The Impact of Information on the Willingness-to-Pay for Labeled Organic Food Products

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I. Introduction

There is a large literature describing the factors that affect consumers' demand for organic and sustainably grown food products. Consumers' values such as security (health), hedonism (taste) and universalism (environment and animal wealth), as well as their attitudes such as beliefs about health, taste, and environmental consequences of organic food, and the importance of social and personal norms, are important drivers for organic food consumption. The organic label plays a significant role in shaping consumers' choice for (non)-organic food since it provides consumers with additional information on product characteristics. Thus, labeling instruments are a crucial tool within the agro-food chain to ensure that producers' effort to rely on organic production methods is rewarded by allowing retailers to ask a premium for organic products or by allowing retailers to increase their market share. However, not much research has been done on how consumers' willingness-to-pay for organic labels is actually affected by the information available to consumers about the true impact of organic food production on health, animal welfare, the environment, the development of rural societies and the local economy. This paper investigates to what extent consumers' willingness-to-pay for organic labels depends on the objective information and subjective perception they have about a specific label.

We rely on surveyed data specifically designed to answer this research question and collected through a combination of quota and convenience sampling. A choice experiment is set up in which Flemish[1] consumers are asked to make a choice between two apple varieties with different attributes and one 'opt out' option. One attribute is the price of a kilogram apples of that variety, while other attributes relate to the presence of a label, the taste, form and origin (locally produced or not) of the product. Next, the respondents' knowledge about the impact of organic production methods for consumers' health and the environment is updated. After receiving the updated information, the respondents are confronted with the same choice cards and asked whether they would like to change their previous made choices. This allows us to analyze how the information about the labels which was provided by the interviewer affects consumers' preferences. Initially, we find that Flemish consumers are willing to pay a positive price premium for labeled organic apples (approximately 25%). After the provision of information on the actual environmental and health effects of organic apple production, this price premium becomes even more pronounced and amounts to approximately 42%. Moreover, we are able to illustrate how the willingness-to-pay for labels as well as the impact of objective information and subjective perception about labels differs among consumer groups (e.g. according to membership of nature protection organizations).

II. Background and literature review

In this section we discuss the use of labeling as an environmental policy instrument and look closer into consumer behavior with respect to organic food products. We also describe the attitude of Belgian consumers when it comes to buying organic food

[1] Flanders is one of the three regions in Belgium.

and finally we discuss environmental and health impacts of apple production and apple consumption.

2.1 Labeling and consumer choice

Labeling is one of the instruments used by governments, regulatory bodies and independent organizations to spread information about the environmental characteristics of companies and products. From a policy perspective, one aim of labeling is to educate consumers about the environmental or other impacts of the product's production, use and disposal. Thus, labeling policies may promote environmental objectives by subjecting production site to (voluntary) command and control methods (Teisl et al. 2002).

Labeling is an example of "the ultimate use of the market mechanism" (Clark and Russell 2004) as no one is obliged to act in any particular way and the products themselves may, but need not, be changed. Consumers may choose to change their purchasing behavior. There are at least three possible explanations why some consumers prefer greener products: 1) consumers overestimate the environmental impact of their individual consumption decisions, 2) some consumers receive a 'warm glow', i.e. a positive feeling of doing the right thing, or 3) consumers associate private health effects with certain green products.

Whatever the reason, there is indeed evidence that labeling has actually changed consumers purchasing decisions. For example, Bjorner et al. (2004) found that the Nordic Swan label has had a positive significant effect on the consumers' brand choices for toilet paper and it also appeared that consumers' choice of detergents were affected by information on environmental performance. Teisl et al. (2002) provide market-based evidence that the dolphin-safe label increased the market share of canned tuna. Nimon and Beghin (1999) found a significant and robust price premium for organic cotton up to 33% of the apparel price. Using hedonic value estimates, Estes and Smith (1996) found a price premium of approximately 118% for organic apples (holding other factors constant) paid by a group of consumers in supermarkets in Arizona.

Moreover, there is evidence collected in surveys that consumers would be willing to pay a premium for labeled goods based on their stated preferences. For example, Blend and van Ravenswaay (1999) found that over one-third of surveyed households would be willing to buy eco-labeled apples at a price premium of 0,40$ per pound. Gil et al. (2000) have analyzed consumer willingness to pay for organic food in Spain using the contingent valuation method. They found that consumers concerned with healthy diet and environmental degradation are the most likely to buy organic food and are willing to pay a high premium ranging from 15 to 25% over the price of conventional products. Also, using contingent valuation, Louriero et al. (2001, 2002) find that female respondents with children and strong environmental and food safety concerns are more likely to pay a premium for eco-labeled apples. However, their estimated premium is limited to 5 cents per pound over an initial price of 99 cents.

2.2 Information and valuation

It is well established in the stated-preference literature that the provision of information influences the responses given by survey respondents (Teisl et al. 2002). In essence, the appropriate amount of information should be provided such that respondents have a clear definition of the public good that are valuing. However, labeling instruments

make information disclosure a policy variable. Labeling decreases search costs for information and may signal the importance of environmental information. Thus labeling might affect the implicit weights that consumers assign to each attribute that they consider during purchasing decisions.

2.3 Consumer choice and organic food

Consumers typically consider a variety of factors when purchasing fresh fruits or vegetables. Estes and Smith (1996) mention price, personal disposable income, absolute and relative quality, overall availability of the item, availability of a substitute item, satisfaction obtained from consumption, perceived freshness, personal tastes, appearance of product (firmness, specked, size etc.), health, safety and dietary considerations.

Focusing on organic food products, the concept of 'credence' goods or characteristics becomes important (Dabbert 2006). Consumers cannot directly check whether a product has been produced organically or not. So it has to be made credible for the consumer that the product is actually organic and organic products have to be easily distinguishable from non-organic products. Moreover, when it comes to the environmental impact of organic farmer, the consumer also has to believe that environmental benefits have been realized during production.

However, when it comes to buying organic products, environmental concerns only come in second after health concerns. Consumers react more strongly to private benefits associated with organic food such as health effects, than to external benefits such as environmental effects. Dabbert (2006) concludes that attempts to sell organic products based only on their environmental characteristics are likely to fail, while as a secondary aspect communication about environmental benefits can have a positive effect on sales. Yet, it is not clear whether the belief held by consumers that 'organic is healthier as well as better for the environment' is warranted for all types of organic food products. Thus in our survey we try to disentangle health concerns from environmental ones by explicitly providing - scientifically based - information on the absence of health effects of organic apples compared to conventional apples (Renagold et al. 2001, Briviba et al. 2007, Dangour et al. 2009).

A recent overview of the literature related to the personal determinants and values held by consumers of organic food can be found in Aertsens et al. (2009). Regarding socio-demographic factors the following relations emerge from the literature: a higher proportion of women buy or consume organic food, families with children are more likely to buy organic products, the relation between age and consumption of organic food and between education and consumption of organic food is ambiguous and not always significant.

2.4 Organic food market

Land devoted to organic farming in EU countries has been steadily increasing. The area of land used for organic farming in 2007 is estimated by Eurostat at some 7 million hectares or a share of 4.1% of the total area of land used for agricultural in the EU. This constitutes a growth of 5.6% compared to the previous year. Next we take a closer look at organic farming in Flanders and Belgium. While the total area of organic crop production is slowly increasing in Flanders, it is far below the European average. Organic crop production involves some 0.5% of the total area of land used for

agriculture. Looking at fruit production, the picture is slightly better as some 1 to 2% of land used for fruit production is dedicated to organic fruit production.

Looking at the consumption of organic food products in Belgium, we see a marked increase over time. According to the report by AMS and VLAM (2008), expenses for organic products by Belgian households increased by 25.6% in 2008 compared to 2007 and amount to 304.6 million euro. The group of consumers that purchased at least one organic product in 2008 is equal to 79.2% of the Belgian population, while 15.8% made more than 32 organic purchases per year. In Flanders the number of consumers buying organic products is with 80.9% slightly higher than the national average in 2008. The Belgian buyers of organic food purchase in the first place vegetables (36%), secondly dairy (28%) and thirdly fruit (23%) in 2008. In absolute terms the largest group of organic consumers consists of wealthy families with children and wealthy pensioners. Jointly they are responsible for 40% of organic expenses. Looking at per capita expenses for organic food by the Belgian population in 2008, we see that annually some 4 euro per capita is spend on organic vegetables, 3.8 euro on dairy, 3 euro on fruit and 2.8 euro on bread. Further, it is noteworthy that the price difference between organic and conventional is decreasing, but organic food products still remain some 33% more expensive than conventional products. For apples sold in Belgium, we find that organically produced apples were 50% more expensive than conventional apples in 2008, while the price difference was still 67% in 2006 and 55% in 2007.

2.5 Apple production and apple consumption

Canals et al. (2006) studied the environmental impacts of apple production in New Zealand using life cycle analysis. They distinguish the following impacts: non-renewable energy consumption, photochemical oxidant formation and terrestrial eco-toxicity, climate change, acidification, human toxicity, and nutrification. The analysis was performed for three different orchards and shows that individual growers' techniques have a significant impact on the results, showing 30% to 50% variances in energy consumption and other environmental impacts for the same field operations.

Reganold et al. (2001) report on the sustainability of different apple production systems in Washington State from 1994 to 1999. They investigate organic, conventional and integrated production systems. Organic management systems exclude the use of synthetic pesticides and fertilizers and put an emphasis on building up the soil, rotating crops and naturally controlling pests. Integrated farming systems focus on a reduced use of chemicals by integrating organic and conventional production methods. The results found by Reganold et al. (2001) show that, while all three systems gave similar apple yields, the environmental and economic sustainability of the systems differ considerably. The organic and integrated systems had higher soil quality and potentially lower negative environmental impact than the conventional system. Moreover, the organic system produced sweeter and less tart apples, higher profitability and greater energy efficiency than the other two systems.

III. Method

Since organic labels represent goods and services such as environmental quality that are not traded in markets, non-market valuation techniques must be used to estimate

the value of these labels. A choice experiment[2] is a stated preference technique especially suited to deal with multidimensional choices such as the purchasing decision of organic food. A choice experiment is a survey-based method for modeling preferences for goods, where goods are described in terms of their attributes and the levels that these take (Hanley et al. 2001). People are presented with alternative varieties of a particular good, differentiated by their attributes and levels, and asked to select their most preferred variety. A baseline alternative, corresponding to the status quo or 'do nothing' situation is included in each choice set in order to be able to interpret the results in standard welfare economic terms. By including price or cost as one of the attributes of the good, the willingness-to-pay for each attribute can be indirectly recovered from peoples' choices.
The analysis of respondents' choices is based on random utility theory, which states that a respondent's utility function is comprised of a deterministic, observable component and a random, unobservable component (Christie et al. 2004):

$$U_i = V_i + \varepsilon_i$$

where U_i represents the utility of choosing alternative i, V_i represents the deterministic component and ε_i represents the random error term. The choice set C comprises three alternatives: variety A, variety B and the status quo. Choosing one alternative over the others implies that the utility of the chosen alternative exceeds the utility associated with the other alternatives. Thus the probability of an individual choosing alternative i can be expressed as:

$$\begin{aligned} \Pr\left[i \middle| C\right] &= \Pr\left[U_i > U_j\right], \forall j \neq i \in C \\ &= \Pr\left[V_i + \varepsilon_i > V_j + \varepsilon_j\right] \end{aligned}$$

In the setting of choice experiments with three alternatives in a choice set and using that error terms are independently and identically distributed with an extreme value distribution, the choice probabilities have a convenient closed-form solution known as the conditional logit model. Welfare estimates in the form of compensating surplus can be derived and when the choice set includes a single change in a policy option, the welfare estimate reduces to (Christie et al. 2004):

$$CS = -\frac{1}{\beta_M}\left(V_0 - V_1\right)$$

where β_M is the marginal utility of income (assumed to be equal to the negative of the coefficient of the monetary variable); V_0 and V_1 represent the indirect utility function functions before and after the change under consideration. A further reduction is possible if the marginal value of a chance with a single attribute is estimated. This implicit price can be estimated as a ratio of coefficient:

$$\text{IP} = -\frac{\beta_{attribute}}{\beta_M}$$

This implicit price represents the marginal willingness-to-pay or willingness-to-accept for a change in the attribute in question.

[2] The choice experiment method was initially developed by Louviere and Hensher (1982) and Louviere and Woodworth (1983).

IV. Choice Experiment

First we describe the dataset and then we present the results of the estimated willingness-to-pay for organic apples in Flanders.

4.1 Description of the dataset

In order to investigate consumers' willingness-to-pay for organic food products and the influence of information on this willingness-to-pay, we performed a survey of consumer decisions concerning the purchase of apples in Flanders (Belgium). Each survey contained socio-demographic questions (age, gender, education, income, constitution of household…), questions measuring social and environmental attitudes (member of environmental NGO, volunteer work, importance of particular societal problems, frequency of sport activities, vegetarian life style…) and questions dealing with consumer behavior (responsibility for food purchases, main location for food shopping, important choice characteristics when buying food, …).

Besides these descriptive questions, we also performed a choice experiment. Each respondent faced six different choice sets (for an example, see table 1), each of which consists of two alternative apple varieties (A and B) and the option not to buy any apples[3]. The apple varieties were described using six attributes: taste, size, shape & skin, bio label, origin and price. See table 2 for the different levels that were included for each attribute. Each respondent was asked of which apple variety they would prefer to buy a kilogram.

In order to study the impact of information provision on consumer choices, we asked each respondent to make six choices between two pairs of apple varieties each (+ option not to buy one kg apples) and then we explicitly listed the environmental and health related impact of organically versus conventionally produced apples. Specifically, we provided the respondents with the following information (based on Reganold et al. 2001, Briviba et al. 2007, Dangour et al. 2009): *"Objective scientific studies find that organic apples provide: 12% better soil quality (less flooding with heavy rainfall), 84% less environmental pollution (due to reduced use of hazardous chemicals), need 7% less energy to produce the same amount of apples (better for climate) and that they are not healthier than non-organic apples"*. After this information was provided, we asked the respondents to go over the six choice sets again to see whether they would change the choices they made. If they did not change their preferences, we asked them why this was so. We explicitly distinguish four reasons: 1) the information provided was not new, 2) the respondent did not care about the positive environmental impact of organic labels, 3) the respondent did not trust the information implicit in organic labels, or 4) the respondent believed that the environmental effects are too small to take into account.

The online survey was executed between April and September 2010 and 226 respondents filled out the questionnaire of which 146 respondents filled out the six choice cards twice (thus before and after we provided information about the impact of organic production methods). The remaining 80 respondents made six choices between two pairs of apple varieties each, but did not go over the choice sets a second time because they indicated that they would not change their preferences as a consequence of the information provided.

[3] Choice sets were designed according to Street et al. (2005).

Table 3 gives a description of the socio-economic characteristics of the respondents. The average respondent was 42 years old. 74% was married or cohabitating with a partner. In comparison with the overall population, a disproportionately high share of respondents obtained a higher education degree (bachelor, master or PhD). Not surprisingly, the majority of respondents had a relatively high net household income of more than 3000 euro/month at its disposal. When asked what three social themes the respondents considered important, over 70% selected 'health'. This topic was followed by 'environmental quality', 'pension security' and 'safety on the streets', each selected by approximately 40% of respondents. Moreover, 41% of the respondents considers organic food to be healthier and 51% considers it to be better for the environment than conventional food. Thus we find that two topics closely related to the beliefs people hold about organic labels are indeed very important to respondents. Further, we also asked what aspects determine the respondents' choice when buying fruit and vegetables. Freshness is the single most important factor (87%), second comes taste (62%) and next come seasonality (38%) and price (32%). The relatively limited attention to price in our sample might be explained by the relatively high household income available to the majority of our respondents.

4.2 Baseline estimation results

To estimate the coefficients that maximize the probability of choice, we used a conditional logit model. We assume an indirect utility function where the deterministic component depends on the attribute values of the alternatives. An alternative specific constant (ASC_i) is included in the model to reflect the effect of choosing to buy any apple over not choosing to buy an apple. The coefficients associated with the different attributes are shown in table 4.

Model (1) and (2) estimate the coefficients of the attributes respectively before and after the information regarding the impact of organic farming has been given and this for all 226 respondents (entire sample). Since 80 respondents went only once over the choice cards because they indicated that the provided information did not alter their responses, we proceeded as if they did make the six choices in the second round and provided identical answers as in the first round. In addition in model (3) and (4) we also estimated the coefficients of the attributes respectively before and after the information about the impact of organic farming was provided but retained only these respondents in our sample that effectively went over the choice cards twice (reduced sample).

The results are as expected: consumers dislike sour specked apples of medium size and prefer domestically produced apples above those produced in Spain and Australia. Also, buying apples with an organic label gives an increase in consumer utility. The positive coefficients of the ASC show that consumer derive utility from buying an apple over not buying an apple. The estimation results also illustrate that the provision of information about organic labels increases the utility derived from buying organic apples. Recall that we explicitly mention to our respondents that organic apples have considerable environmental benefits compared to conventional apples, but that there are no scientifically proven health effects. Thus any increase in the WTP (willingness-to-pay) for organic labeled apples reflects a valuation for external effects such as environmental quality improvements and not a valuation for private effects such as health improvements. We find that the coefficient of the organic label attribute significantly

increases when additional information is provided and, in the limited sample, its significance level increases as well. When looking at the entire sample, the WTP for buying one kilogram of apples with an organic label increases from 0.33 € to 0.56 € per kilogram. In the reduced sample, the WTP for organic labels is always lower than in the entire sample, but the increase in WTP for buying one kilogram of apples with an organic labels due the provision of information is even more pronounced (from 0.26 € to 0.60 € per kilogram). This indicates that the respondents that went over the choice cards only once, were respondents that were already aware of the positive effects of organic production systems and were already willing to pay a price premium for it.

4.3 Identification results using interaction terms

So far we have considered a choice model in which only the attributes of the apple variety were taken into account. However, socio-economic factors are also likely to affect consumers' choices and to affect their WTP for organic apples. In order to test these effects, we include several interaction terms of the organic label attribute variable with socio-economic variables. While our results indicate that variables such as age and gender do not affect the WTP for organic apples, we do observe an effect concerning respondents' membership of one or more nature conservation organizations. Non-members are willing to pay a significantly higher amount for organic labels after information on the production method has been provided, while the willingness-to-pay of members was not affected by the information we provided. This result clearly illustrates the important role of information provision on individuals' consumption choices (see table 5).

We also tested the impact of education on the WTP for apples with an organic label (table 6). The estimation results indicate that people with a higher education (professional bachelor, academic master or PhD) are willing to pay a significantly higher price for organically labelled apples than for non-labelled apples, while lower educated people are not willing to pay a higher price for organically produced apples. After information is provided concerning the impact of organic production methods, both higher and lower educated people are willing to pay a higher price for labelled apples. While information provision increases the WTP for organic labels of lower educated people, their overall WTP is still not significantly different from zero. The latter may be due to the limited amount of information that is provided or to the smaller sample size.

V. Conclusion

To investigate how consumers' willingness-to-pay for organic labels depends on the objective information and subjective perception they have about a specific label, we have set up a choice experiment in which Flemish consumers were asked to make a choice between two apple varieties with different taste, shape, price, origin and label. We estimated the respondents' a priori willingness-to-pay for labeled organic apple varieties. For our sample, consumers were willing to pay a price premium of 33 eurocent per kilogram for labeled organic apples compared to non-labeled apples. Next, we updated the respondents' knowledge about the impact of organic production methods for consumers' health and the environment. After receiving the updated information, the respondents were confronted with the same choice cards and asked whether they would like to change their previous made choices. Thus we were able to estimate a significantly

positive effect of information provision on consumers' preferences. For our sample, consumers were willing to pay up to 56 eurocent per kilogram for labeled organic apples after the additional information on positive environmental and neutral health impacts was explicitly provided. Finally, socio-demographic information is collected in order to control for some fixed effects. While our results indicate that variables such as age and gender do not affect the WTP for organic apples, we do observe an effect related to education and respondents' membership of one or more nature conservation organizations.

Our analysis illustrates how the willingness-to-pay for labeled organic products increases by providing consumers with objective information about the impact of organic production systems. In that way, the paper provides useful insights for policy makers concerned with the environment and rural development as well as different actors in the agro-food chain (both producers and retailers) on how information provision can affect their product demand. Using labeling to promote sustainable products might provide a stimulus to develop the supply and demand for these products. However, our results show that this positive effect on the development of a green market can be significantly increased by providing simple, to-the-point and trustworthy information on the environmental implications of the presence of an organic label to consumers.

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Table 1: Example of a choice set

	Apple variety A	Apple variety B	Neither A nor B
Taste	Sweet	Mildly sweet	Neither Apple variety A, nor Apple variety B
Size	Large	Small	
Shape & skin	Round & specked	Irregular & not specked	
Organic label	No	Yes	
Origin	Australia	Belgium	
Price	1,5 euro/kg	2 euro/kg	
	☐	☐	☐

Table 2: Attributes and attribute levels

Attribute	*Attribute levels*
Taste	Sweet; Mildly sweet; Sour
Size	Small; Medium; Large
Shape and skin	Round & not specked; Round & specked; Irregular & not specked
Organic label	With label; Without label
Origin	Belgium (local); Spain; Australia
Price	1 euro/kg; 1.5 euro/kg; 2 euro/kg

Table 3: Descriptive statistics

Number of respondents			226
Average age (years)			42
Female (%)			62
Did or doing voluntary work (%)			47
Higher education – bachelor, master, PhD (%)			78
Member nature protection organisation (%)			19
What social themes do you consider important? (%)			
Health	74	Unemployment	27
Environmental quality	40	Equal opportunities	21
Pension security	40	Tax pressure	13
Safety on street	39	Animal wellbeing	10
Political correctness	28		
What aspects are considered important when buying fruit and vegetables? (%)			
Freshness	87	Country of origin	19
Taste	62	Consumption ease	12
Season	38	Bio/organic	10
Price	32	Variation	8
Health	19	Nutritional value	4
What characteristics do you assign to organic food? (%)			
Healthier	41	Better for the environment	51
Which statements can you subscribe? (%)			
Labels are a marketing tool but do not guarantee sustainable production			36
Only labels certified by governmental/public organisation guarantee sustainable production			32
Private and public labels both guarantee sustainable production			16
None of the above statements is correct			16

Table 3: Descriptive statistics (continued)

Net income (euro/month) (%)			
0-1000	2	3001-4000	28
1001-2000	12	4001plus	23
2001-3000	19	Not specified	15

Table 4: Baseline estimation results

	Full		Reduced	
	(1) Before	(2) After	(3) Before	(4) After
Round specked	-0.430	-0.403	-0.403	-0.414
	(4.72)***	(4.39)***	(3.46)***	(3.50)***
Not round not specked	-0.188	-0.092	-0.186	-0.068
	(1.99)**	(0.98)	(1.53)	(0.56)
Mildly sweet	-0.117	-0.057	-0.185	-0.104
	(1.34)	(0.66)	(1.68)*	(0.94)
Sour	-0.951	-0.932	-1.143	-1.137
	(9.82)***	(9.61)***	(9.04)***	(8.94)***
Spain	-0.483	-0.547	-0.432	-0.529
	(5.48)***	(6.17)***	(3.87)***	(4.67)***
Australia	-0.901	-0.900	-0.925	-0.924
	(9.44)***	(9.40)***	(7.55)***	(7.48)***
Medium size	-0.259	-0.154	-0.245	-0.092
	(2.86)***	(1.69)*	(2.10)**	(0.79)
Large size	-0.250	-0.175	-0.208	-0.080
	(2.59)***	(1.78)*	(1.69)*	(0.63)
Organic label	0.203	0.355	0.179	0.421
	(3.10)***	(5.34)***	(2.16)**	(4.92)***
Price	-0.615	-0.635	-0.685	-0.704
	(6.55)***	(6.75)***	(5.69)***	(5.80)***
ASC1	3.175	3.000	3.318	3.047
	(14.22)***	(13.67)***	(11.47)***	(10.74)***
ASC2	3.151	2.971	3.315	3.030
	(13.85)***	(13.25)***	(11.24)***	(10.45)***
Observations	4083	4083	2628	2628
WTP organic label	0.33	0.56	0.26	0.60
Test H_0: WTP organic label before = WTP organic label after	Prob > chi2 = 0.0205**		Prob > chi2 = 0.0191**	

Table 5: Choice model results using interaction terms

	Full		Reduced	
	(1) Before	(2) After	(3) Before	(4) After
Round specked	-0.431	-0.403	-0.435	-0.393
	(5.00)***	(4.90)***	(4.09)***	(3.95)***
Not round not specked	-0.192	-0.098	-0.251	-0.099
	(2.12)**	(1.09)	(2.17)**	(0.88)
Mildly sweet	-0.120	-0.062	-0.209	-0.115
	(1.35)	(0.72)	(1.94)*	(1.11)
Sour	-0.957	-0.940	-1.226	-1.200
	(6.68)***	(6.72)***	(6.76)***	(6.92)***
Spain	-0.485	-0.550	-0.435	-0.535
	(4.44)***	(4.82)***	(3.38)***	(3.94)***
Australia	-0.906	-0.908	-0.947	-0.956
	(9.12)***	(8.96)***	(7.79)***	(7.72)***
Medium size	-0.261	-0.155	-0.272	-0.103
	(3.05)***	(1.80)*	(2.55)**	(0.97)
Large size	-0.255	-0.180	-0.260	-0.125
	(2.35)**	(1.63)	(2.00)**	(0.94)
Organic label	0.150	0.285	0.156	0.366
	(2.23)**	(3.86)***	(1.79)*	(3.70)***
Price	-0.612	-0.631	-0.714	-0.752
	(5.90)***	(6.29)***	(5.39)***	(5.92)***
Organic label * nature	0.276	0.368	0.297	0.391
protection org	(1.71)*	(2.21)**	(1.45)	(1.83)*
ASC1	3.179	3.006	3.388	3.133
	(11.14)***	(10.86)***	(9.52)***	(9.15)***
ASC2	3.156	2.979	3.361	3.089
	(11.21)***	(10.83)***	(9.53)***	(9.06)***
Observations	4083	4083	2880	2880
WTP Organic label				
Not member nature cons org	0.25	0.45	0.22	0.49
Member nature cons. org	0.43	0.65	0.45	0.76
Test H_0: WTP organic label before = WTP organic label after				
Not member nature cons org	Prob > chi2 = 0.0473**		Prob > chi2 = 0.0440**	
Member nature cons. org	Prob > chi2 = 0.1182		Prob > chi2 = 0.1233	

Table 6: Choice model results using interaction terms with education

	Full		Reduced	
	(1) Before	(2) After	(3) Before	(4) After
Round specked	-0.431	-0.403	-0.436	-0.393
	(5.01)***	(4.92)***	(4.10)***	(3.97)***
Not round not specked	-0.188	-0.092	-0.243	-0.089
	(2.09)**	(1.04)	(2.13)**	(0.80)
Mildly sweet	-0.123	-0.063	-0.209	-0.112
	(1.38)	(0.73)	(1.94)*	(1.08)
Sour	-0.960	-0.940	-1.226	-1.195
	(6.72)***	(6.73)***	(6.79)***	(6.91)***
Spain	-0.482	-0.545	-0.429	-0.529
	(4.39)***	(4.78)***	(3.32)***	(3.88)***
Australia	-0.902	-0.900	-0.939	-0.945
	(9.13)***	(9.01)***	(7.77)***	(7.76)***
Medium size	-0.260	-0.153	-0.271	-0.100
	(3.05)***	(1.80)*	(2.54)**	(0.95)
Large size	-0.258	-0.181	-0.259	-0.121
	(2.37)**	(1.64)	(1.99)**	(0.92)
Organic label	-0.023	0.147	-0.055	0.205
	(0.15)	(0.93)	(0.28)	(0.94)
Price	-0.609	-0.629	-0.715	-0.753
	(5.89)***	(6.29)***	(5.42)***	(5.97)***
Interaction org.label *	0.284	0.262	0.344	0.307
higher education	(1.69)*	(1.48)	(1.53)	(1.28)
ASC1	3.175	2.998	3.384	3.123
	(11.19)***	(10.90)***	(9.59)***	(9.22)***
ASC2	3.151	2.969	3.353	3.075
	(11.26)***	(10.90)***	(9.60)***	(9.13)***
Observations	4083	4083	2880	2880
WTP Organic label				
No higher education:	-0.04	0.23	-0.08	0.27
Higher education:	0.43	0.65	0.40	0.68
Test H_0:WTP Organic label=0				
No higher education:	Prob > chi2 = 0.8778	Prob > chi2 = 0.3520	Prob > chi2 = 0.7840	Prob > chi2 = 0.3433
Higher education:	Prob > chi2 = 0.0007***	Prob > chi2 = 0.0000***	Prob > chi2 = 0.0018***	Prob > chi2 = 0.0000***
Test H_0: WTP organic label before = WTP organic label after				
No higher education	Prob > chi2 = 0.0989*		Prob > chi2 = 0.0958*	
Higher education	Prob > chi2 = 0.0608*		Prob > chi2 = 0.0550*	