



Green market expansion by reducing information asymmetries: Evidence for labeled organic food products

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ARTICLE INFO

Article history:

Received 12 September 2011

Received in revised form 16 January 2013

Accepted 31 January 2013

Available online 15 March 2013

Keywords:

Organic food labels

Willingness-to-pay

Choice experiment

Information asymmetries

ABSTRACT

We investigate how the provision of objective information about the environmental and health impact of organic labels by policy makers can influence the willingness-to-pay of consumers for labeled organic apples in Flanders (Belgium). Using a stated choice experiment, we initially find that Flemish consumers are willing to pay a positive price premium of some 33 eurocent per kilogram for labeled organic apples. After the provision of information on the actual environmental and health effects of organic apple production, this price premium becomes even more pronounced and increases to 57 eurocent per kilogram. Using a conditional logit model with covariates and a mixed logit model, we find evidence of preference heterogeneity. Also, the effect of information provision is more pronounced for certain groups of consumers such as non-vegetarians, infrequent buyers of organic products and members of a nature protection organization. As such, this paper illustrates that there is a role for policy makers and CSR producers in providing more accurate and reliable information about socially responsible production processes. Moreover, it is important to take the observed preference heterogeneity into account and tailor policies to specific consumer groups.

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Introduction

Several studies show that consumers are increasingly interested in products produced in a social-, environmental- and health-friendly way (Doane, 2001). Despite the growing interest, market shares of products produced in a socially responsible way remains low. Information asymmetries between consumers and sellers are thought to be the main cause of this gap between consumer behavior and consumer preferences. Labels have the potential to reduce this information asymmetry, but only if they are credible and imply a significant impact of changing production processes towards more sustainable methods. Organic labels play a significant role by providing consumers with additional information on product characteristics so as to shape consumers' choice for (non)-organic food. 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 them to increase their market share. We know that consumers' demand for organic and sustainably grown food products is affected by various factors. 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 (Aertsens et al., 2009). However, not much research has been done on how policy makers can affect consumers' willingness-to-pay for organic labels by making information about the true impact of organic food production on health, the environment, the development of rural societies and the local economy available to consumers. 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. 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 they are valuing. However, labeling products makes 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.

In order to explicitly disentangle the effects of separate product characteristics, we rely on surveyed data specifically designed to answer this research question and collected through a combination

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of quota and convenience sampling. A choice experiment is set up in which Flemish¹ 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 previously made choices. This allows us to analyze how information provision about labels affects consumers' preferences. Initially, we find that Flemish consumers are willing to pay a positive price premium for labeled organic apples (approximately 25% of the price of conventional apples). 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).

Thus our analysis contributes to a better understanding of the role information provision can play in expanding the market for organic food products. Information distributed to consumers through labeling can help in reducing the market barrier caused by information asymmetries (see, e.g., Wier and Calverley, 2002 or Makatouni, 2002). In our case study, more knowledgeable consumers – those with a higher education or members of environmental organizations – have a higher initial valuation of labeled organic apples and show a significantly lower response to information provision than less knowledgeable consumers. These results show that information matters and can be used to increase the willingness-to-pay for labeled organic food products. Following the concept of demand-pull or consumer driven market development, increased demand will then lead to increased supply and thus a larger market of organic food products.

In the next section we look at consumer preferences concerning food purchases focusing specifically on organic food products. In *Organic food market* we describe the supply and demand side of the Flemish organic fruit and vegetable market in more detail. The formal model used to estimate consumer willingness-to-pay for organic apples is presented in *Method*. In *Choice experiment*, we describe the design of the choice experiment and the respondents, while the results are presented and discussed in *Empirical results*. In *Conclusion* we conclude.

Consumer preferences

In this section we discuss the use of labeling as an environmental policy instrument and look closer into consumer behavior concerning organic food products. We also describe consumers' preferences when it comes to buying organic food and the possible influence of information on these preferences.

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 inform consumers about the environmental or other impacts of the product's production, use and disposal. Thus, labeling policies may pro-

mote environmental objectives by subjecting production sites 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.

Recent research (see, among others, D'Souza et al., 2007) also indicated that different types of labels have a different impact on the demand side for socially responsible products including eco-labeled products. Labels differ in their level of commitment in environmental-friendly production processes that are guaranteed. Credence attributes are supplied by the producers and consumers will only be willing to provide a price premium if they receive a truthful signal about attributes. Therefore the willingness-to-pay for organic labeled products – and hence also the supply of such products – will depend on the institutions that are designed to cope with the information asymmetries. These institutions include certification by independent agents (Bottega and de Freitas, 2009); the information provided by activists such as NGOs (Feddersen and Gilligan, 2001) or by direct (advertisement) or indirect communication by producers and information provided to consumers/citizens by the media (Dyck and Zingales, 2002). By studying the market of Corporate Social Responsibility (CSR) in experimental settings using different signaling methods (third party certification, unsubstantiated claims and brands), it became clear that market efficiency can be reached when CSR labels are certified by a third independent party rather than by brands or unsubstantiated claims (Cason and Gangadharan, 2002; Etilé and Teyssier, 2011).

Whatever the reason and the type of label, there is evidence that labeling has actually changed consumers' decisions. For example, Bjorner et al. (2004) found that the Nordic Swan label 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, *ceteris paribus*, paid by consumers in supermarkets in Arizona. While these studies rely on real observed behavior, i.e. revealed preferences, they generally do not allow to distinguish the effect of each separate product characteristic on consumer behavior. The variety of products available to consumers often show correlated characteristics, e.g. a higher price is often asked for organic food products or organic food products are esthetically less perfect. Thus several combinations of product characteristics are not available to consumers. Since the limited set of available product varieties (i.e. bundles of product characteristics) influences their purchasing behavior, it is difficult to estimate the willingness-to-pay for each separate product characteristic. For this reason, researchers employ stated preference methods using hypothetical product varieties presented in surveys.

The evidence collected in previously executed surveys also shows that consumers would pay a premium for labeled goods. 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 consumers' willingness-to-pay for organic

¹ Flanders is one of the three regions in Belgium.

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