Supply chain and market innovations in the seafood market

by

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Introduction

- In traditional fisheries economics papers the price is assumed to be exogenous or given (read fixed)
  - If so, one need not have much concern with the market

- However, the seafood market is highly segmented
  - Kristoferson and Rickertsen
- Hence, even if the price is exogenous, it matters which market one is targeting
  - Although regulations can make this difficult

- Seafood supply chains have traditionally consisted of many independent agents, where the market has cleared at each level

- The seafood market and the supply chains for seafood is changing rapidly due to
  - Globalization
  - Aquaculture
  - Retail chains

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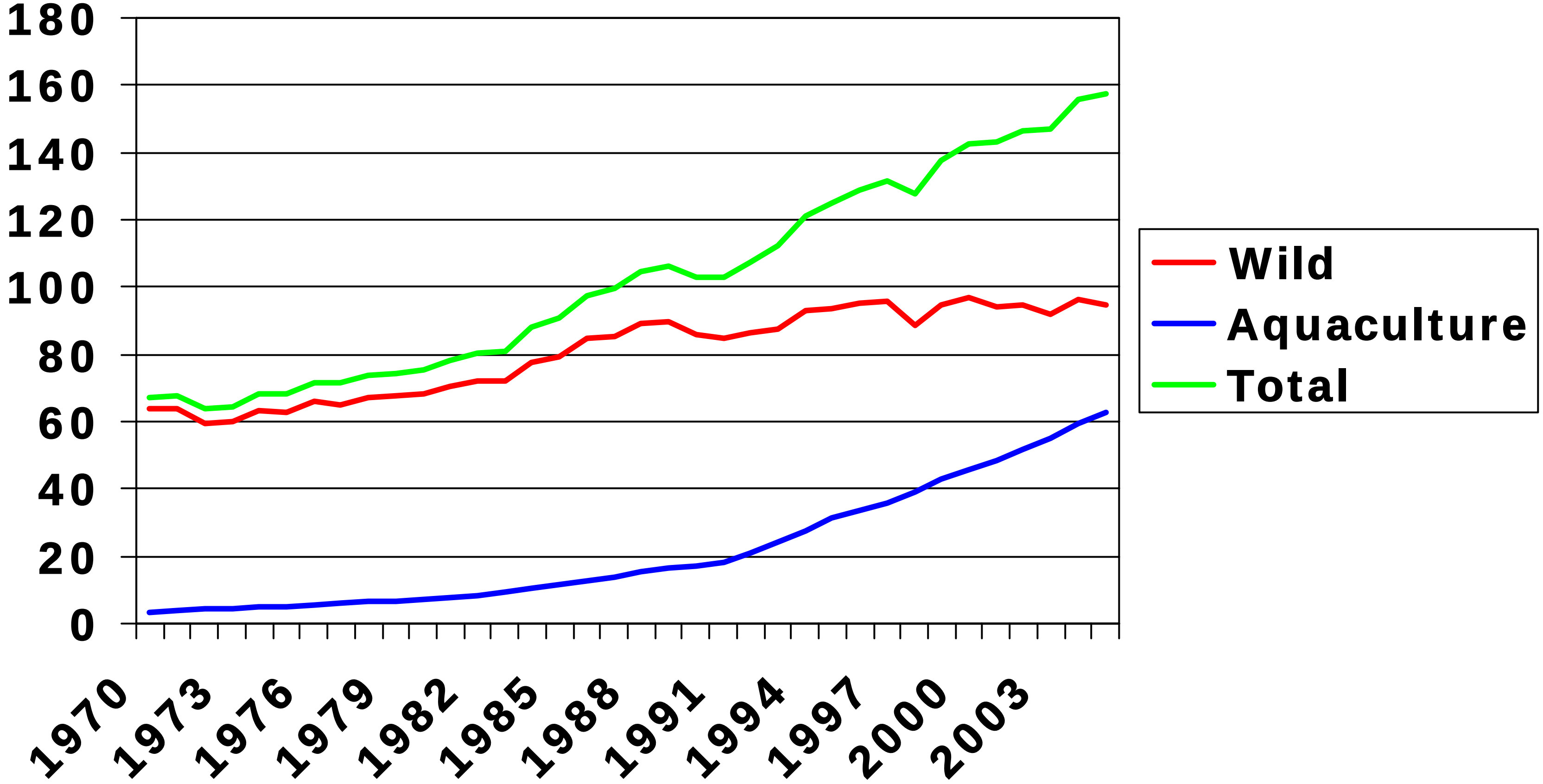
Global seafood production



Introduction

- Increasing control with the production process in aquaculture leads to productivity growth and market development
- In 1970 aquaculture contributed 5% of the total supply of seafood. In 2005 aquaculture's share was 40% with a production of 62.9 million tonnes
  - New technologies and better feeding has led to an enormous increase in production
- Aquaculure is increasingly becomming more like any other crop
  - This development is still in the early beginning, and there is still a substantial scope for innovation
  - Salmon and shrimp is so far leading this development
- Transforms the seafood market together with the retail chains
- Globalization increase the opportunity for those who are competitive

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Processing, transports and logistics

Ryfisk-plant at Hjelmeland

Safeway distribution terminal

Air freigh of fresh fish

Salmon on wheels

Retail sales and marketing


Value added products from salmon

One Auchan Retail outlet

From Tesco-advertisement in the UK…

Salmon fillet at NOK 76/kg

	Was Price*	Now Price	SAVE
Tesco Butchers Choice 8 Sausages 454g	£1.69	£1.38	31p
Tesco Healthy Eating Chicken Mini Fillets 240g	£2.39	£1.99	40p
Tesco Healthy Eating Diced Chicken Breast 400g	£3.99	£2.97	£1.02
Tesco Pork Steaks x 2	£5.49/kg	£4.80/kg	69p
Tesco Sparerib Chops x 2	£3.99/kg	£3.68/kg	31p
Tesco Salmon Fillets	£7.97/kg	£5.99/kg	£1.98
Tesco Baby New Potatoes 750g	£1.09	67p	42p
Tesco Baking Potatoes 2.5kg	£1.78	£1.49	29p
Tesco Value Apple Bag	£1.08	87p	21p
Tesco Value Bananas 1.5kg	£1.09	99p	10p
Tesco Value Pears Pack	£1.19	87p	32p
TOTAL	£31.75	£25.70	£6.05

...and Tesco-advertisement in Polen

Salmon fillet at NOK 28,80/kg

Seafood supply in the EU, Japan and US increases

- Because these markets have the highest ability to pay
- Improved logistics and transportation makes these markets increasingly acceccible for producers from all over the world
- Supply used to be local and regional, now it is increasingly global
- Reduced landings of cod and other whitefish is no problem for the consumer because of increased supplies of New Zealand hoki, Nile Perch, Alaska Pollock, Tiapia and Pangasius
- Supply becomes more concentrated. Between 1987 and 2005 the top six seafood products went from accounting for 60.1% to 80.3% of total US seafood consumption. The farmed species in the top six have also increased from being only shrimp in 1987 to shrimp, salmon, catfish and tilapia in 2005 (Anderson).

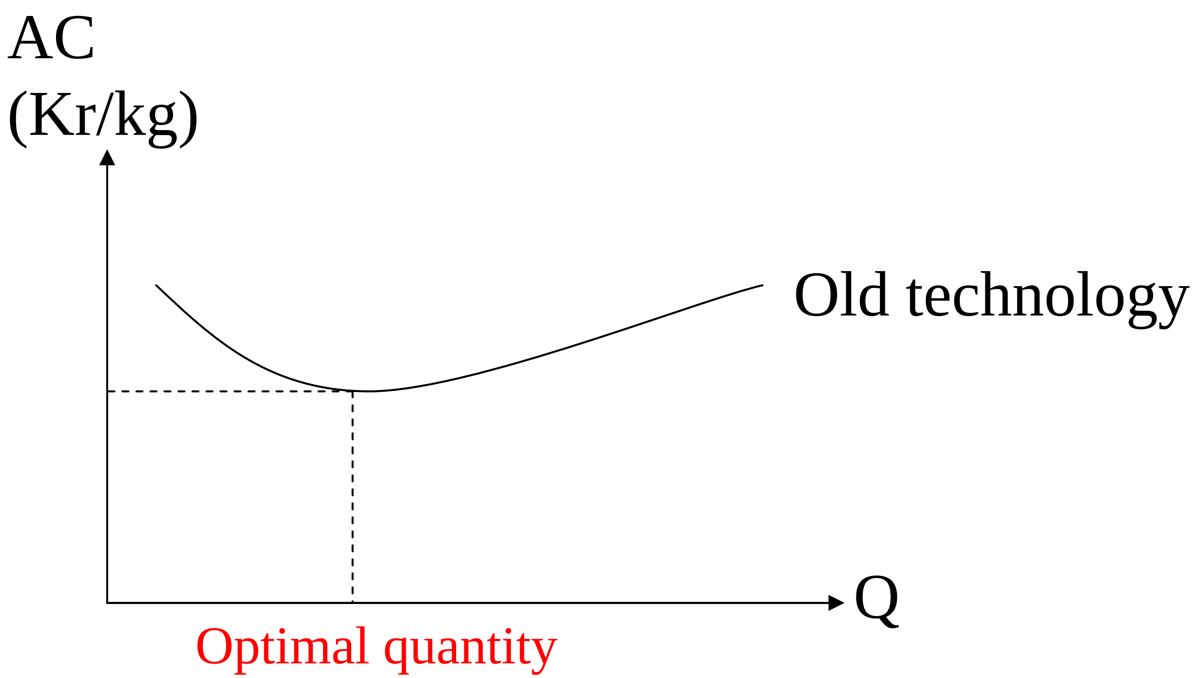
The retailing sector and logistics is changing

- Retail chains allows for economies of scale and scope in marketing, retailing, logistics and distribution

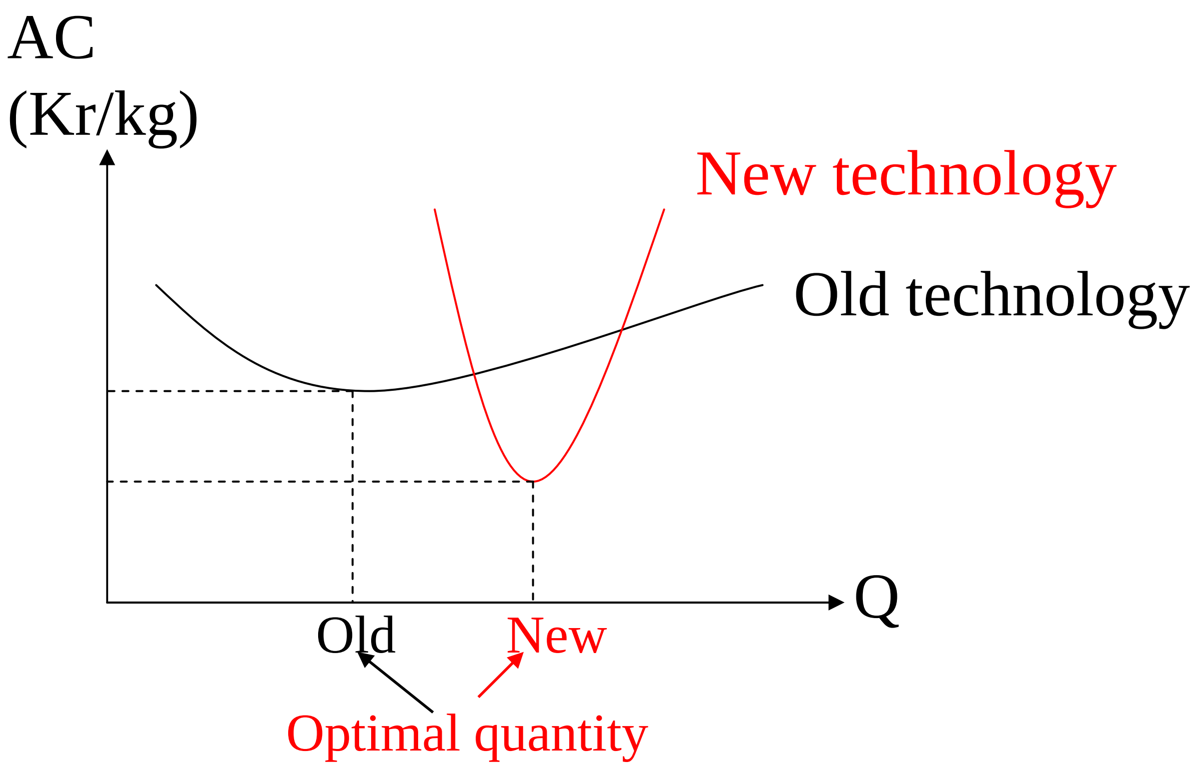
- Few seasonal products and smallscale suppliers get access to the shelves because that gives higher cost

- In most European countries retial chains make up more than 80% of retail sales
  - Murray and Fofana, Guilotreau et al
  - Traditional outlets like fish mongers disappear

The technolgy has changed...



…so that optimal scale has increased, although the costs associated with poor capacity utilisation is also higher



The retail chains are demanding customers

I. **Price**: (a) Price level, (b) linkage to market prices, (b) quantity discounts.

II. **Volume and timing**: (a) Total volume, (b) regularity of deliveries, (c) flexibility in deliveries, e.g. in relation to ”normal” volumes and times of delivery.

III. **Raw material attributes**: (a) Size distribution, e.g. fillets, (b) quality attributes, e.g. colour, fat, texture, taste, (c) fresh vs frozen, (d) uniform quality, (e) shelf life.

IV. **Product range and differentiation**: (a) Fish species, (b) Product varieties, e.g. easy-to-cook, ethnic foods, healthy foods, (c) private labels / brands, (d) consumer advertising.

V. **Production process**: (a) Raw materials in feed, (b) environmental effects of production, (c) animal welfare, (d) third party certification, e.g. ISO, EMAS, (e) traceability.

VI. **Transaction costs**: (a) Negotiation, (b) planning, (c) control and enforcement, (d) transportation og (e) storage.

The product is not only the physical seafood product…

...but also a set of services for the industrial buyers related to:

- **Volume**
- **Timing and frequency**
- **Flexibility**
- **Cost efficiency in distribution**
- **Food safety**
- **etc.**

The retail chains are demanding customers

- The set of extra services increase the complexity of the composite product that a supplier is providing

- In addition to productivity growth, this increase the competitiveness of aquaculture because it is less costly to provide the added services

- The fishing sector can also do it to some extent when the regulatory system allow it
  - Iclelandic firms now airfreight cod in a similar fashion to how Norwegian farmers ship salmon
  - Is it positive that an increasing share of Norwegian seafood exports go to *new* markets?

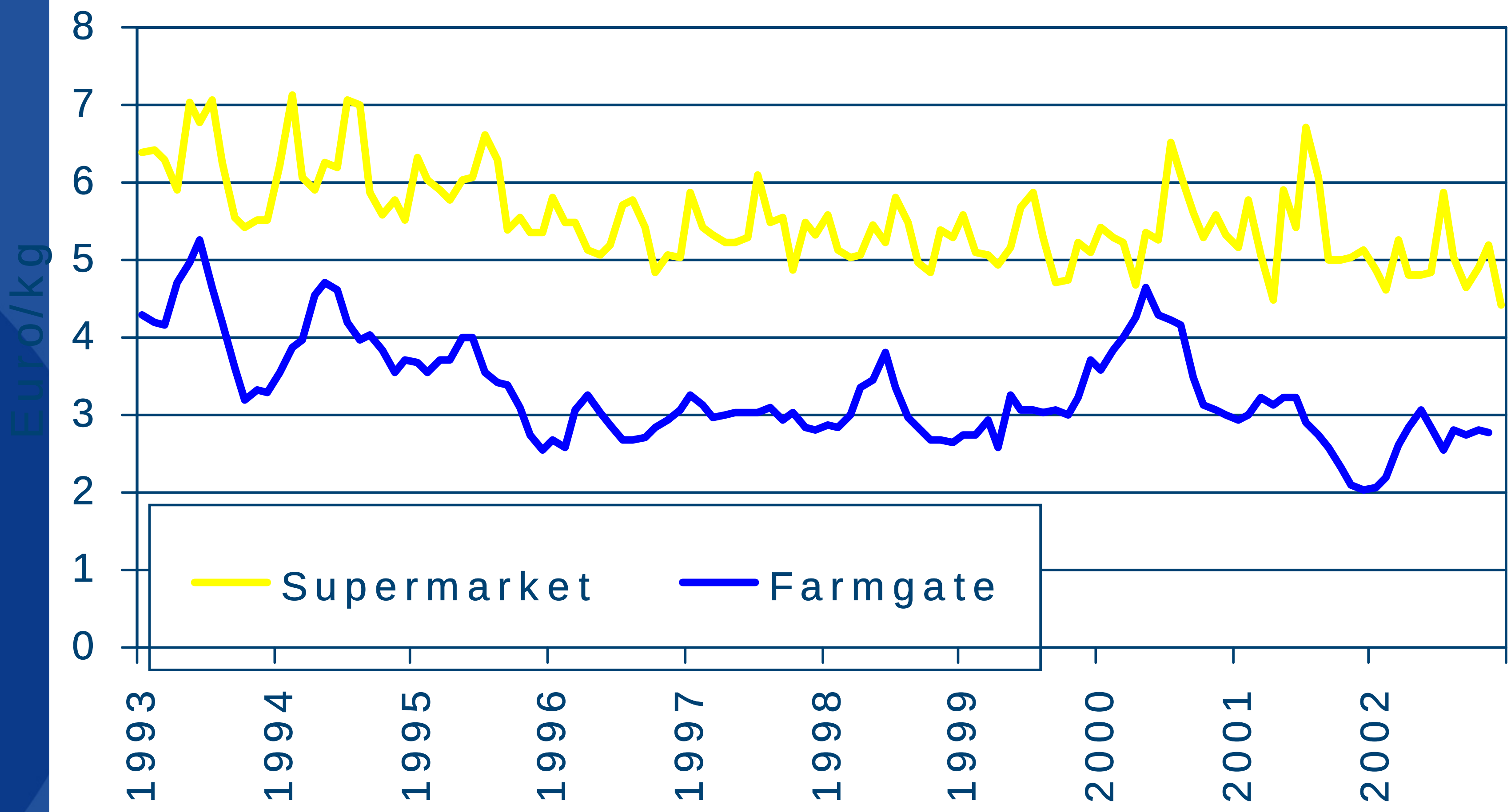
Supply chain innovations are important

- For fresh cod, the fishermen get 10-15% of the retail value
- For salmon, the farmer gets 40-50%

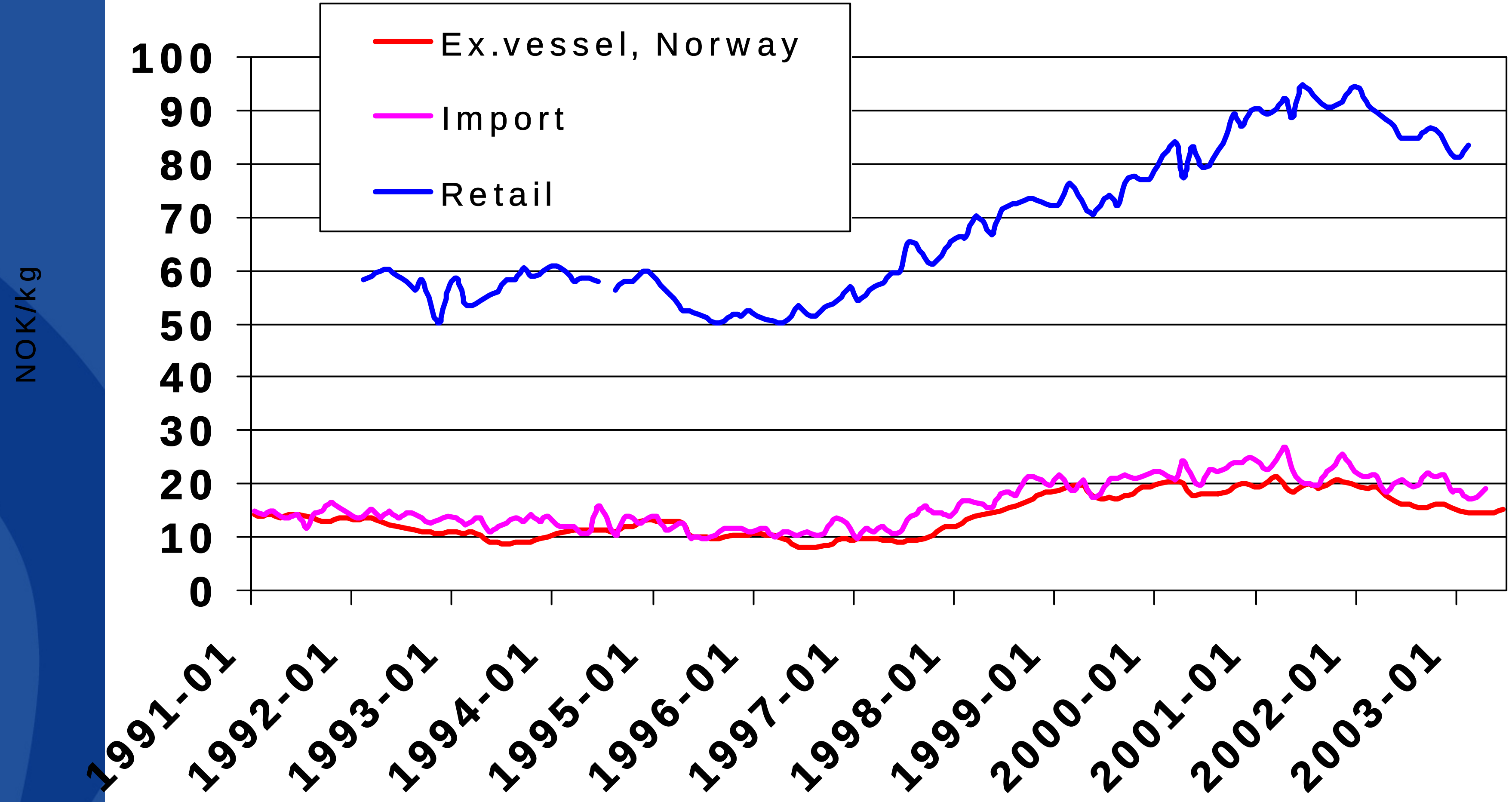
- This implies that the retail price of salmon relatively to cod is cut by more than a half becuase of more efficient distribution
- This is possible because of control and scale

- Consumers and downstream processors are only concerned about the retail price, not where the cost savings occur
  - Increase the potential competitiveness for farmed cod

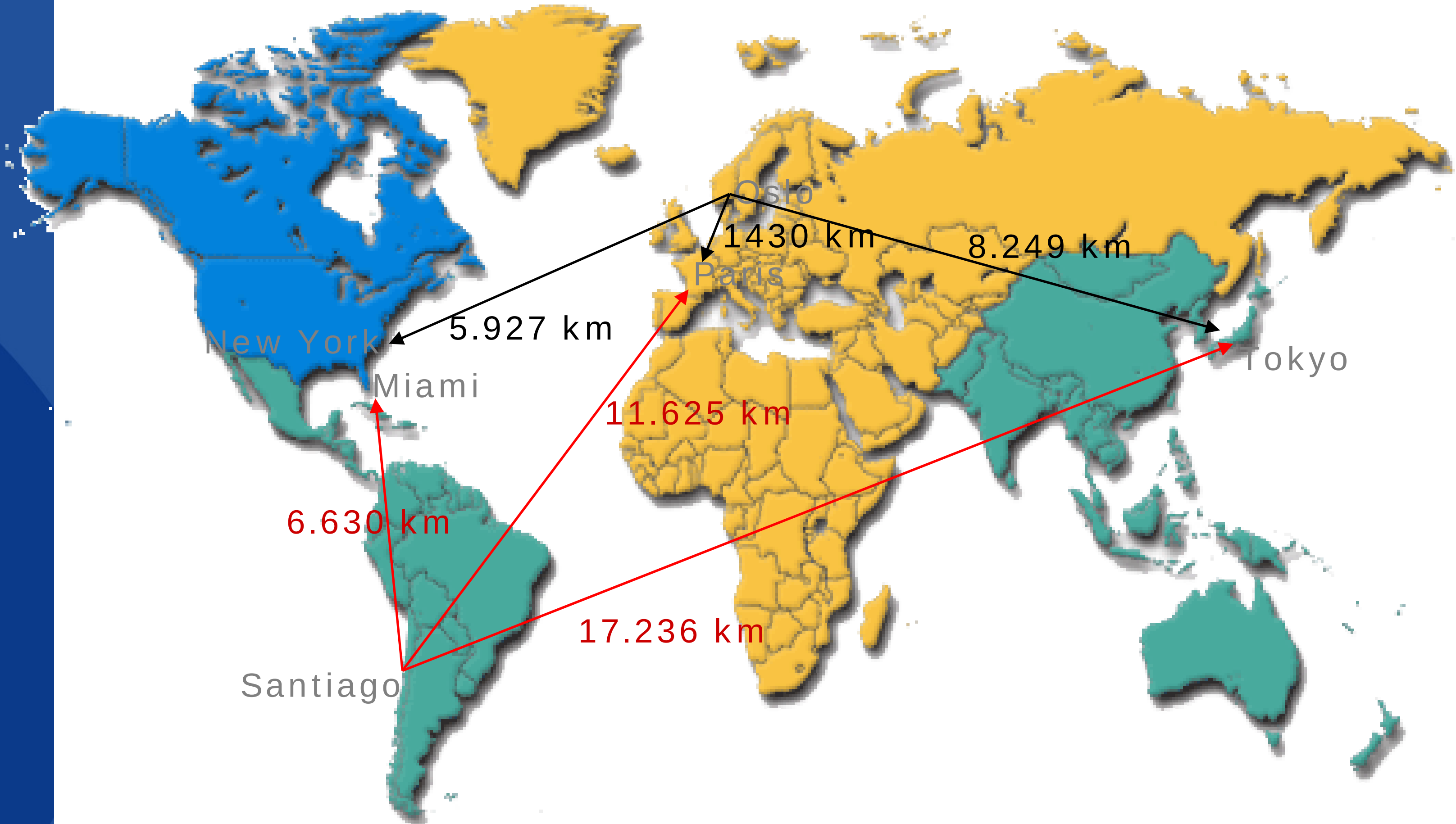
Norwegian farmgate price and french retail price for whole salmon



Price at different stages of the supply chain for cod to the UK



The market for salmon has become global



Innovations in logistics and marketing

- The control in the production process has allowed a number of innovations in the supply chain
  - E.g. large scale air freight of seafood, just-in-time delivery, and substantial product innovation

- One started in the traditional fresh fish counter, with unprocessed products….

- ..and continued with fresh packed product, branded products..

- ..and one see an increased number of ready meals and convenience food based on salmon

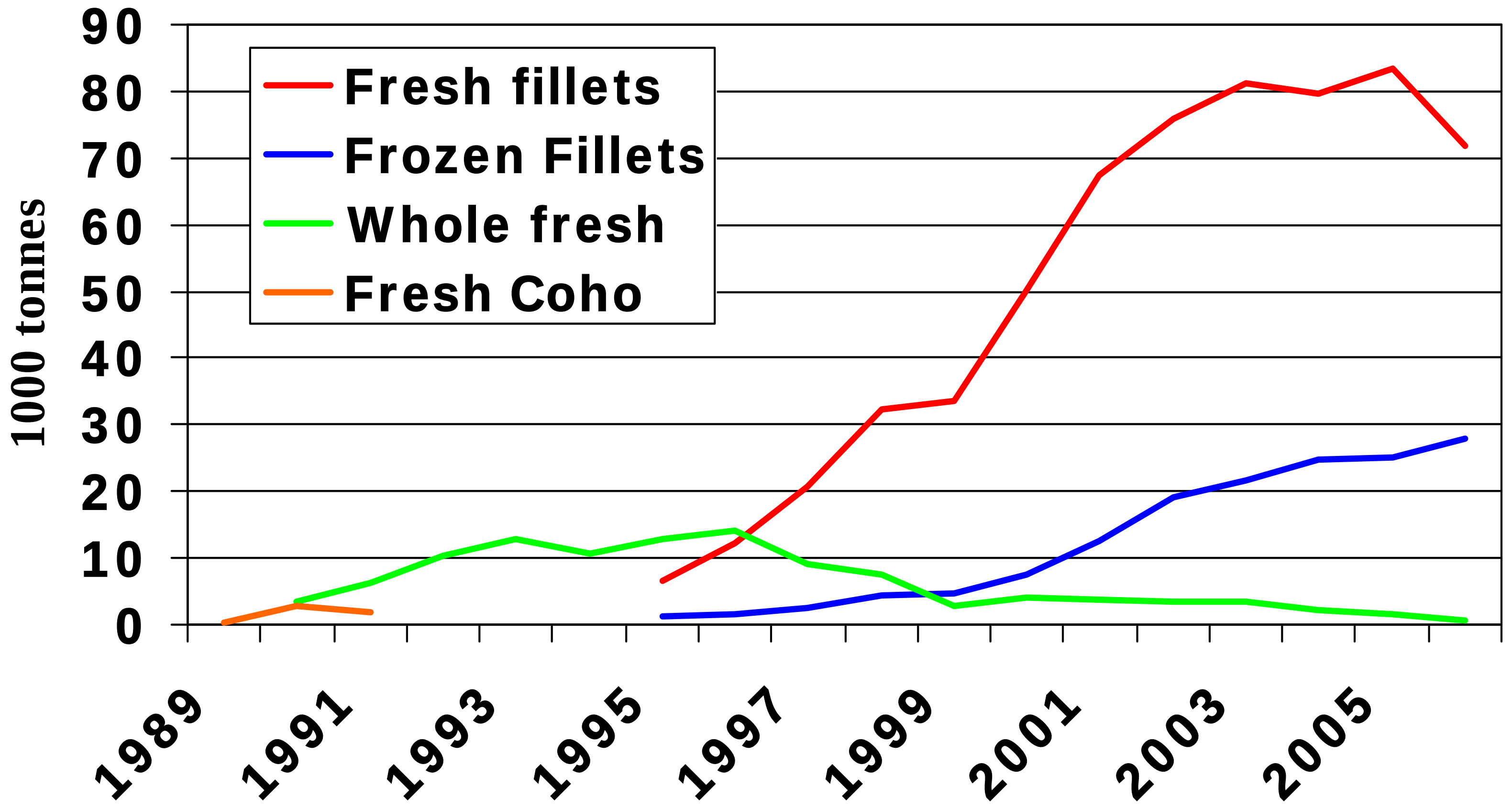
Product development in Chile

- Chile has partly overcome long distances to the main markets with innovative product development, and has been leading on the development during the last decade

- Exploit local competitive advantages in processing, which increase value and reduce transportation cost

- ”pinbone out” fillets opened up markets in the USA where fish normally were not consumed

Chilean salmon exports to the US



Aquaculture production will continue to increase and transform the seafood supply chains and products

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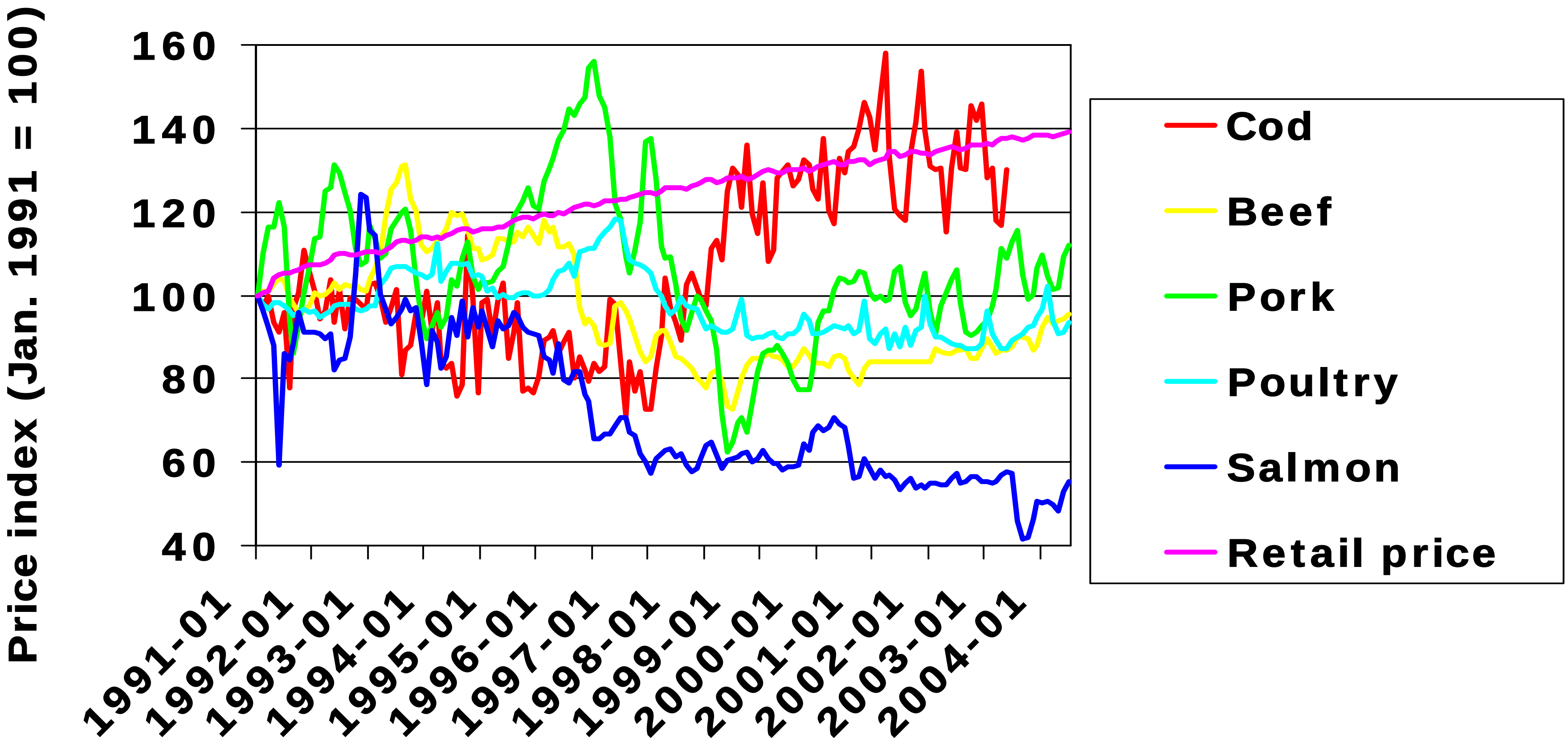
- Because it is profitable and competitive
- Control of production process leads to technological development and productivity increase
  - Cost reductions
  - Breeding
  - Better logistics
  - Product innovation
- This makes aquacultural products increasingly competitive
- Species that does not have production processes with these characteristics, will not succeed as large volume species
  - In the intermediate term, there will be relatively many species exploring new technology

Retail prices on selected food products and retail price index in UK



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  - In the intermediate term, there will be relatively many species exploring new technology
- Creates substantial challenges for traditional fisheries

Aquaculture production will continue to increase

- Cost consideration will leave only a few high volume species, of which there are produced millions of tonnes
  - Tilapia, and maybe some other finfish species?
  - Shrimps
  - Mussels and scallops
  - ?
- In animal production there are four; livestock, pigs, poultry and sheep
- These species will be sold in a similar fashion
- There will be a large number of species produced in moderate quantities
  - Like quail, deer etc.

Comparative advantage becomes more important in the supply chain

- Traditional seafood supply chains are directly from producer with processing along the way

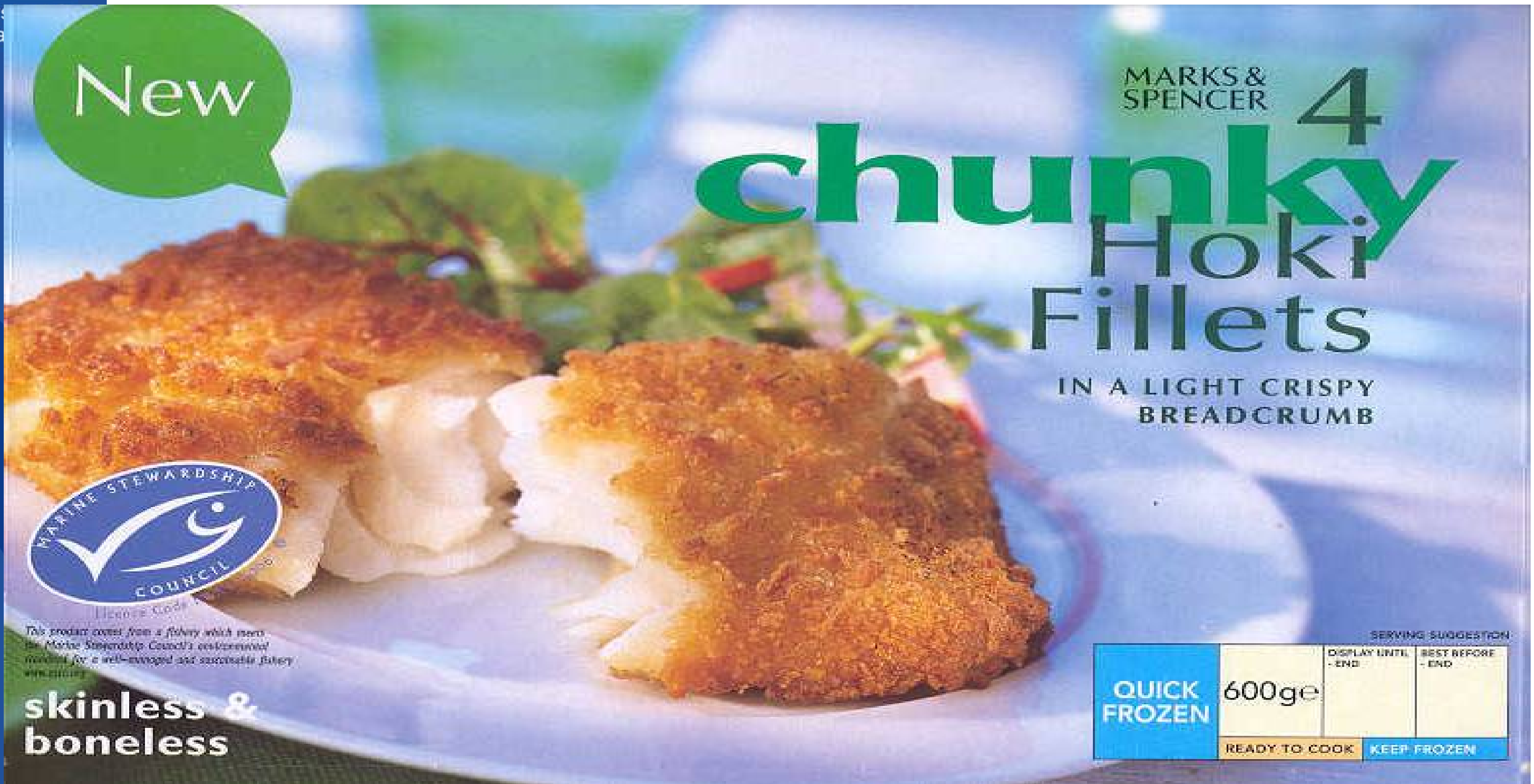
- Cheap transportation and innovations when it comes to conservation allows fish to be sent to other countries with a comaprative advantage in processing
  - Poland
  - China

- Retail chains jump traditional wholesalers and often certifies suppliers

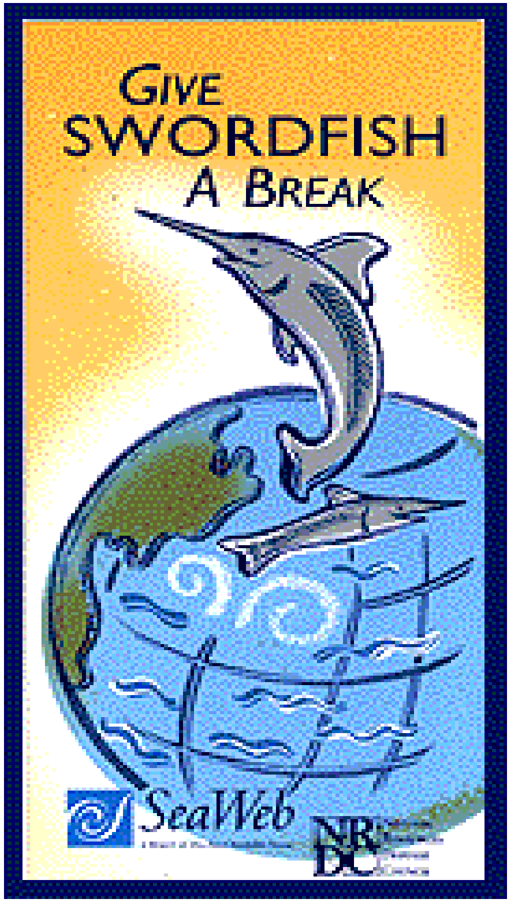
There are also new challenges on the marketplace

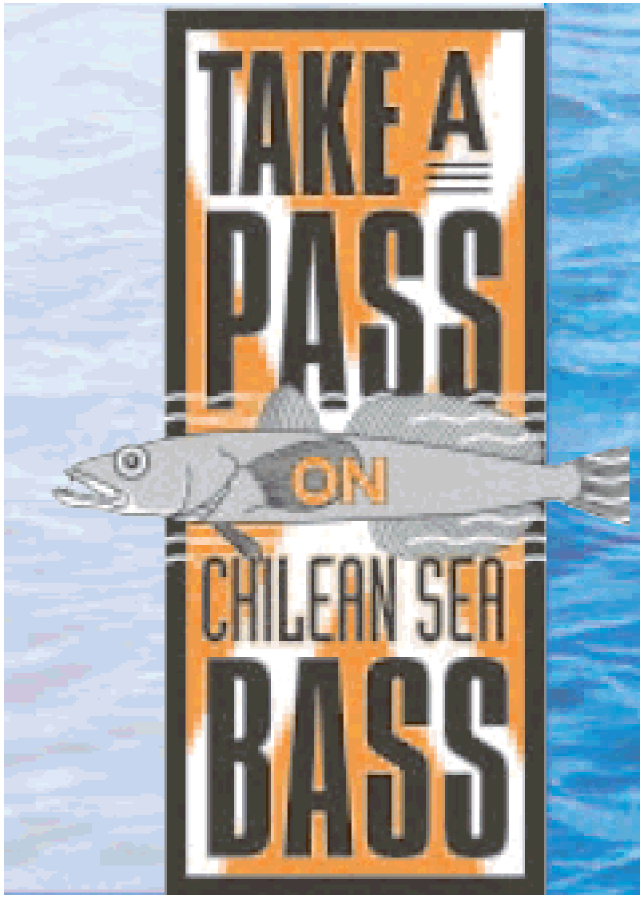
- The retail chains brand is one of their largest assets, but it also makes them vulnerable
  - Negative attention is costly
- At times it is not worth the trouble to stock a product
- This provides different challenges for aquaculture and fisheries

Ecolabeling



Consumer boycotts





"GIMME YOUR MONEY OR I FILL YOU FULL OF FARMED SALMON."

Concluding remarks

- Seafood is becomming less a homogenous product for which the seller has no responsibility after it is transmitted to the next level in the supply chain, and increaingly a composite commodity with a number of services attached to the product
- The large retial chains leads this development
- Species and production modes that are competitive on supplying these services has a competitive advantage
  - The control with the production process in aquaculture gives aquaculture an edge in many supply chains
  - Better logistics and transportation removes geographical barriers
- The number of product forms will increase

Concluding remarks

- The ”industrialisation” of seafood supply chains are likely to create substantial nice markets

- Some wild species like cod and tuna are well placed to compete if the regulatory systems allow it

- For saithe and other species without a reputation, and without just-in-time supply chains, it can be difficult to attract consumers