

Does Sustainability Certification Improve the Market Position of Seafood Products?

Evidence from the Alaska Pollock (*Theragra chalcogramma*) Market

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- ◆ Market benefit of sustainability labeling
- ◆ Alaska pollock and ecolabeling
- ◆ German Alaska pollock market
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Purpose of this study

- To determine if the **U.S. Alaska pollock** fishery gained market benefits relative to Russia after **MSC certification** in 2005
- Analyze the market position of U.S., Russian, and Chinese-sourced pollock in the **German** market

Premise behind sustainability certification and ecolabeling

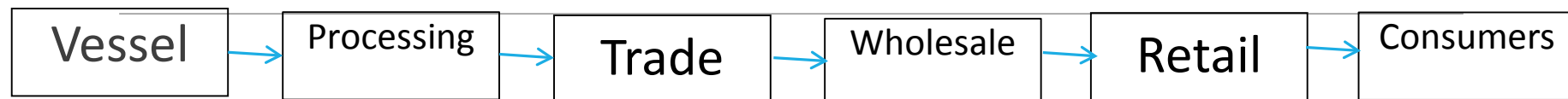


Buyers may have a preference for sustainably produced seafood over others

Market benefits will provide an incentive to provide sustainable seafood to the marketplace



The impact of ecolabeling along supply chain



Ex-post evidence

e.g. Stemle, Uchida, and Roheim (2016); Bloomberg et al. (2014); Wakamatsu (2014)

Ex post evidence

e.g. Roheim et al. (2011); Sogn-Grundvåg et al. (2013, 2014); Asche et al. (2015)

WTP evidence

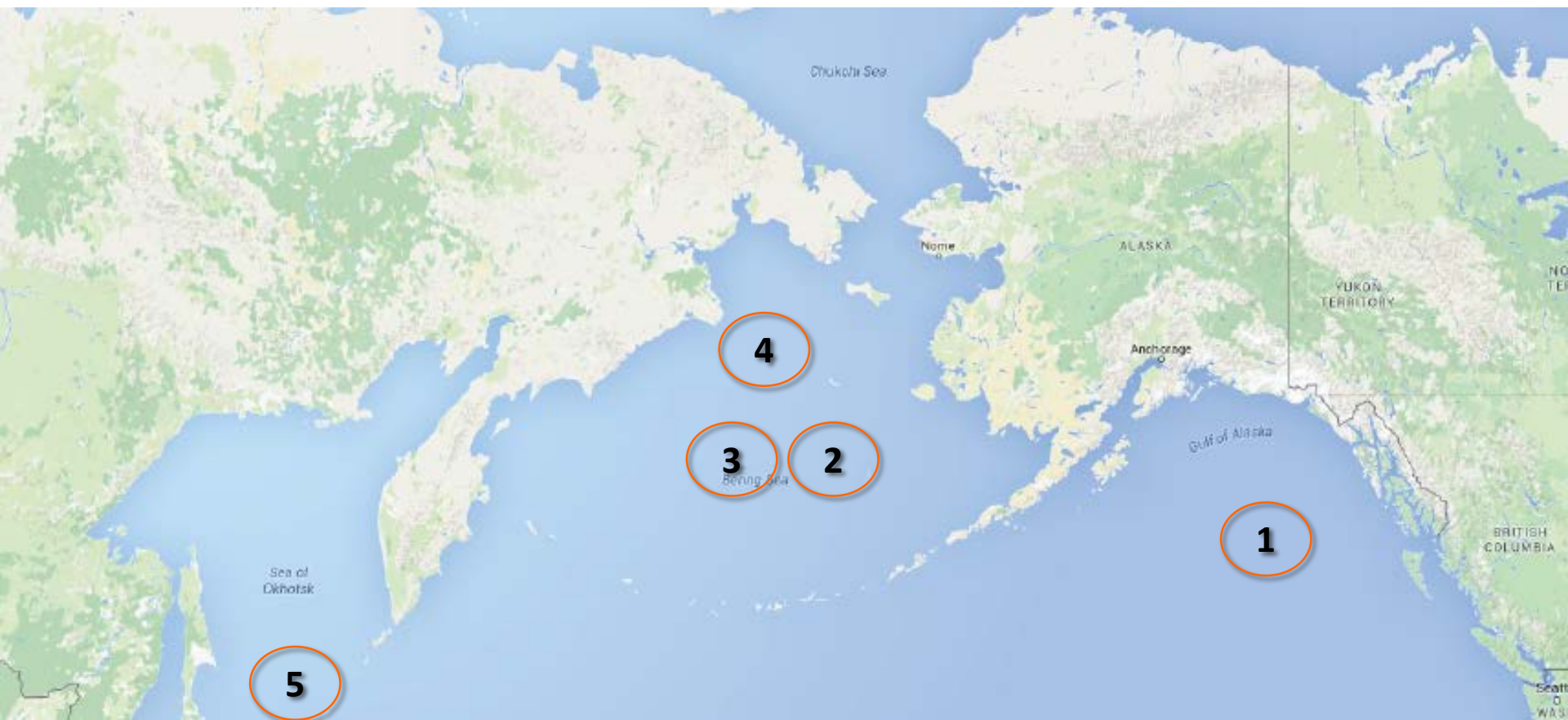
e.g. Johnston et al. 2001; Johnston and Roheim 2006; Uchida et al (2013)

?

U.S. pollock fishery

- World's largest whitefish fishery, with average annual landings over 1.5 million mt.
- Some product is sent to China for secondary processing
- Main markets are Japan, U.S. and Europe, with Europe being the main market for 'sustainable' pollock (in the form of fillets)
- Bering Sea and Gulf of Alaska pollock fisheries initially MSC- certified in **February 2005**
 - Re-assessment every 5 years

Alaska pollock fisheries



1

U.S. Bering Sea and Aleutian Islands: Certified

2

U.S. Gulf of Alaska: Certified

3

Russian Bering Sea pollock – in assessment

4

Russian Navarinsky pollock – in assessment

5

Russian Sea of Okhotsk pollock – Certified

German pollock market

- The value share of Alaska pollock into German market is over 50% out of the total EU import value.
- Product form: frozen fillets and block fillets
- Source countries: the U.S. (Feb. 2005, certified), Russia, and China
 - Treated product from China as un-certified due to lack of MSC chain of custody certification for Alaska pollock going through China

Identical Products with and without MSC-label offered against a premium by Lidl

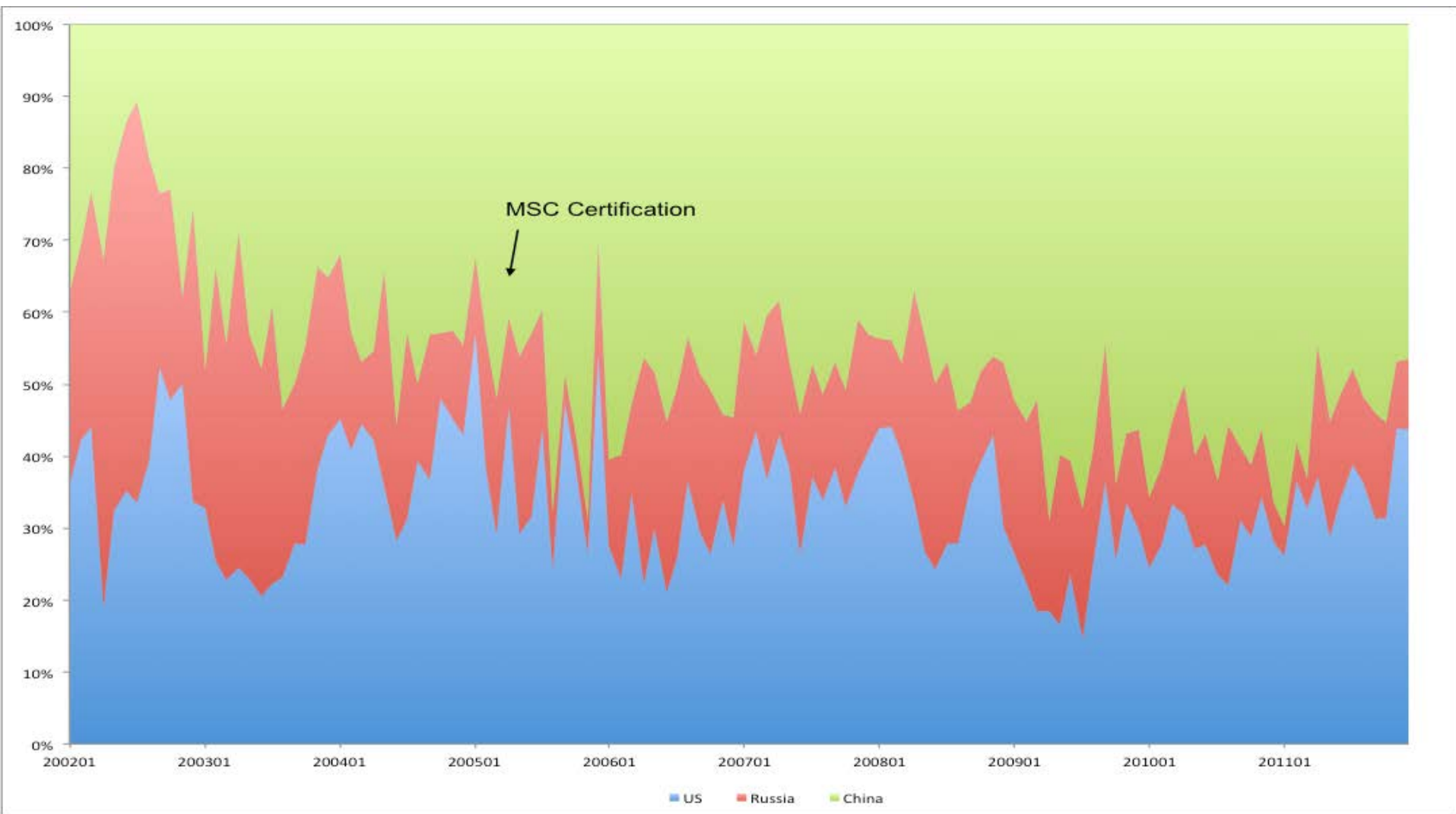
Non MSC labelled fish finger- Lidl

MSC labelled fish finger - Lidl

MSC labelled fish finger - Iglo



Source: MSC, 2008



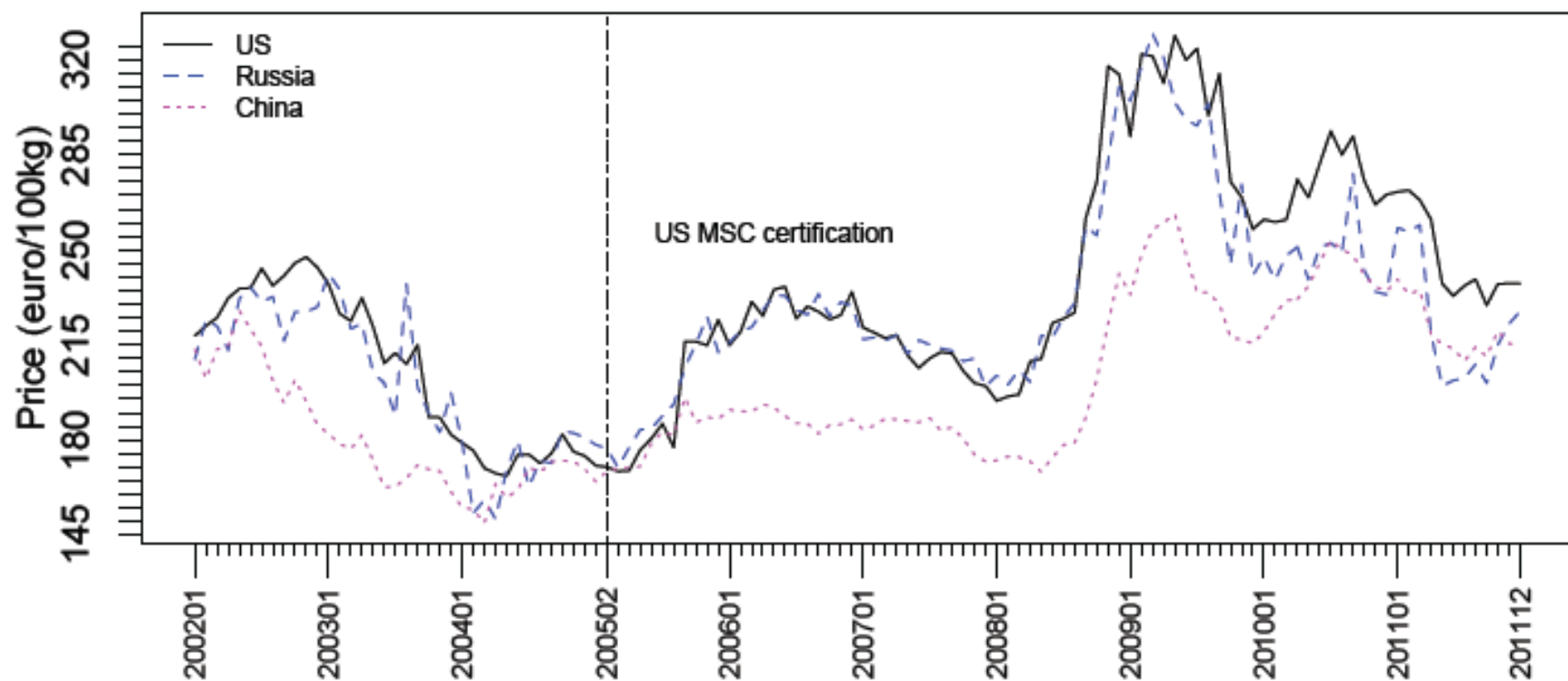


Figure 3. Import prices of frozen pollock fillets into German, by country of origin (Source: Eurostat)

Methods and data

- To test changes in market shares, via demand parameters, post certification on U.S. Pollock, we applied
 - An (first-differenced) **inverse Almost Ideal Demand System** (AIDS) model, with
 - Transition function: A truncated logistic distribution
- Data: 2002:Jan ————— 2011:Dec
2005: Feb

Methods: Inverse demand model

$$\Delta w_{it} = \gamma_i h_t + (\beta_i + \delta_i h_t) \Delta \ln Q_t + \sum_j (\beta_{ij} + \delta_{ij} h_t) \Delta \ln q_{jt} + \\ + \sum_k (\alpha_{ik} + \lambda_{ik} h_t) \Delta D_k + e_{it}$$

where

- w_i is expenditure share given by $w_i = p_i q_i / y$,
- p_i denotes the unit price of frozen pollock fillets from country i ,
- q_i is the quantity
- y is the total import expenditure on frozen pollock fillets across all sources
- $\ln Q$ is the Divisia volume index
- D_k is seasonal dummy variables,

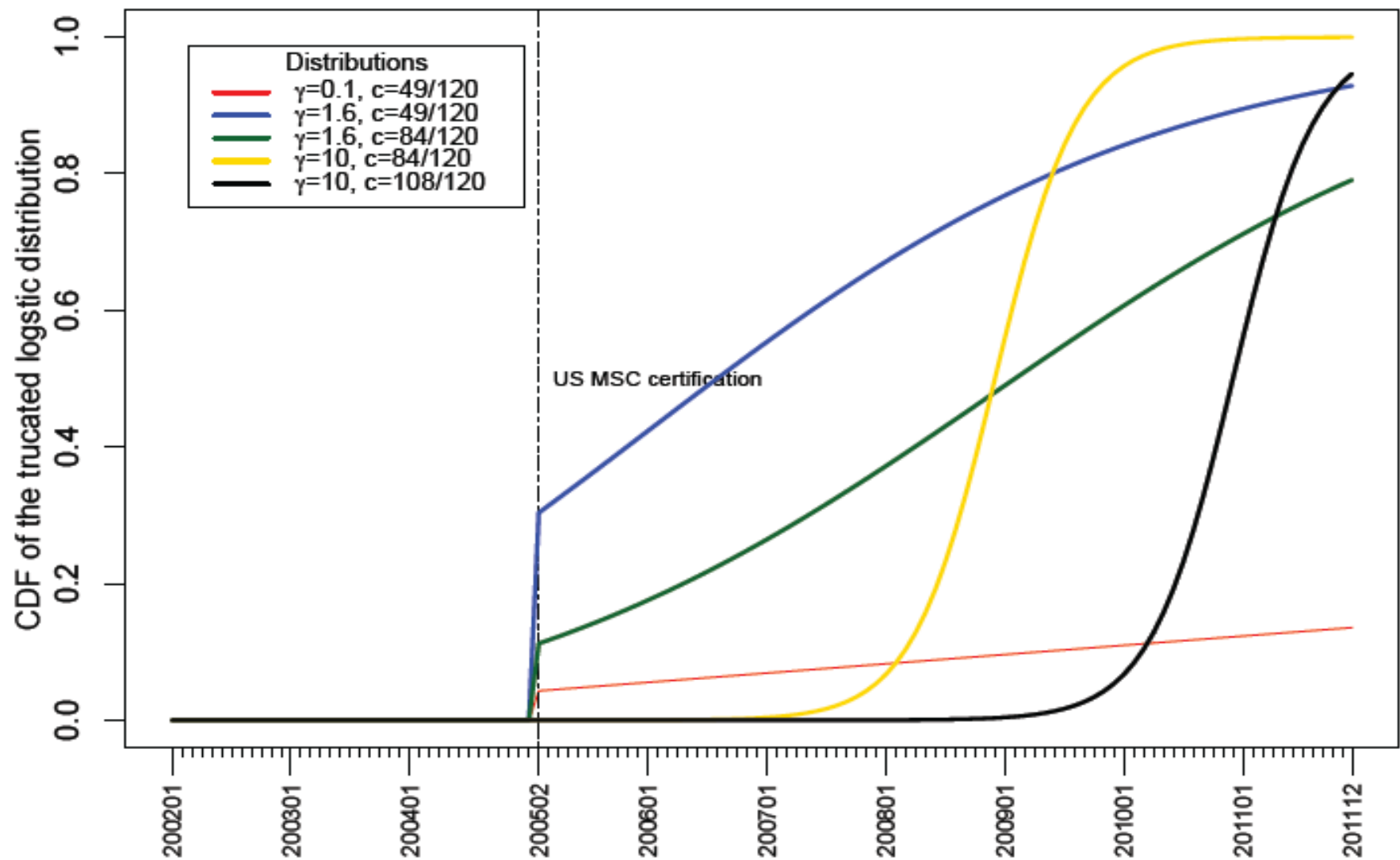


Figure 2. Illustration of the truncated logistic distribution, by different combination of speed-adjustment parameter (γ) and centrality parameter (c)

Evaluate the impact of certification

Pre- and post-certification

- The U.S. price changes with respect to a 1% change in U.S. volume (own-quantity flexibility)
- The U.S. price changes with respect to a 1% change in Russian volume (cross-quantity flexibility, **substitutability**)

Results: Transition function

$$\gamma = 1.6 \text{ and } c = 49/120$$

- The effect of ecolabeling was strong immediately after the label entered the German market
- Afterwards, that effect continued to grow gradually over time
- The estimated centrality parameter corresponds to January 2006. This indicates
- Half of the adjustment takes place within 12 months

Results: Tests of structural change

Table 3. Tests of Structural Changes in the Demand System Based on Log-likelihood Ratio

Hypothesis	Species-differentiated Model	
	Number of Restrictions	<i>p</i> -value
No structural changes in intercepts	2	0.98
Constant scale effects	2	0.0105
Constant Antonelli effects	3	<0.001
No structural changes in the demand parameters as a whole	7	<0.001

Results: The impact of certification

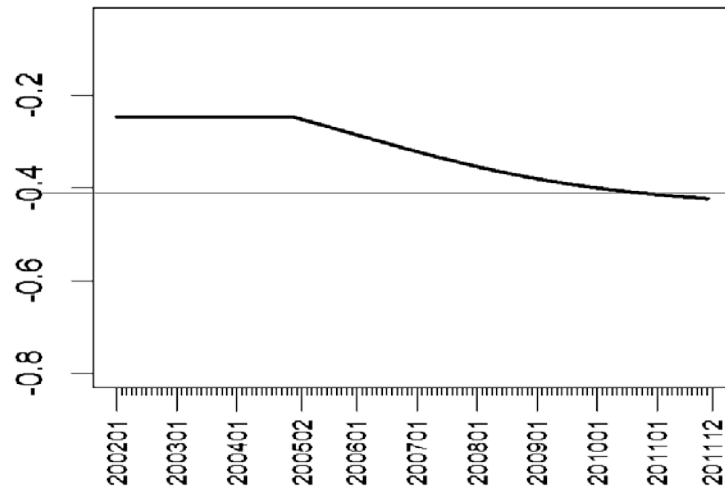
Table 3. Scale and uncompensated price flexibilities (on average)

Price of	w.r.t. Scale	w.r.t. quantity of		
		US	Russia	China
Pre-certification				
US	-0.832	-0.245	-0.208	-0.379
Russia	-1.072	-0.439	-0.193	-0.440
China	-1.089	-0.352	-0.440	-0.555
Post-certification				
US	-0.967	-0.354	-0.137	-0.476
Russia	-1.013	-0.252	-0.362	-0.163
China	-1.018	-0.351	-0.163	-0.503

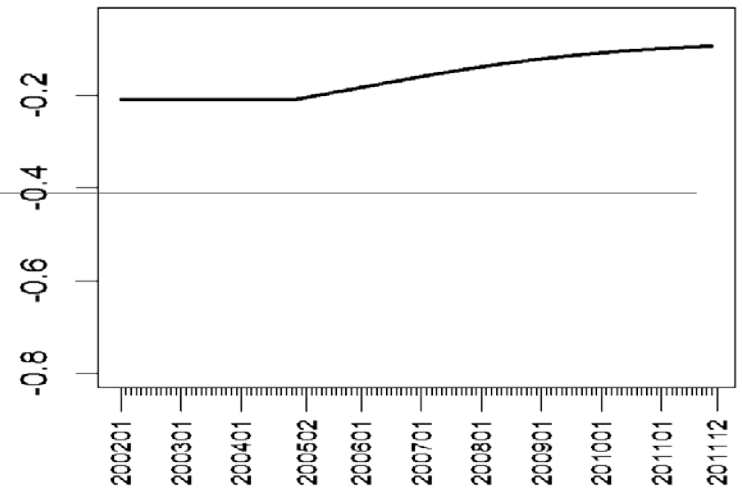
Post certification:

- Imports from U.S. are (relatively) less sensitive to changes in own-quantity
- Imports from U.S. are less sensitive to changes in quantity of Russian pollock (and vice verse)

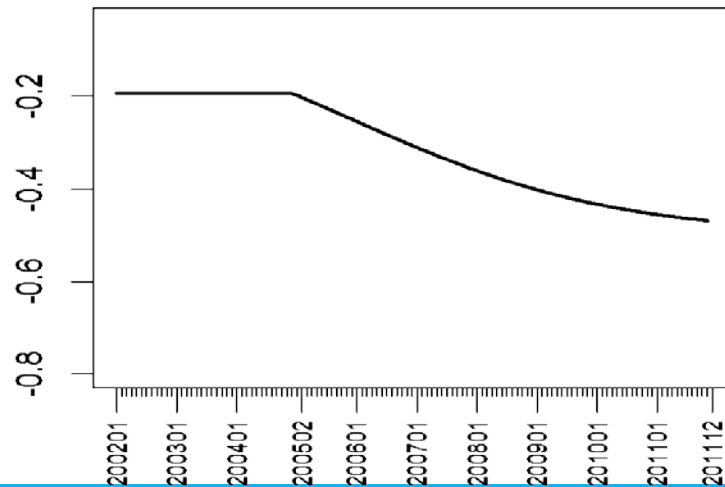
US own flexibility



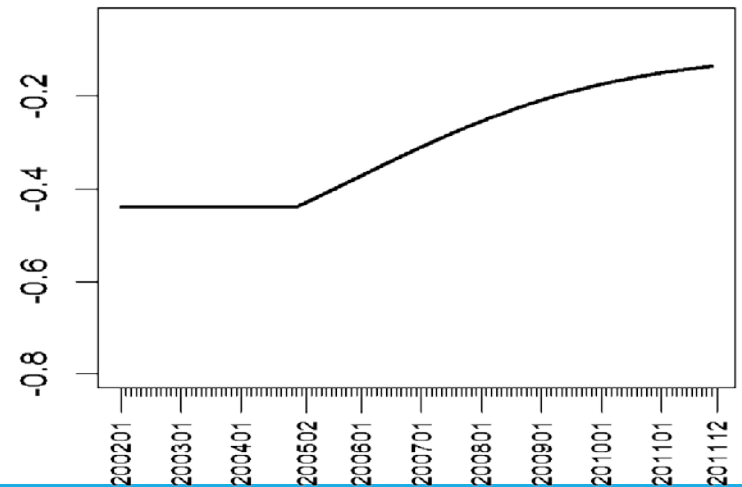
US flexibility w.r.t. Russia



RU own flexibility



Russia flexibility w.r.t. US



Conclusions

- The period post certification of the U.S. pollock fisheries was a period of statistically significant changes in the market of German imports of pollock
- Post certification, U.S. pollock became more competitively placed relative to Russian pollock

Caveat: There are quality differences in U.S. (and Russia's) and China's pollock (e.g. once frozen, twice frozen).



Why do fisheries engage in sustainability certification?

Survey of global MSC certified fisheries and those in assessment for certification conducted in 2009

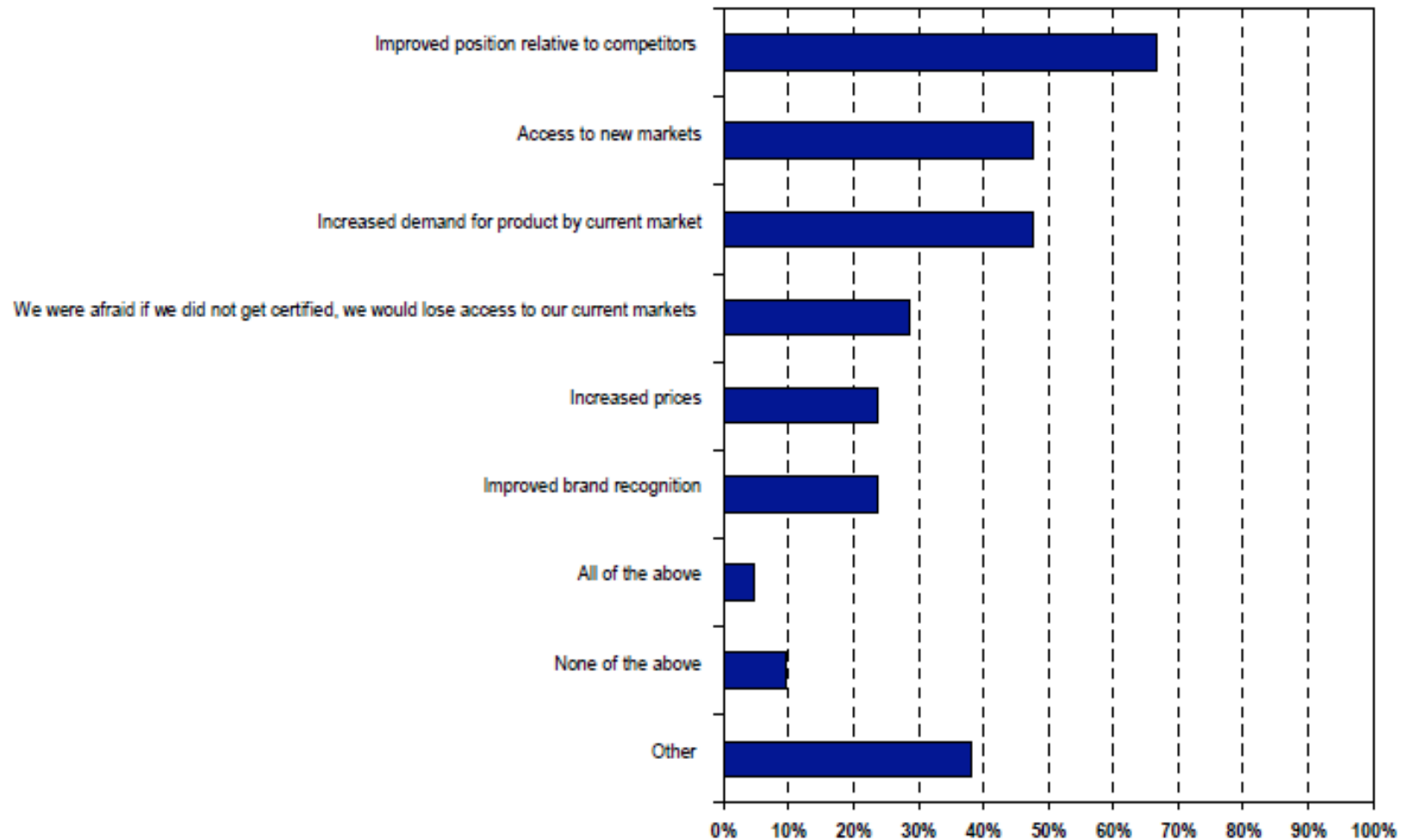
- 44 certified fisheries
- 70 fisheries in assessment
- Response rate:
 - 48% certified fisheries
 - 36% fisheries in assessment

Goal: to identify motivations of fisheries pursuing certification

Major findings from fisheries survey

- The majority of certified fisheries did not expect to enter new geographic markets after certification, whereas the majority of the fisheries in assessment expect to gain new markets in different countries around the world after their products are certified.
- European countries are the main target of all fisheries seeking to gain new geographic markets after certification.
- All fisheries recognize differences between markets around the world regarding the impacts of MSC labeled products.

**As you entered assessment,
what market benefits did your fishery anticipate
once certified?**



The impact of ecolabeling

- To evaluate:

- Monetary value of product attributes
- Methods: Experimental study (willingness-to-pay) / Hedonic price model (price premium)

- To test

- Changes in market shares, due to introduction of the product with new attributes.
- Methods: Demand system model