IS ORGANIC FOOD A QUALITY ATTRIBUTE OR A PRODUCT CATEGORY?

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1. Abstract

The present study investigates the relationships between consumer categorization of organic versus non-organic food products, consumers' underlying perceptions of organic food, and their propensity to consume organic foods. A choice experiment is used to test these relations in a case study involving consumer preferences for attributes relating to milk. First and foremost, we find a strong link between how consumers categorize food and their organic profile. Second, our study supports earlier findings which indicate that certain socio-demographic variables are important drivers of organic demand together with beliefs in organic foods possessing positive attributes. Third, we find that knowledge concerning a claim stating that milk from grazing cows is healthier serves as a way to categorize consumers.

Keywords: organic demand, separability, perception of organic foods, mixtures of logit

2. Introduction

The demand for organic foods is increasing rapidly in many European countries as well as in the USA. According to Padel et al. (2008), Denmark had one of the highest demand for organic food in Europe in 2006. In 2006, an average Danish household spent around 6 % of its total food expenditures on organic varieties (Denver et al., 2007). This relatively high percentage has been explained by a well-functioning market with stable supply where the main part of the transactions takes place in supermarkets at relatively low price premiums. Furthermore, an important factor is the existence of a single, official label (the red Ø-label) which is recognized and trusted by the majority of the consumers (Wier et al., 2008). Large variations in organic demand among Danes are observed. Around 90 % of the consumers bought organics at least once in 2006[1], but approximately 65 % of the organic products were bought by a small group of heavy users that included only 15 % of the consumers (Denver et al., 2007). Whereas the small group of loyal heavy users of organic products is particularly interesting in order to understand the trend setters of organic demand, there is a potential for growth in organic consumption for all consumer groups.

In order to improve understanding of organic consumption, we need to know more about why some consumers are willing to pay a (sometimes considerable) price premium for organic products - and how these consumers can be identified. Previous studies have shown that organic

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[1] The study included purchase data from GfK ConsumerScan for 32 common food categories (bread, eggs, fruit, vegetables, coffee, meat, flower, milk, butter, yoghurt, others).

demand can be linked to certain attitudinal and socio-demographic characteristics. The present study adds to this line of research by focusing on consumer categorization of products as an additional tool for understanding differences in organic orientation between groups of consumers. By including well-known as well as new variables to explain organic consumption patterns, we seek to capture the relative importance of the factors.

The relationship between some attitudinal as well as socio-demographic characteristics and organic consumption are well-documented. A high organic consumption is typically found among the older, higher educated, women, and consumers living in larger cities (Monier et al., 2009; Jonas and Roosen, 2008; Roitner-Schobesberger et al., 2008; Bellows et al., 2008; Gracia and de Magistris, 2008). According to Wier et al. (2008), a conviction that organic products are healthier, better tasting, and fresher than conventional products is an important driver of organic demand. Secondary, contribution to a better environment and improvements in animal welfare are also recognized as drivers. These findings are supported by other studies (see e.g. Roitner-Schobesberger et al., 2008; Aldanondo and Almanza-Sáez, 2009; Gracia and de Magistris, 2008; Padel and Foster, 2005; Schifferstein and Ophuist, 1998; and Griffith and Nesheim, 2008). Some attributes are guaranteed by the organic standards while others relate to subjective beliefs in desirable attributes, beyond what is guaranteed. The subjective beliefs might include documented as well as undocumented characteristics, e.g. a belief that organic producers are not simply maximizing profits but care about the needs of soil, plants, and animals.

In econometric analyses of organic demand, it is common to assume weak separability in food consumption. The demand for products within a product group is assumed to be a function of prices as well as expenditures allocated to this group. Prices on products in other groups are only used to allocate the budget between groups. This implies that the marginal rate of substitution between two products in one group is independent of quantities of products consumed from other groups (Edgerton et al., 1996). Typically, organic and conventional variants of specific products are modeled as close substitutes because they are considered to be different versions of the same product, see e.g. Thompson and Glaser (2001), Glaser and Thompson (1998), Zhang et al. (2006), Anders and Moeser (2008), Jonas and Roosen (2008), and Lin et al. (2009). This demand structure can be considered as a two-step decision process in which consumers first settle on a certain type of product and second choose whether they prefer the organic or the non-organic variant.

However, qualitative studies indicate that some of the most loyal organic consumers conceive organic products as constituting a category by itself. Rather than traditional food attributes, like taste and texture or even type of product (such as apple or carrot), these consumers consider organic attributes, such as improved animal welfare and concern for the environment, as the common denominator of different products. In other words, organic and conventional versions of a product are regarded as totally different products even though they share traditional food attributes. As a consequence, this group of consumers is reluctant to substitute an organic product with the non-organic version (Lund and Jensen, 2008). This qualitative result is supported by a study based on observed purchase data at household level (Hansen, 2004). Restricted to consumers with a relatively high level of organic consumption and aggregated food categories, the separability structure of organic demand is investigated. Hansen (2004) concluded that organic products seem to constitute a category by itself. Contrary, Smed (2005) used revealed preference data for both organic and non-organic consumers to test separability structures of organic and non-organic variants of milk with different fat-content. Smed (2005) found that consumers as a homogenous group first chose according to fat-content and then decided whether the milk should be organic or not.

3. Our study

Inspired by these studies, we formulated an experiment where consumers were asked directly to choose between two modes of product categorization. In other words, we asked the consumers to reveal their separability structure – or mode of categorization, as it will also be denoted. The advantage of this approach is that it allows us to use categorization as an explanatory variable rather than a dependent variable or a behavioral assumption. A very simplified setting was used with only two modes of categorizing and only two types of products. More specifically, consumers were asked to group organic and conventional fruits and vegetables either 1) by grouping them according to traditional food attributes (ProductFirst) or 2) by grouping them according to organic attributes (OrganicFirst). The two modes of categorization are illustrated in Figure 1.
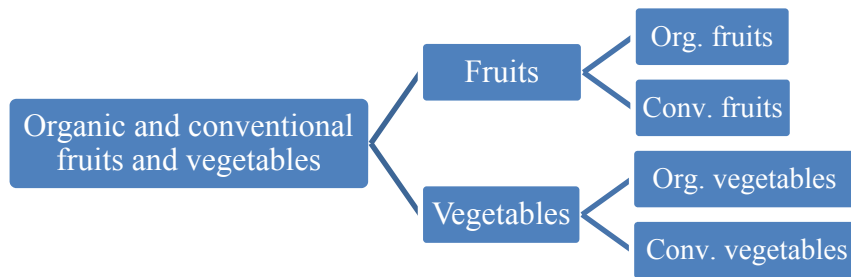
1. ProductFirst
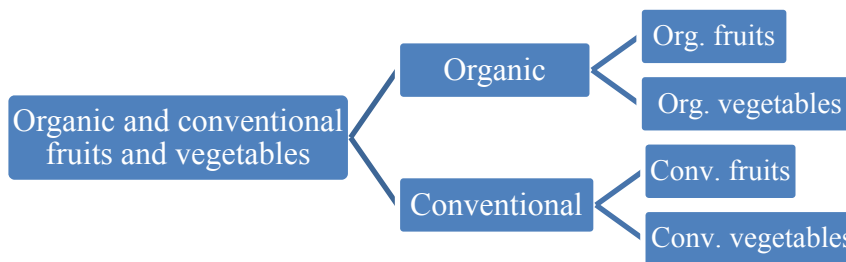
2. OrganicFirst

Figure 1. Illustrations of two ways to categorize products.

We assume that consumers, who chose ProductFirst, did so because they found it most logical to place all fruits (organic as well as conventional) in one basket and all vegetables (organic as well as conventional) in another basket. This would indicate that for a ProductFirst consumer, the closest substitute for an organic piece of fruit will be a conventional piece of fruit. Similarly, a consumer who followed OrganicFirst is assumed to prefer initially to choose between organic and conventional products and then to decide whether to buy fruits or vegetables. For a consumer conforming to OrganicFirst, the closest substitute for an organic piece of fruit will be an organic vegetable – not a conventional piece of fruit. The underlying rationale behind the experiment is that once the consumers have chosen a certain mode of categorization, they will mainly look within one basket when searching for substitutes. The focus on fruits and vegetables in the present experiment is equivalent to assuming weak separability between fruits and vegetables vs. all other products.

The hypothetical approach has the advantage that it allows us to include non-organic consumers in the analysis. Thereby, it is possible to refine the description of OrganicFirst consumers such that it includes consumers who prefer to separate organic products from non-organic products

either because they prefer to choose only from the organic basket or because they disfavor organic food and rather want to choose only from the non-organic basket.

The survey concerns milk and involves a choice experiment. The overall aim is to investigate consumers' underlying perceptions of organics and how they affect valuations of product attributes. In particular, we add to the literature on separability structures by allowing consumers to choose the structure they adhere to - either ProductFirst or OrganicFirst. Subsequently, we investigate how organic purchase patterns in general as well as consumer preferences for specific milk characteristics are related to these particular ways of categorizing products. The following hypotheses are addressed:

Hypothesis1.   Consumers can be grouped according to how they categorize organic and non-organic products.

Hypothesis2.   Consumer demand for organics is reflected in the way products are categorized.

After a presentation of the survey, we shortly describe the methodological approach used in the econometric analysis of data. Second, results are shown and finally, findings are summarized and discussed in a broader perspective.

4. Survey

Milk is used as the carrying product in the choice experiment. Milk is a very familiar product consumed regularly in most households in Denmark both by children and adults. Milk is sold in many varieties such as different fat contents, type of carton, size, regional origin, whether it is homogenized or not, whether it is organic or not, type of carton and which dairy company it is produced by. The wide variety of milk products added to the realism of the hypothetical experiment and made it cognitively easy for consumers to accept yet new variants. The choice experiment included three non-price attributes with two levels and a price attribute with six levels. More specifically, the following attributes were included:

- The milk could be either organic or non-organic
- The milk could be provided by cows that were guaranteed access to grass or by cows that were not guaranteed 'grass-access'
- The milk carton could be either environmentally friendly or standard

- The price for 1 liter of fresh milk could assume the following values in DKK[2]: 4, 5, 6.5, 8.5, 11, 15

One of the requirements for milk to be labeled as organic is that the dairy cows get out on grass. There are no such requirements for conventional dairy cows and as a consequence, approximately half of these herds are kept indoor all year. Recent scientific research indicates that milk from grazing cows contains a high level of healthy fatty acids, mainly due to a diet consisting of fresh grass and clover (Hermansen et al., 2008). By including 'grass-access' as well as 'organic' as attributes in the choice experiment, we included 'organic' milk that was not necessarily delivered by grazing cows. We carefully explained to the respondents that they should imagine milk that fulfilled all requirements for being organic except that the cows did not necessarily get out on grass. Hence, instead of being integrated in the organic label the graze attribute in the experiment indicated whether or not the cows had access to free range areas in summertime.

According to the official organic standards, environmentally friendly packaging is not a requirement for a product to be labeled as organic. However, it is now and then debated whether it ought to be part of the organic rules – a debate which has only become more relevant as concerns for global heating have increased. Just prior to when the choice experiment was conducted, a major dairy company in Denmark (Arla) tested an environmentally friendly version of their standard cardboard carton. To make the experiment as real as possible, we used the Arla-version and explained to the respondents that the environmentally friendly carton was produced using less cardboard than the traditional cartons and that the inner layer had a brownish color as it was not bleached. The price-vector consisted of six prices ranging from the lowest prices observed in cheep discounters to prices observed in the most expensive specialty stores.

The design is created using the software Ngene 1.0 optimized with respect to c-efficiency of willingness to pay estimates for all four attributes in a multinomial logit model. Each respondent faced twelve choice situations with two hypothetical types of milk (*Milk A* and *Milk B*) and an opt out (*None of these*). An example of a choice set is given in figure 2.

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[2] DKK 1 corresponds to EUR 0.134 (2010.04.14, www.nationalbanken.dk)

Milk A	Milk B
Organic	Non-organic
Cows get out on grass	Cows are not required to get out on grass
Environmentally friendly carton	Normal carton
15.00 DKK/Liter	5.00 DKK/Liter

What milk do you prefer?

Milk A

Milk B

None of these

Figure 2. Example of a choice set.

The main objective of the study in terms of identifying whether respondents tend to agree with the separability structure ProductFirst or OrganicFirst was addressed by the following question concerning categorization strategy.

Imagine yourself in front of a big basket with organic and non-organic fruits and vegetables. Imagine that you are asked to divide up the food products into two smaller baskets. Please, tick the option most in line with your perception of the products?

1. *I would put all the organic products (both fruits and vegetables) in one basket and all the non-organic products (both fruits and vegetables) in the other basket*
2. *I would put all the fruits (both organic and non-organic) in one basket and all the vegetables (both organic and non-organic) in the other basket*

Two attitudinal characteristics of consumers, related to the perceived benefits of organic products were included in the analysis. The first attitudinal characteristics was whether consumers believed that organic foods contained more positive attributes than guaranteed by the organic standards. Secondly, level of knowledge was included by asking respondents to state if they were aware of the following health claim emphasizing the effect of cows' access to pasture on the milk:

When dairy cows get out and feed on fresh grass, their milk contains more vitamins and healthy fatty acids.

Also, three key socio-demographic characteristics were included (gender, education, and urbanization).

Finally, in order to be able to relate mode of categorization as well as perceived benefits of organic products to shopping behavior, the consumers were asked to state their propensity to buy organic. More specifically, this issue was addressed by the following question:

Think about the last times you bought the following products. How often did you choose the organic version?

In June 2009 the questionnaire was distributed to the panel in Userneeds' online database which consists of 150.000 Danish consumers. The questionnaire was sent out to obtain representativeness according to Statistics Denmark in gender, age (age 20 – 64), and income. In 2009, 83 % of Danish households had access to the internet (Danmarks Statistik, 2009).

5. Methodological framework

In each choice set, consumers can choose between the following three alternatives, $j \in \{MilkA, MilkB, None\}$ representing the possibility to choose either *Milk A*, *Milk B*, or *None of these*. We assume that consumers choose the alternative that maximizes utility. Hence, *Milk A* is chosen by individual *n* if, and only if, this provides the largest utility, $U_{n,MilkA} > U_{nj} \forall j \neq MilkA$. In the econometric analyses, we assume that utility is described as $U_{nj} = V_{nj} + \varepsilon_{nj}$ where V_{nj} is the systematic (observed) part of the utility and ε_{nj} is a random utility component which captures the unobservable part of utility (Train, 2009). We assume that ε_{nj} is independent and identically distributed (i.i.d.) extreme value. The observed part of the utility is assumed to be a linear function of the observed attributes. That is $V_{nj} = \beta_n' x_{nj} + \gamma_n p_j$ where the first term on the right hand side captures a vector of weights, β_n', put on the vector of utilities of the three non-price attributes interacted with observed characteristics of the respondents (socio-demographic as well as attitudinal), x_{nj}. The socio-demographic characteristics include gender, urbanization and education. The attitudinal characteristics include 1) beliefs in attributes beyond what is

promised by the organic standards 2) mode of categorizing organic and conventional products, and 3) level of knowledge regarding the relation between grazing cows and healthy milk. The second term on the right hand side captures the weight, γ_n, put on the price attribute, p_j.

Alternative specific constants, Asc_j are included to capture the preferences for unobserved attributes. To account for taste heterogeneity among the respondents, a mixture of logit models is used and random parameters introduced. Attribute parameters concerning the cows' access to pasture and the milk labeled as organic are assumed to be random. In particular, we assume these parameters to be normally distributed. Hereby, we allow for both negative and positive preferences and means and standard deviations are estimated. The parameters concerning the environmentally friendly carton and the price attribute are assumed to be fixed[3].

In order to allow for stronger correlation between the hypothetical alternatives (*Milk A* and *Milk B*) than between a hypothetical alternative and *None of these*, the term $Milk_j \delta$ is introduced where δ is a normally distributed error component with mean zero, and *Milk_j* is a dummy that takes the value 1 if alternative *j* is one of the hypothetical variants of milk and 0 if *None of these* is chosen.

6. Results

Descriptive statistics

Close to 40% of the contacted respondents completed the questionnaire. Eight respondents chose N*one of these* in each choice set and stated as reason either 1) *It is not up to the consumers to decide how milk should be produced* or 2) *The choice sets did not make sense* or 3) *Other/don't know*. These were removed from the sample because their answers indicated that they did not choose *None of these* for reasons related to the attributes or their levels but for other reasons. Consequently, 900 respondents were used in the estimations. Table 1 provides descriptive statistics of the respondents and compares the attitudinal and socio-demographic profiles of OrganicFirst and ProductFirst consumers.

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[3] Models with lognormal distributed price and normally distributed environmentally friendly carton were tried. The standard deviations were found to be insignificant.

Table 1. Attitudinal and socio-demographic profiles of ProductFirst and OrganicFirst consumers (N=900).

	Believe in extra attributes	Aware of health claim	Female	Live in Copenhagen	Longer advanced education	Total
ProductFirst	*27.92*	*74.34*	*50.54*	28.11	54.15	*58.89*
OrganicFirst	*40.81*	*80.81*	*61.89*	32.97	54.32	*41.11*
Total	33.22	77.00	55.44	30.11	54.22	-

Numbers in *cursive* indicate that difference between percentage consumers choosing ProductFirst and OrganicFirst is significant at 0.05 level.

Table 1 indicates that the respondents were split in two almost equally sized groups according to their choice of separability structure. A little more than half the respondents (59 %) choosing ProductFirst leaving 41 % to conform to OrganicFirst. One third of the respondents stated that organic products to some extent contain extra attributes beyond those promised by the organic standards. The main part of the respondents, 77 %, stated that they were *aware* of the relationship between grazing cows and healthy milk, 18 % were only *Partly aware*, while less than 5 % stated that they were *Not aware* of this relationship or answered *Don't know*. Even acknowledging the bias related to a hesitance to admit lack of knowledge, we still find the high level of stated knowledge in the Danish population surprising. A little more than half of the respondents were female, one third lived in Copenhagen, and one half had completed an advanced education of more than two years.

As it appears, the most profound difference between respondents choosing ProductFirst and OrganicFirst is that there is a significantly stronger belief in positive organic attributes within the group of consumers who supported OrganicFirst (40 %) than within the group of ProductFirst consumers (28 %). Furthermore, respondents aware of the health claim and women were more likely to choose OrganicFirst than those not aware of the health claim and men, respectively. On the other hand, no significant differences with respect to education and living in Copenhagen exist.

In Table 2, stated organic demand is related to categorization strategy. Based on how often the respondents stated to have picked the organic version of five product types (bread, fruits, vegetables, meat, and milk) in the most recent purchases done, three consumer groups are defined: A *conventional* group who almost never buys the organic version of any of the five

products, an *organic* group who almost always buys the organic version of all five products, and a *mixed* group who buys the organic version of some products and the conventional of others.

Table 2: Stated organic consumption of ProductFirst and OrganicFirst consumers.

Consumer group	ProductFirst	OrganicFirst	Total
Conventional	66.84	33.16	21.81
Organic	37.50	62.50	8.14
Mixed	57.90	42.10	70.06
Total	58.19	41.81	100

The mixed group is by far the largest and consists of 70 % of all respondents while there are 22 % conventional consumers and 8 % organic consumers. OrganicFirst seems to be the preferred categorization strategy among the organic consumers while conventional consumers are more likely to consider traditional food attributes as the common food denominator. Interestingly, the probability of supporting OrganicFirst is almost twice as big for consumers with a high stated organic consumption as for consumers with a low stated demand.

In the discrete choice model, the relationships between preferences for specific attributes in milk and mode of categorization as well as the perceived benefits of organic products are modeled in greater detail.

Discrete choice model
The econometric estimation was done using BIOGEME 1.8 (Bierlaire, 2003) using 700 draws. The results are shown in table 3. The first two columns of parameter estimates show the mean and the robust standard error of the mean. The next two columns show, where random parameters are applied, the standard deviation and the robust standard error of this estimate.

Table 3: Results

Variable	Mean		Std. deviation	
	Value	Rob. s.e.	Value	Rob. s.e.
$Asc_{milk\ A}$	11.6***	1.57		
$Asc_{milk\ B}$	11.5***	1.56		
δ_{milk}	0 (fixed)	-	-8.07***	1.43
Environmentally friendly carton	0.142	0.180		
x OrganicFirst	0.141	0.136		
x belief in extra attributes	0.541***	0.140		
x aware of health claim	0.0988	0.144		
x Copenhagener	0.197	0.156		
x long education	0.214	0.125		
x female	0.242	0.133		
Cows get out on grass	0.195	0.247	-2.56***	0.660
x OrganicFirst	0.480**	0.151	0.853	0.837
x belief in extra attributes	1.49***	0.211	-0.332	0.408
x aware of health claim	0.840***	0.190	-0.768	3.90
x Copenhagener	0.726***	0.173	-0.451	0.509
x long education	0.235	0.143	0.557	0.417
x female	0.384**	0.143	0.250	0.637
Organic	-0.565*	0.258	2.03***	0.503
x OrganicFirst	0.751***	0.208	1.40	1.15
x belief in extra attributes	2.79***	0.287	0.861	0.843
x aware of health claim	0.385*	0.182	0.587	0.655
x Copenhagener	0.853***	0.223	0.721	3.01
x long education	0.714***	0.174	-1.57**	0.515
x female	0.250	0.174	1.35*	0.686
Price	-0.676***	0.0761		
ρ^2 (adjusted)	0.246			
Likelihood ratio test	5900.90			

*, **, *** indicate significance at 0.05, 0.01, and 0.001 level, respectively.

Significant δ_{milk} indicates (as expected) the presence of correlation in unobserved attributes between Milk A and Milk B. Besides, the overall impression from the results is that the respondents on average found it very important that the cows are let out on grass. Concerning the milk fulfilling all other criteria for being labeled as organic, the preferences were mixed as some groups regarded this attribute as positive while other groups would like to avoid milk carrying this label. Respondents were on the other hand relatively indifferent towards the environmentally friendly carton. As expected, the sign of the price parameter is negative indicating marginal disutility of higher prices.

Looking at mode of categorization, our results indicate that the way the consumers categorized organic and conventional fruits and vegetables, have a very significant effect on their valuation of the individual attributes. When a respondent chose OrganicFirst, and therefore preferred to place organic fruits and vegetables together rather than dividing them by sort, it significantly increased the marginal utility of the cows' access to pasture and the milk labeled as organic. For neither of these two attributes heterogeneity in preferences was present, which indicates relatively unanimity in preferences. For an environmentally friendly carton, no significant relation between separability structure and marginal utility was found. Overall, the indication of a positive relation between choosing OrganicFirst and having a high organic consumption which appeared in table 2 is therefore supported by the estimation results.

Respondents who ascribed additional positive attributes to organic products, beyond those guaranteed by the rules, had significantly higher marginal utility of all three non-price attributes. An insignificant standard deviation indicates that this group of respondents seemed to agree in the importance of the attributes. This finding confirms other studies which have shown that a positive perception of organics is an important driver for the organic demand – but nevertheless, the clarity of the result is noteworthy.

Furthermore, we identified two distinct groups of consumers based on stated previous knowledge concerning a health claim. We found that respondents who were *aware* of the health claim found it relatively more important that cows were allowed to graze and that the milk was labeled as organic, than respondents stating to be *not aware* of the health claim. Hence, even though consumer preferences were elicited after the health claim had been presented such that all respondents were aware of the health claim at the time preferences were elicited, we still found significant differences in the preferences of those who had been aware of the claim and

those who had not. This result indicates that the respondents did not react on the health claim but mainly stuck to their prior beliefs.

It is noteworthy that while respondents in the reference group were indifferent towards the environmentally friendly carton and the opinions were mixed towards the cows' access to pasture, they considered it as negative that the milk fulfilled all remaining requirements for being labeled as organic. Contrary, respondents holding a longer education or living in Copenhagen appreciated that milk was labeled as organic.

7. Conclusion and discussion

Concerning Hypothesis1, the results indicate that different separability structures do exist when consumers assess organic and conventional food products. The traditional approach used in econometric analysis where products are primarily grouped as fruits, vegetables, etc. and secondarily as organic or non-organic, seems to be the prevalent separability structure (59 % of the consumers adhered to what we have denoted ProductFirst). At the same time, almost half of the respondents (41 %) adhered to the separability structure OrganicFirst.

This result is interesting in itself. However, the real power of the result lies in the conclusions relating to Hypothesis2, namely the clarity with which the categorization is correlated with stated consumer preferences. Indeed, all results point in the direction that those consumers who preferred OrganicFirst had higher organic demand and had great trust in the virtues of organics. First, our findings suggest that consumers with a high organic demand were more likely to follow OrganicFirst. Second, the choice experiment suggested that OrganicFirst consumers had a significantly higher marginal utility for grass-access, an environmentally friendly milk carton and – in particular – for milk being organic. Third, OrganicFirst consumers had a significantly stronger belief in the positive organic attributes than consumers conforming to ProductFirst. Fourth, consumers conforming to OrganicFirst had a slightly higher proportion of members who stated that they knew the health claim concerning milk from cows on grass being healthier.

Of course, the robustness of the results can be questioned because of the rather simple question that was used to categorize consumers as being either ProductFirst or OrganicFirst consumers. However, the clarity with which this categorization could be linked to the propensity to consume organics as well as to consumers' beliefs in additional benefits of organic products suggests that this type of categorization is very promising. Therefore, categorization of

consumers according to the separability structure of their utility functions is certainly worthwhile to pursue in future research for methodological as well as marketing reasons. In particular, identifying other ways to elicit the modes of categorizations and by extending the analysis to include other product categories, spring immediately to mind as obvious ways to further validate the present findings and increase their robustness. On the methodological side, our results suggest that econometric models of consumer choice of food might increase their explanatory power if they allow different consumer groups to have fundamentally different utility functions that reflect how they categorize products. Indeed, if OrganicFirst is the true prevalent separability structure in certain consumers groups, then assuming ProductFirst might bias the results.

Our results might be useful in relation to product innovation. We find that to some consumers, the viability of a new organic product depends mainly on its ability to differentiate itself from other organic products across different product categories. While to other consumers, a new organic product needs to distinguish itself mainly from other products within the same product-category.

This study supports earlier findings indicating that the consumers who believed that organic products and organic production methods were able to provide attributes in excess of what was guaranteed by the organic rules, had a significantly higher marginal utility for organic attributes. Consumers who believe organic products to provide additional attributes constituted around one third of the sample. One of the conditions for maintaining or even increasing the presently high level of organic demand is that organic products meet consumer wishes and expectations. Consequently, a driver based on undocumented beliefs can be vulnerable to stories in the newspapers, research etc. that might either confirm or reject the existence of additional attributes.

When consumers were divided according to whether they had been aware of the health claim or not, there was a significant difference particular in their valuations of grass-access. This result indicates that level of knowledge concerning products and production methods can serve as a tool to distinguish between segments in the population. Possibly, interest and level of knowledge is basically connected so respondents who find it important that cows get out on grass are more likely to seek and absorb other information concerning this issue. Another possible explanation is that the segment of consumers who were aware of the health claim

simply needed a confirmation of the virtues of milk from grazing cows. This could be interpreted as consumers need to be motivated to take new information in and suggests that health claims have to be designed in a more sophisticated way in order to have an effect on food choice of consumers without previous knowledge and interest in e.g. food production and health.

Finally, this study indicates that consumers consider it to be very important that dairy cows are let out on grass compared to the other attributes guaranteed by the organic label and compared to an environmentally friendly milk carton. It is worth to note that certain groups even seemed to avoid milk labeled as organic when cows are not required to get out on grass. The strong preferences for cows' access to pasture may be a result of the health claim saying that milk from grassing cows are relatively healthy, but other explanations may also apply. Currently, cows are guaranteed access to pasture while no rules concerning environmentally friendly cartons exist. Part of the differences in valuation of the attributes may be related to an endowment effect related to the existing standards of organic farming. Such an endowment effect would induce respondents to react more negatively when an attributes is removed from the standards than positively when an attribute is added. If there is a strong endowment effect, careful consideration should be done before diluting/worsening the national organic standards as it may affect consumer demand negatively. However, this particular issue is not addressed here and ought to be investigated further before firm conclusions are made.

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