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The Organic Food Premium: A Canterbury Tale

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Abstract

The present paper attempts to bring further evidence on the behavioural gap for organic food in Britain. The stated preferences are analysed by contingent valuation, while the revealed preferences are estimated by hedonic pricing. A small but significant gap in the premium for organic food between stated and revealed preferences has been found. This gap may suggest a need for price premium intervention. The estimated price elasticity for organic products is on average above one in absolute value suggesting that a pricing policy could be very effective.

JEL classification: H29, Q18, Q21

Keywords: Contingent Valuation, Hedonic Pricing Method, Convergent Validity, Behavioral Gap, Organic Food, Price Premium

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1 Introduction

The organic food sector is a fast growing sector. According to the Organic Trade Association U.S. sales of organic food and beverages have grown from $1 billion in 1990 to $26.7 billion in 2010. According to FiBL (The Research Institute for Organic Agriculture) in 2010, it represented 13 percent growth over 2009 sales, experiencing the highest growth in sales for organic fruits and vegetables. In Europe the development is similar if not even stronger, particularly in countries like Denmark, Germany, Austria, France, Italy, Sweden, Switzerland, and Norway. The overall growth in Europe from 2005 to 2011 was 77 percent.[1]

Figures from the Soil Association show that the organic market in the *Peoples Republic of China* has quadrupled in the past 5 years, while *Organics Brazil* reported an annual growth of 40% in the Brazilian market. On top of this, market analysts have predicted a 20% yearly increase in organic sales in Asia over the next 3 years. However, in the UK according to the Organic Food & Drink Market Assessment 2012 and 2013, after an initial increase of organic sales of 15 percent in 2006 'over the past few years, the UK organic food and drink market has observed year-on-year decline. Figure 1 shows the decline of the UK organic sales growth as opposed to the EU market over the 2005-2011 period.[2]

Include Figure 1 about here.

Moreover, the IFOAM (International Federation of Organic Agriculture Movements) summary report 2012, asserts that 'the decline in the organic food and drink market has also resulted in a number of organic farmers converting back to conventional methods of farming, causing a decrease in organically-managed land in the UK. In 2011, the area of organically-farmed land in the UK was down by 3% from compared to 2009 and the decline in organic sales was almost 6 percent. Figure 2 shows the growth rate in organic sales in ten countries consisting of 9 European countries and the US over the period 2005-2011.[3] The UK is the only country that has a negative growth. Therefore, there seems to be a high priority in analyzing the organic food market in the UK and finding ways to help this sector to recover.

Include Figure 2 about here.

The main objective of this paper is to ask explicitly UK consumers about their arguments for buying organic products and to determine their willingness to pay for the organic attribute using the contingent valuation method. We have performed our face to face interviews at two consecutive weekends in Canterbury in front of two supermarkets. However, even if people state that they appreciate organic products they might not buy them if they are more expensive than the conventional products. The reasons for this behaviour might be various but the most important seems to be the higher price that consumers have to pay for organic products.

[1] Percentages calculated by the author from the FiBL Organic Key Indicator tables available at:http://www.organic-world.net/fileadmin/documents/statistics/data-tables/world-statistics/TABLE-01-WORLD-key-indicators.xls.

[2] Graph made by the author based on the FiBL data.

[3] Graph made by the author based on the FiBL data.

Other reasons might be the lower variability and availability of organic products. And finally, an important downside of organic products is their less appealing esthetic aspect and their much quicker perishability. The second objective of this paper is to determine the 'true' or revealed preferences of consumers for organic products. How much do consumers really buy organic products? What are they really paying for the organic attribute? This is going to be done employing the hedonic pricing method. It seems to be crucial, whenever survey based methods are used, to validate these results through a revealed preferences method. The validation method used in the present study is the *convergent (or external) validity test* and consists of testing whether there are significant differences between the willingness to pay (WTP) determined using a stated preference method - in our case the contingent valuation method (CVM) - and the WTP obtained through a revealed preferences technique like the Hedonic Pricing Method (HPM). Studies show that in general there is a gap between what consumers state that they want to pay and what they really pay especially with respect to organic products and animal welfare (eg. Harvey & Hubbard, 2013). The third main aim of this project is to determine this gap, to actually quantify it and to identify the main driving forces behind it. To our knowledge, this is the first study that tries to *actually quantify* the gap between stated and revealed WTP for organic food in Britain. Finally, we would like to suggest a policy to narrow this gap. Price elasticities for the organic products will be estimated in order to determine to what extent a change in the price premium would affect the consumption of organic products.

2 Methodology and relevant Literature

The difference or the gap between the stated and revealed preferences is also known under the name 'hypothetical bias' because stated preferences are elicited with the help of a questionnaire that includes a hypothetical scenario and the answers of the consumers are contingent on this hypothetical scenario. Consumers may react differently in a hypothetically constructed situation than in a real situation. It is much easier to say that you want to pay a specific amount than to actually pay it. Therefore, a 'hypothetical bias' derived from the hypothetical nature of the scenario is created. Another name under which the difference between stated and revealed preferences is known is 'social desirability bias' or 'warm glow' because consumers derive utility from giving a social desirable answer. Saying that you like to pay more for organic products because they are more environmental friendly and involve higher animal welfare and support for local production, is socially desirable. Another name under which this gap is known in the literature is the so called 'Citizen-Consumer Duality/Gap' (Harvey & Hubbard, 2013). People might want to act as good citizens and pay a higher price for goods that involve, higher environmental standards, local production or better animal welfare but when acting as consumers their behaviour might not translate in actual purchasing behavior (Toma et al. 2011). However, the most known name is the 'intention/attitude-behavior gap' or short 'behavior gap' because consumers have a positive attitude towards an (organic) product, intend to buy it but then do not behave according to their intention/attitude.

The simplest way to measure it is to look at the ratio between stated and revealed preferences. There is a plethora of studies that look at this ratio for different products using different

methodologies. In a meta-analysis involving 28 valuation studies and yielding 83 observations Murphy et al.(2005) showed that even though it is generally believed that individuals overstate their WTP by a factor of 2-3 this factor is usually less. In their study they found a ratio stated to revealed preferences of 1.35. Carson et al.(1996) in their meta-analysis involving 83 studies and 616 comparisons of contingent valuation to revealed preference estimates found a ratio which is in fact lower than 1 (0.89) implying that stated preferences are actually *lower* than revealed ones. And in their study of behaviour with respect to the Kerbiside recycling scheme in the UK, Davies, Foxall & Pallister (2002) found absolutely no significant relationship between stated preferences and revealed behaviour, concluding that *intention* fails to predict *behaviour*.

Turning now our attention to studies related to organic products we find that there are a multitude of studies that look at the difference between stated and revealed preferences but none that actually tries to *quantify* it. A very often cited study in relation to the behaviour gap related to organic products is by Vermeier & Verbeke (2006), where the authors analyze the attitude of 456 young consumers with respect to organic dairy products in Belgium. They found that social pressure influences intention to buy but low perceived availability of organic products seem to deter these intentions. The study is about the difference between *attitude towards consumption* and *behavioural intentions* but never about *actual* behaviour. Another very interesting study about the behavioural gap related to organic products is by Millock, Wier & Andersen (2004), looking at organic consumption in Denmark. The authors analyze the reasons for buying organic products and found that even though consumer state to buy organic products because of their *non-use* values like environmental friendliness and animal welfare in reality they seem to buy them because of their *use-values* like health and taste. They look at how the various reasons for buying organic impact on the propensity to buy these products and conclude that 'even though households assign highest values to the non-use attributes in survey questions, it is the valued use attributes that makes them buy organic foods.' However, even if the authors seem to have the data about actual consumption behaviour they never try to quantify the difference between stated preferences and actual behaviour. A study related to the behavioural gap with respect to organic products in the UK is by Padel & Foster (2005). The authors differentiate between regular and occasional consumers of organic products and found that their motives for buying or not buying organic products are different. For example, they found that the price and a low food budget is the main impediment against buying organic products mainly for occasional consumers, while for regular consumers rather habit or convenience and lack of information seems to be an obstacle. However, their study is purely qualitative and non-quantitative measures are involved. The strength of the present study is that it has data both for stated and revealed preferences *from the same consumers* and that it actually *quantifies* the difference between these two. Therefore, it brings a significant contribution to the literature and important insights for policy recommendations.

2.1 Contingent Valuation Method (CVM)

The name of the method refers to the fact that the values revealed by respondents are contingent upon the constructed or simulated market presented in the survey. The method was

first introduced by Ciriacy-Wantrup (1947), where he suggested as a way to estimate benefits from public goods that are not valued by the market by simply asking individuals directly how much they would be willing to pay for that benefit through a survey. Since then thousands of studies have used this method in order to evaluate different non-market objectives and goods and even if the choice modeling is now increasing in importance, contingent valuation still remains the dominant method for estimating the stated preferences of consumers.

The contingent valuation method is considered to be especially appropriate when the *non-use* values of a good, such as the existence, the bequest or the option values are high as often is the case with environmental goods. This might be the reason why most applications seem to come from this corner. In the case of organic products the non-use value could also consist additionally to the environmental value (since organic products are produced more environmentally friendly), to support for local producers and a contribution to animal welfare. Millock et al. (2004), explicitly identify and quantify the existence, option, bequest values of organic products and additionally define *altruistic* and *vicarious* non-use values for them.[4] Burton et al. (1999) show hat even the decision to adopt organic techniques in the UK has traditionally involved non-financial 'concerns about the environment and the sustainability of the food system'. Since organic products seem to have so many components of non-use value the contingent valuation method seems to be especially appropriate in the present case.
The basic ideas of willingness to pay (WTP) and the willingness to accept (WTA) lie in the concept of marginal utility derived from consumer choice and the theoretical foundations of the method that have been set by Carson & Hanemann (2005). They will not be repeated here in order to save space. The goal of the CVM is to estimate via questionnaire the WTP and/or the WTA of the consumer, concepts that find their theoretical counterparts in the two so called 'Hicksian measures' one called 'Equivalent Variation' and the other called 'Compensating Variation'.
After eliciting the WTP/WTA for organic products with the help of the questionnaire, usually the trimmed average is calculated by eliminating the top and bottom 5% of the observations (Garrod & Willis 1999). This is necessary since the simple average can severely be affected by outliers.
In a next step the WTP/WTA is usually explained by various socio-economic factors which are assumed to determine it using different functional forms. If we assume a simple linear form for the WTP for example, then:

$$WTP = \beta_0 + \beta_1 Gender + \beta_2 Age + \beta_3 Education + \beta_4 Income + \beta_5 Children + ... \quad (1)$$
$$... + \beta_6 Health + \beta_7 Happiness + \beta_8 Exercise + \beta_9 Nutrition... + \mu$$

where μ is just an error term with the usual properties (zero mean and constant variance).

Various forms can be tried out until the best fit function is found. Because the right hand side variable is truncated at zero and discrete it is important to use an econometric estimation

[4] Altruistic value refers to the utility derived from knowing that other people that value organic can buy it. Vicarious value refers to the utility derived from indirect consumption i.e. reading in the newspaper about local producers, looking at TV programs about organic etc.

method that accounts for this. We used both the Linear and the Poisson regressions and it made a big difference. Much more variables were significant in the Poisson, which assumes that the dependent variable has a Poisson distribution, than in the Linear regression. The Poisson distribution seems to be especially suited here since it is a discrete probability distribution which takes values only above zero which is the case for the WTP variable. We have also done several robustness checks using the Probit and the Negative Binomial regressions and the results were robust.

2.2 Hedonic Pricing Method (HPM)

The description of the HPM follows Rosen (1974) and will only shortly be summarized here. The central idea behind it rests on the hypothesis that goods are valued for their utility generating *attributes* and the observed market price is the sum of implicit prices paid for each quality attribute:

$$P = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + ... \tag{2}$$

where P is the price of the product and X_1, X_2... are various attributes of the product like for example the brand of the product, the quantity of the product, the shop where it has been purchased, or if it is organic or not.
In a competitive market, the marginal implicit price of any of these characteristics (e.g.$\frac{\partial P}{\partial X_i}$) represents a consumers's WTP for a marginal increase in that characteristic. Each consumer chooses a bundle of product characteristics to maximize utility subject to a budget constraint and each producer maximizes profits subject to a cost function. The price function represents optimal behaviour on both sides of the market both of consumers and producers and the equilibrium is at the point of tangency between the value function of the consumer and the offer function of the producer (Rosen 1974). In our case the attribute that we are interested in is 'organic'.
The empirical specification is subject to constant debate since the theory does not prescribe a specific one. In general, it is recommended that the choice should be driven by the data (eg. Costanigro et al. 2007) and various forms can be found in the literature. However, the log-linear and the log-log seem to be the most frequently used. Furthermore, making use of the natural logarithm potentially improves the model of fit considerably and was suggested by Rosen in his original work. Therefore, the following specification is used:

$$Log(P) = \alpha_0 + \sum_{i=1}^{n} \beta_i X_i + u \tag{3}$$

where P is he price of the good, X_1 to X_n are its attributes and u is a random error term with the usual properties. Robustness checks have been done involving the Probit, Poisson and Negative Binomial regressions but in this case the results were very similar to the Log-linear regression. We additionally tested for multicollinearity, which has not been found, and corrected for heterosekdasticity, problems usually encountered in the HPM.

2.3 Convergent or External Validity Test

Given the ongoing debate in the literature about the validity of the results using stated preferences, we need to perform a validity test.[5] The convergent validity test compares CVM responses to behaviour in actual markets. Similarly, to Brookshire et al.(1982) and to Pommerehne (1988) a theoretical model is developed for the comparison of the survey responses to the price premium of organic products in the supermarket. Let F being a variable denoting food consumption and let Z denoting the organic attribute; let X be the consumption of a composite commodity excluding food and C being the price of this composite commodity; let P be the price of food (presumably higher prices will be paid for organic products, so $P'(Z) > 0$); and let Y be the household income.
The consumer maximizes the following utility function:

$$maxU(Z, F, X) \tag{4}$$

subject to the following budget constraint:

$$Y - CX - P(Z, F) = 0 \tag{5}$$

with $U(Z, F, X)$ the consumer utility, an increasing function of food consumption $U_F > 0$ and an increasing function of consumption of the composite good $U_X > 0$. Therefore, $U_{Z,F,X}$ is an increasing quasi-concave function of both food and the composite good.
Solving the first order conditions gives after some transformations:

$$C(U_Z/U_X) = P'(Z) \tag{6}$$

meaning that the marginal rate of substitution between organic food and the consumption good (U_Z/U_X), valued at the cost C of the consumption good X is equal to the marginal costs for the organic good $P'(Z)$. From the second order conditions Brookshire et al. (1982) derive graphically an equilibrium condition that the willingness to pay for organic product should always be below actual premium paid for it:

$$WTP \leq \Delta P'(Z) \tag{7}$$

The only condition being that the price gradient $P(Z, F)$ must lie 'below' the relevant indifference curve (Brookshire et al. (1982) p. 167). The equivalent logic behind the graphical argument is that the answers from the surveys should provide information on the WTP for an organic product, holding constant the initial utility level of each individual. Equation (7) provides the theoretical background for a comparison of the CVM with the HPM and is a test for the convergent validity of both measures. However, it has to be remembered, that in most valuation studies that employ both revealed and stated preferences the WTP is larger than actual payments meaning that this condition is not fulfilled.

3 Data and Questionnaire Design

The first step in eliciting the WTP or the WTA with the help of a questionnaire is to set up a hypothetical scenario intended to give the respondent a very clear picture of the good

[5] See for example the debates in the *Journal of Economic Perspectives* from 1994 and 2012.

being valued and the situation in which it shall be valued. We defined the organic products according to the definition given by the Soil Association in the UK and have constructed a hypothetical scenario in which the price for organic products has been decreased gradually up to the level of the average comparable conventional product.[6] The chosen payment and bid vehicle is hence, the price premium paid for the organic products calculated as the difference between the price of the specific organic product and the average price paid in the shop for a comparable conventional product. The chosen bid vehicle has a plausible connection with the organic good that is being valued following the best practice recommendations of NOAA. We followed the NOAA best practice recommendation also by performing *face-to-face interviews* which was neither cheap nor easy especially given the cold season but we do think that we got a better understanding of the reaction of people to organic by directly talking to them. After setting up a first version of the questionnaire it was discussed in a *focus group* designed to provide insights into the respondent's likely understanding of the goods or issue being investigated. The focus group consisted of 6 specialists at the University of Kent that usually consume organic products and have had experience with questionnaire design. The focus group provided valuable information in the framing and designing of the questionnaire survey. The next important step was to pretest the questionnaire in a *pilot study*. The pilot study was similar to the present study except that it referred to just one product namely coffee and the attribute analyzed was fair trade and not organic. The *face validity* of the questionnaire for the pilot was additionally assessed by a specialist at the University of Kent experienced in questionnaire design. The pilot study used more than 100 observations and was published as a master dissertation at the University of Kent (Benjamin, 2013).

The next and most important step was obtaining the responses and eliciting the WTP. We have performed the survey on two consecutive weekends before Christmas 2013, in front of three supermarkets in Canterbury: Marks & Spencer, Tesco and Waitrose. Even though we would have liked to have had a balanced sample between the three supermarkets, unfortunately only about 20 consumers at Tesco were willing to answer our questionnaire. We could not use the questionnaires from M&S because of missing data and therefore, the majority of our consumers come from Waitrose.[7] At Waitrose both managers and the consumers were much friendlier and much more willing to answer our questions. We have used as a reward for filling in questionnaires an organic chocolate bought in the shop. In the end we obtained 117 questionnaires from which 104 were used in the analysis after trimming. First, we asked the consumers if they want to pay a premium for organic products. If they answered 'yes' we started to elicit the size of the premium they wanted to pay. We constructed premium-intervals and increased them up to the point where consumers said 'no'. If the consumers answered from the beginning that they did not want to pay a premium we reduced gradually the premium up to the point where it was zero and the price of organic products was equal to the one of comparable conventional products. About 70% of the consumers stated that they were willing to pay an organic premium. However, from the ones that stated that they did not wanted to pay an organic premium, 5 did actually by organic products on the day that we had

[6]See Appendix for the questionnaire.

[7]We had also interviewed around 100 consumers at Sainsbury's, another major supermarket in Canterbury/UK, however the questionnaires, sent via Royal Mail to the University got lost.

interviewed them.[8] As results will reveal, even though 70% of the consumers sated that they want to pay an organic premium, only 40% actually bought organic products on the day we interviewed them. It could be that the organic premium is larger than what they are ready to pay, or, more probable that they didn't buy the desired organic products on that specific day.

The questionnaire consists of 4 major parts. The first and most demanding part was eliciting the revealed preferences. Consumers that agreed to participate in the survey had to show us their bags and/or trolleys with their purchases and every single food item that they bought was noted down together with the brand, quantity, price and organic attribute using their supermarket till receipts if necessary. Even though this was a tedious task we think that the effort was worth it because this is what makes the data set unique. In this way we have a very exact documentation of what consumers bought and paid and can compare it to what they claimed that they wanted to pay. Once all the questionnaires had been completed, further information relating to the characteristics of the product purchased by the respondent was obtained from the online grocery websites.

The second major part consisted of questions related to stated preferences and WTP for organic products. Additionally to the questions about the WTP we had a set of questions aimed at eliciting the stated elasticity of spending for organic products. We asked the consumers, if the price-premium for organic products would decrease by a specific percentage interval how much more would they spend per week for organic products. Then we gradually decreased this price-premium until it was zero and the price for organic products equaled the one of comparable conventional ones. More than half of the consumers stated that they would increase their spending for organic products by 30% and more if the price of organic products would equal the one of conventional products. The question arose why consumers would not buy only organic if the price would be equal to the conventional one. There are several potential answers for this, like the lack of availability, quicker perishability and aesthetic aspect of organic products, that will be discussed in the results section.

The third part of the questionnaire contained questions about personal attitudes towards organic products. In this section we tried to find out the reasons for buying or not buying organic products. For this we have consulted several previous studies on attitudes towards organic products and discussed with colleagues from the marketing department that seem to have analyzed these issues much more extensively before. The advantage of our data set is that we can analyze how the given reasons impact both on *stated* WTP and on *actual* consumption behaviour and compare the results.

The last part of the questionnaire aimed at eliciting socioeconomic information related to the consumers. Additionally, to the typical questions about gender, age, income and education, social status, children and household members that have been found to impact significantly on organic consumption, we also asked questions about the self assessed health and happiness of the consumers. We wanted to find out if organic consumption is related in any way with these

[8] In the fair trade pilot study, frequently we have had the situation where the consumers bought fair trade coffee and actually did not know that it was fair trade. Another possibility is that consumers bought the organic product because no other comparable conventional product was available.

two variables. We were also able to control for the (stated) weekly exercise of the consumer and the stated number of daily consumed fruits and vegetables as a measure for individual lifestyle effects. Of course that the analysis that we can perform on this front with the existing data is very preliminary but we obtained some interesting insights that may help future work.

4 Empirical Results

Descriptive statistics regarding consumers and the organic products they have purchased can be found in Table 1 and Table 2. Our typical consumer seems to be a married mature woman with college education living together with her partner in the household with an average net monthly income of 2049.51 British Pounds which is about the average income in the UK. She eats on average 2-3 fruits and vegetables per day, is exercising on average between 1/2 and 1 hour per week and considers herself to be quite healthy and happy. Typically, if there are any children they have left home. Even though we do not claim representativeness we can observe from comparison with the last column in Table 1 that the characteristics of the sample of respondents used in this study match up relatively well with that of the UK as a whole, except that the sample consists of a larger share of women than is present in the UK population and of only primary grocery shoppers as typically is the case in studies about food consumption (Brooks & Lusk 2010).

Include Table 1 abut here.

On average the consumers who bought organic products bought around 2 (at most 10) organic items. The most bought organic products were milk, bananas, carrots and apples. This confirms the results obtained in the literature according to which the most bought organic product also in the UK is produce (eg. Fearne 2008, Padel & Foster 2005). These products are also the least expensive organic products. Potatoes would be cheaper than apples, however, consumers do not seem to care about organic potatoes. They seem to care much more about organic carrots maybe because they eat it raw in salads or because they use it for baby food. However, these products are not the ones with the lowest premium. The premium for organic products can indeed be negative because organic products can get cheaper than conventional ones when there are special offers. Also, before expiry, the prices of organic products are reduced and they can become significantly cheaper than the conventional ones. However, our consumers do not seem to want to buy mainly these products with negative premium. Maybe because they do not realize that they are cheaper or maybe they do not care for products that are going to expire soon. Unfortunately, we could not determine the least bought organic products because we had too many products that have been bought only once. Nevertheless, we could determine the products with the highest premium and with the exception of the bananas they are meat products. Bananas might sound surprising given the fact that it is one of the most bought organic product but the premium is high not because organic bananas are expensive but because conventional bananas are among the cheapest soft fruits costing half as much as for example apples. Both chicken and beef (as categories) have premiums equal or larger than 100%. Table 3, tries to shed further light upon the spending of the consumers on different product categories. We can observe that the largest percentage of organic products

bought per category is Milk/Dairy. The number of organic products as a percentage of total organic products is also highest for this category. The next category with the largest spending as a percentage of total spending is meat although the percentage of products is after cereals the lowest. This means that organic meat products are very expensive. Organic produce has a lower percentage of total spending per category but more than twice as much products bought. It can be of course, that produce is smaller and cheaper than meat. However, even though produce is also obtained individually, most consumers buy it per kg. Organic cereals are low in percentage of spending per category but there are also few products bought. Turning now back to Table 2, it can be observed that the most expensive organic products seem to be beef and chicken. Indeed, meat seems to be not only the most expensive organic product but also the least bought. On average consumers spend about 26% of their total spending on organic products. This is a number that surely can be increased.

Include Table 2 about here.

Include Table 3 about here.

Table 4, shows a first comparison between the average premium paid by the consumers as compared with their stated average WTP.

Include Table 4 about here.

As we can see, even though people state that they would be willing to pay on average a premium for organic products of about 13% in reality they pay on average just 9%. This implies a gap between the stated and revealed preferences of about 4% and this gap is statistically significant. The ratio between stated and revealed preferences is 1.42 comes close to 1.35 from Murphy at al. (2005). Therefore, we can indeed say that 'people do not put their money where their mouths are'.
However, if we look at the correlation between stated and revealed preferences we find that it is about 0.6 and highly significant. This means that in general people that say that they are willing to pay a higher premium for organic also pay a higher one. They may not pay as much as they state they would but the ones who say that they want to pay more, also pay more. Therefore, despite of a small significant gap between stated and revealed preferences, the behaviour of the consumers seems to be consistent.[9]

4.1 HPM Results and Convergent Validity Test

Table 5, presents the results of the hedonic price regression described in equation 2. The dependent variable is the price for the specific products and the explanatory variables contain various attributes of the product like the shop where the product had been bought (Tesco or Waitrose), the brand of the product (shop own brand or not), the organic attribute and the

[9] A similar result was obtained by Brooks & Lusk (2010) analyzing the stated and revealed preferences for cloned milk in the US. They found that even if the hypothesis of equal SP and RP parameters could be rejected the correlation between the two is positive and significant which shows that SP and RP choices are 'clearly related'.

quantity bought. Each of these attributes determine the price that the consumers pay for the specific products. For example, the consumers may be ready to pay a higher price, just to be able to shop the product in the same shop where they buy also the other products. Of course, the variable that we are most interested in, is the organic dummy called 'Organic'.

Include Table 5 about here.

It can be observed that when we control for specific product attributes the organic coefficient is positive and significant and it takes values identical or slightly larger than the average WTP of 13%. This means that we pass the convergent validity test condition (7) namely, that the WTP has to be lower or equal to the hedonic pricing gradient. Our stated WTP was on average 13.08 and the hedonic price gradient takes values between 13% and 14%. This means that - according to the test developed by Brookshire et al. (1985) - 'the empirical results provide evidence towards the validity of the survey methods'.
From the same table we can observe that it is cheaper to buy at Tesco's as opposed to the more luxury supermarket chain Waitrose and indeed, buying the shop own brand is cheaper. Since the price cannot be negative we have tried also two other specifications that take only positive values, namely the Poisson and the Negative Binomial regression. The results were robust.[10]

4.2 CVM Results - Explaining the WTP

As mentioned in section 2.1.4 after estimating the average willingness to pay in a second step this is usually explained with the help of various consumer specific characteristics. Additionally, to the classical sociodemographic characteristics like gender, marital status, income, age, education, number of children and household members, we were able to consider also a set of life style related variables like the number of fruits and vegetables, exercise, health and happiness. Results are presented in Table 6.

Include Table 6 around here.

Since the WTP is not only truncated at zero but also discrete we have tried various specifications additional to OLS. The best results have been obtained with the Poisson regression which assumes the response variable Y has a Poisson distribution. Additionally, the Negative Binomial and the Tobit regression have been employed. Both of them yielded similar results to the Poisson but the Poisson results were the best. This is why they are presented together with the OLS results for comparison. As opposed to the hedonic price regression much more variables were significant using the Poisson regression than using OLS.
The WTP seems to rise with the average premium paid confirming that people that are willing to pay a higher price (premium) also pay one. The WTP for organic is positively and significantly correlated with the quantity of organic bought which seems quite intuitive. However, the larger the total quantity of food bought, the lower the WTP for organic. The coefficient of total quantity bought is negative and highly significant. The more people buy, the less they seem to be willing to pay an organic premium, maybe because it gets more expensive in total. As opposed to other organic studies, which found that women behaved differently

[10]Multicollinearity was not present and we corrected for heteroscedasticity using robust standard errors.

to men with respect to organic consumption and even sometimes run separate regressions for women and men, we did not find that gender has a significant impact on the WTP. Age has surprisingly a significantly negative impact on the WTP for organic products. Usually, older people are more willing and have more means to pay for organic products. Given the result for age, the result for education is not surprising. If there are younger people who state that they are willing to pay a premium it may be that they haven't reached their highest level of education yet. The number of children impacts significantly negative on the WTP for organic products which is surprising since usually people want their children to have a healthy diet and this much more than for themselves. However, at the same time, people with many children may lack the means to buy organic products. Tiffin & Arnoult (2010), found for example that 'the presence of children in a household has a negative impact on dietary quality', which seems to be reflected also in our results. People with higher income state that they are willing to pay a higher premium for organic food and both health and happiness have a positive impact on the stated WTP. People that are feeling more healthy and happy seem also to have a higher WTP for organic products. But will they also buy more organic products?

The beauty of the present data set, is that we now can analyze how the observed socioeconomic characteristics impact on *actual* organic spending. We sum up the total spending for organic products of each consumer and analyze how the variables analyzed before impact on revealed organic spending. Results are presented in Table 7. In the interest of brevity only the results from the Poisson regression will be reported.

Include Table 7 about here.

The results show that even though the average premium and the organic quantity bought still correlate significantly positive with organic spending as should be, the total quantity spent does not correlate significantly with organic spending anymore. In reality, people who buy larger quantities do not seem to spend significantly less on organic. Age is now positively correlated with organic spending as expected. Even if rather younger people are more enthusiastic about organic food and have a higher WTP, it seems that rather older people buy it. However, it seems that not highly educated people with large incomes are the ones that spend more on organic products but rather consumers from the lower income class and education level. The number of children does not impact significantly on organic spending, nor do health or happiness. However, the stated number of fruits and vegetables consumed per day, does correlate positively with the spending on organic products. Probably, at least part of the fruits and vegetables consumed are organic.

4.3 Reasons for buying or not buying organic products

Part three of the questionnaire dealt with personal attitudes towards organic products. In this part people were asked their reasons for buying or not buying organic. The 'catalogue of reasons' was constructed based upon an extensive literature review and discussions with experts from the marketing department. In terms of question type and structure, the questionnaire comprised Likert-scales types of questions with 5 options ranging from 'Strongly Disagree' to 'Strongly Agree', for the reasons for/pro buying organic and from 'Not a problem at all' to 'A major obstacle to purchasing organic products', for the reasons against/contra buying organic.

The reasons pro buying organic contained both the typical *use-value* reasons like health, better taste, freshness, safety and the typical *non-use* value reasons like environment, animal welfare and support of local production. We introduced also a reason about 'habit formation' in the form 'I have bought organic previously and was satisfied with it' because we believe that habit is a main driver for consumption behaviour. The reasons against buying organic are also 'the usual suspects' found in the literature namely, high price, limited range available, perishability (variable 'Con Last'), poor esthetic appearance (variable 'ConLooks'), difficult to identify as organic (variable 'Con Difficult to know'), difficult to find on the shelf (variable 'Con Difficult to find'), poor advertising and other. We introduced also here a question about habit but this time formulated against organic as, 'I have always bought conventional products and it is hard to change the habit of doing this'. Even though much more pro and contra reasons could be envisaged we have deleted them partly in order to make the questionnaire operable. The results are presented in Figure 3 and 4.

Include Figure 3 about here.

As we can see from Figure 3 consumers state that their main reasons for buying organic are *non-use* reasons like environment and animal welfare. Habit formation seems also to play a major role. Only in third place comes a *use-value* reason like health. Support of local production takes the next place and only then follow the other 'classical' *use-value* reasons like better taste, safety and freshness. According to their stated reasons *non-use values* seem to be the driving force for buying organic. But are these the 'true' reasons?

However, let's analyze the stated reasons *against* buying organic first. Figure 4 indicates that the price is the largest barrier against buying organic products. The variable 'ConPrice' has both the largest average value and the largest modal value. The next largest impediment against buying organic is stated to be the lack of availability. Indeed, in most supermarkets one finds a multitude of varieties for each product while the organic products come mainly in one or two variants if at all. Therefore, this may be considered a legitimate reason against buying organic even if the price of organic products should be equal to the one of conventional ones. As a next barrier against buying organic products, 'poor advertising' is stated. Indeed both in the public media and in the shops, organic products are poorly advertised if at all. Probably, because advertising is expensive and often small organic producers cannot afford it. Nevertheless, consumers feel that organic products should be better advertised. Another reason found to be important against buying organic products is the perishability (variable 'ConLast'). This is understandable. Consumers do not like to have in their refrigerator products that expire soon. However, if the products shall be perservative-free, they will have a sooner expiry date. But even if the consumer would understand that the advantages of buying organic products outweigh their disadvantages it is still not clear that they would buy them due to the higher price. The next stated reason against buying organic is the organic label and the mistrust in it. Consumers feel that it is difficult to recognize organic products and to trust the organic label. Maybe a larger, better visible label or more advertising for the organic labels would be helpful. Or maybe a separate shelf for organic products, as often can be found in other European countries, may help. Surprisingly, consumers do not recognize their habit for buying specific conventional products as a main barrier against buying organic

as they do not consider that organic products look poorer than their conventional counterparts.

Include Figure 4 about here.

In a next step we can use again the advantages of the present data set in order to combine stated with revealed preferences and analyze how the mentioned reasons pro and cons buying organic impact on *actual* organic consumption. The results are presented in Table 8. Since the dependent variable - organic spending - is continues but truncated at zero, we present directly the results of the Poisson regressions which are the best. Table 8 shows that from the reasons for buying organic the only one that impacts positively and significantly on organic spending are 'Health' and 'Taste', with 'Health' being stronger significant than 'Taste'. 'Environment' and 'Animal Welfare' do not seem to have a significant impact on organic spending. It seems therefore, that even if consumers claim that they buy organic products because of their *non-use* values, the true reasons for buying them are purely *use-values* like better health and better taste. Similar to the results obtained in the literature, we found that even if people acting as good citizens state that they are concerned with the environment and animal welfare, and this is why they buy products that ensure these two, when they behave as consumers and are in front of the shelf they decide to buy a product for purely 'egoistic reasons' like better health and better taste (Millock et al. 2005).[11] However, when we turn now to the reasons against buying organic and how they impact on *actual* organic spending, we can observe that the same reasons stated as citizens apply also as consumers. The price was the main stated reason against buying organic and it is also impacting negatively and significantly on organic spending. Another reason that impacts significantly negative on organic spending is, as in the case of stated preferences, the low availability or limited range of organic products. The next significantly negative impact on organic consumption is the poor advertising of organic products followed by their high perishability. Therefore, in the case of reasons against buying organic consumers seem to agree both as citizens and as consumers that the price together with the limited range, followed by a poor advertising and a high perishability are the main barriers. Their behaviour with respect to the reasons against buying organic products seems to be much more consistent. Therefore, these reasons seem to deserve special political attention. We believe that if organic products were cheaper, the demand for them may increase significantly without needing necessarily much advertising and the supply may regulate itself leading to a larger variation in organic products and a better logistic through the supermarket chains. The issue of perishability remains, however, if the premium is zero we believe that consumers may counterbalance this negative aspect with the positive ones of better health and better taste.

Include Table 8 about here.

[11] A disclaimer has to be made here for vegetarians or people eating low quantities of meat. They may value organic products for their animal welfare attribute, nevertheless, this may not be reflected in their organic spending. Ideally, we would run the regressions per product category. It may well be that the reasons for buying or not buying organic products differ strongly with the product category. Unfortunately, we have too few observations for some product categories.

4.4 Elasticity Results

The 'stated' elasticity was determined via the questionnaire by asking consumers the following question(s): 'If the price of organic products decreased by 10% (10-20%, 20-30%,> 30%) how much more would you spend on organic products per week? The options were also given in percentages and therefore, we could easily calculate the elasticity of organic spending for each consumer as the ratio between the two. Then we calculated the average per consumer and for all consumers and obtained an average absolute value of 1.34 meaning that the demand for organic products is *elastic* and that a decrease in price by 10% would lead to an increase in weekly spending for organic products of 13.4%. Therefore, if the price of organic products would decrease, the demand would increase by more than the price decreases and total sales revenues for the supermarket would increase. This does't mean of course that profits from organic products need to increase as well because the costs might exceed the revenues but it means that a price reduction for the consumer would lead to a disproportionate increase in consumption. If this price reduction could be at least partly financed through a *pro-rata consumption subsidy* as suggested by Harvey & Hubbard (2013) for products involving higher animal welfare, then the supermarkets could even gain from the price reduction. Other potential advantages and disadvantages of such a consumption subsidy will be discussed later.

We also asked a question of the type: 'How much more would you expect to spend per week for organic products if the prices of the organic products were the same as the one of similar conventional products?' to which 50% of the consumers answered 30% or more which was the highest category. On average consumers stated that they would spend 22.9% more for organic products per week if the price would decrease to the one of conventional products.

We have also tried to estimate the *actual* price elasticity of demand using the actual prices and actual quantities for the organic products purchased. We tried first to estimate a double-log demand function of the following form (following Frisch, 1959):

$$lnq_i = ln\alpha + \beta_1 lnX_i + \beta_2 lnp_i + \mu_1 = \alpha_0 + \beta_1 lnX_i + \beta_2 lnp_i + \mu_1 \tag{8}$$

where lnq_i is the quantity purchased in gram, lnX is the log of the household consumption expenditure (as a proxy for income), lnp is the log of the price of the good and μ is an error term. The estimated coefficients β_1 and β_2 are the partial expenditure and price elasticities of demand, respectively. We have estimated equation (8) using various socioeconomic controls in order to calculate the price elasticity of demand at the average point. We did obtain a value of -1.89 which is close to the 'stated elasticity' but results have to be interpreted with care. First, the 'stated elasticity' is a price elasticity of spending while the 'revealed elasticity' is a price elasticity of demand. Secondly, the Double-Log estimation of demand gives only a very rough indication of the marginal effect of a price change on the quantity consumed. Due to this and other shortcomings, we additionally estimated an Almost Ideal Demand System (AIDS) a la Deaton & Muellbauer (1980) which has become common practice for such estimations. In the AIDS model, the demand equations for n goods can be expressed as a system of expenditure shares equations:

$$w_i = \alpha_i + \beta_i log(Y/P) + \sum_j \gamma_{ij} logP_j + \eta_i \tag{9}$$

where $i, j = 1, 2, ...n$, w_i is the expenditure share of good i, P_j is the price of good j, Y is total expenditure, and P is an aggregate price index of the form:

$$logP = \sum_j w_j logP_j. \tag{10}$$

The slope coefficients of the model β_i and γ_{ij} are the expenditure and price effects on demand for the n goods. Consumer theory requires the demand system to satisfy the restrictions of homogeneity, adding up, symmetry and negativity. These restrictions can be easily imposed on the AIDS model. Homogeneity is satisfied when $\sum_j \gamma_{ij} = 0$, symmetry when $\gamma_{ij} = \gamma_{ji}$ and given the two, the adding condition requires only that $\sum_i \alpha_i = 1$ and $\sum_j \beta_i = 0$. The negativity conditions in AIDS cannot be imposed by simple parametric restrictions; but they are likely to be satisfied automatically by any data set generated by utility maximizing behaviour. We have aggregated our data in four food categories: milk/dairy, produce, meat and cereals (for organic and conventional) and ran the 'quaids' command in Stata as suggested by Poi (2012). The elasticities were sensitive to the choice of the α_i parameter but as suggested by Poi (2012) and others we have tried different values slightly less than the lowest value of total expenditures and obtained similar results. The average expenditure elasticities for organic products were above one with the highest expenditure elasticity for organic meat while for conventional products the average elasticity was below one with the highest elasticity for conventional produce. This may suggest that when prices of organic products increase, consumers may switch to conventional products while when the prices of conventional products decrease they have no other products to substitute with and therefore, their reaction is less elastic (except for produce that they may decide to buy less).[12] However, since the data is hugely noisy and we have a relatively small sample it is hard to draw strong conclusions. Future work, involving a higher number of observation may allow for stronger results. Thirdly, we do not have a variation in the prices of the same good. We just have data from two days and therefore, even if the price of the same good may have varied during this period due to special offers or reductions due to expiry date, the expected price variations were only minimal. Other shortcomings could be mentioned here, however the present data set has also its advantages among which the fact that we do not use *implicit* prices derived from expenditures divided by quantities but *actual* market prices, has to be emphasized here. The results point in the direction that the 'stated' and the 'revealed' elasticities for organic products are similar and both above one in absolute value suggesting an *elastic* response to a price reduction of the demand/spending of organic products and a potential strong effect of price policies.

[12]The same pattern was obtained when using weighted average prices. The weights were calculated based on the mean prices per category in the shop and not the average prices paid by the consumer since, especially for organic products consumers might have chosen the cheapest organic products.

5 Discussion, Policy Implications and Future Perspective

We can conclude that even though people *state* that they are willing to pay a premium for organic products of 13% on average, in reality they *reveal* to pay just 9% and the gap of about 4% between stated and revealed preferences is statistically significant. However, the correlation between stated and revealed preferences is positive and significant meaning that people who state that they are willing to pay a higher premium actually also pay a higher premium for organic food. Moreover, the *convergent validity test* is passed meaning that sated and revealed preferences are consistent and that the empirical results provide evidence towards the validity of the survey methods.

One of the main reasons for *not* buying organic products has been found to be the price. Especially, the price for organic meat seems to be too high for the consumers since only about 3% of the meat products bought are organic and the premium for organic meat is among the highest. This, correlated with a price elasticity of spending larger than one in absolute value suggests that a decrease in the price for organic products could lead to an increase in organic sales revenues. Fifty percent of the consumers stated that they would spend 30% and more on organic products if their price would be equal to the one of conventional products. At the same time consumer seem to agree that more advertising and a larger variety of organic products would help.

One potential implication of the present study is that together with or instead of subsidies for producers, a more effective policy may be to subsidize the consumption (as suggested by Harvey & Hubbard 2013 for products involving higher animal welfare). Our paper seems to suggest the efficacy of such a subsidy based on the following reasons: a significant behavioural gap between stated and revealed preferences for organic products and an elasticity above one. Consumers would react *elastic* to a price reduction and the consumption of organic products would increase disproportionately. The advantages of such a subsidy would be that it would encourage retailers to seek suppliers as they would only receive the subsidy if they would ensure their suppliers continued to supply them and to improve supply logistics. The consumption subsidy would be easy to implement to any organic label that complies with the established standards and would therefore, be competitive because it would apply to any organic product independently of its origin. But maybe the most important advantage would be that it would allow people to buy organic independently of their income and would therefore not be discriminating against the less well off. The biggest drawbacks being however, that it crowds out what some consumers might have spend anyway on organic and that it might create unfair competition to other products with similar positive attributes like 'Freedom Foods', 'Free Range' or 'Fair Trade'. Harvey & Hubbard (2013) suggest therefore, that if the consumption subsidy would be only time limited the advantages would outweigh the disadvantages.

Future work might consider 'choice modeling' potentially with consequential purchasing as a superior but also more challenging econometric approach and/or the relatively newly developed

but growing in importance 'life-satisfaction approach'. The approach has many advantages one of them being that it avoids the problems with the construction of the hypothetical scenario in the questionnaire and potential biases related to it (Welsch, 2009). Another strength is that it captures the monetization of virtually all effects that organic food may have on individual well-being (health, psychological, material etc.) independent of whether the individuals are consciously aware of them or not. This is important, since the relationship between health and organic products has not been empirically proven yet. The approach has its drawbacks as well but could be important at least as a complementary, robustness check of the results. Another way to compare hypothetical with real behaviour would be to use an Information Display Matrix (IDM) and Sequence Analysis (Langen, Klink and Hartmann 2013 or Cltekin et al. 2010). A joint estimation of both the stated and the revealed preferences, similarly to Adamovicz et al.(1997), or more recently Brooks & Lusk (2010) may result in a more efficient estimation and more robust results.[13] Finally, as always in empirical work, more data is better. In our case it could enable us to perform analysis per shop, per gender, per product category, per season and per buyers/non-buyers, to estimate the elasticity with a larger number of observations which may bring stronger results and important additional insight in organic consumption behaviour in the UK. Finally, a crosscountry comparison and gaining experience from best practice countries like Belgium, Denmark, Germany and Austria may be an additional help in finding ways to help the UK organic sector to recover.[14]

[13]See Whitehead et al. (2008) for a comprehensive assessment of the joint SP/RP estimation literature.
[14]However, such studies would also require significant more financing.

Figure 1: Organic Sales, total [Millions Euro]

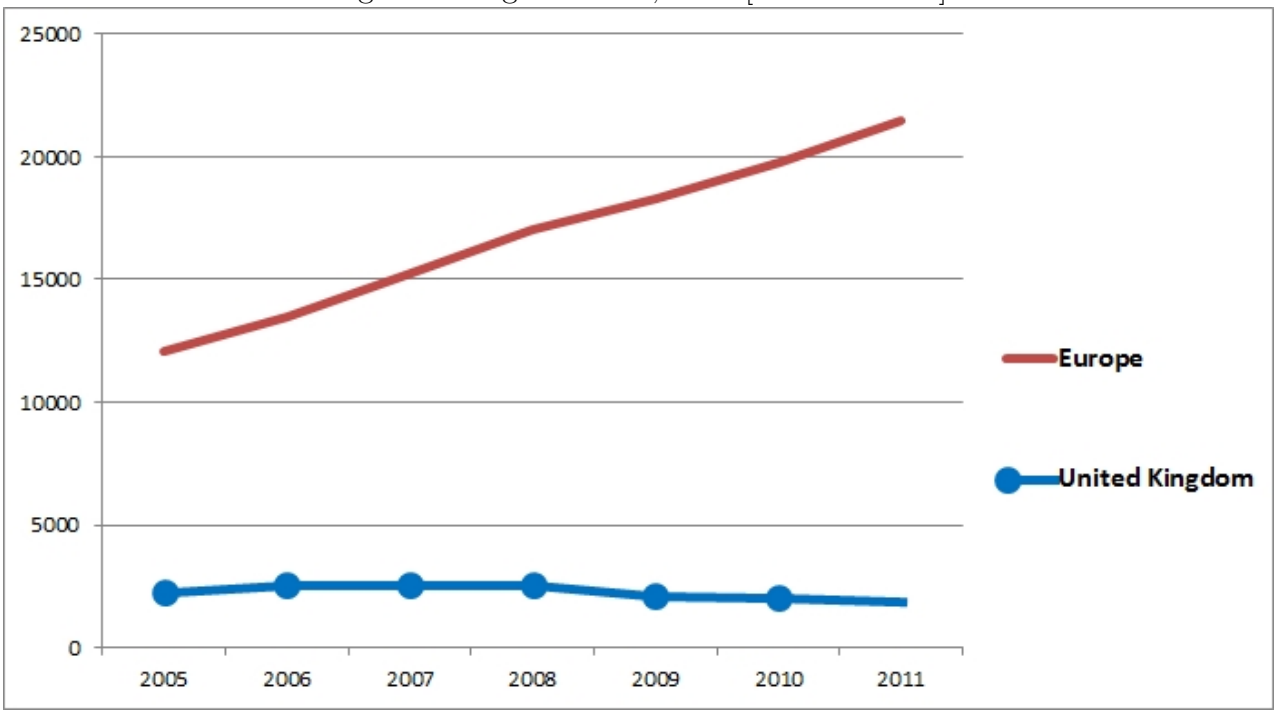

Figure 2: Growth of Organic Food Sales 2005-2011 (percentages)

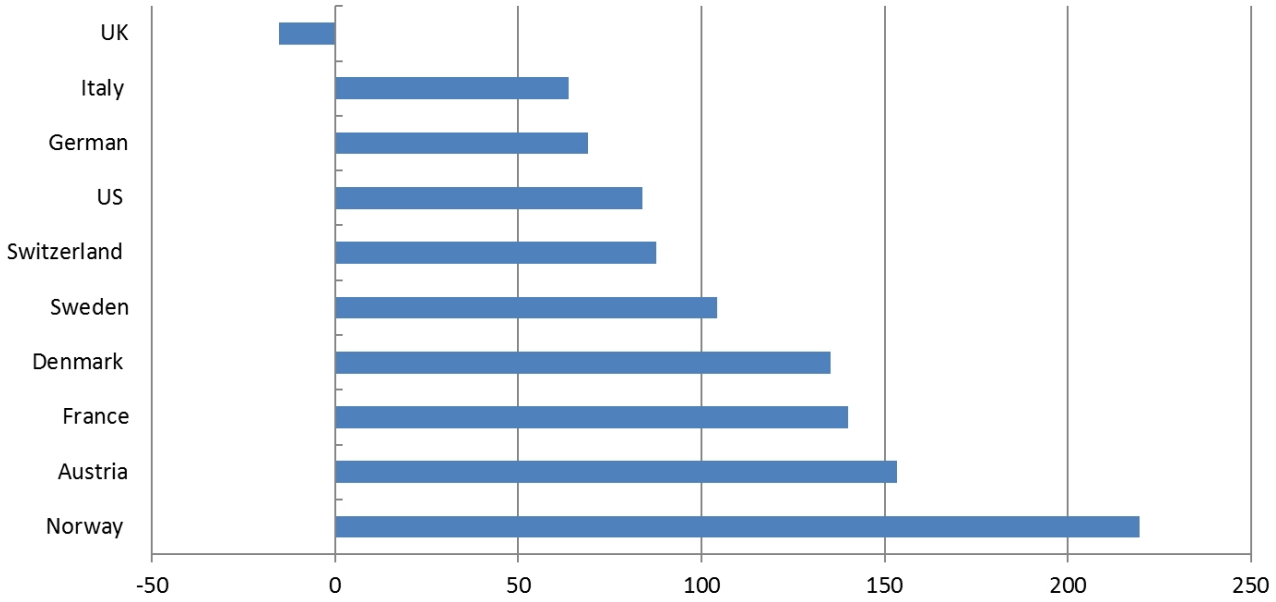

Table 1: *Descriptive Statistics Consumers*

Variable	Mean	Mode	Median	Annotation	UK Stat*
Gender	0.64	1(women)		64% Women	51% women
Age	46	50	50		40-49 highest%
Net Inc/month	2049.51	1500	1500		2208.33 (mean)
Household Memb.	2.76	2	2	Max>4, Min=1	2.3 (mode 2)
Child < 18 at home	0.44	0	0	Max>4	2 in general
Education	3.28	4	4	Categ 3= College Categ 4= Diploma Categ 5= Univ.	35% higher degree
Marital Status	0.63	1	1	63% Married	67% of families married
Fruits and Veg.	2-3/day	≥ 5	4		4 average UK**
Exercise	1/2-1 h/week	2-3h/week	1-2h/week		43% < 2 h/week
Healthy	4.1	4	4	Categ 4= Good	68.3% mostly-completely satisf.
Happy	4.3	5	4	Categ 4=Satisfied	77% med-high (rank 7 out of 10)

*Office for National Statistics, 2011 Census,
Personal Well-being in the UK, 2012/13
** UCL Study

Table 2: *Descriptive Statistics Organic Products Consumed*

Nr of Org Prod bought per Person*	Av=2.29	Max=10	Min=1
(*among the ones who bought)			
Most bought Organic Products	Milk	Bananas	Carrots & Apples
	50%	20%	12% each
Least expensive Organic Products	Milk	Bananas	Carrots & Potatoes
Organic Products with *lowest* Premium	Yoghurt	Muesli	Bacon
	(-37%)	(-35%)	(-33%)
Organic Products with *highest* Premium	Bananas	Chicken	Beef
	(140%)	(138%)	(100%)
Most expensive Organic Products	Beef	Chicken	Raspberries
Total Organic Spending (TOS) per person (Pounds)	Av=3.84	Min=0	Max=100
TOS as % of Income	Av=0.34	Min=0	Max=5.14
TOS as % of Total Spending	Av=26	Min=0	Max=100

Table 3: *Organic Spending per Product Category*

Category	% of the nr of Org Prod bought/Category	% of Spending on Organic Products/Categ
Milk/Dairy	10	44.96
Produce	6.7	30.22
Meat	2.8	32
Cereals	1.9	8.87

Table 4: *Comparison of Average Premium Paid with Average WTP*

	Premium Paid	**WTP**
Average	9.19	13.08
Gap	-3.88 **	Ratio SP/RP=1.42
	(0.03)	
Pearson Correlation	0.59 ***	
	(< 0.001)	
Standard Deviation	18.93	21.07
Maximum	100.81	100
Minimum	-24.69	0
Mode	0	15
Zero Bids	59 (56%)	31 (30 %)
Observations (truncated at 5%)	104	104

Table 5: *Hedonic Price Regression. Dependent Variable: LogPrice (OLS) or Price*

Model	OLS (robust StdErrors)			Poisson			Negative Binomial		
Variable	Coeff	StdE	T-Value	Coeff	StdE	Z-Value	Coeff	StdE	Z-Value
Constant	0.72***	0.1	5.62	0.93***	0.13	7.24	0.93***	0.14	6.41
Quantity	0.00	0.00	1.16	0.00	0.00	0.54	0.00	0.00	0.55
Organic	0.13*	0.08	1.64	0.14*	0.09	1.64	0.14*	0.09	1.56
Brand (shop own)	-0.14*	0.08	-1.69	-0.07	0.09	-0.81	-0.07	0.1	-0.74
Shop Dummy (Tesco)	-0.29***	0.10	-2.81	-0.32***	0.1	-3.08	-0.32***	0.12	-2.73
Adj R^2	0.06			Pseudo R^2:	0.02		Pseudo R^2:	0.02	
Observations	379			379			379		

Table 6: *WTP Regression. Dependent Variable: Stated WTP*

Model (WTP)	OLS (robust StdErrors)			Poisson		
Variable	Coeff	StdE	T-Value	Coeff	StdE	Z-Value
Constant	10.25	15.05	0.68	1.48***	0.31	4.80
Av Premium Paid	0.53***	0.18	2.96	0.03***	0.00	21.64
Quantity Organic	0.003	0.001	1.90	0.000***	0.000	13.04
Quantity Total	-0.001**	0.000	-1.75	-0.000***	0.000	-7.72
Gender (Woman=1)	1.26	3.21	0.39	-0.04	0.08	-0.52
Age	-2.39	1.18	-1.34	-0.15***	0.04	-3.79
Education	-1.67	1.30	-1.28	-0.18***	0.03	-6.29
Children	-1.21	2.18	-0.55	-0.12***	0.06	-2.06
Income	1.13	1.14	0.99	0.14***	0.03	4.75
Married	-0.69	3.92	-0.18	0.11	0.09	1.25
Fruits and Vegs	-1.22	1.91	-0.63	-0.00	0.03	-0.14
Exercise	0.39	1.16	0.33	-0.23	0.03	-0.95
Health	0.42	2.37	0.18	0.09**	0.05	1.94
Happy	0.42	2.37	0.75	0.22***	0.05	4.10
(Tesco)						
Adj R^2	0.49			Pseudo R^2:	0.49	
Observations	91			91		

Table 7: *Org. Spending Regression. Dependent Variable: revealed Organic Spending*

Variable	Coeff	StdE	Z-Value
Constant	-0.74	1.36	-0.55
Av Premium Paid	0.27***	0.00	6.29
Quantity Organic	0.003***	0.000	11.07
Quantity Total	-0.000	0.000	-0.62
Gender (Woman=1)	0.11	0.29	0.39
Age	0.47***	0.11	4.34
Education	-0.22**	0.10	-2.11
Children	0.05	0.21	-0.55
Income	-0.95***	0.11	-8.50
Married	0.08	0.27	0.31
Fruits and Vegs	0.42***	0.09	4.70
Exercise	0.06	0.08	0.80
Health	0.12	0.13	0.93
Happy	-0.10	0.17	-0.55
Pseudo R^2	0.71		
Observations	91		

Figure 3: Stated reasons **for** buying organic products

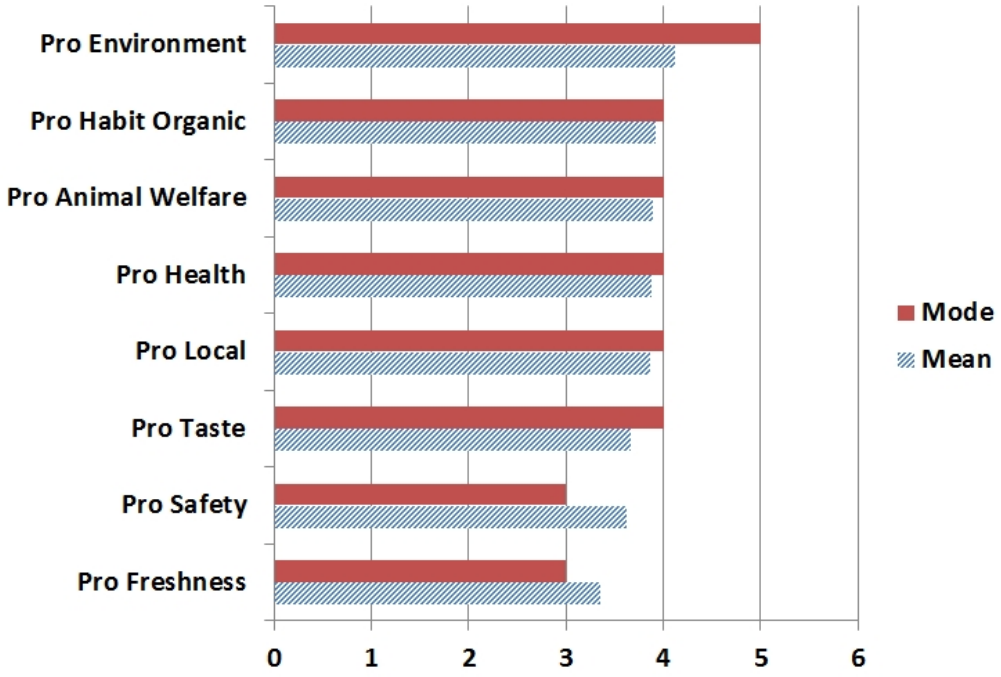

Figure 4: Stated reasons **against** buying organic products

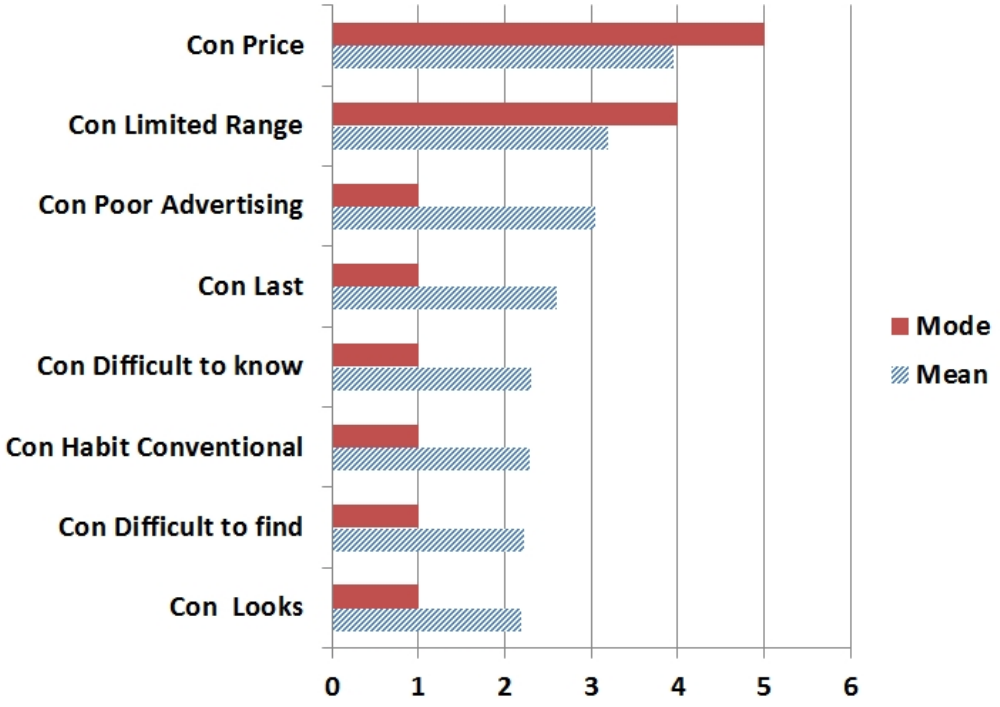

Table 8: *'Revealed' reasons **pro/contra** buying organic. Dep. Var.: Organic Spending*

Variable	Coeff	StdE	Z-Value
Constant	-3.11**	1.32	-2.35
Health	1.54***	0.15	10.21
Taste	0.21**	0.99	2.10
Environment	0.23	0.19	1.26
Animal Welfare	-0.16	0.14	-1.14
Freshness	-0.75***	0.10	-7.85
Local Support	-0.18*	0.09	-1.93
Safety	-0.54**	0.11	-4.88
Habit	-0.32**	0.12	-2.56
Price	-0.23***	0.08	-2.73
Limited Range	-0.36***	0.09	-3.96
Poor Advertisement	-0.18***	0.06	-2.88
Perishability	-0.20***	0.07	-2.96
Difficult to know	0.35***	0.08	4.57
Habit Conventional	0.27***	0.08	3.58
Difficult to find	0.47***	0.06	7.58
Poor Looks	0.05	0.07	0.76
Pseudo R^2	0.54		
Observations	86		

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Organic purchasing behaviour survey

This questionnaire is part of a research project concerned with the market for organic products. The questionnaire should take no more than 10 minutes to complete. Your answers will be treated as strictly confidential and will be used for research and educational purposes only.

Organic products are in general valued for the following attributes: better taste, food safety, health, freshness, environment preservation, animal welfare, local production.

The present study tries to elicit your opinion on organic products found in the UK supermarkets. It tries to find out your opinion on the quality and availability of the organic products in the UK supermarkets and the price that you would like to pay for these organic products. More precisely the main aim of this study is trying to find out what would induce you to buy more organic products. How much should organic products cost, so that you buy more?

Among all participants, a prize of £100 (gift vouchers for the respective supermarket) will be drawn and send to the winner, if you agree to give us your email address or number to let you know.

Please note that this survey is completely anonymous and confidential. However, if you desire a copy of the final study, please provide an email address at which it can be send to you.

Your participation is greatly appreciated!

If you have any questions about our research on this area please contact:

Adelina Gschwandtenr: Email: A.Gschwandtner@kent.ac.uk

Tel: 01227823874

Part 1 Questions about Purchasing Behaviour and Product Characteristics

1 (i) Did you bought any of the four products today?

Milk/Diary ☐ **Bananas** ☐ **Carrots** ☐ **Meat** ☐

1(ii) Please describe the following product characteristics:

	Price	Quantity	Brand	Expiry date	Shop	Organic	UK Origin
Milk/Dairy							
Bananas							
Carrots							
Meat							

Part 2 Questions about willingness to pay

2(i) Are you willing to pay an 'organic premium' for organic products? The 'organic premium' is the price for organic products above the price of conventional products.

Yes ☐ No ☐

2(ii). If you are willing to pay an 'organic premium' how large would this be?

Less than 5%	Between 5-10%	Between 10-20%	Between 20 and 30%	More than 30%
☐	☐	☐	☐	☐

2(iii). If you are not willing to pay an 'organic premium' how should the price of the organic products be in comparison with the one of conventional products?

Equal to the one of the conventional similar products ☐	5% lower ☐	5-10% lower ☐	10-20% lower ☐	20-30% lower ☐	More than 30% lower ☐

2(iv). If the price of the organic products shall be equal to the one of the conventional similar products or even lower, would you then buy the organic products?

Yes ☐ No ☐

2(v) How much would you expect to spend *more* per week for organic products if the price of the organic products shall be equal to the one of the conventional similar products or even lower?

Less than 5% ☐	5 – 10% ☐	10 – 20% ☐	20 – 30% ☐	more 30% ☐

2(vi) If the price of organic product shall decrease by 1-5% how much more would you spend for organic products per week?

Less than 5% ☐	5 – 10% ☐	10 – 20% ☐	20 – 30% ☐	more 30% ☐

2(vii) If the price of organic product shall decrease by 5-10% how much more would you spend for organic products per week?

Less than 5% ☐	5 – 10% ☐	10 – 20% ☐	20 – 30% ☐	more 30% ☐

2(viii) If the price of organic product shall decrease by 10-20% how much more would you spend for organic products per week?

Less than 5% ☐	5 – 10% ☐	10 – 20% ☐	20 – 30% ☐	more 30% ☐

2(ix) If the price of organic product shall decrease by 20-30% how much more would you spend for organic products per week?

Less than 5% ☐	5 – 10% ☐	10 – 20% ☐	20 – 30% ☐	more 30% ☐

2(x) If the price of organic product shall decrease by more than 30% how much more would you spend for organic products per week?

Less than 5% ☐	5 – 10% ☐	10 – 20% ☐	20 – 30% ☐	more 30% ☐

Part three – Personal attitudes towards organic products

3(i). Please indicate the extent to which you agree/disagree with the following statements.

The reason I buy organic products is to....	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
i) Because organic is more healthy					
ii) Because organic products taste better					
iii) Support of local organic producers.					
iv) Because organic is more environmental friendly.					
v) Because of food safety					
vi) Because organic producers care more about animal welfare					
vii) Because organic products more fresh					

3(ii). Please indicate the extent to which the following problems prevent you from purchasing (more) organic products.

	Not a problem at all for me	Not a problem	Not sure it is a problem or not	A minor obstacle to purchasing organic products	A major obstacle to purchasing organic products
i) Higher prices than conventional products.					
ii) It is difficult to know which organic products are available.					
iii) There is limited range (variety)					
iv) Organic information is difficult to understand.					
v) Organic products are of poor quality compared to conventional products.					
vi) Conventional food products taste better than organic products (lack of taste premium for organic).					
vii) Conventional food products look better (have a more consistent appearance)					
viii) Conventional food products last longer					
ix) I have always bought conventional products and it is hard to change the habit of doing this.					
x) I find it difficult to find the products in the shelf.					
xi) Organic products are not sufficiently advertised while conventional products are much better advertised.					

xii) Since organic products are seasonal, I cannot find them all the time of the year. I want to be able to eat strawberries in winter.					

Part four – Personal information

4(i). Gender **Male** ☐ **Female** ☐

4(ii). Age group

Under 20	21-30	31-40	41-50	51-60	61-70	Over 71
☐	☐	☐	☐	☐	☐	☐

4(iii). How many children under the age of 18 years do you have living with you?

4(iv). Which of the following qualifications do you have?

O levels ☐	A levels ☐	Technical/Trade certificate ☐	Diploma ☐	University Degree ☐

4(v). Please state the occupation of the highest income earner in the household

4(vi). How many people live in your household?

1 Person ☐	2 Persons ☐	Three Persons ☐	Four Persons ☐	More ☐

4(vii). Regarding your monthly income, which of the following would you select (in Pounds)?

Under 500	501-1000	1001-1500	1501-2000	2001-3000	3001-4000	4001-5000	5001 or more
☐	☐	☐	☐	☐	☐	☐	☐

4(viii) Marital Status : Married (or cohabitating) ☐ **Single** ☐

4(ix) Are you ordering an organic bag/box on weekly basis?

Yes ☐ No ☐

4(x). If you order an organic bag/box what kind of organic box is it?

Veggie box ☐	Fruit bag/box ☐	Fruit and Veggie Box ☐	Veggie and Meat ☐	Meat Box ☐

4(xi). If you order an organic box within what range is the price of it (in British Pounds)?

Less than 4 ☐	Between 4-6 ☐	Between 6-12 ☐	Between 12-24 ☐	Equal or more than 24 ☐

4(xii) How many fruits and vegetables they eat per day?

None ☐	1 ☐	2 ☐	3 ☐	4 ☐	5 or more ☐

4(xiii) How much exercise/sports (even a quick walk) do you do per week?

None ☐	less than 30 minutes ☐	between 1/2 and 1 hour ☐	1-2 hours ☐	2-3 hours ☐	4 hours or more ☐

4(xiv) How is your health in general given your age?

Very bad ☐	Bad ☐	Fair ☐	Good ☐	Very good ☐

4(xv) All things considered, how satisfied are you with your life as a whole these days?

Very Satisfied ☐	Satisfied ☐	OK ☐	Not too dissatisfied ☐	Dissatisfied ☐	Very dissatisfied ☐