, and the correlation and price difference eliminate any suspicion of manipulation in either one of them. The argument is supported by the fact that the contributor panels have no overlap.

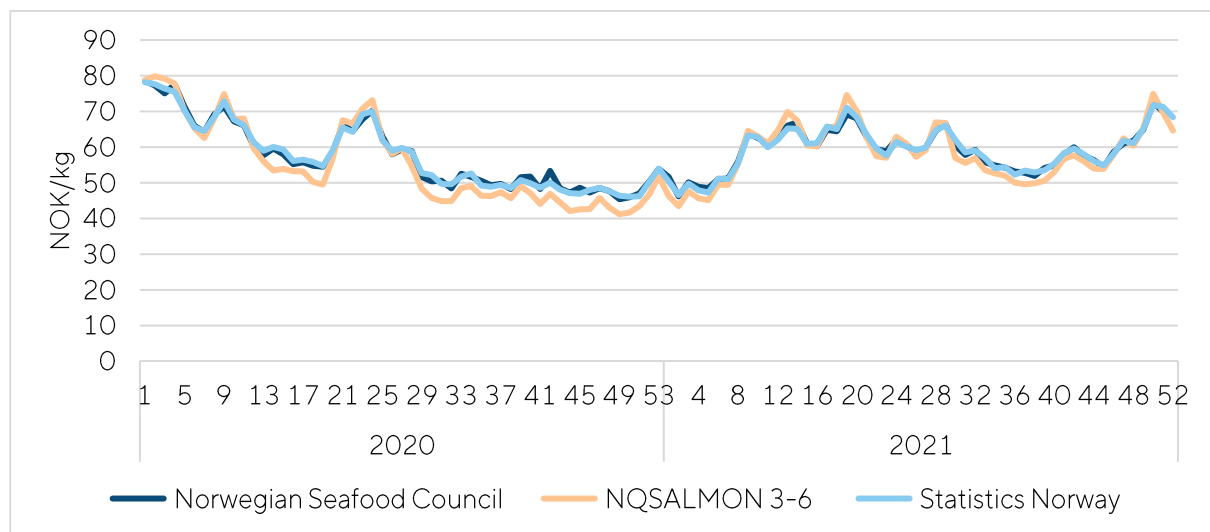
5.3 Statistics Norway and Norwegian Seafood Council

The weekly export statistics from Statistics Norway (SSB) consisting of average export price for fresh whole salmon to all markets, and from the Norwegian Seafood Council (NSC) containing of average export price for fresh whole salmon to NQSALMON European market is another price indicator often used by analysts. The prices are accurate reflection of the total exported volumes and values of Norwegian salmon, however neither are benchmarks under BMR.

The price data has characteristics that limit its quality as a precise assessment of the actual spot prices in the market for a given week. The reason being that the SSB and NCS export data includes all export of fresh whole salmon, regardless of the quality and certification, of when the price was negotiated, and the share of contract sales which at times can be significant.

Approximately 30% of the salmon exported from Norway is contract sales. This affects the market in the way that in a downwards trending market, the SSB price tends to be higher than the actual weekly spot price in NQSALMON, and vice versa. As salmon prices are volatile, the effect will in periods be substantial. The export statistics from the NSC is a less powerful benchmark for market participants that link their business to spot prices. Hedging based on these prices will include substantial and uncontrollable financial risks.

Figure 7 NQSALMON 3-6 kg vs. SSB export of fresh whole salmon* and NSC export of fresh whole salmon**

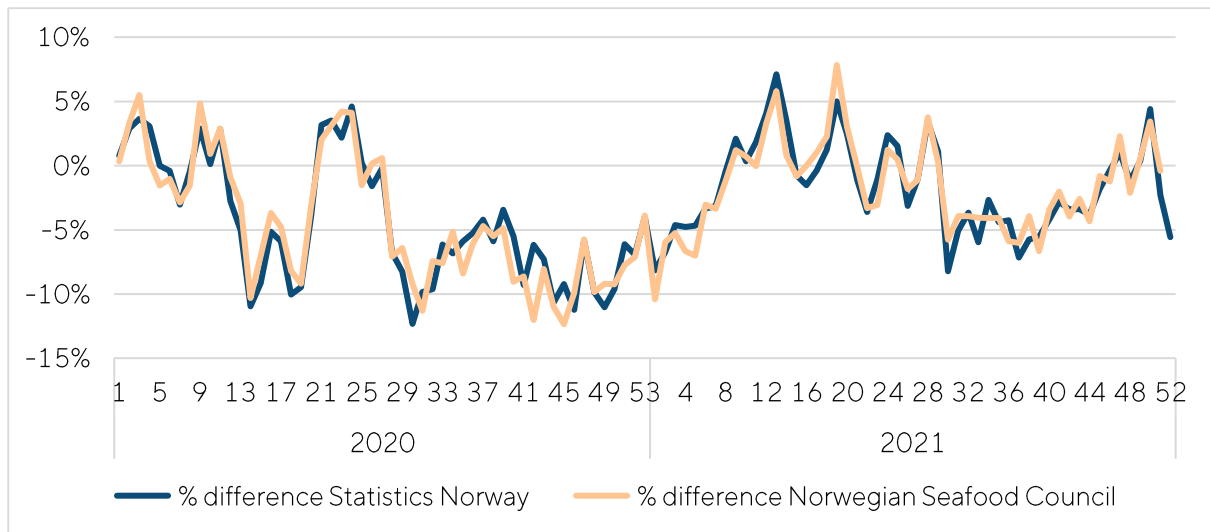


Source: NQSALMON, NSC, and SSB

* average export price for fresh whole salmon to all markets

** average export price for fresh whole salmon to NQSALMON markets

Figure 8 Percent of difference in price with NQSALMON 3-6 kg as reference (right).



Source: NQSALMON, NSC, and SSB

In trending periods, SSB will differ from NQSALMON due to the contracts included in SSB and NSC:

1. Falling market: SSB will be higher than NQSALMON due to contracts done at higher prices than in current spot market.
2. Rising market: SSB will be lower than NQSALMON due to contracts done at lower prices than in current spot market

6 Audits, Controls, and Compliance

Kontali Analyse has since 2014 been contracted as the auditor of contributors to the NQSALMON.

In 2020 and 2021 audits of almost all contributors were conducted.

Contributor audits consisted of three parts:

1. System audits which checked the procedures for identifying and eliminating contract sales, identifying sales to integrated companies, and handling of credit notes.
2. Standard parameter audits which controlled the foreign exchange rates, the deduction/addition of transportation costs, the deduction of customs clearing, products included in the reporting, the weight class categorisation, and the destination markets.
3. Random audits that cover controls of methods, routines, and procedures related to reporting.

Special focus in 2020/2021 was contributor corporate structure and potential sales to related entities.

The index contributors show satisfactory knowledge of the reporting procedures and demonstrate detailed expertise on the internal procedures and systems to meet the reporting criteria. Some minor inconsistencies were discovered during the audits, but they were of no significant consequences to the integrity of the benchmark.

In 2020, Kontali Analyse was appointed as external auditor of the administrator of Nasdaq Salmon Index on the compliance with the European Benchmark Regulation.