The Australian Journal of Agricultural and Resource Economics

Journal of the Australian Agricultural and Resource Economics Society

Australian Journal of Agricultural and Resource Economics, 61, pp. 576–589

Price premiums for ecolabelled seafood: MSC certification in Germany

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Whether ecolabelled seafood actually provides incentives to improve the management of fisheries remains a controversial issue. A number of stated preference studies indicate a substantial willingness to pay for ecolabelled seafood. Early evidence from actual market data supports the existence of a premium, while more recent papers provide a more nuanced picture. In this paper, a hedonic price model for whitefish species on the German market is estimated that includes information on Marine Stewardship Council (MSC) labelling, the leading seafood ecolabel in Germany. The model also allows the potential premium to vary by species. Results indicate that MSC premiums in Germany vary substantially between species, from a hefty 30.6 per cent for the high-end species cod, to a 4 per cent premium for Alaska pollock, and no premiums for saithe.

Key words: consumer preferences, ecolabelling, hedonic pricing, marine stewardship council, price premium, scanner data.

1 Introduction

Whether ecolabels for seafood provide incentives for better fisheries management is a contentious issue. During the last decade, the ecolabel of the Marine Stewardship Council (MSC) has established itself as the leading ecolabel for seafood.[1] By the end of 2015, 264 fisheries had been certified (MSC 2016). However, despite this success, it remains unclear whether the MSC label provides market-based incentives that lead to improvement in fisheries management.

The basic intention with any ecolabel is to provide marked-based incentives for producers to embrace better environmental production practices (Roheim 2009). A credible ecolabel, generally provided by an independent third party,

We would like to thank two anonymous reviewers for helpful comments. Financial supports from the Norwegian Research Council (Grant no. 233751) and from the Research Project Systematische Verfahrensoptimierung der Edelfischaufzucht in rezirkulierenden Systemen 'Aqua-Edel' by Bundesanstalt für Landwirtschaft und Ernährung are acknowledged. All opinions and short-commings are the responsibility of the authors.

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[1] The MSC provides a set of criteria that allow a fishery to be certified as sustainable. Fish from a certified fishery can carry an ecolabel with the MSC logo to signal that this is the case, provided that a chain of custody has been certified (MSC 2016).

doi: 10.1111/1467-8489.12217

signals to consumers which foods are produced by means of environmentally friendly practices, and sets them apart from the rest of the market, which instead uses conventional, cost-minimising production methods. A successful ecolabel will then segment the market by increasing demand for labelled product and reducing demand for unlabelled products. Consumers interested in improved environmental quality buy ecolabelled products at a price premium, thereby incentivising 'green' production practices (Gudmundsson and Wessells 2000). For a labelled product, this premium can come in the form of a higher price in a specific market, or by access to more attractive markets.[2] The premium is necessary, as there are costs associated with obtaining and using the ecolabel (Gudmundsson and Wessells 2000).

A substantial number of stated preference studies indicate that a large number of consumers prefer seafood from well-managed fisheries and that they have a higher willingness to pay for such seafood, thus confirming the role of ecolabels in incentivising better environmental management of fisheries. For instance, Wessells *et al.* (1999) show that preferences for ecolabels exist in the United States, but that they differ by species, geographic region, consumer groups, and even by certifying agency. Johnston *et al.* (2001) use the same survey to shed further light on these issues by using data from the United States and Norway; these authors find that preferences also differ between the two countries. For the UK market, Jaffry *et al.* (2004) investigate the effect of various ecolabels and conclude that ecolabels have the greatest effect on product choice but that origin and mode of production labels also influence consumer preferences. Johnston and Roheim (2006) examine trade-offs between ecolabels and species, and show that consumers are willing to pay a premium for an ecolabelled product, but are not willing to give up their most favoured fish species for less-favoured species that carry an ecolabel. Brécard *et al.* (2009) find that in a sample of European consumers, particularly young and low-income females tend to purchase ecolabelled fish. For the French market, Salladarré *et al.* (2010) show that young and more-educated consumers have a stronger preference for ecolabelled seafood. Furthermore, attributes such as origin, production method and the level of natural fish stocks are more strongly associated with preferences for ecolabels than product attributes such as freshness and product form. However, there is substantial scepticism with respect to whether this translates into an actual premium and therefore actual incentives (OECD, 2006; Washington 2008). For the Japanese market, Uchida *et al.* (2014) report that consumers only respond to an ecolabel after receiving information about environmental issues, indicating a general lack of awareness of these issues among the consumers in their study, while Fonner and Sylvia (2015) show that

[2] An ecolabel can provide market access if it is a positive product attribute that increases the perceived quality of the product sufficiently to make it competitive in a market where, at prevailing prices, it would otherwise not be competitive. The Fish Improvement Projects (FIPs) certification is an example of an ecolabel that explicitly provides market access (Sampson *et al.* 2015).

consumers in the United States respond to ecolabels as well as origin, safety and quality labels.

In recent years, evidence of a premium being associated with the MSC label is also provided by using data based on actual transactions. For example, Roheim *et al.* (2011) use scanner data for the London metropolitan area to estimate a premium of 14.2 per cent for MSC-labelled Alaska pollock. However, Bronnmann and Asche (2016) report an average premium of only 3 per cent using German scanner data for 11 species. Using store observation data in Glasgow, Scotland, Sogn-Grundvåg and Young (2013) report a premium of 10.1 per cent for haddock, and Sogn-Grundvåg *et al.* (2014) report a premium of 12.7 per cent for frozen whitefish, but without distinguishing by species. Furthermore, Asche *et al.* (2015b) show substantial variation in the prices of different ecolabels, and that in particular, those of the MSC label vary across UK retail chains, also using data from Glasgow. This leads them to question whether any of the premiums are actually transferred to the fishers. Stemle *et al.* (2016) provide evidence of a premium associated with MSC labelling in some but not all certified fisheries investigated in Japan and the United States.

In this study, we use scanner data for Germany to investigate the presence of a price premium associated with the MSC label for three whitefish species in Germany, namely cod, Alaska pollock and saithe. These species are the only whitefish species in Germany with products carrying the MSC label during the period covered by our dataset. We will follow the same basic approach as Roheim *et al.* (2011) and Sogn-Grundvåg and Young (2013), Sogn-Grundvåg *et al.* (2014). However, Roheim *et al.* (2011) and Sogn-Grundvåg and Young (2013) used data for only one species, while Sogn-Grundvåg *et al.* (2014) and Bronnmann and Asche (2016) estimated a model that did not allow the MSC premium to vary by species. In this paper, the MSC premium will be allowed to vary by species by including an interaction term. Whether the premium varies by species is then testable, as is whether a premium actually exists.

The paper is organised as follows. In the next section, we briefly describe the German fish market, as well as the data used in this study. Following that, the empirical methodology is introduced in section 3. The estimation results are reported in the next section, followed by the last section, which draws some conclusions.

2 The German fish market and data

The per capita consumption of seafood in Germany was 14 kg in 2014, and the two main product categories are frozen and canned fish. In 2014, the market share of frozen fish was 30 per cent, and the market share of canned fish was 27 per cent (DESTATIS 2016).[3] Frozen fish is easily available and

[3] Bronnmann *et al.* (2016a,b) provide additional information on demand for seafood in Germany.

primarily sold in the large retail chains. Moreover, discount chains are becoming increasingly important. In 2014, discount chains like Aldi and Lidl had a market share of over 50 per cent of the seafood retail market (DESTATIS 2016).

This article analyses the price premiums and discounts for frozen fillets of cod, Alaska pollock and saithe, the only three whitefish species with products carrying the MSC label. Frozen fillets of these species are among the most consumed fish products in Germany. Alaska pollock is the popular seafood species by quantity consumed. The different product forms of these species have a similar content and are readily comparable and hence, the attributes that we have data for are likely to provide similar product characteristics. Other species can in principle be included, but it would be harder to argue that the attributes convey the same information for all species.

The data used in this study are provided by the Homescan panel dataset on food purchases of German households, which is conducted by the Gesellschaft für Konsumforschung (GfK), the largest consumer research company in Germany.[4] The panellists record their food purchases, the date and point of sale, several detailed product characteristics, as well as the European Article Number (EAN), code at home by using a hand-held scanner.[5] The dataset contains monthly observations aggregated from the households' daily fish purchases. Using information provided by the logo licence manager from MSC, we determine all products in our dataset that carry a MSC label using the EAN code.

The dataset contains 1,348 observations covering a sample period of 36 months (January 2008 – December 2010).[6] The dataset contains 58 different products with 11 products carrying the MSC label, three process forms, and 10 brand categories.[7] We can distinguish between retail brands (private label products) and traditional producer brands. Our analysis includes retail brands from three retail chains, Aldi, Lidl and Netto, as well as traditional national brands from the manufacturers Pickenpack, Paulus and Royal Greenland.[8] Moreover, the dataset also includes products from the home deliverers Bofrost and Eismann and provides information on when a product was on promotion.

[4] The households in the GfK Homescan Panel comprise a stratified random sample, selected on demographic as well as geographic targets. Stratification ensures that the sample represents the socio-demographic profile of consumers in Germany according to the German microcensus (GfK, 2016).

[5] The EAN code is the International Article Number, which is a 13-digit barcode and identifies each item.

[6] In common with most hedonic price analyses (Chang *et al.* 2010), the prices are deflated using a consumer index (2010 = 100).

[7] The dataset consist of 21 Alaska pollock products including five MSC-certified products, 22 saithe products of which three products are MSC certified, and 15 cod products including three certified products.

[8] Aldo and Lidl are at times referred to as hard discounters as over 90 per cent of their stock is private labels, and they are very aggressive in their pricing strategy (Cataluna *et al.* 2005).

Table 1 reports the descriptive statistics of the various attributes. The values are calculated with the average price for 100 g to ensure comparability. The average price in the dataset is 0.70 € per 100 g. Alaska pollock is the most important species in the German market in terms of quantity; in the dataset, the market share of Alaska pollock fillets is 43 per cent, followed by 37 per cent for saithe fillets, and 20 per cent for cod fillets. Cod has the highest price, with an average of 0.88 € per 100 g, while the prices for Alaska pollock and saithe are similar at €0.65 and €0.64 per 100 g, respectively. Natural fillets are the most important product form, while breaded and battered fillets are the other important product forms, and are cheaper than natural fillets.

Germany is among the five European countries with the largest share of private labels in retailing, and the supply of private labelled products is increasing (Nielsen 2013). In our dataset, 46 per cent of the products were private label products, with an average price of 0.53 € per 100 g. The private

Table 1 Descriptive statistics

Product attribute	Frequency in %	Price of the product attribute in € per 100 g				
		Mean	Min.	Max.	SD	Marketshare* in %
Fish species						
Cod	19.81	0.88	0.36	1.60	0.24	20.68
Saithe	36.94	0.64	0.22	1.46	0.35	34.73
Alaska pollock	43.25	0.65	0.26	1.42	0.34	44.59
Process form						
Battered	2.45	0.47	0.44	0.53	0.02	1.14
Breaded	44.29	0.71	0.22	1.46	0.36	44.85
Natural	53.84	0.68	0.26	1.60	0.32	54.02
Brand						
Royal Greenland	2.60	0.60	0.50	0.72	0.07	1.35
Paulus	3.34	0.67	0.51	0.80	0.07	4.25
Other brands	8.38	1.05	0.46	1.60	0.30	13.15
Pickenpack	22.70	0.54	0.26	1.28	0.21	15.33
Eismann	8.53	1.20	0.90	1.42	0.16	17.30
Bofrost	8.09	1.14	0.63	1.23	0.07	19.23
PL_Netto	12.09	0.59	0.26	0.89	0.18	5.69
Other PL	10.83	0.45	0.32	1.02	0.13	6.95
PL_Lidl	11.94	0.61	0.22	1.28	0.38	7.34
PL_Aldi	11.50	0.47	0.32	0.70	0.12	9.41
Package Size						
< 300 g	10.53	0.98	0.36	1.28	0.23	6.68
300–500 g	27.30	0.57	0.26	1.28	0.18	14.36
>500 g	62.17	0.70	0.22	1.60	0.37	78.96
Additional attributes						
Promotion price	20.77	0.56	0.22	1.60	0.29	16.70
Regular Price	79.23	0.73	0.27	1.60	0.34	83.30
MSC	28.12	0.70	0.26	1.33	0.35	26.00
No MSC	71.88	0.69	0.22	1.60	0.33	74.00
Overall average		0.70	0.35	1.27	0.23	26.09

*Revenue based.

label of the discounter Aldi is the largest, with a market share of nearly 9 per cent, followed by Lidl (7 per cent). Branded fillets, on average, have a 60 per cent higher price (0.87 € per 100 g) than private label products. Fillets from the home delivery brands Bofrost and Eismann are the highest priced. The average price for Bofrost products is 1.14 € per 100 g, while for Eismann products the average is 1.20 € per 100 g. With respect to the MSC labelling, the average price of the labelled fillets is 0.70 € per 100 g and has a market share of nearly 26 per cent for the three species analysed.[9]

3 Method

Investigating the value of specific product attributes and their contribution to the price of a product has a long tradition, starting with Lancaster (1966). From the turn of the century, this approach has been used to show that various product attributes have a substantial impact on seafood prices at the landing point (McConnell and Strand 2000; Carroll *et al*. 2001; Lee 2014; Asche *et al*. 2015a; Blomquist *et al*. 2015; Gobillon *et al*. 2016), the wholesale level (Asche and Guillen 2012) and the retail level (Roheim *et al*. 2011; Ahmad and Anders 2012; Sogn-Grundvåg and Young 2013; Sogn-Grundvåg *et al*. 2014; Asche *et al*. 2015b; Ankamah-Yeboah *et al*. 2016; Bronnmann and Asche 2016). These studies typically estimate a single parameter for each product attribute, with Asche *et al*. (2015b) and Blomquist *et al*.(2015) being exceptions, as they allow interaction, respectively, between ecolabel and retail chain and size and quality grading.

Theory provides little guidance about which functional form should be chosen for the hedonic price function (Malpezzi 2002; Taylor 2003). Using a Box-Cox test, we cannot reject the null hypothesis of choosing a log linear model (*P*-value is 0.34), and this specification was accordingly chosen. This is also the most common model specification in the hedonic price function literature for seafood.

The basic specification (Model 1) is given as:

$$\ln P_{\mathrm{it}} = a + \sum_{j=2}^{3} b_j s_j + \sum_{k=2}^{K} c_k r_k + \mathrm{dMSC} + e_{it}, \tag{1}$$

where P_{it} is the price of product i at time t, s_j is a vector of species that influence the price, $r_2, \ldots, r_k$ is a vector of the other product attributes that determine the price of the product, and MSC is a dummy variable for products carrying the MSC label. The parameters b_j, c_k, d to be estimated are associated, respectively, with the species, the other product attributes, and the

[9] The market share for MSC-labelled cod, saithe, and Alaska pollock products in 2008 was 25 per cent, in 2009 it was 27 per cent, and in 2010 it was 26 per cent. The average market share of the MSC-certified products is 38 per cent for Alaska pollock, 11 per cent for saithe and 37 per cent for cod.

MSC ecolabel. The constant term, a, is the average price of the base product, which is indexed to 1 in all the sums. Hence, all variable indices start at 2 to avoid the dummy trap. Finally, e_{it} is an i.i.d. error term.

The model specification in eqn (1) is similar to Sogn-Grundvåg *et al*. (2014) and Bronnmann and Asche (2016), where the MSC premium is restricted to be equal for all species. To allow the premium to vary, interaction dummies between the species and the MSC label are introduced (Model 2). The model then becomes

$$\ln P_{it} = a + \sum_{j=2}^{3} b_j s_j + \sum_{k=2}^{K} c_k r_k + \mathrm{dMSC} + \sum_{j=2}^{3} d_j s_j MSC + e_{it}, \qquad (2)$$

where d_j provides the interaction effect, showing how the ecolabel is enhanced (positive value) or discounted (negative value) relative to the base case for any species. If the null hypothesis that all $d_j = 0$ cannot be rejected, the premium will be equal for all species.

In both models, a White test for the null hypothesis of no heteroscedasticity is rejected, and only robust standard errors are accordingly reported. To test against multicollinearity, we compute the conditional index of Belsley *et al*. (1980), which indicates that multicollinearity is not a problem.

Asche *et al*. (2015b) note that the standard errors are not likely to be independent across units, but rather independent across some clusters of units and correlated within those clusters. The potential for correlation among species, product types, process forms, package size or brand could bias the estimated standard errors as in the clustered standard errors literature (Moulton 1990). As there is no obvious criterion to select the unit of clustering, we estimate the models with clustering for all the main categories of attributes.

4 Empirical results

The base category in the estimation is natural cod fillets from Pickenpack in packets larger than 500 g from 2010, which carry no MSC label. The parameter estimates from the two models are reported in Table 2 together with the implied premiums associated with each attribute. These are computed using the approach of Halvorsen and Palmquist(1980) and are calculated as $(e^{\beta} - 1) * 100$, where β is the estimated parameter. With an R^2 of 0.842 and 0.846, respectively, Model 2 explains slightly more of the price variation than Model 1. An F-test of whether Model 2 can be reduced to Model 1 gives a P-value of 0.031, and the null hypothesis can accordingly be rejected at a 5 per cent significance level. With the exception of the parameters associated with the MSC label, all parameters are fairly similar between the two models. Moreover, with the exception of the time dummies and trend, all estimated parameters are significant at a 1 per cent level. Table 3 shows that

Table 2 Parameter estimates and computed premiums

Variable	Model 1				Model 2			
	Coefficient estimate	Robust SE	Clustered SE	Price effect (in %) †	Coefficient estimate	Robust SE	Clustered SE	Price effect (in %) †
Intercept	−0.240	0.056***	0.128*		−0.235	0.057***	0.140*	
Fish Species	Base: cod							
Alaska pollock	−0.517	0.027***	0.096***	−40.37	−0.493	0.027***	0.093***	−38.92
Saithe	−0.331	0.029***	0.117***	−28.18	−0.280	0.036***	0.140*	−24.65
Process Form	Base: natural							
Battered	−0.615	0.075***	0.067**	−45.94	−0.601	0.082***	0.325*	−45.17
Breaded	−0.152	0.016**	0.305**	−14.10	−0.137	0.014***	0.576**	−12.80
Brand	Base: Pickenpack							
PL_Netto	−0.269	0.024***	0.091***	−23.59	−0.284	0.03***	0.118**	−24.72
PL_Lidl	−0.224	0.02***	0.068***	−20.07	−0.314	0.025***	0.087***	−26.95
PL_Aldi	−0.205	0.023***	0.080**	−18.54	−0.222	0.024***	0.081**	−19.91
Other PL	−0.181	0.025***	0.075**	−16.56	−0.193	0.028***	0.087**	−17.55
Paulus	−0.171	0.043***	0.141	−15.72	−0.365	0.061***	0.197*	−30.58
Royal Greenland	0.12	0.025***	0.055**	12.75	0.142	0.028***	0.078*	15.26
Other brands	0.398	0.061***	0.267	48.88	0.373	0.058***	0.249	45.21
Bofrost	0.794	0.021***	0.084***	121.22	0.752	0.023***	0.093***	112.12
Eismann	1.006	0.02***	0.069***	173.46	0.989	0.022***	0.079***	168.85
Package Size	Base: >500 g							
300–500 g	0.235	0.022***	0.069***	26.49	0.207	0.026***	0.089**	23.00
< 300 g	0.508	0.044***	0.164***	66.20	0.472	0.058***	0.213**	60.32
Additional attributes								
Promotional Price	−0.104	0.013***	0.015***	−9.88	−0.103	0.012***	0.016***	−9.79
MSC	0.072	0.014***	0.052*	7.47	0.267	0.038***	0.121**	30.60

Table 2 (*Continued*)

Variable	Model 1				Model 2			
	Coefficient estimate	Robust SE	Clustered SE	Price effect (in %) †	Coefficient estimate	Robust SE	Clustered SE	Price effect (in %) †
Dynamics	Base: 2010							
2008	−0.054	0.036	0.027*	−5.26	−0.056	0.036	0.027**	−5.45
2009	0.037	0.02*	0.018**	3.77	−0.037	0.02*	0.017**	−3.63
Trend	−0.004	0.003	0.001	−0.40	−0.001	0.001	0.010	−0.10
Interaction effects								
Alaska pollock MSC					−0.230	0.047***	0.151	3.77
Saithe MSC					−0.277	0.051***	0.195	−0.99
R^2	0.842				0.846			
Observations	1.348				1.348			
Pr > F	<0.001				<0.001			

***$P < 0.01$, **$P < 0.05$, *$P < 0.10$. †Relative to base category at average price (0.70 €), adjustments made according to Halvorsen and Palmquist (1980).

Table 3 Hypothesis for attribute category inclusion

Null hypothesis	Test statistic	Distribution	Prob > *F*
No effect of species	232.05	*F* (2, 1325)	<0.001
No effect of product form	108.51	*F* (2, 1325)	<0.001
No effect of package size	38.66	*F* (2, 1325)	<0.001
No effect of brand	1378.21	*F* (9, 1325)	<0.001
No yearly effects	19.76	*F* (2, 1325)	<0.001

all groups of attributes containing more than one attribute are statistically significant. This is also true with clustered standard errors, although these standard errors (as expected) are somewhat wider. Hence, all groups of product attributes influence the product price.

In Model 1, there is a discount of 28.2 per cent for saithe and 40.4 per cent for Alaska pollock relative to cod. Hence, the similar average prices in the descriptive statistics (Table 1) for saithe and Alaska pollock is due to a high proportion of more value-added products for Alaska pollock. In a price conscious market like Germany, it is also as expected that Alaska pollock has the lowest prices given its commanding market share. There is a discount of 14.1 per cent for breaded and 45.9 per cent for battered relative to natural fillets. This aligns with Roheim *et al.* (2007), who argue that more processing destroys value. Natural fillets show the whole piece of fish and have to be of good quality.

Branded products command significantly higher prices than private label products. The discount for a private label product from Netto, Lidl and Aldi relative to a product from the brand Pickenpack is, respectively, 23.6 per cent, 20.1 per cent and 18.5 per cent, and the premium for the brand Royal Greenland is 12.8 per cent. Products from the home delivery brands Bofrost and Eismann receive premiums well above 100 per cent. Packet size matters; prices increase as packet size becomes smaller. Finally, the price level is stable over the period covered by the data, as neither annual dummies nor the trend term are statistically significant.

The attribute that is of most interest, the MSC premium, is 7.47 per cent in Model 1, and it is statistically significant at a 1 per cent level. However, Model 2 shows that there are significant differences between the species. Both interaction parameters are negative and significant at the 1 per cent level. The MSC premium without the interaction term is now associated with cod. This is found to be 30.6 per cent and statistically significant at the 1 per cent level. Accounting for the interaction effect, the premium for saithe is $(e^{0.267-0.277}-1)*100=-0.99$ per cent and for Alaska pollock it is $(e^{0.267-0.230}-1)*100=3.7$ per cent. Moreover, the premium for saithe is not statistically significant at any conventional significance level with a *P*-value of 0.827. For Alaska pollock, the *P*-value is 0.030, providing some evidence against the null hypothesis, but not enough to make the premium significant at the 5 per cent level. Hence, the MSC premiums vary

substantially between species, from a hefty 30.6 per cent for the high-end cod, to a small percentage for the Alaska pollock, and even a negative but statistically insignificant point estimate for saithe. While we do not have any demographic information with respect to who buys cod, the results seem to support the notion that it is high-income and high-knowledge consumers who care about both quality (Onozaka *et al*. 2014) and sustainable seafood (Johnston *et al*. 2001).

5 Concluding remarks

Whether the MSC ecolabel provides incentives for better fisheries management is a contentious issue. While a large number of studies indicate a strong consumer preference for sustainable seafood and for ecolabels as a means to achieve this, the preferences vary between markets and consumer groups. Moreover, there has been substantial scepticism with respect to what extent the stated preferences could be turned into actual incentives for fishers to demand better management. As market data have become available, studies using data at the retail level that support the existence of a MSC premium have started to appear. Roheim *et al*. (2011) and Sogn-Grundvåg and Young (2013), Sogn-Grundvåg *et al*. (2014) showed that an MSC premium exists for whitefish in the UK, while Asche *et al*. (2015b) show a premium for salmon in the UK, and Bronnmann and Asche (2016) show a premium for 11 species in Germany. However, Blomquist *et al*. (2015) indicate that MSC certification is not sufficient for fishers to obtain a premium at the landing location in the Swedish cod fisheries, but that the share of the cod landings that are sold through certified supply chains do obtain a premium. Hence, their results indicate that the management incentives depend on the share of fish being sold with an MSC label. Stemle *et al*. (2016) report varying impacts of MSC labels on ex vessel prices for fisheries in Alaska and Japan, including no premium in some cases.

Our results indicate that whether a premium exists or not depends on species in the German retail market. There is a much stronger premium for cod than in the UK, but a lower premium for Alaska pollock and a lower and statistically insignificant premium for saithe. Together with the various premiums associated with the MSC label revealed in earlier studies, this is an important result, as it indicates that the general heterogeneity of the seafood market (Asche *et al*. 2002; Tveterås *et al*. 2012) also translates into the issue of ecolabels. As a consequence, the question of whether an ecolabel provides incentives for better fisheries management depends on the species, market and supply chain that is considered. This implies that ecolabels will most likely be an effective tool in some cases, but not in all.

Providing advice with respect to whether an ecolabel is a useful tool for a particular fishery will require specific information with respect to that fishery and the markets and supply chains it serves. This is also the case with respect to the often-made argument that an ecolabel will help provide market access

to better paying markets. Heterogeneity with respect to the level of the premiums is also an indication that, if the ecolabel is to remain credible, it is in the interest of the providers of an ecolabel to investigate market factors in each specific case. Ecolabels can only provide incentives for better management in markets with a sufficiently strong preference for the ecolabel and the message it conveys for this to translate into real value. Otherwise, since ecolabels are costly, theory indicates that producers will abstain (Gudmundsson and Wessells 2000).

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