

Trends in Atlantic Salmon Markets and Implications for Bristol Bay Salmon Markets

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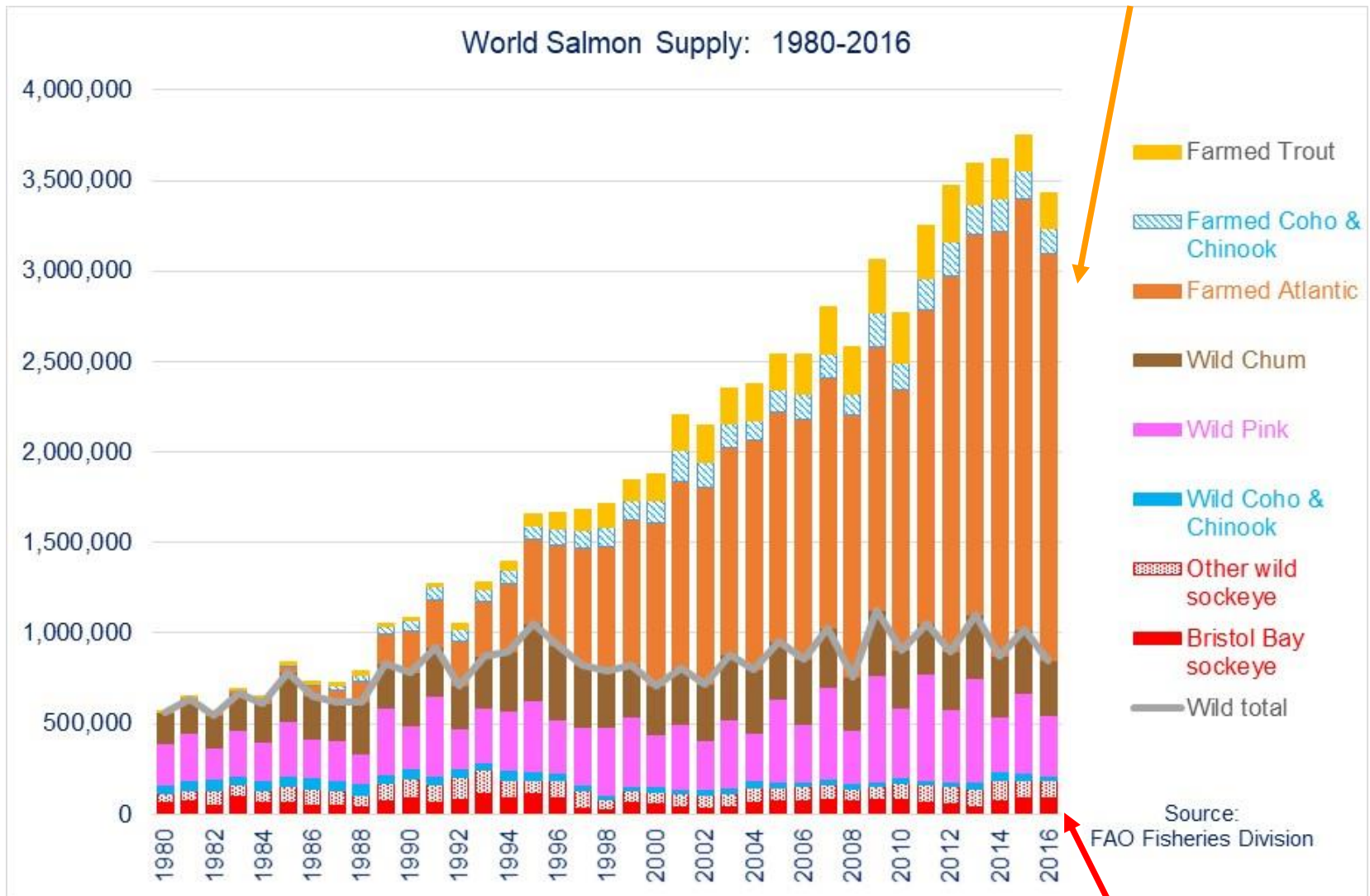
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Outline

- Trends in world salmon supply
- Trends in US salmon supply
- Trends in farmed Atlantic salmon prices
- Effects of farmed Atlantic salmon prices on sockeye salmon prices
- Outlook for farmed Atlantic salmon prices

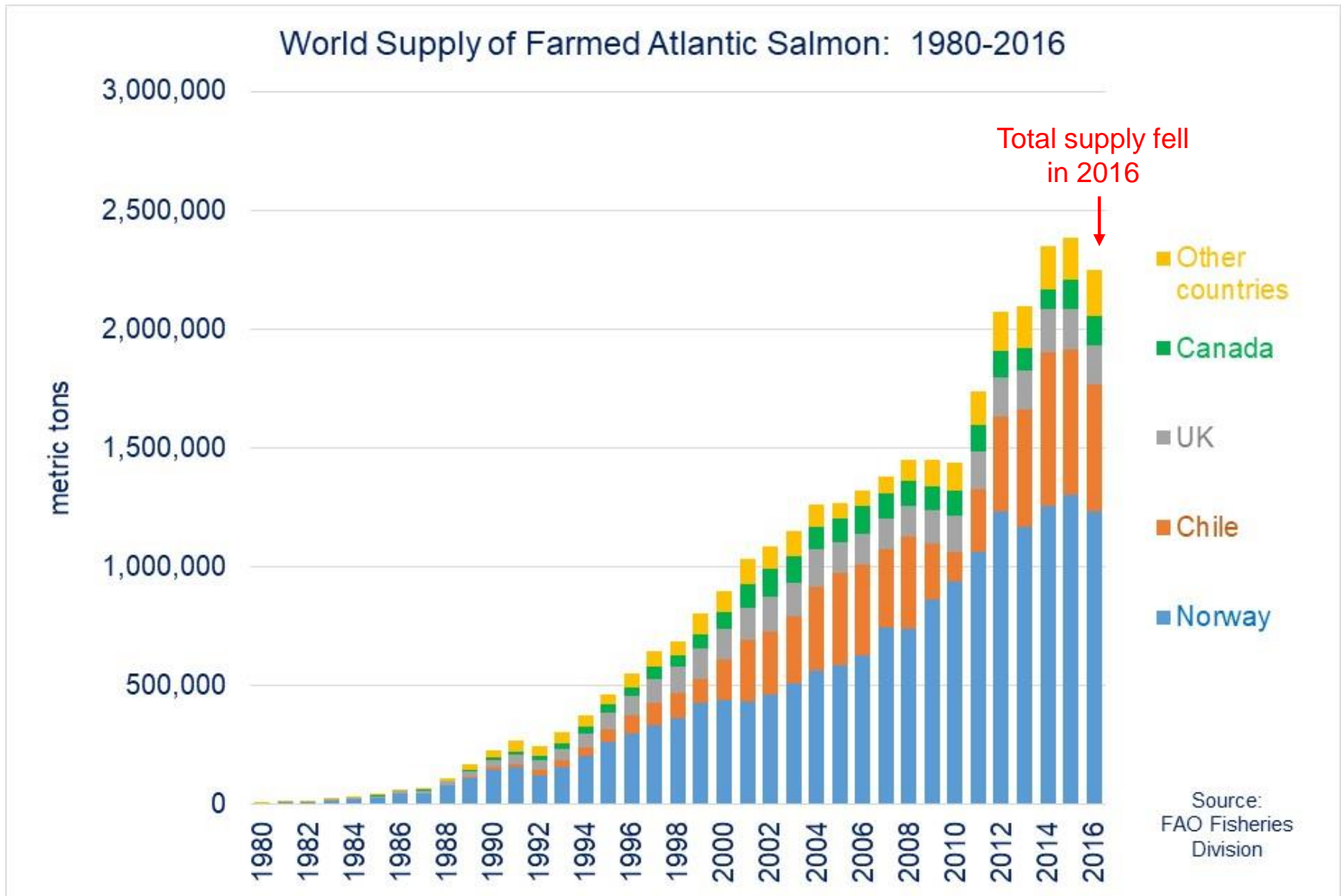
Trends in world salmon supply

World salmon markets are dominated by farmed Atlantic salmon.

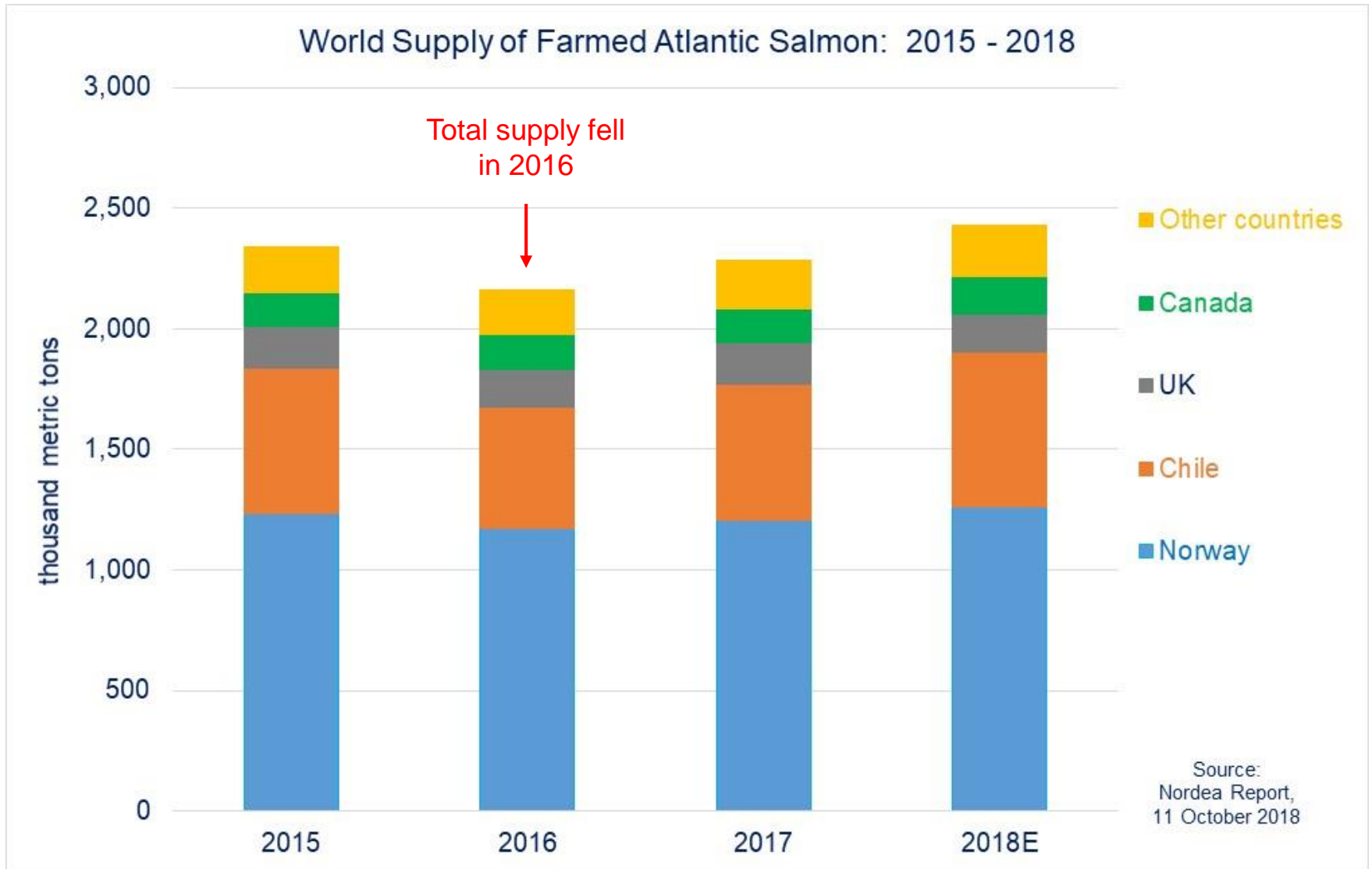


As farmed salmon production has grown, Bristol Bay sockeye salmon has become an ever-smaller share of world salmon supply.

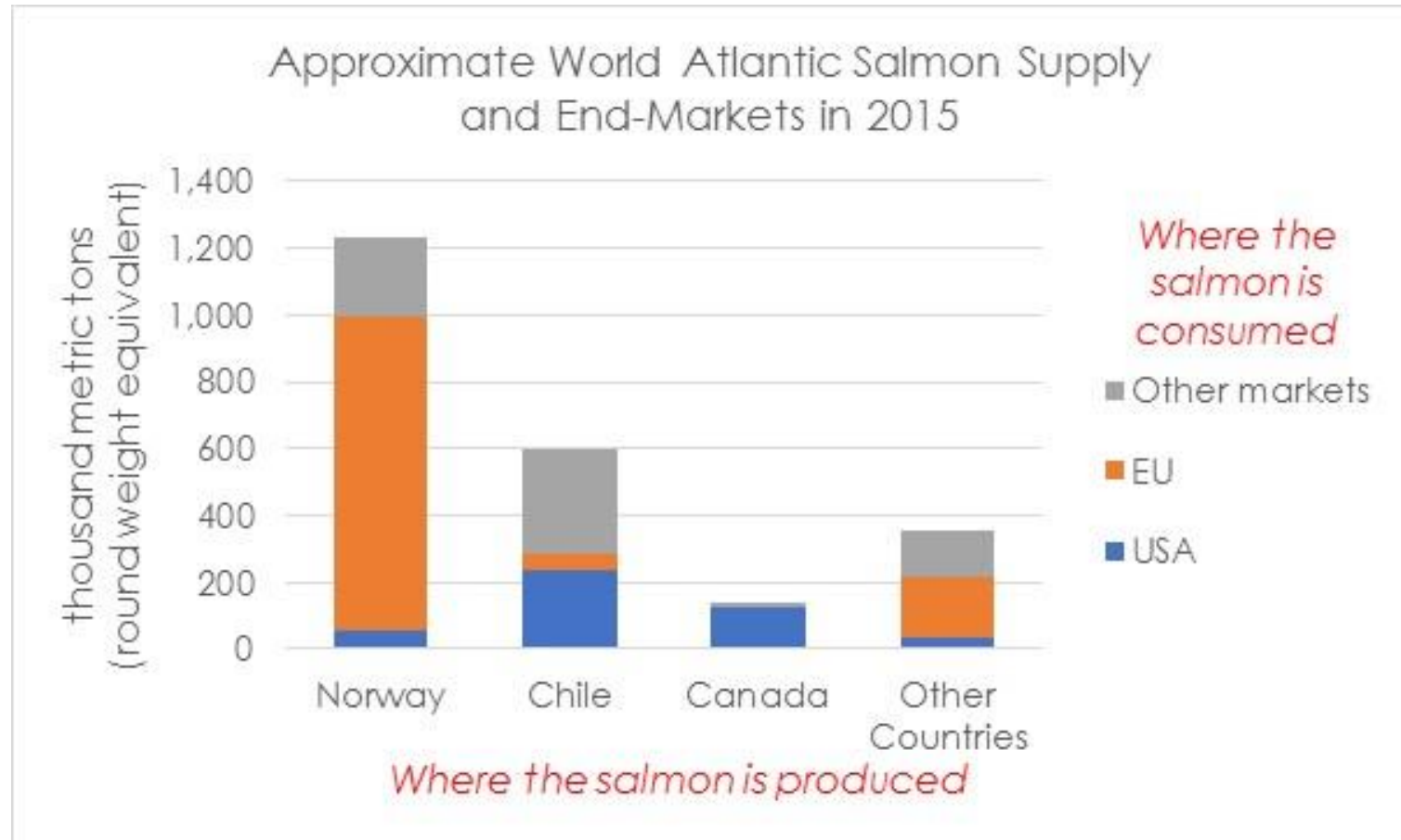
Norway and Chile are by far the largest producers of farmed salmon, followed by the UK and Canada.



Recent trends in world farmed Atlantic supply:
After falling in 2016, total supply rebounded in 2017 and 2018.



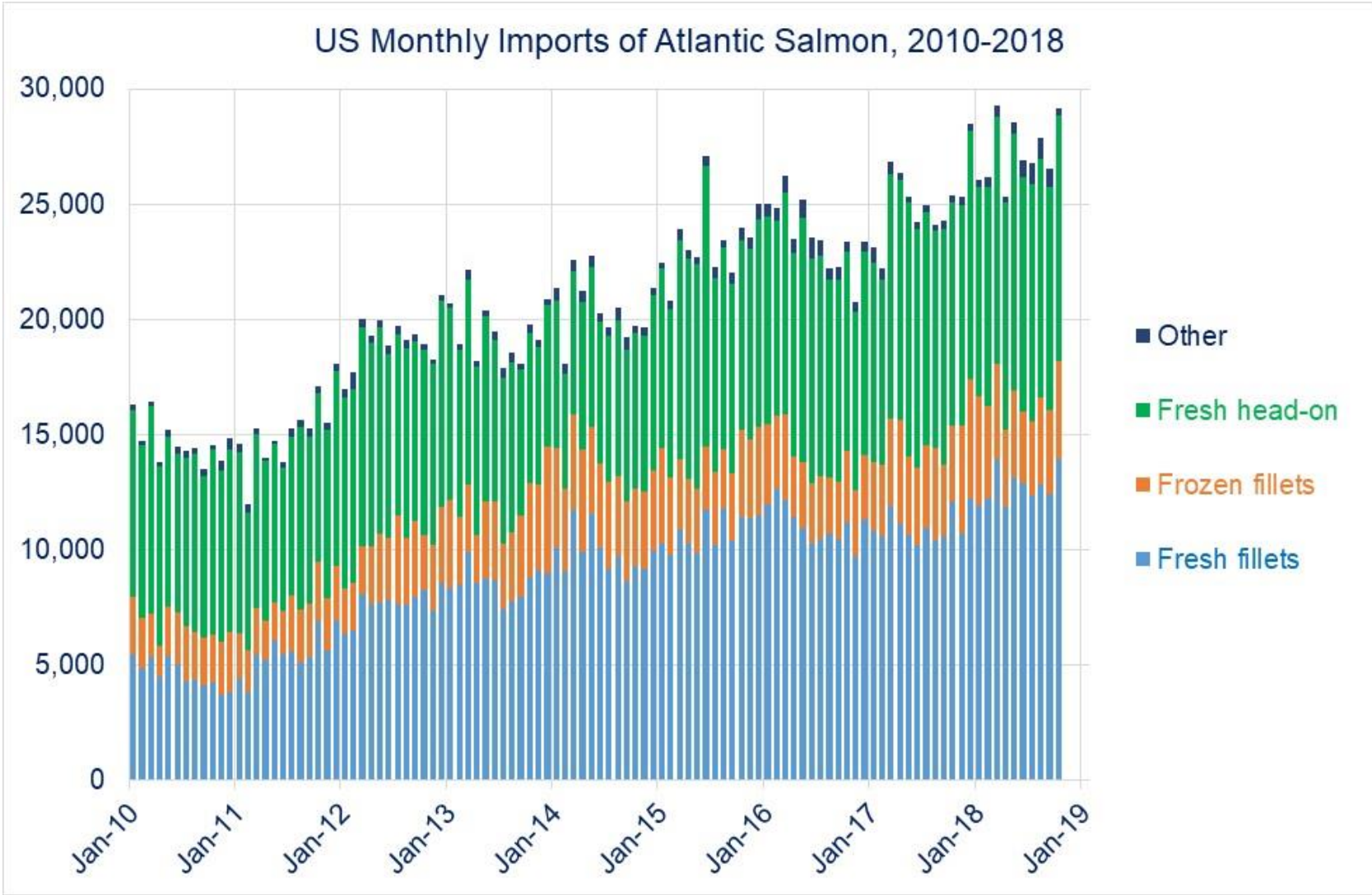
Norway is the world's largest Atlantic salmon producer.
Chile and Canada are the largest suppliers to the US market.



Source: Estimated based on harvests and exports reported by Kontali

Trends in US salmon supply

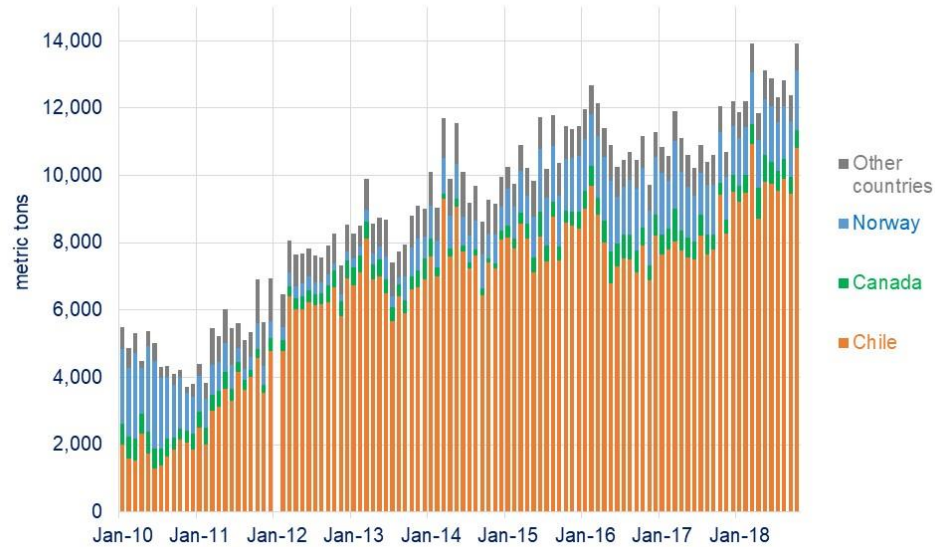
The United States imports large volumes of farmed Atlantic salmon—about 15% of world production. U.S. imports increased in 2018 to record highs.



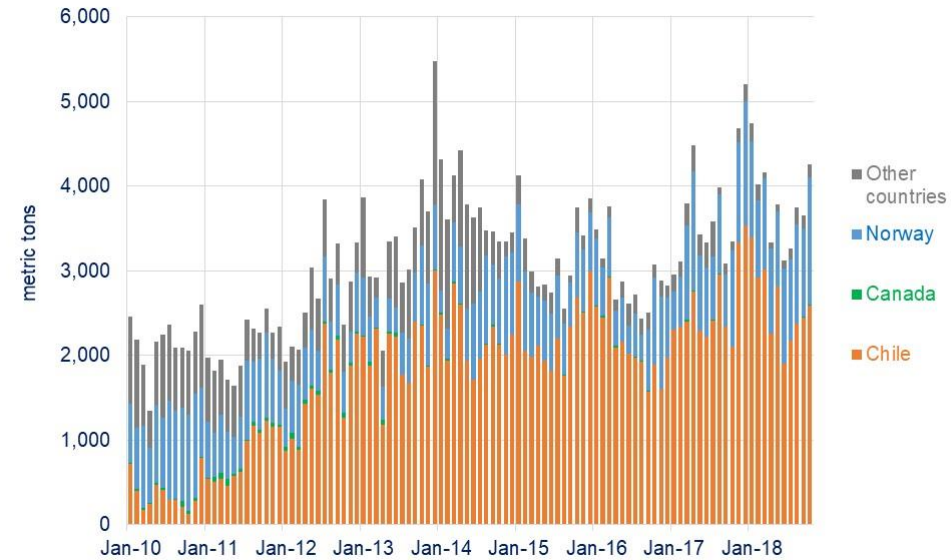
Almost all imports are fresh fillets, frozen fillets, or fresh head-on.

Chile is the biggest supplier of fresh and frozen Atlantic fillets.

US Monthly Imports of Atlantic Salmon Fresh Fillets, 2010-2018

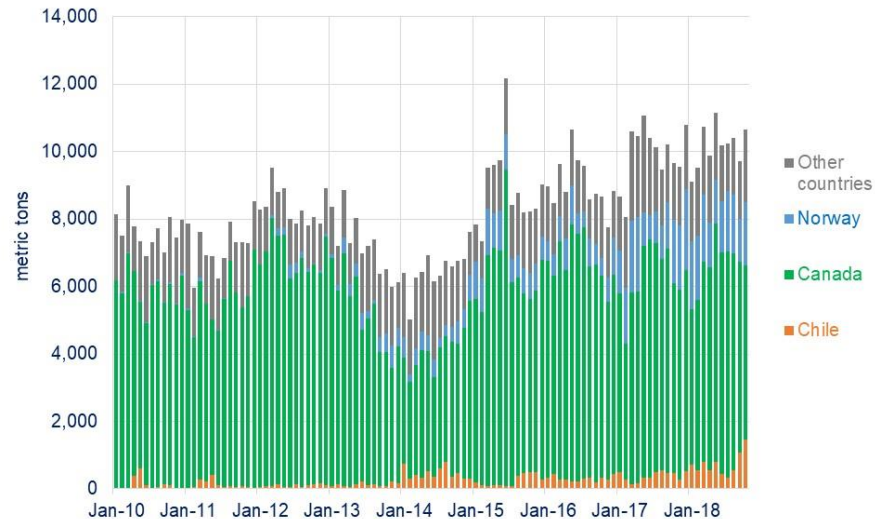


US Monthly Imports of Atlantic Salmon Frozen Fillets, 2010-2018

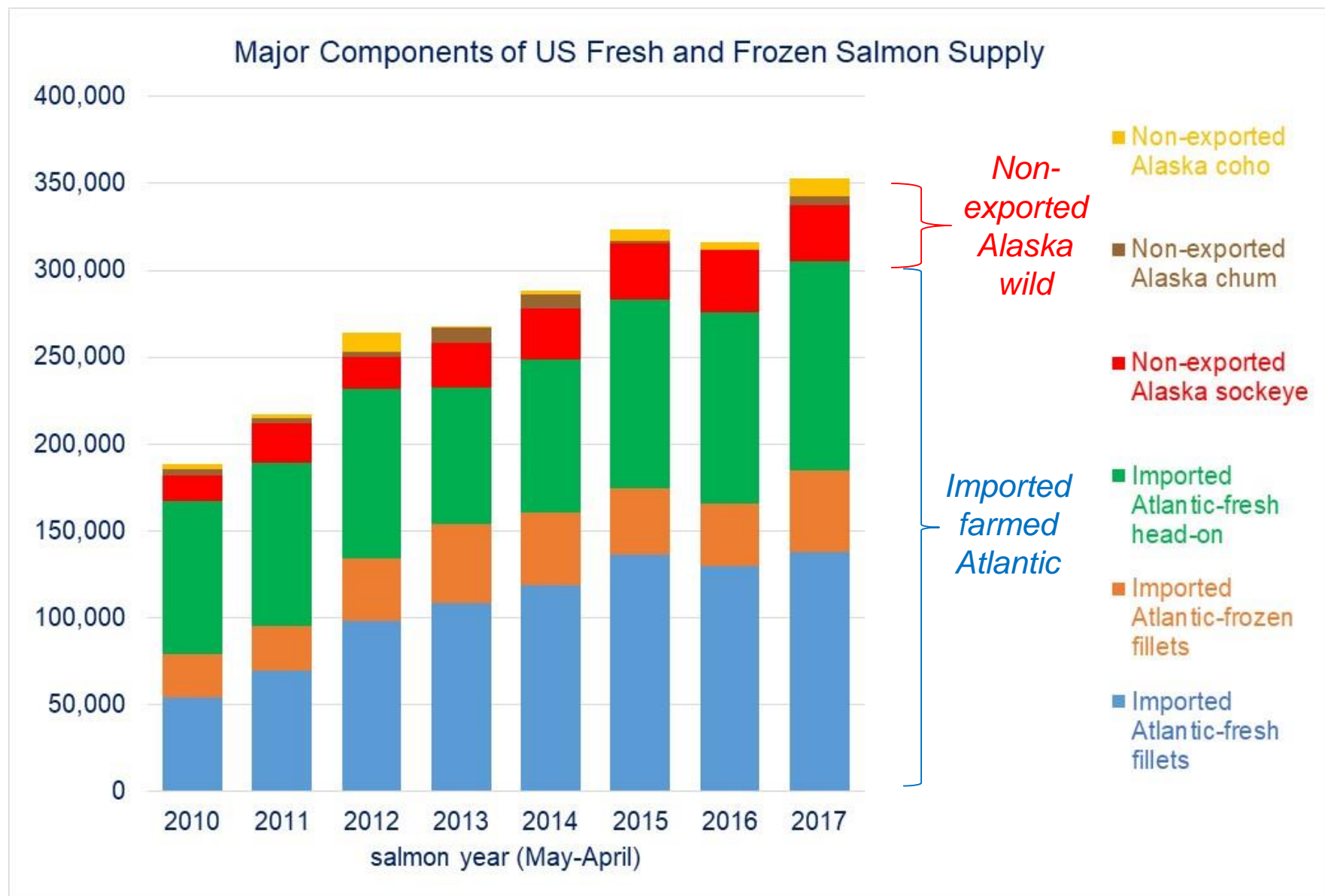


Canada is the biggest supplier of fresh head-on Atlantics.

US Monthly Imports of Fresh Head-On Atlantic Salmon, 2010-2018



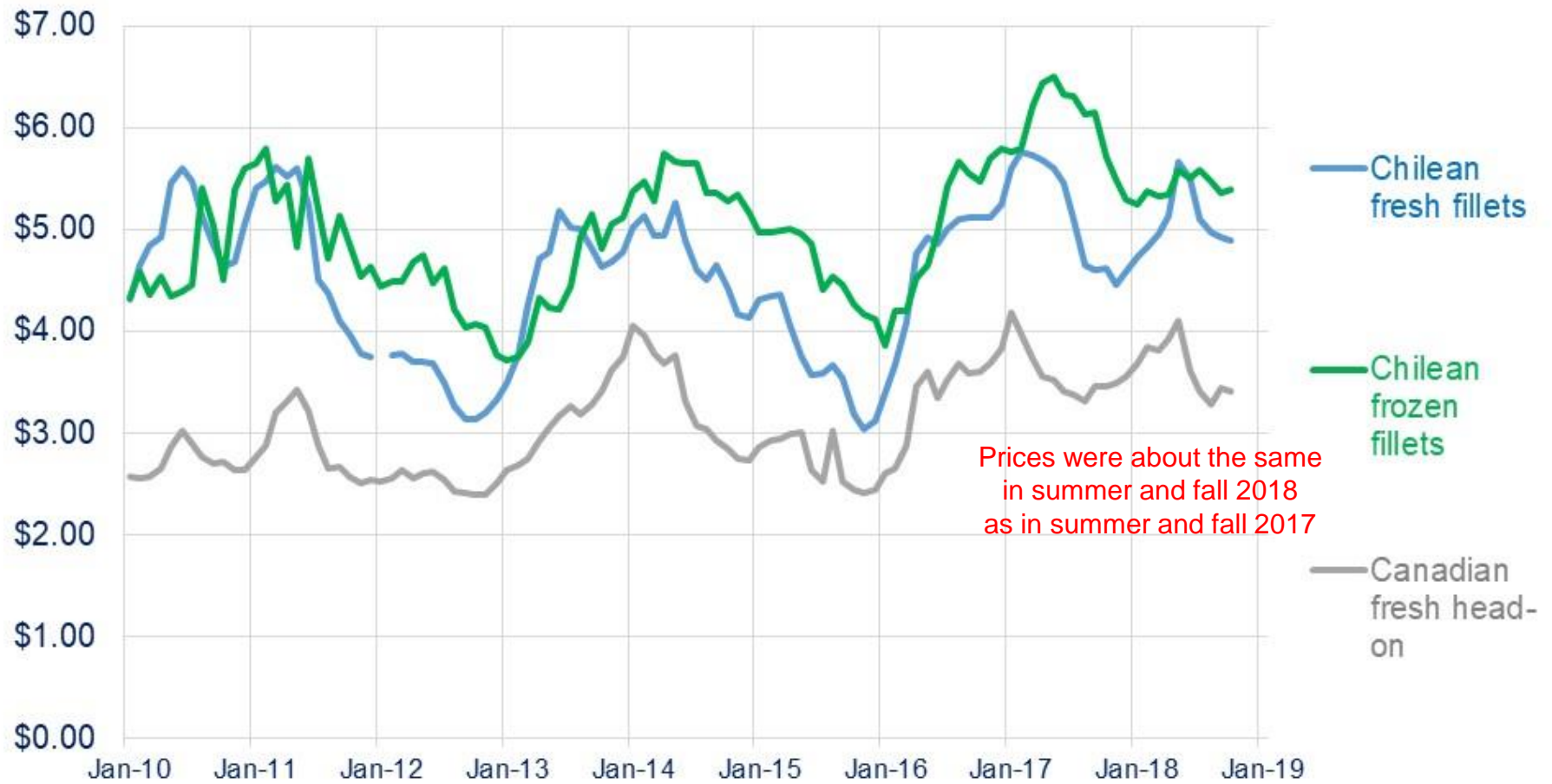
Imported farmed Atlantic salmon accounts for a much larger share of US salmon supply than Alaska wild salmon.



Trends in farmed Atlantic salmon prices

Since 2010, farmed Atlantic salmon have gone through three major up-and-down price cycles.

Average Import Prices of US Atlantic Salmon Imports: 2010-2018



What drives farmed salmon prices?

SUPPLY AND DEMAND THEORY:

If supply rises more than demand, prices fall

If supply rises less than demand, prices rise

Historically, year-over-year changes in US monthly imports have been inversely correlated with year-over-year changes in prices.

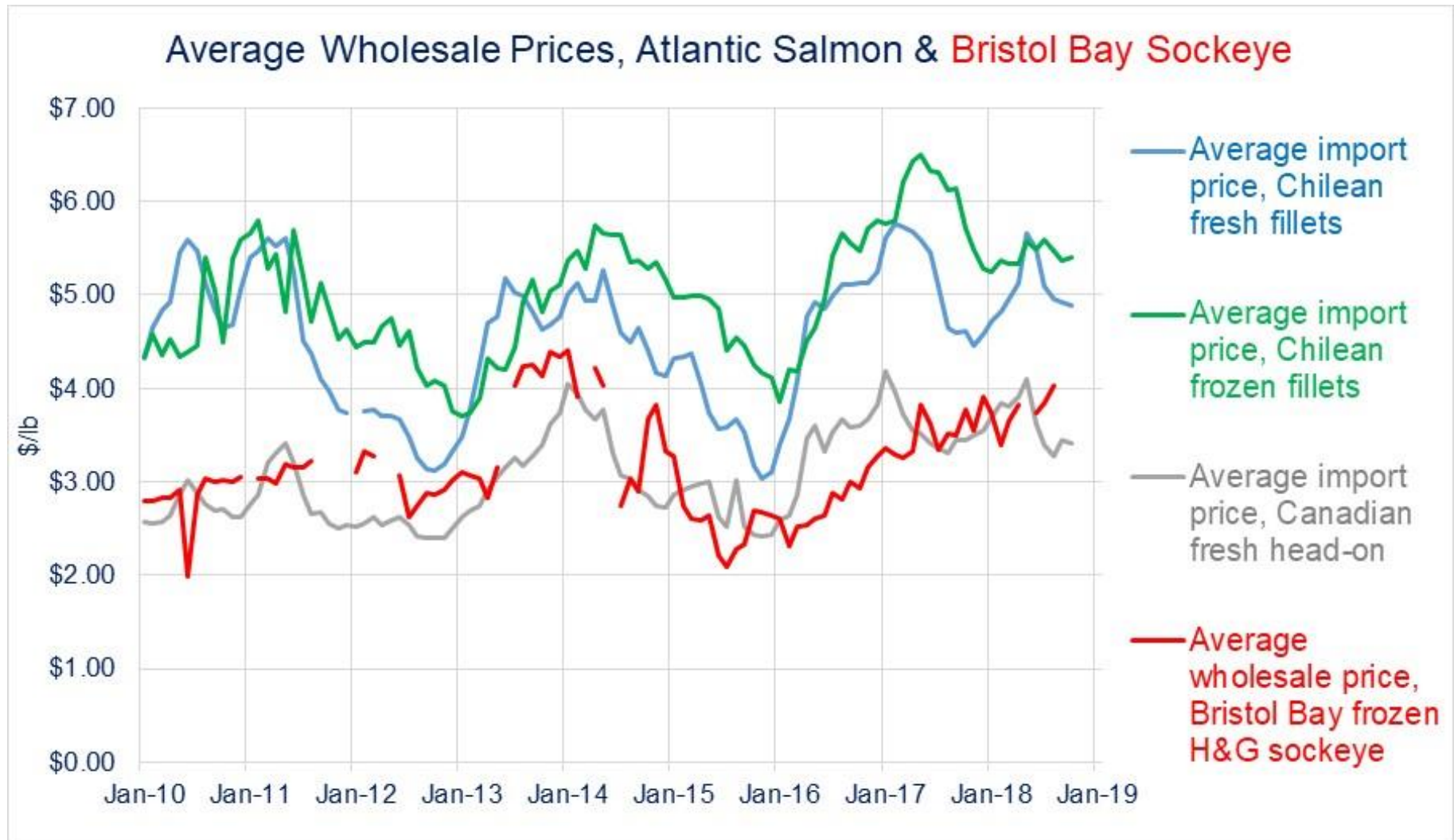
Year-over-Year Change in **Total US Atlantic Salmon Imports**
and Year-over-Year Change in **Chilean Fresh Fillet Average Import Prices**



Source: NMFS Foreign Trade in Fisheries Products data

Effects of farmed Atlantic salmon prices on sockeye salmon prices

Historically, sockeye wholesale prices have been correlated with farmed Atlantic wholesale prices.



We should expect frozen sockeye prices to be correlated with farmed Atlantic prices because sockeye products compete directly with farmed Atlantic products in many markets.

When prices of competing farmed Atlantics rise, buyers are willing to pay more for sockeye.

When prices of competing farmed Atlantics fall, buyers are willing to pay less for sockeye.

Competing salmon products at an upscale Maryland supermarket, April 2018



Cermaq Salmon Farm
Vancouver Island, British Columbia

FRESH, FARMED

**Atlantic Salmon
Portion**
(6 oz.)

\$5.99/ea

PRODUCT OF CANADA

PREVIOUSLY FROZEN
WILD CAUGHT

**Sockeye Salmon
Fillets**

\$18.99/lb

6 oz. portion would be:

\$7.08

PRODUCT OF USA

Villa Organic Salmon Farms

FRESH, FARMED

**E.U. Organic
Salmon Fillet**

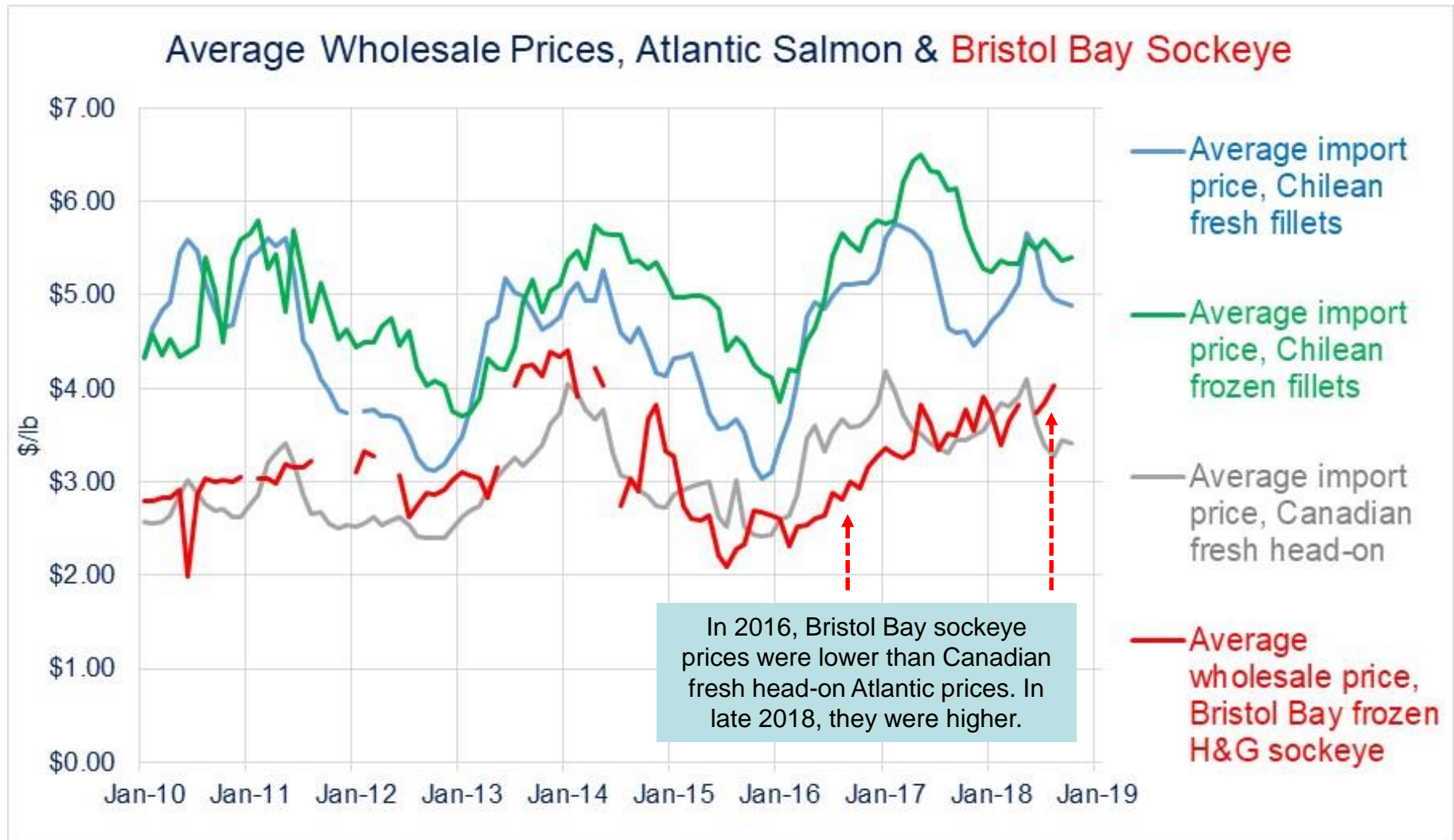
\$18.99/lb

6 oz. portion would be:

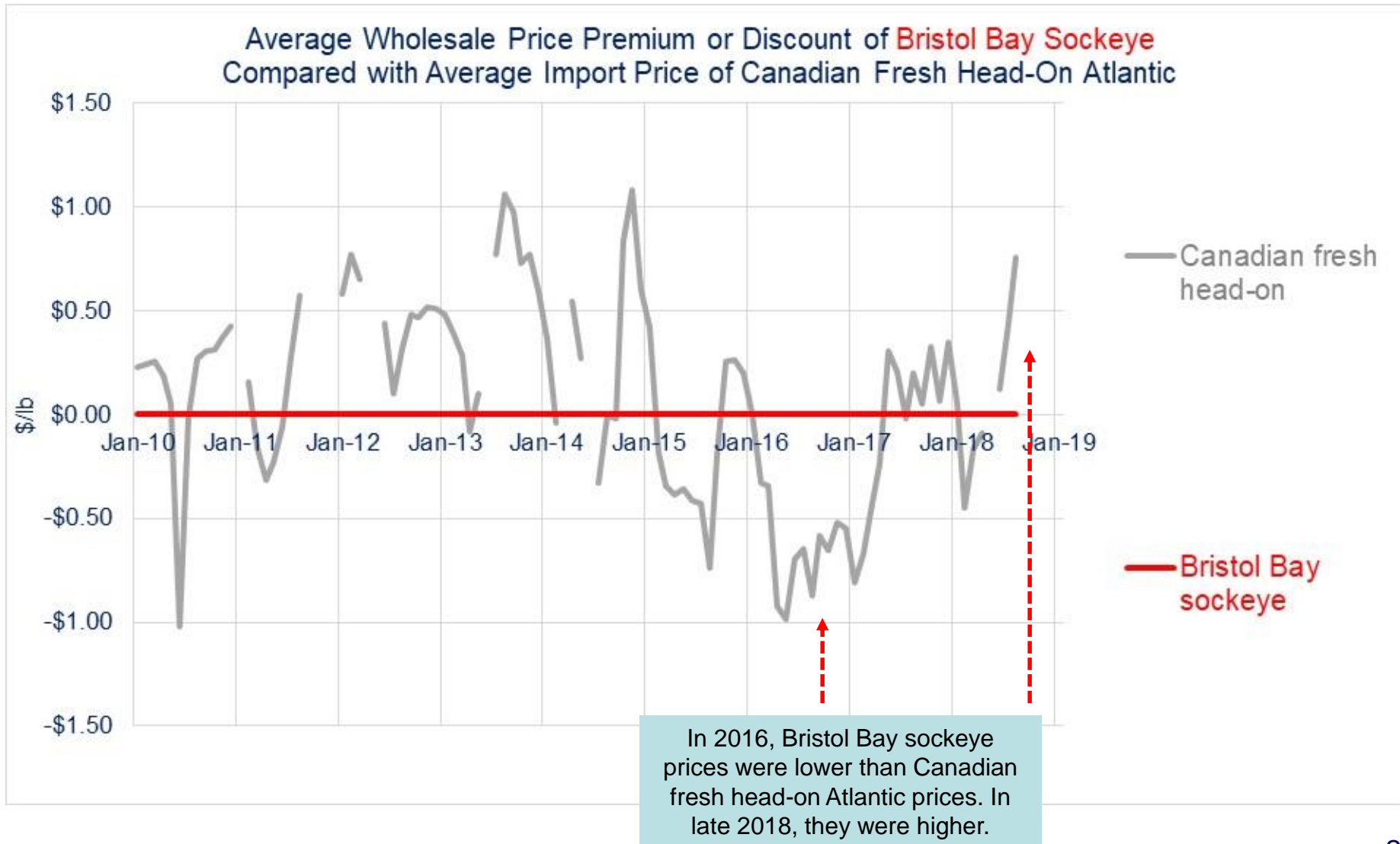
\$7.08

PRODUCT OF IRELAND

The differences between sockeye and farmed Atlantic prices (premiums or discounts) vary over time.



Sometimes Bristol Bay sockeye salmon has sold at higher prices than Canadian fresh head-on Atlantics and sometimes for lower prices.



What explains changes over time in the price premium or discount of sockeye relative to competing farmed salmon?

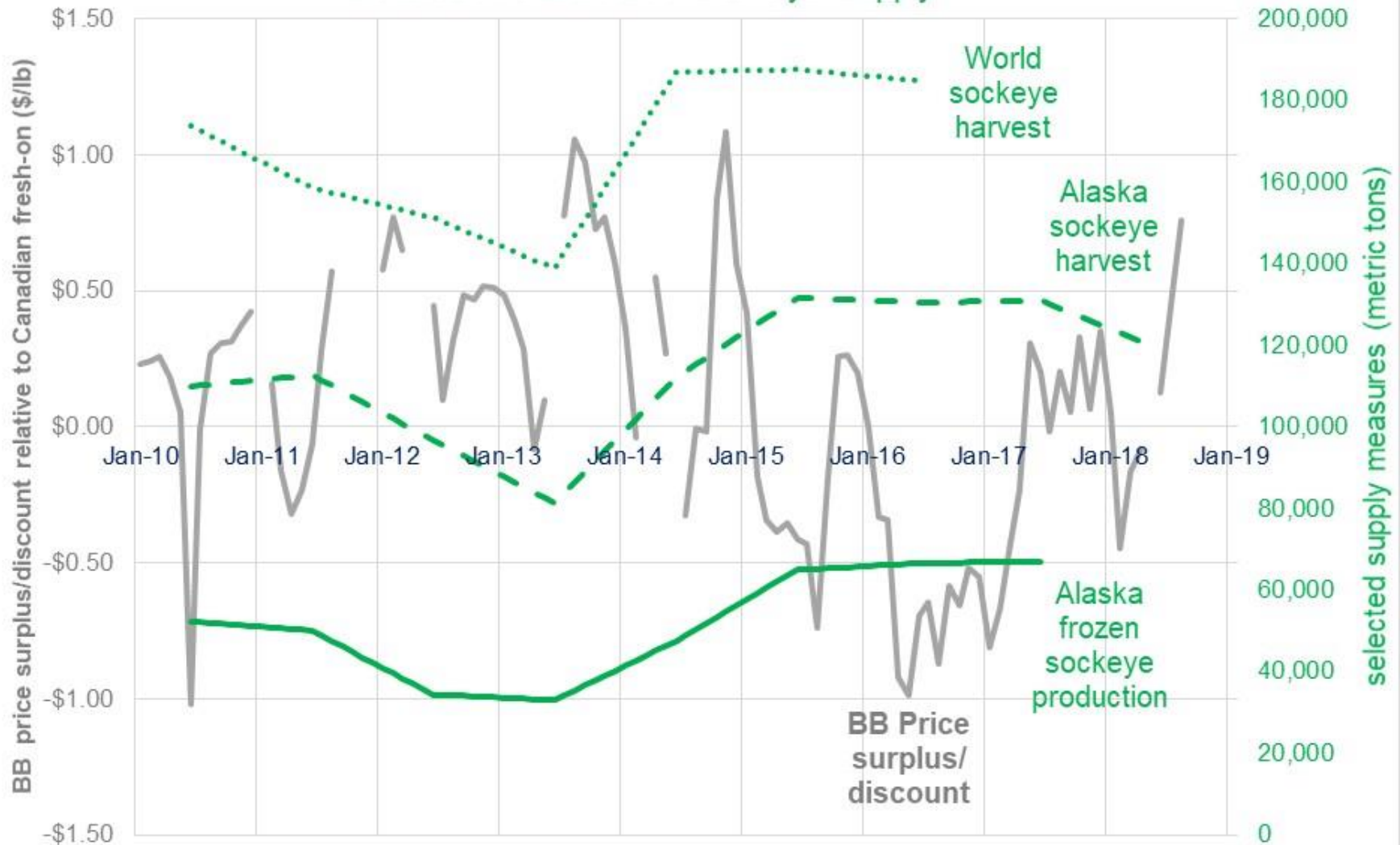
SUPPLY AND DEMAND THEORY:

The higher the supply of sockeye
the lower the price premium buyers will pay
(or the higher the price discount buyers will demand)
compared with competing farmed salmon

*The more sockeye there is, the harder it is
to sell it for more for it than farmed salmon.*

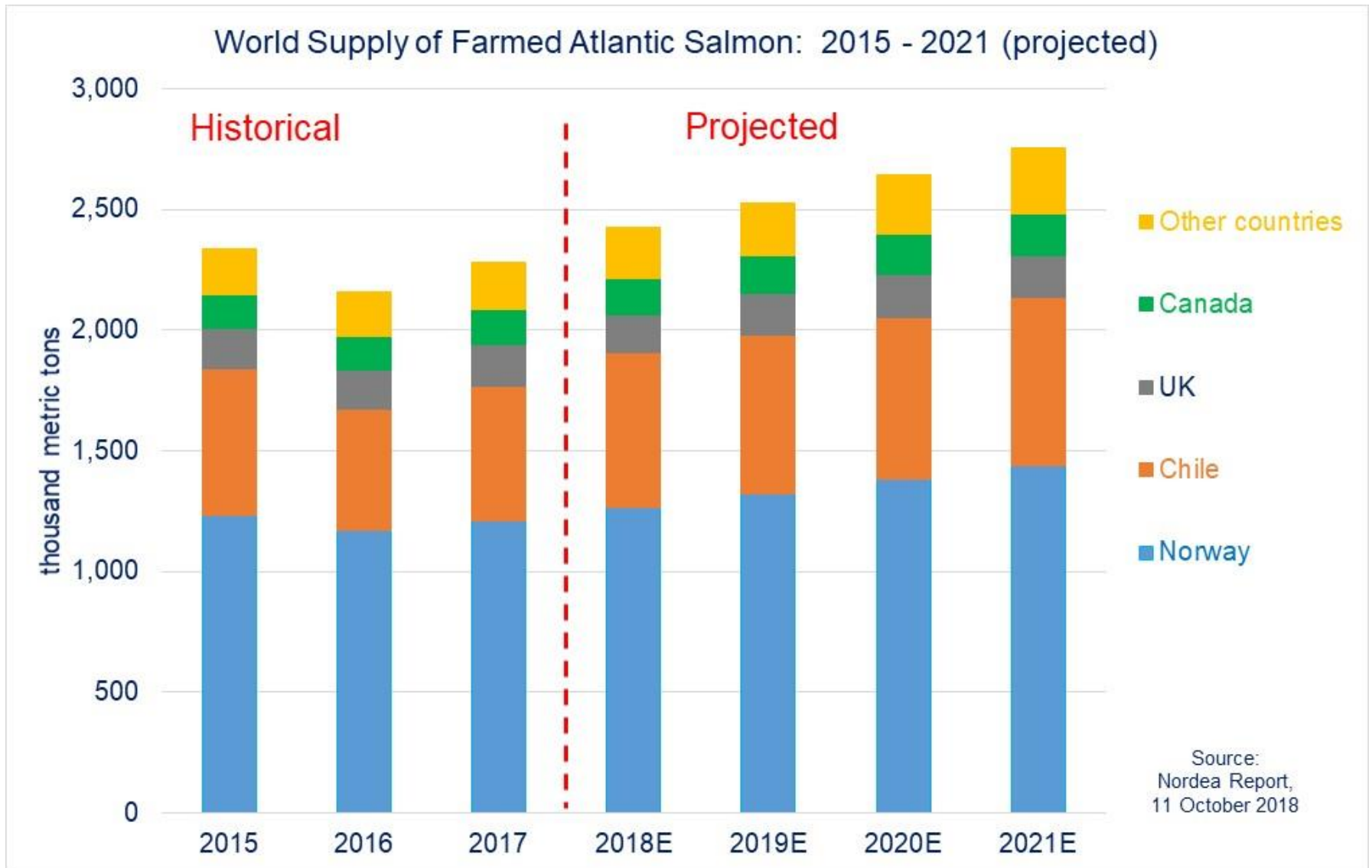
Historically, the higher the supply of sockeye, the smaller the price surplus (or greater the price discount) has been of Bristol Bay frozen sockeye relative to farmed Atlantic Salmon.

**Bristol Bay Wholesale Price Surplus / Discount &
Selected Measures of Sockeye Supply**



Outlook for farmed Atlantic salmon prices

Most analysts expect world farmed salmon production to grow over the next-three years—but not fast enough to depress prices.



From Nordea Seafood Sector Report, 11 October 2018:

Ove the past five years, there has been an impressive demand increase in well-established markets (the EU and the US) . . .

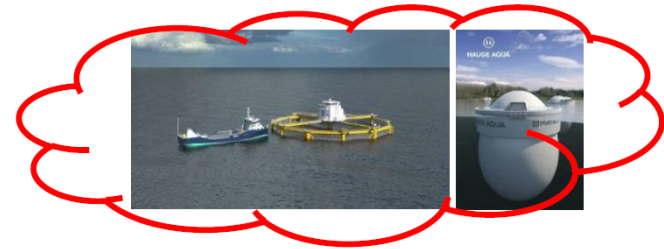
Looking at the relationship between price and supply changes, we conclude that the market is able to absorb 6-7% more fish at stable prices.

As a consequence, we expect a 5% increase in price is 2019 despite 4% supply growth.

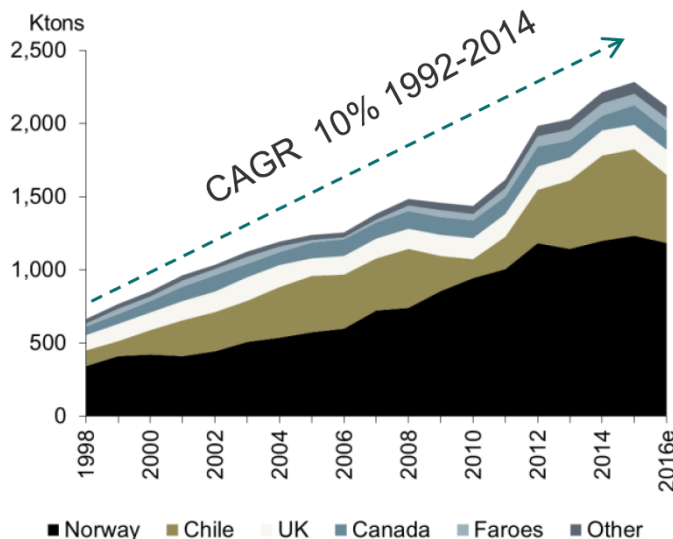
From a June 2017 presentation by Dag Sletmo, DNB Bank:

No supply growth = end of pork cycle + high prices
And strong economic incentives for innovation

A road map for growth



Atlantic salmon harvest; growth, no growth – and eventually innovation will trigger new growth



CAGR?

A few years with very limited or no growth due to restrictions in Norway and Chile?

CAGR?

Industry and governments lift biological capacity through technological and regulatory innovation, but still supply growth below growth in demand?

Data Sources Used in Preparing this Presentation

- **ADFG COAR data.** Alaska Department of Fish and Game, Commercial Operator Annual Report data. Statewide production data downloaded from ADFG “Commercial Fishing Reporting website: https://www.adfg.alaska.gov/index.cfm?adfg=fishlicense.coar_salmonproduction
- **Dag Sketmo (DNB bank) presentation, June 2017.** Downloaded from: <https://www.slideshare.net/firsttuesdaybergen/dag-sletmo-innovasjon-vil-gi-ny-vekst-i-laksenringen>
- **DOR Salmon Reports.** Alaska Department of Revenue Tax Division salmon price and production reports, available at <http://www.tax.alaska.gov/programs/programs/reports/index.aspx?60624>
- **FAO Fisheries Division.** Datasets for Global Capture Production and Global Aquaculture Production, downloaded from Fisheries Division Statistics website, <http://www.fao.org/fishery/statistics/en>
- **Marine Harvest Salmon Farming Industry Handbook 2018.** Available on Marine Harvest investor website at <http://marineharvest.com/investor/industry-handbook/>
- **NOAA Trade Data.** Downloaded January 16, 2019 from NOAA Office of Science and Technology “Monthly Trade Data by Product, Country/Association” website: <https://www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/applications/monthly-product-by-countryassociation>
- **Nordea Seafood Sector Report, 11 October 2018.** Downloaded from: <https://js.undercurrentnews.com/wp-content/uploads/2018/10/Nordea-report.pdf>