# 1 Introduction

Start of Introduction

1. Our problem: "Predicting the pricing of salmon using similar commodities and macroeconomic factors"

Why is our problem important and what is its relevance?

The salmon industry is one of the biggest industries in Norway. (Johansen et al. 2019) The companies in the industry impact the rest of the Norwegian economy and society as a whole through labor and culture. Predicting the price of salmon would help to predict the future of these companies short term and their impact. It is relevant in Business analytics as we will be creating a model using methods and logic form the course and its highly relevant in the economy today as it has been quite a turbulent market given the recent discussion about tax increase for the industry especially.

# 2 Theory and literature

Relevant theory will be: We envision using economic theories such as market equilibrium, Pareto efficiency and consumer choice theory. Statistical theory, such as the presumptions for regression to evaluate whether our data sources meet the requirements, and our model is robust. Neural networks, especially LSTM compared to other predictive models

# 3 Methodology

We intend to utilize the following methods:

- Exploratory analysis
- Regression, https://www.alchemer.com/resources/blog/regression-analysis/
- ARIMA, https://www.machinelearningplus.com/time-series/arima-model-time-series-forecasting-python/

– LSTM — Tensorflow

## 3.1 Data gathering

In order to analyze data connected to salmon price, we first need to gather this data. The main data point, our dependent factor, is the price of salmon. There are several sources for this data, but we utilized the data from the NASDAQ salmon exchange. The reason for this being a combination of the accessibility of the data, and the fact that the NASDAQ salmon exchange (NQSALMON) uses a wighted average for the salmon price, gathered from a spectrum of salmon exporters and it is therefore the best source of meaningful data. Another reason for using the NASDAQ salmon exchange is that the data is updated weekly with no missing values for the entire time frame. We downloaded data from March 2013 through December 2022, for a total of 507 data points. This was our base for the independent factors.

## 3.2 Exploratory analysis

## 3.3 ARIMA

One condition for ARIMA is that the data is stationary. (Hyndman and Athanasopoulos 2021, p. 291)

## 3.4 LSTM — Tensorflow

# 4 Results and discussion

# 5 Conclusion

# Works Cited

Hyndman, Rob J and George Athanasopoulos (2021). *Forecasting: principles and practice*. Melbourne: Otexts. ISBN: 9780987507136.

Johansen, Ulf et al. (2019). 'The Norwegian seafood industry – Importance for the national economy'. In: *Marine Policy* 110, p. 103561. ISSN: 0308-597X. DOI: https://doi.org/10.1016/j.marpol.2019.103561. URL: https://www.sciencedirect.com/science/article/pii/S0308597X1830914X.