

Preferences for food safety and animal welfare – a choice experiment study comparing organic and conventional consumers

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Abstract - Food quality attributes such as food safety and animal welfare are increasingly influencing consumers' choices of food products. These attributes are not readily traded in the markets. Hence, stated preference methods have proven to be valuable tools for eliciting preferences for such non-traded attributes. A discrete choice experiment is employed, and the results indicate that consumers in general are willing to pay a premium for campylobacter-free chicken and for improved animal welfare; and they are willing to pay an additional premium for a product containing both attributes. Further, we find that organic consumers have a higher willingness to pay for animal welfare than other consumers, but they are not willing to pay more than conventional consumers when it comes to their willingness to pay for avoiding campylobacter.¹

INTRODUCTION

Food quality attributes such as food safety and animal welfare are increasingly influencing consumers' choices of food products. In particular, organic consumers are more interested in animal welfare, the environment, and health (Wier et al., 2004). In example, they are more concerned about food being free from medical or pesticide residuals than consumers in general (Wier et al., op cit). Organic products offer a whole bundle of attributes which are more or less well-known to the individual consumers, but at present, we do not have sufficient knowledge about how consumers constitute their willingness to pay for different attributes of organic or other products.

For a number of reasons, including insufficient knowledge of and data on consumers' preferences, consumers' lack of information, and presence of externalities, market prices are not always reliable indicators of consumers' demand for these attributes. Stated-preference methods have shown themselves to be valuable tools for examining demand for food quality attributes (Alfnæs, 2004; Carlsson et al., 2004).

OBJECTIVES

The objectives of the present paper are to 1) present estimates on consumers' willingness to pay for animal welfare and food safety 2) identify whether a bundle of attributes is perceived as the sum of the individual attributes and 3) assess whether organic consumers' preferences are different from other consumers.

METHOD

Discrete choice experiment is the stated preference method that we have used to identify consumers' preferences. To our knowledge, animal welfare and food safety have previously been valued separately, which could lead to an embedding effect (Carlsson et al., 2003; Goldberg and Rosen, 2005). In the present study, each choice situation depicts a different cost-risk trade-off between animal welfare, food safety, and price. The animal welfare attribute entails outdoor versus indoor production systems for chicken; the food safety attribute entails a chicken being labelled campylobacter-free versus chicken not being so labelled; and prevailing price levels range 40-110 DKK. The questionnaires also include questions on demand-influencing variables such as knowledge and perception of animal production and food safety, whether they buy organic products, as well as gender, income, education, and marital status. Results are obtained using a multinomial probit model (Train, 2003).

DATA

A sample of 2300 respondents is asked to choose amongst different chicken products. The sample is representative for the Danish web based population which constitutes 75% of the Danish population (ACNielsen, 2005). Of this population, 32% state that they find it important that a product is organic (the groups that completely agree or agree), 33% are neutral and the remaining 34% do not find it important that a product is organic. (Christensen et al. 2006). In the analysis, we have excluded the consumers stating they are neutral.

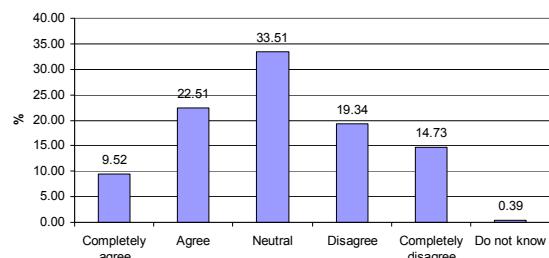


Figure 1. It is important that the product is organic

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RESULTS AND CONCLUSIONS

We show the non-parametric relation between the frequencies by which a chicken is being chosen and the price of the chicken. This can be seen as a simple demand curve for chicken meat when the product is only described by its price (when we do not consider differences in quality attributes).

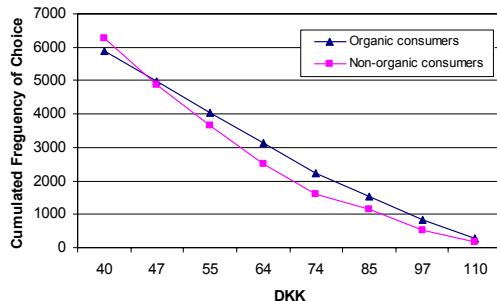


Figure 2. Relation between price (in DKK) and cumulated frequency of a chicken with that price being chosen divided upon the two types of consumers.

Figure 2 nicely illustrates how the choice of chicken depends on the price. The higher the price for a given chicken product, the fewer have chosen that specific chicken product. Furthermore, Figure 2 shows that even though the sample of non-organic consumers is slightly larger than the organic consumer sample, the frequency of chicken products being chosen with higher prices is larger for the organic consumer sample. This indicates that organic consumers have a larger willingness to pay for a chicken product.

The analyses indicate that consumers in general are willing to pay a premium for campylobacter-free chicken and for improved animal welfare; and they are willing to pay an additional premium for a product containing both attributes. Further, we find that organic consumers have a higher willingness to pay for animal welfare than other consumers but they are not significantly different from other consumers when it comes to their willingness to pay for avoiding campylobacter. And, they are willing to pay an extra premium for both attributes which non-organic consumers are not willing to do.

In monetary terms we find that on average, organic consumers are willing to pay an extra 40 DKK per chicken for an outdoor chicken compared to a chicken produced indoors whereas non-organic consumers have a price premium of 5 DKK. On average, organic as well as non-organic consumers are willing to pay an extra 15 DKK for a chicken being campylobacter-free. And finally, on average organic consumers are willing to pay a total of 80 DKK for a chicken with improved animal welfare AND being campylobacter-free (which is more than the sum of the willingness to pay for the individual attributes). Our results are summarized in Table 1.

Table 1. Willingness to pay (WTP) in DKK, estimates for different chicken products for organic and non-organic consumers, respectively.

| WTP for | Organic consumers | Non-organic consumers |
|-------------------------------------|-------------------|-----------------------|
| Outdoor bred | 40 | 5 |
| Campylobacter-free | 15 | 15 |
| Outdoor bred AND campylobacter-free | 80 | 20 |

We have elicited what and how much consumers value various characteristics but we can not elicit why they do so. Ongoing research projects aim at identifying this *why* and furthermore analysing in depths the result that we found on non-additivity of attribute values.

REFERENCES

- ACNielsen. (2005). http://www.acnielsen.aim.dk/produkter/markedsbeskrivelse_forbruger/mm/mm.asp
- Alfnes, F. (2004). Stated Preferences for imported and hormone-treated beef: application of a mixed logit model. *European Review of Agricultural Economics*, **31(1)**: 19-37.
- Carlsson, F.; Frykblom, P. and Lagerkvist, C.J. (2003). *Farm Animal welfare – testing for market failure*. Working papers in Economics no. 119. November 2003. Department of Economics Gothenburg University.
- Carlsson, F.; Frykblom, P. and Lagerkvist, C.J. (2004). *Consumer benefits of labels and bans on genetically modified food – An empirical analysis using choice experiments*. Working papers in Economics no. 129. March 2004. Department of Economics Gothenburg University.
- Christensen, T.; Hasler, B.; Lundhede, T.; Mørkbak, M.; Christoffersen, L.B.; and Porsbo, L.J. (2006). *Information, and consumer behaviour – a choice experiment*. Report No. xx forthcoming. Institute of Food and Resource Economics, Copenhagen.
- Goldberg, I. & J. Roosen (2005). *Measuring Consumer Willingness to pay for a Health Risk Reduction of Salmonellosis and Campylobacteriosis*. Paper prepared for presentation at the 11th congress of EAAE in Copenhagen, august 24-27. 2005.
- Train, K. (2003). *Discrete Choice Methods with Simulation*. Cambridge University Press, UK.
- Wier, M., L. Mørch Andersen, and Millock, K. (2004). Information provision, consumer perceptions and values – the case of organic foods. In "Environment, Information, and consumer behaviour", eds C. Russell and S. Krarup. *New Horizons Economics Series*, Edward Elgar Publ.