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Eliciting consumers' willingness to pay for organic and welfare-labelled salmon in a non-hypothetical choice experiment

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Abstract

In this study, we use a non-hypothetical choice experiment to elicit Norwegian consumers' willingness to pay a price premium for organic and animal welfare-labelled salmon. A total of 115 Norwegian consumers were recruited for a choice experiment in which they had to choose between farmed salmon produced under three different production regimes. The salmon used in the experiment were conventional, organic, and Freedom Food salmon, certified by an [animal welfare](#) organization.

In order to reveal consumers' true preferences for the products, a nonhypothetical choice experiment was carried out. The experiment consisted of 30 choice scenarios, where each scenario mimics a shopping situation with two alternative packages of salmon. The packages varied with respect to production method, colour, and price. Real economic incentives were imposed by letting each consumer randomly draw one out of 30 choice scenarios to be binding, and then executing the sale of the package that he or she had chosen under that scenario.

Our results show that the average consumer preferred organic and Freedom Food salmon to the otherwise identical salmon from conventional salmon farms. Further, he or she was willing to pay a price premium of approximately 2 euros per kg (15%) for organic and Freedom Food salmon, compared with conventional salmon of the same colour. Owing to feed restrictions, the organic salmon were much paler than the conventional and Freedom Food salmon, which resulted in a mean willingness to pay (WTP) for the pale organic salmon significantly below the mean WTP for conventional and Freedom Food salmon. Hence, it is very important for the success of organic salmon that the organic feed producers will be able to produce an organic feed with good [pigmentation](#) ability at an acceptable price.

The results in this paper indicate that consumers are willing to pay to improve animal welfare and reduce undesirable environmental effects from fish farming. Consequently, eco-labelling of farmed seafood such as animal welfare-labelled salmon and organic certified salmon might become an important differentiation strategy in the future. However, it is also shown that the producers of alternatively labelled [seafood products](#) must consider the aesthetic properties of their products and that labelled products of inferior appearance are unlikely to achieve the necessary price premium. Finally, it is shown how real choice experiments can be used to elicit consumers' WTP for multiple product attributes including the colour of the fish, improved fish welfare, and environmental improvements.

Introduction

Farmed salmon is still a relatively new product and, until recently, producers have mainly focused their attention on reducing production costs. Knowledge of other food products indicates that when production methods become standardized and there is less to gain from reducing costs, producers typically start differentiating their products. The beef, pork, and chicken markets, for example, are highly differentiated compared with the salmon market. Thus, more varieties are also likely in the future salmon market. Some of the varieties may be based on production-related credence attributes, such as organic or animal-friendly production methods.

If fish products can be labelled and efficiently marketed as being produced under

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conditions that involve better welfare for the fish, or as being more environmental friendly, and consumers are willing to pay for such attributes, producers can ask a price premium for such labelled fish. Organic salmon (IFOAM, 2004) and Freedom Food salmon (RSPCA, 2002) are examples of existing labels used on farmed fish. Fish welfare and environmental and social benefits are the main requirements for certifying products as organic. The Freedom Food label applies stricter animal welfare production criteria than the standard criteria used in Europe. Both products are produced and sold in very small quantities and are not readily available to the average consumer. For a review addressing the scientific, ethical, and economic factors that impact on the welfare of farm animals, see Webster (2001). For a discussion of the ethical dimensions of salmon farming, see Needham and Lehman (1991).

Even if market prices exist, it is not certain we can use them to predict consumers' willingness to pay (WTP) for the product of interest. McInerney (2004) illustrated some of the problems by valuing welfare improvements of for example free range hens by the consumers' total monetary expenditure on free range labelled eggs. He concluded that, even if markets for welfare friendly products exist, the data generated from these markets do not provide a particularly dependable route to valuing the animal welfare enhancements.

In economics and marketing, consumers' reservation price or WTP for a private good is defined as the price at which consumers become indifferent about buying the product or not buying it. The WTP for a product attribute is the difference in the consumer's WTP for a product with the attribute and the WTP for an otherwise identical product without the attribute. The dominant method for eliciting consumers' WTP is the stated preference method, in which consumers are asked questions designed to reveal their WTP for the product or attribute of interest. However, stated preference methods have been criticized for giving inflated WTP numbers, especially when it comes to product attributes with a social dimension such as environmental protection or animal welfare.

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To overcome these problems, several researchers have turned to experimental markets where the consumers' choices have real consequences for how much money they can take home. Recent studies using experiments with real economic incentives to investigate consumer preferences and WTP for organic and animal welfare-labelled products have been conducted by Napolitano et al., 2008, Bernard and Bernard, 2009, Yue et al., 2009, all of whom used experimental auction markets (Lusk and Shogren, 2007). This paper illustrates how a new type of experimental market using post prices, real products, and real purchases can be used to elicit consumers' WTP for animal welfare and organic production using existing labels. The results are based on data from the same real choice experiment used by Alfnes et al. (2006a) to evaluate consumer preference for the fillet colour of salmon, and represents the first investigation into consumer preferences for organic and animal welfare-labelled products using a real choice experiment. Furthermore, it is the first paper that presents the results of a real choice experiment including multiple product quality attributes.

The objectives of this paper are twofold. The first and main objective is to analyze consumer attitudes toward and WTP for improved fish welfare and environmental improvements in relation to other important quality attributes; here, the colour of salmon. The second objective is to illustrate how this can be done in an experimental market with real products, existing labels, post prices, and real purchases.

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Materials and methods

Consumer attitudes toward and WTP for improved fish welfare and organic fish were analyzed using a market experiment with real economic incentives. In a market-like situation, respondents were offered salmon fillets produced according to three different sets of criteria: conventional Norwegian standards, standards for organic certification by the Norwegian organization Debio/Swedish KRAV (Debio, 2001, Debio, 2009), and standards for Freedom Food set by the Royal Society for Prevention of ...

Results

The first three columns of Table 7 present the estimated coefficients, standard errors, and *p*-values from the estimation of the random parameter logit model in Eq. (1). The last

three columns present the corresponding mean WTP results, with standard errors and p -values. The variables R21, R23, R25, R27, and R29 are the dummy variables included in the colour vector $Colour_{mis}$ in Eq. (1). The coefficients for R21, R23, R25, R27, and R29 were all positive and significant ($p < 0.01$). Furthermore, the ...

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Discussion

A relatively large percentage of consumers agreed (at least partially) that Norwegian animal welfare standards are sufficiently strict (78.1%) and that fish welfare is sufficiently protected in Norwegian fish farming (67.9%). With such high numbers being satisfied with the current situation, it will probably be difficult for the producers of organic and animal welfare-labelled salmon to obtain high price premiums from the average consumer. Our study shows that, on average, consumers are willing ...

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Conclusion

The market potential for eco-labelled fish such as organic and animal welfare-labelled salmon depends on consumer preferences for fish. If fish can be labelled and marketed as having been produced in a way that provides improved fish welfare or environmental benefits, then producers can charge a price premium for their fish. In this paper, we found that the average consumer is willing to pay more for organic and Freedom Food salmon compared with conventional salmon of the same colour. However, ...

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