Conformity and the Demand for Environmental Goods

Fredrik Carlsson · Jorge H. García · Åsa Löfgren

Accepted: 1 June 2010 / Published online: 19 June 2010
© Springer Science+Business Media B.V. 2010

Abstract The existing literature on eco-labeling and green consumerism has been framed within a classical market context where price and quality are the drivers of consumer choice. However, it seems possible that consumers are also concerned about the choices made by other consumers. In fact, it is unclear that people’s consumption decisions are made independently of social context. For instance, under the desire to conform to certain social norms—or in the presence of status concerns—some individuals may be willing to pay a higher price premium for green products the more widespread green consumerism is in society. We test this hypothesis using a choice experiment where the respondents were asked to choose among coffee products varying with respect to their share of ecological beans, share of fair trade beans, and price. Three treatments were used, differing only in the information given about the choices made by other consumers. We find different responses to the treatments across individuals and we can only confirm our hypothesis of conformity for women, although men appear to have stronger preferences for ecological coffee than women have.

Keywords Conformity · Choice experiments · Environmental goods

JEL Classification C90 · D12
1 Introduction

It is a well-established fact that many people are concerned with the environment when making consumption decisions (Carlsson et al. 2007; Bjorner et al. 2004; Teisl et al. 2002), although the degree of concern differs among individuals, goods, and environmental problems. There are many reasons why people have environmentally friendly preferences, ranging from purely self-interest motives such as health risk avoidance to ethical and altruistic concerns about biodiversity, climate, or animal welfare. The demand for environmentally friendly consumer goods has increased, in some instances rather dramatically, over the last 15 years. The market response to this has been an increased supply of environmentally friendly goods and the emergence of various eco-labeling (Sterner 2003). Some of these schemes have been evaluated (e.g. Huang 1996; Nimon and Beghin 1999; Johnston et al. 2001; Blend and Van Ravenswaay 1999; Teisl et al. 2002; Bjorner et al. 2004), and the studies agree that labeling allows product differentiation that is rewarded in the market. Similar trends have been reported in fair trade product markets, which are also built on ethical concerns (see e.g. Bacon 2005).

The existing literature on eco-labeling and green consumerism, as well as on fair trade, has been framed within a classical market context where price and quality are the drivers of consumer choice. However, it seems possible that consumers are also concerned about the choices made by other consumers. In fact, it is not at all clear that people’s consumption decisions are made independently of social context. For instance, under the desire to conform to certain social norms—or in the presence of status concerns—some individuals may be willing to pay a higher price premium for green products the more widespread green consumerism is in society. In this context conformity means that people care about their behavior relative to the behavior of others; see for example Bernheim (1994) for a theoretical model of conformity. A classical empirical study of conformity is the experiment by Venkatesan (1966) where it was demonstrated that an individual’s evaluation of the “quality and style” of certain consumption goods is to some extent determined by the evaluations of her peers.

Recently a number of experimental studies have shown that conformity to what others do is one important factor affecting people’s charitable giving (e.g. Alpizar et al. 2008; Shang and Croson 2009; Frey and Meier 2004), and contributions to public goods (Bardsley and Sausgruber 2005). This reasoning is also in line with the growing empirical literature showing that people are concerned with their consumption relative to others in addition to the absolute level of consumption (Alpizar et al. 2005; Johansson-Stenman et al. 2002; Solnick and Hemenway 1998, 2005). One focus in the literature has been on gender differences; evidence indicates that women are more socially oriented and less selfish (List 2004; Andreoni and Vesterlund 2001). There is also experimental evidence that women’s social preferences are more sensitive to cues than are men’s (Croson and Gneezy 2009; Ladenburg and Olsen 2008). In addition, some studies in the literature on relative standing suggest that women are more concerned with their relative positions in society than men (Alpizar et al. 2005). 1

Our main purpose with this paper is to test for conformity in green consumerism. In particular, we are interested in determining whether, and if so to what extent, individuals take the choices of others into account when making purchasing decisions with an environmental dimension. Furthermore, and in light of the above-mentioned literature on social preferences, we explicitly test for differences in conformity between males and females. While a number of studies have used market data to analyze the demand for green products (Bjorner et al. 2004), such data does not lend itself to the analysis of social interactions, which is the concern of this

1 The existing experimental economics literature also reports robust gender differences in attitudes towards risk and competition (Croson and Gneezy 2009). Specifically, women appear to be more risk averse and less prone to competition than men.
study (Manski 2000). The main difficulty lies in the fact that people’s choices are typically only observable under the prevailing social setting, which makes it impossible to distinguish demand motivated by direct effects on utility (other people’s choices are irrelevant) from demand induced by social interactions (demand depends on other people’s choices). In this study, we therefore use a hypothetical choice experiment. Choice experiments (CE) have previously been used to investigate demand for food products with environmental characteristics (Carlsson et al. 2007) and offer a degree of flexibility that allows us to create different social scenarios. In a CE, individuals are given a hypothetical setting and are then asked to choose their preferred alternative among several alternatives, each described by a number of attributes (the participants are usually asked to perform a sequence of choices). The good used in our experiment is coffee, and the attributes are share of ecologically grown beans, share of fair trade beans, and price. In order to test for the effect of conformity in green consumption, we use three treatments—where the only difference between the treatments is the information given about the share of other people who buy 100% ecologically grown coffee.

The paper is organized as follows: First, we introduce a simple model that incorporates people’s preferences for conformity in environmental quality. We then propose a method to test the presence of such preferences, namely a CE design and an econometric model. This is followed by a presentation of results and a concluding discussion.

2 A Simple Model of Environmental Conformity

There is a rather extensive literature on analyses of demand for environmental quality in various market settings; see for example Amacher et al. (2004) and Cremer and Thisse (1999). Unlike those studies, the aim here is not to analyze the demand and supply of environmental quality. Instead, we use a simple model to illustrate how people’s preferences for environmentally friendly goods can also be driven by conformity, i.e. a desire to conform to the societal norm regarding environmental quality. We propose a model following the approach by Akerlof and Kranton (2000) and assume that individuals derive utility not only from consumption of a good (the direct utility effect) but also from certain social costs or rewards that such consumption generates, namely an identity effect. Levitt and List (2007) use a similar approach where decisions that are at odds with an individual’s identity give rise to a moral cost. The authors identify three factors of particular importance for explaining the moral cost: the financial externality that an action imposes on others, social norms in society, and to what extent the actions of an individual are scrutinized. In this paper, we focus on the social norm aspect of the moral cost, i.e. the effect of social norms on identity. We believe that the financial externality of green consumerism is negligible, while the action of buying an eco-labeled product could be observed by others (scrutinized). However, for green consumerism, we argue that the possibility of being scrutinized is closely linked to the social norm in society, and the model proposed here therefore treats these two effects jointly. Following Levitt and List (2007), we thus assume that the utility function is additive separable between consumption and identity and can be written as:

---

2 In the literature on voluntary contributions, field experiments have been used to investigate conformity (see e.g. Alpizar et al. 2008). Since voluntary contributions typically take the form of one-time payments, it is relatively easy to test for conformity in experiments. In the analysis of purchasing and consumption decisions made on a regular basis, it is more difficult, although not impossible, to recreate a real world scenario in an experiment.

3 For methodological overviews of choice experiments, see Alpizar et al. (2003) and Louviere et al. (2000).
where \( c \) represents the product with an environmental impact (here coffee), \( 0 \) represents a composite good, and \( q_c \) and \( q_0 \) represent the quantities consumed of the two product types. \( W(\cdot) \) represents the direct utility function of consumption and is assumed to be concave in its arguments, and \( I \) is the identity or self-image component with \( \frac{\partial U}{\partial I} > 0 \). Furthermore, we assume that \( I \) is a function of the level of environmental quality of good \( q_c \) consumed by the individual, \( S_c \), and of some norm in society \( \bar{S}_c \). This could for example be the average level of environmental quality. Specifically,

\[
I (S_c, \bar{S}_c) = \beta_1 S_c - \beta_2 \left( S_c - \bar{S}_c \right)^2, \tag{2}
\]

where \( \beta_1 \) and \( \beta_2 \) are positive.\(^4\) An increase in the difference between the environmental quality chosen by the individual and the social norm affects the self-image of the individual negatively, i.e. \( \frac{\partial I}{\partial (|S_c - \bar{S}_c|)} < 0 \). The budget restriction is

\[
y = q_c p(S_c) + q_0,
\]

where the price of the composite good is normalized to one. The price of the environmental good, \( p(S_c) \) is an increasing function of its quality level, \( p' > 0 \). For simplicity, we assume a linear relation between environmental quality and price, i.e. \( p'' = 0 \). Furthermore, our experimental design (introduced in the next section) presents environmental quality as the share of ecologically friendly coffee beans in one packet of coffee. We therefore assume that \( q_c = 1 \).

Using this quantity restriction and the linear price assumption, the budget constraint takes the following form:

\[
q_0 = y - p(S_c).
\]

Substituting in this expression and the expression for identity, \( I \), we can rewrite the utility function as:

\[
U (S_c; \bar{S}) = W (1, y - p(S_c)) + \beta_1 S - \beta_2 \left( S_c - \bar{S}_c \right)^2. \tag{3}
\]

It is important to stress that the influence of identity on utility is contextual (Levitt and List 2007). The most obvious aspect is to think of the interaction between observability of the action and the influence of identity; see for example Alpizar et al. (2008). Another example is the study by Heinrich et al. (2001) where there were large differences in behavior in dictator, ultimatum, and public good games between different communities. The influence of identity is therefore likely to depend on a number of exogenous factors that are not made explicit in the model.

Maximizing (3) with respect to the environmental quality, \( S_c \), we obtain the following first order condition:

\[
W' \left( 1, y - p \left( S^*_c \right) \right) p' + \beta_1 - 2 \beta_2 \left( S^*_c - \bar{S}_c \right) = 0. \tag{4}
\]

To find the effect of a change in \( \bar{S} \) on the optimal choice of \( S^*_c \), we total differentiate (4) and solve for \( \frac{dS^*_c}{d \bar{S}_c} \):

\[
\frac{dS^*_c}{d \bar{S}_c} = \frac{2 \beta_2}{2 \beta_2 - (p')^2 W''}. \tag{5}
\]

Since the direct utility \( W(\cdot) \) is concave, it is easy to see that \( 0 < \frac{\partial S^*_c}{\partial \bar{S}_c} < 1 \); i.e. a marginal increase in the overall consumption of environmental quality in society induces a less than proportional increase in the individual demand for quality. Note that Eq. (5) represents an

\(^4\) In this simple model, identity does not depend on level of consumption, but only on environmental quality. For a given good, this is not particularly restrictive, and we believe that it is not unrealistic to assume that the identity effect relates to the environmental quality irrespective of the size of the consumption.
outward shift of the demand function $S^*_c \left( p', \bar{S}_c \right)$. Accordingly, the individual’s willingness-to-pay (WTP) for environmental quality is such that $\frac{dWTP_c}{dS_c} > 0$ (the marginal WTP is given by the inverse demand function $MWT_{Pe} (S_c, \bar{S}_c)$).

3 The Choice Experiment

In order to test whether conformity drives the demand for environmental goods, we designed a CE concerned with the choice of coffee and applied it to a sample of Swedish consumers. Retail coffee, which is the focus of our attention, is a fairly simple and homogenous good in terms of taste and quality. In fact, the difference in quality of coffee beans is smaller in Sweden than in most other countries (Durevall 2007). To make the choice even simpler we informed the respondents that all coffee in the CE corresponded in taste to the coffee they usually buy. In a relatively recent development, certified ecological, organic, and fair trade coffees have been introduced in the market (Lewin et al. 2004). As with many other products, this has occurred in response to increasing consumer concerns about environmental and social aspects of production. Eco-labels signal that the coffee beans were grown and processed using practices that preserve biodiversity and minimize pollution of surrounding water bodies in the growing areas. Such practices include planting local trees between coffee bushes to provide shade and preserve the ecological habitat (as opposed to mono-cropped full-sun plantations), using organic fertilizers and pesticides (rather than chemical fertilizers), recycling water in the production process, and proper disposal and treatment of residues from production. While eco-labels are mainly concerned with impacts on local ecosystems, fair trade labels focus on the livelihoods of farmers. Fair trade coffee beans are bought directly from cooperatives of small and typically poor farmers who are guaranteed a minimum price before harvest. This price is higher than the market price. Fair trade labels thus signal a reduced vulnerability of local farmers. Although the market share of ecological and fair trade coffee is still relatively small—on average less than 2% in the developed world—it is the fastest growing segment in the coffee markets.

The CE was conducted through a mail survey in May 2007. The population that the sample was drawn from was defined as those between 20 and 75 years of age with a permanent address in Sweden. A sample of 2,100 individuals was randomly selected from the Swedish census registry; for each treatment we sent out 700 surveys. We took a number of steps to design a questionnaire that was easy to understand, plausible, and meaningful to the respondents. For example, we held a number of focus groups and conducted a small pilot study (100

---

5 Sweden is one of the world’s largest consumers of coffee in per capita terms (International Coffee Organization ICO 2005).

6 We restricted the CE to only brewed coffee, and consequently did not include other coffee types such as cappuccino, café latte, and macchiato.

7 Coffee was traditionally traded as a generic commodity. However, over the last few years differentiated coffees have become more important in the market. It has been estimated that differentiated coffees (differented by quality, origin, production process, etc.) make up about 12% of the total imports in the developed markets of North America, Western Europe, and Japan. The US market for differentiated coffees grew from 9 to 13% between 1999 and 2002 (Lewin et al. 2004). It is estimated that the value of sustainable coffees (ecological, organic, and fair-trade) is about US$530 million and that it has benefited about 7,50,000 farmers (Bacon 2005). In Sweden ecological or organic coffee accounted for about 8% of total coffee consumption in 2008. This corresponds to a significant 21% increase from the previous year. Other certified coffees, including fair trade and other responsibility and sustainability programs, have around 10% of the market share in the country. Double certification is not uncommon and about 50% of these coffees are also certified as ecological (European Coffee Federation 2009).
surveys). The final questionnaire consisted of three parts: The first part included questions about the household habits regarding coffee consumption, the second contained the CE, and the third part questions about the respondent’s socio-economic status. The introduction to the CE briefly explained the purpose of the survey and described the attributes.

In each choice situation, the CE respondents had three alternatives, each described by three attributes: (i) the share of ecologically grown beans, (ii) the share of fair trade beans, and (iii) the price per packet. The first attribute is directly concerned with local ecosystems whereas the second relates to the livelihoods of the farmers. While these two aspects may sometimes be intertwined, there is not necessarily a direct relation between them. Although we are mainly interested in studying people’s green preferences, the inclusion of fair trade adds a higher degree of complexity to the trade-off faced by respondents. In particular, it is not straightforward what the socially responsible choice is. The levels of the first and second attributes were 0, 50, and 100%, while the levels of the third attribute were 20 SEK, 25 SEK, 30 SEK, and 35 SEK. We asked respondents to choose one of three coffee products, without including an opt-out alternative. Again, in the survey it was explained that the coffee tasted the same as the kind they normally consumed. Our interest here is not to predict the market shares of various coffee products; instead we are interested in estimating the marginal WTP for environmental quality.

The different versions of the questionnaire were designed in order to test for conformity related to green consumption. The only difference among them was the information given about the consumption decisions of other consumers, which was given prior to the presentation of the choice sets and in connection with an example. The script in Version 1 of the questionnaire reads:

Please, consider that 10% of all coffee consumers choose the alternative with 100% ecological beans.

In Versions 2 and 3 of the questionnaire, the proportion of green consumers (in bold letters above) was 50 and 90% respectively. The choice sets were created with a D-optimal design principle using utility coefficient priors from a pilot study (Carlsson and Martinsson 2003; Huber and Zwerina 1996). In total nine choice sets were generated, with three alternatives in each set. Table 1 shows an example of a choice situation.

The major disadvantage with using a choice experiment is the risk of hypothetical bias. The empirical evidence of hypothetical bias in CE is mixed (see e.g. Carlsson and Martinsson 2001; Johansson-Stenman and Svedsäter 2008; Lusk and Schroeder 2004). One important issue here is that we focus on the marginal trade-offs between attributes, more specifically the marginal willingness to pay. As discussed by Carsson and Groves (2007), hypothetical bias is not of major concern for estimation of marginal WTP for private goods. In any case, in order to reduce the probability of a hypothetical bias, we followed Carlsson et al. (2005) and List et al. (2005) and used a cheap-talk script. The script read as follows:

\[ \text{Springer} \]

Table 1  Example of a choice situation

<table>
<thead>
<tr>
<th>Coffee characteristics</th>
<th>Coffee 1</th>
<th>Coffee 2</th>
<th>Coffee 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of ecologically grown beans</td>
<td>50%</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Share of fair trade beans</td>
<td>50%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Price per 1/2 kilo coffee</td>
<td>30 SEK</td>
<td>35 SEK</td>
<td>20 SEK</td>
</tr>
<tr>
<td>Your choice (mark one alternative)</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
In many attitude surveys the experience is that people often respond in one way but act differently. It is particularly common that one states a higher willingness to pay than what one is actually willing to pay for the good in the store. We ask you to make your choices considering your actual food budget. A higher price means that you have to reduce your consumption of other goods.

See “Appendix” for a scenario and attributes description.

### 4 Econometric Model

Following from the theoretical model, our econometric specification tests whether people’s WTP for environmental quality increases in the average share of environmental quality bought by other consumers. Since we only observe the choices and not the preferences of the respondents, we apply a standard random utility model in the analysis. Note that our experiment only allows us to estimate the impact of the norm on the WTP for the share of ecological coffee. However, we can look at the difference in WTP among the various treatments in order to test for a potential impact of conformity. If we focus on the demand for share of ecological beans, the utility function of one pack of coffee can, based on Eq. (3), be written as

$$ U = U \left( S_{c}, \bar{S}, y - p(S_{c}) \right). $$

(6)

where in our experiment $\bar{S}$ is a measure of the number of people that buy coffee with 100% share of ecological beans. In order to estimate the increase in WTP for the share of ecological beans if the social norm changes we would have to solve the equality:

$$ U \left( S_{c}, \bar{S} = 50\%, y - p(S_{c}) \right) = U \left( S_{c}, \bar{S} = 100\%, y - p(S_{c}) - \Delta \text{WTP} \right). $$

(7)

However, we cannot estimate this directly since we have a between-subject design. In addition, since the demands for fair trade and ecological coffee might be substitutes in the sense that both can entail social and moral considerations, we also test whether the norm regarding ecological coffee has an impact on the WTP for fair trade coffee. We hence assume a simple linear indirect utility function where the utility of alternative $i$ for individual $k$ in treatment $m$ is

$$ V_{ikm} = \alpha_{im} + \beta_{m}(\bar{S})'S_{i} + \delta_{m}(\bar{S})'F_{i} + \lambda_{m}'p_{i} + \epsilon_{ikm}, $$

(8)

where $S_{i}$ is the share of ecological coffee, $F_{i}$ the share of fair trade coffee, and price is the cost of alternative $i$.\(^8\) We allow all parameters to vary with the treatment, i.e. with the share of ecological coffee consumed by others. In practice, this means that we estimate the three treatments separately. Although the experiment is generic, there might be other reasons why respondents opt for one of the alternatives, and we control for this with two alternative specific constants. We assume that the two alternative specific constants and that the two parameters of the coffee attributes are randomly distributed with a normal distribution, but we keep the cost coefficient fixed. The model is estimated with simulated maximum likelihood. Since we have repeated observations, we assume that the parameters are constant across choice sets for a given respondent.

From the utility specification in (8), we can estimate the marginal WTP for the two attributes, which is the ratio of the attribute coefficient and the marginal utility of income, $\lambda$.

---

\(^8\) In the theoretical model we only included the ecological aspects of the good, but it would be fairly straightforward to include a fair trade aspect as well. If we assume additive separability between these two aspects, as we do in our empirical specification, then the main results of the model still hold.
Since we are interested in the marginal WTP for a given treatment, we want to compare the following three WTP measures:

\[
\begin{align*}
MWT_P S_i (\bar{S} = 10\%) &= \beta_{m=10\%} \\
MWT_P S_i (\bar{S} = 50\%) &= \beta_{m=50\%} \\
MWT_P S_i (\bar{S} = 90\%) &= \beta_{m=90\%} \\
\end{align*}
\]  

(9)

5 Results

Out of the 2,100 questionnaires sent out (see Sect. 3 for sampling details), 28 were returned due to address unknown. One reminder was sent out after 10 days to those who had not replied. In total 861 individuals returned the questionnaire (implying a response rate of 41%), of which 768 were available for analysis due to non-responses to various questions and to the fact that some respondents did not consume coffee. Although not all 768 individuals answered all nine choice sets, they are still included in the analysis. The average age of the respondents is around 50 years, 35% have university education, and 44% are females. Comparing these with the national statistics, we find that the shares of women and of those who have at least 3 years of university education are higher in our sample than in the population, but the difference is not significant. The distribution across age groups is, however, not representative and we have a significantly higher share of older respondents. Table 2 presents the results of the random parameter logit models for the three different treatments. The model is estimated with simulated maximum likelihood using Halton draws with 500 replications; see Train (2003) for details on simulated maximum likelihood and Halton draws. At the bottom of the table, mean marginal WTP for the attributes are presented; standard errors are computed with the Delta method (Greene 2000).

All attribute parameters are significant in all three treatments. The attributes Share ecological beans, Share fair trade beans, and Price thus all have a significant effect on the choices. Respondents are more likely to buy a given type of coffee the higher its share of ecologically grown and fair trade beans, and the lower its price. In some of the treatments, the alternative specific constants are positive and significant. Thus, despite the experiment being generic, there is a tendency for respondents to prefer the first and second alternative rather than the third.

The results show that given the 10% treatment, respondents are on average willing to pay around 0.112 SEK for a 1 percentage point increase in the share of ecologically grown coffee beans, and 0.102 SEK for the same increase in the share of fair trade beans. This corresponds to a WTP premium of 12.2 SEK per packet of 100% ecological coffee compared with the 0% variety. The current actual price difference in stores is difficult to measure but it ranges approximately from 0 to 3 SEK per packet, hence it is lower than 10.7 SEK. This could be a sign of hypothetical bias; although it is difficult to say how large the bias may be. At the same time, experimental evidence suggests that there could be a sizeable price premium; see Arnot et al. (2006) for an example on fair trade coffee. However, we cannot claim that we managed to completely eliminate hypotheti-
cal bias with our cheap-talk script. At the same time, our interest is in the differences between the treatments, thus if the hypothetical bias is not too large, then we can still interpret the potential difference between the treatments as a measure of the influence of conformity.

For the share of ecological beans, the marginal WTP is almost identical across the treatments, and the difference is not significantly different from zero (using a two-sided t-test). For the share of fair trade beans, there is a larger difference in marginal WTP, and it is higher the higher the share of people that buy ecologically friendly beans. The difference is even significant (using a two-sided t-test) if we compare the 90% treatment with the 10% treatment (p-value = 0.100).

Thus, looking at the aggregate data, conformity only plays a limited, and indirect, role through the effect on the share of fair trade beans. However, and as mentioned in the introductory section, gender differences in preferences may be expected. Previous findings suggest that females are more sensitive to the information about the behaviors of others. At the same time, if women are less egoistic and more environmentally aware than men (Loureiro and Lotade 2005; Zelezny et al. 2000), then they would, in principle, be less concerned with the social conformity of green consumption. In order to identify a possible gender effect and its direction, we split the sample into males and females and estimated separate random parameter logit models. The models were estimated with simulated maximum likelihood using Halton draws with 500 replications, and the results are presented in Table 3.

Again, all attribute parameters are significant in all three treatments. The attributes Share ecological beans, Share fair trade beans, and Price thus all have a significant effect on the choices. Notably, male respondents have a higher WTP than female respondents in all treatments. Using a two-sample t-test, the difference is, however, only significant at the 1%
Table 3  Results of the random parameter logit models for females and males; p-values in parentheses

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Females</th>
<th></th>
<th></th>
<th>Males</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Treatment 10%</td>
<td>Treatment 50%</td>
<td>Treatment 90%</td>
<td>Treatment 10%</td>
<td>Treatment 50%</td>
</tr>
<tr>
<td>Share ecologically friendly beans</td>
<td>0.0156(0.000)</td>
<td>0.0172(0.000)</td>
<td>0.0185(0.000)</td>
<td>0.0256(0.000)</td>
<td>0.0236(0.000)</td>
<td>0.0215(0.000)</td>
</tr>
<tr>
<td>Share fair trade beans</td>
<td>0.0115(0.000)</td>
<td>0.0193(0.000)</td>
<td>0.0195(0.000)</td>
<td>0.0229(0.000)</td>
<td>0.0229(0.000)</td>
<td>0.0235(0.000)</td>
</tr>
<tr>
<td>Price</td>
<td>-0.1989(0.000)</td>
<td>-0.1795(0.000)</td>
<td>-0.1679(0.000)</td>
<td>-0.1756(0.000)</td>
<td>-0.1986(0.000)</td>
<td>-0.1821(0.000)</td>
</tr>
<tr>
<td>Alternative specific constant alternative 1</td>
<td>0.2372(0.077)</td>
<td>0.0604(0.620)</td>
<td>-0.1060(0.407)</td>
<td>0.2120(0.058)</td>
<td>0.0413(0.700)</td>
<td>-0.0352(0.756)</td>
</tr>
<tr>
<td>Alternative specific constant alternative 2</td>
<td>0.2714(0.042)</td>
<td>0.1956(0.093)</td>
<td>0.2910(0.026)</td>
<td>0.3658(0.001)</td>
<td>0.0689(0.547)</td>
<td>0.0398(0.716)</td>
</tr>
<tr>
<td>Standard deviations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share ecologically friendly beans</td>
<td>0.0215(0.000)</td>
<td>0.0210(0.000)</td>
<td>0.0247(0.167)</td>
<td>0.0213(0.000)</td>
<td>0.0255(0.000)</td>
<td>0.0247(0.000)</td>
</tr>
<tr>
<td>Share fair trade beans</td>
<td>0.0227(0.000)</td>
<td>0.0277(0.000)</td>
<td>0.0279(0.000)</td>
<td>0.0234(0.000)</td>
<td>0.0254(0.000)</td>
<td>0.0270(0.000)</td>
</tr>
<tr>
<td>Alternative specific constant alternative 1</td>
<td>0.4311(0.044)</td>
<td>0.0276(0.930)</td>
<td>0.2264(0.429)</td>
<td>0.0086(0.972)</td>
<td>0.1094(0.817)</td>
<td>0.2315(0.350)</td>
</tr>
<tr>
<td>Alternative specific constant alternative 2</td>
<td>0.6832(0.000)</td>
<td>0.3569(0.052)</td>
<td>0.6267(0.000)</td>
<td>0.4377(0.002)</td>
<td>0.6931(0.000)</td>
<td>0.3764(0.015)</td>
</tr>
<tr>
<td>Respondents/Choice sets</td>
<td>118/1008</td>
<td>110/949</td>
<td>110/959</td>
<td>137/1151</td>
<td>157/1348</td>
<td>136/1156</td>
</tr>
<tr>
<td>Pseudo-R2</td>
<td>0.09</td>
<td>0.14</td>
<td>0.16</td>
<td>0.15</td>
<td>0.18</td>
<td>0.16</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>1007</td>
<td>966</td>
<td>991</td>
<td>1172</td>
<td>1351</td>
<td>1169</td>
</tr>
<tr>
<td>Marginal WTP Share ecological (standard error)</td>
<td>0.079(0.012)</td>
<td>0.096(0.012)</td>
<td>0.110(0.016)</td>
<td>0.146(0.014)</td>
<td>0.119(0.011)</td>
<td>0.118(0.013)</td>
</tr>
<tr>
<td>Marginal WTP Share fair trade (standard error)</td>
<td>0.058(0.014)</td>
<td>0.107(0.015)</td>
<td>0.116(0.018)</td>
<td>0.131(0.016)</td>
<td>0.115(0.013)</td>
<td>0.129(0.015)</td>
</tr>
</tbody>
</table>
level for the 10% treatment. Some studies show that females are more environmentally aware than men (Loureiro and Lotade 2005; Zelezny et al. 2000), and since we do not control for differences in income, our results do not suggest that men necessarily are more environmentally aware than females. Furthermore, and as pointed out before, our main interest lies in comparing the potential differences in treatment effects between the two groups.

We find that there is a difference between male and female respondents with respect to the reaction to the information about the choices of others. For females, the difference in WTP for ecological beans between the 10 and the 90% treatment is significant at the 10% level (using a t-test), while there is no significant difference between the 50 and the 90% treatments. Interestingly, a similar pattern holds for fair trade beans, where even the difference between the 50 and 90% treatment is significant. In addition, for females, the WTP for ecological and fair-trade coffee increases when the social norm of consuming ecologically friendly coffee is strengthened. For male respondents, the WTP does not change or even decrease when the norm is strengthened, the difference in WTP is, however, not significant in any of the cases; although it is sometimes sizeable.

Hence, the hypothesis of conformity is partly confirmed for the female sample while it is rejected for the male sample. However, they increase their WTP for both attributes, which suggest that the norm or the will to conform relates to behaving in a good way in general and not only to purchasing ecologically friendly coffee. Women are thus the ones who react positively to the information about the behaviors of others given in the experiment. This is in line with the finding by Ladenburg and Olsen (2008) that women are more prone to starting point bias in CE than men. As discussed earlier, this is also consistent with some previous studies showing that females are more sensitive to cues than men (Croson and Gneezy 2009) and that women are more concerned with their relative position in society than men (Alpizar et al. 2005). Thus, in the experiment women are more likely to try to find out what the socially appropriate thing to do is, and they do not want to be different from the others. Why do men behave in the opposite way? One explanation could be free riding, i.e. if everybody else in society is already contributing, there is little incentive to join in and contribute to the public good. The possibility of males being more selfish than females (List 2004) could partly explain the difference as well.

6 Discussion

Earlier studies using both revealed and stated preferences report that some consumers have a positive willingness to pay for ecologically friendly and fair trade products. With production of some of these products taking place far from the consumers, the results highlight the possible existence of altruistic preferences. Selfish motives, although less likely, are also possible as some consumers could view environmental soundness as an indicator of quality. However, the existing empirical and theoretical literature on green consumerism ignores the possible existence of social interactions. Using a choice experiment, we investigated whether the premium that consumers are willing to pay for ecological coffee depends on the overall environmental behavior in society. We find that women respond to the different treatments, and their willingness to pay for ecologically friendly coffee and fair trade coffee increases

10 These results are also confirmed by likelihood ratio tests. Using likelihood ratio test we can reject the hypothesis of equal parameters between male and female respondents for the 10% treatment, but not for the two other treatments. Using the grid-search procedure proposed by Swait and Louviere (1993), we first adjust for a potential difference in scale parameters for the 10% treatment. When estimating the random parameter model with the grid search procedure, we used 25 Halton draws.
when they are asked to consider that a large share of consumers choose the ecologically friendly alternative. Men’s choices on the other hand did not appear affected by this cue. The presence of social preferences can generate positive feedback effects in consumption. For instance, in a society where individually motivated green consumption increases due to higher environmental awareness, aggregate green consumption will naturally be larger. This in turn incentivize individual green consumption due to social standing concerns (particularly among women), which ultimately has a direct positive effect on overall green consumerism.

Our study also reports gender differences in absolute willingness to pay, which is independent of other people’s choices. In particular, men appear to have stronger preferences for ecological coffee than women have. Although consistent with previous studies, this result should be interpreted with some care, as our analysis does not include income data. In Sweden, as in many other countries, there is still a difference in income between men and women (e.g. Alpizar et al. 2003).

While it is clear that differences in income may explain gender differences in absolute willingness to pay, they cannot explain the differences in social preferences as measured in this paper. Socio-demographic differences in sensitivity to social pressure and norms (identity), differences in the extent of conditional cooperation, or differences in the way individuals interpret the information on what others are doing, are all potential factors explaining the differences found in this study. However, it is not straightforward how one can disentangle such effects, but this is clearly an important area for future research. While testing for social conformity is obviously not a simple task, we believe that our proposed methodology is a useful approach. However, using hypothetical choice experiments to test the hypothesis of conformity is obviously not without problems either. In particular, there is a clear risk that respondents overstate their willingness to pay for ecologically friendly and fair trade coffee. At any rate, from our point of view this is not a major concern since we are only interested in the difference among the treatments. In addition, we focused on marginal willingness to pay. At the same time, the findings on the presence of conformity are strong since our test consists of a simple statement in the survey. Incorporating conformity as a driver of consumer choices when individuals make purchasing decisions with an environmental dimension can hence increase the explanatory power of such models. This is not to say that the effect of conformity on consumer behavior is the same outside the survey situation. As we have discussed, the effects of factors such as norms and identity depend, and perhaps to a large extent, on contextual factors such as whether the action is observed or not (Levitt and List 2007). Thus our contribution is not to estimate the size of the effect of conformity, but rather to identify the possible existence of such an effect per se. Clearly, more studies and experiments are needed to quantify such an effect.

Acknowledgments Financial support from Sida to the Environmental Economics Unit at the University of Gothenburg as well as funding from Mistra’s Climate Policy Research Program (CLIPOR) is gratefully acknowledged. The authors are indebted to Karin Jonsson and Anna Lock for research assistance. The paper has benefited from comments by an anonymous reviewer, Olof Johansson-Stenman, Katrin Millock, seminar participants at the University of Gothenburg, and participants at the Second Nordic Workshop in Behavioral and Experimental Economics, University of Gothenburg.

Appendix: Scenario and Attributes Description

Imagine that you are standing in the local food store and that the coffee brand with the roast that you normally buy offers three different coffee products. These are described with three characteristics: share of ecologically friendly beans, share of fair trade beans, and price.
In nine different choice situations, only these characteristics are varied. Please, mark the coffee product that you would choose in each situation. You should only mark one choice in each situation. The three characteristics are described below.

Share Ecologically Friendly Beans: 0%  50%  100%

Ecologically grown beans means that only environmentally friendly methods that preserve the biological diversity and minimize pollution in the ground and in water are allowed on the plantation. Chemical fertilizers and artificial manure are not allowed, and trees should be planted between the bushes; this is particularly important for migratory birds. In addition to this, water and waste from the production process are treated in a good manner. Depending on the supply of coffee beans, it is sometimes the case that ecologically grown beans are mixed with conventionally grown beans. The taste of this coffee does not depend on its share of ecologically grown beans. The share of ecologically friendly beans is labeled on the package.

Share Fair Trade Beans: 0%  50%  100%

Millions of farmers in developing countries are dependent on coffee production for their survival. The market price for coffee is often below the production cost. Fair trade beans means that a minimum price, above the market price, is guaranteed. The production should occur in such a way that health risks to the workers are minimized. In the case of child labor, the children’s human rights must be fulfilled. Depending on the supply of coffee beans, it is sometimes the case that fair trade beans are mixed with conventionally grown beans. The taste of this coffee does not depend on its share of fair trade beans. The share of fair trade beans is labeled on the package.

Price: 20 SEK/pk  25 SEK/pk  30 SEK/pk  35 SEK/pk

The price is expressed as the price per 1/2 kilo packet.

In many attitude surveys, the experience is that people often respond in one way but act differently. It is particularly common that one states a higher willingness to pay than what one actually is willing to pay for the good in the store. We ask you to make your choices considering your actual food budget. A higher price means that one has to reduce consumption of other goods.

Below is an example of a choice situation. Mark the alternative you would pick if you had to choose among these three alternatives. For example, if you think that the alternative where you pay 35 SEK for coffee made from 100% ecologically friendly beans and 0% fair trade beans is the best compared with the other two alternatives, then mark Coffee 2.

“Please, consider that 90% all of coffee consumers choose the alternative with 100% ecological beans.”

Example

<table>
<thead>
<tr>
<th>Coffee characteristics</th>
<th>Coffee 1</th>
<th>Coffee 2</th>
<th>Coffee 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of ecologically grown beans</td>
<td>50%</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>Share of fair trade beans</td>
<td>50%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Price per 1/2 kilo coffee</td>
<td>30 SEK</td>
<td>35 SEK</td>
<td>20 SEK</td>
</tr>
<tr>
<td>Your choice (mark one alternative)</td>
<td>□</td>
<td>×</td>
<td>□</td>
</tr>
</tbody>
</table>
References