

Ping Qing, Wuyang Hu, and Yun Liu

## THE INTERACTION BETWEEN CONSUMER PREFERENCE AND PRODUCT ETHICS: IMPLICATIONS ON COFFEE TRADE IN CHINA

### ABSTRACT

This study examines consumers' ethics concerns on their product choices in the context of coffee in China. Using an in-person survey, an interval regression technique was used to elicit willingness to pay. Respondents were randomly assigned to one of three different information scenarios including product ethics: basic definition, impact on sustainability and the environment, and information including both environmental and social implications. Results indicated that information played an important role in determining what types of consumers were responsive to ethical production. Furthermore, the amount of information provided and consumer willingness to pay did not follow a linear relationship.

*Key Words: Chinese market, coffee, product information, willingness to pay*

#### **Ping Qing**

*College of Economics and Management, Huazhong Agricultural University, China*

#### **Wuyang Hu**

*Department of Agricultural Economics, University of Kentucky, USA*

#### **Yun Liu**

*Zhongnan University of Economics and Law, China*

#### **Correspondence: Ping Qing**

College of Economics and Management  
Huazhong Agricultural University, Wuhan, Hubei Province, 430070  
China  
E-mail: qingping@mail.hzau.edu.cn  
Tel: (027)87286896

## **INTRODUCTION**

Fair trade is an organized social movement and market-based approach to help producers in developing countries obtain better trading conditions and promote sustainability. Among fair trade products, coffee has the largest sales volume and the longest history, dating back to 1989. Research found that coffee consumers in many developed countries were willing to pay a premium for fair trade coffee (Pelsmacker, Driesen, and Rayp, 2005; Arnot, Boxall, and Cash, 2006). However, there existed strong heterogeneity in consumer willingness-to-pay (WTP) and some consumers even had negative perceptions on fair trade coffee. It is interesting to study consumers in different countries, particularly those that have not been traditionally exposed to many of the fair trade products.

In addition, these past studies also indicated that not all consumers understood the meaning and implications of fair trade and fair trade coffee. As a result, another question is whether consumers would react to product information that links to the real-life implications of fair trade coffee. If the answer is positive, it will be useful to understand how consumers may respond to different types of such information. Would more product information lead to higher WTP? These questions have important implications to coffee producers and marketers.

Clear product labeling can assist consumers in making informed decisions. Numerous past studies have shown that consumer decisions could be strongly affected by the product information shown on labels (Caswell and Padberg, 1992; Caswell and Mojduszka, 1996; Loureiro and Lotade, 2005; Basu and Hicks, 2008; Bougherara and Combris, 2009). However, in the area of fair trade coffee, due to incomplete consumer knowledge, how different types of product information regarding fair trade may affect consumer preferences is not well understood. Ignoring the interaction between consumers' knowledge and perceptions on fair trade and the product information they receive may undermine the importance of consumer heterogeneity. The first objective of this study is to investigate how consumers react toward different types of information regarding fair trade coffee. One of a total of three types of information was introduced to consumers, ranging from the basic definition, to impact on sustainability and the environment, to a more comprehensive scope including both environmental and social implications.

Previous studies of fair trade coffee focused solely on developed countries. No such studies exist based on consumers in developing countries. Consumers' product knowledge, perception, and information received by consumers in developing countries

may be different than that of consumers in developed nations. Because of income, budget constraints, and other social differences, consumers in developing countries may not be able to pay a comparable price premium for fair trade coffee. Many developing countries themselves also benefit from the fair trade social movement. This study focuses on one of the developing countries, China, where coffee consumption has shown strong growth over the past decade. Chinese demand for coffee imported from the US is predicted to increase faster than ever before. Given the increasing importance of coffee in China, the second goal of study is to compare results to previous research on fair trade coffee in developed countries.

## **LITERATURE REVIEW**

World Fair Trade Organization (2009) expounds that fair trade (or fairtrade) is a response to deliver development opportunities and sustainable livelihoods to people in the poorest countries of the world, and this is evidenced by the two billion producers who survive on less than US\$2 per day. There are sixteen categories of fair trade products, including coffee, carrying fair trade logo and focusing on exports from developing countries to developed countries. The core principles of fair trade include: market access for marginalized producers, sustainable and equitable trading relationships, consumer awareness raising & advocacy, and fair trade as a “social contract” (World Fair Trade Organization, 2009). Hence, the message of fair trade logo may not only promote sustainability to producers in the poorest countries but also improve consumer awareness on several important issues, such as environmental aspects, child labor, and safety and healthy working conditions.

Fair trade coffee has the longest history and the largest sales volume among fair trade products, yet it does not mean that every consumer knows every detail of fair trade coffee. Consumers’ knowledge and perceptions for the product may not necessarily match with the product information that they may receive. Numerous studies show evidence that consumers in developed countries are willing to pay more for fair trade coffee (McCluskey and Loureiro, 2003; Galarraga and Markandya, 2004; Pelsmacker *et al.*, 2005; Arnot *et al.*, 2006; Basu and Hicks, 2008; Wolf and Romberger, 2010). Consumers in developed countries are a representative group for people with higher education and income, but those in developing countries often represent groups with different cultural and social

background. This implies that consumers' WTP in developing countries may not necessarily exhibit the same level as in developed countries.

Basu and Hicks (2008) studied the label performance and the WTP for fair trade coffee among university students in developed countries, such as the US and Germany. They found that the WTP is positively related to fair trade coffee, but it is identified as a "threshold" property on fair trade labeling performance. This means that the WTP for fair trade coffee is only up to a certain level, and after this critical level, the WTP becomes negatively related to fair trade coffee. This is likely to be true if respondents are undergraduate students who only have a certain amount of disposable income. The respondents were only given one set of details about fair trade certified products for the questionnaire (Basu and Hicks, 2008). Therefore, this study raises the question whether label performance and the WTP for fair trade coffee could respond differently if given different sets of information about fair trade certified products.

Coffee with fair trade logo brings a potential message that buying fair trade coffee is helping conventional coffee producers to obtain better trading conditions and promote sustainability. The interaction between different types of product information and consumers' attention as well as their WTP is the main objective in this study. Particularly, given China's economic prosperity, research results on the impact of information on fair trade coffee preference can offer valuable insight in this fast-developing market.

## **DATA**

Data used in this study were collected from 564 respondents by individual face-to-face surveys in Wuhan city in China during October and November in 2008. In order to improve clarity and reduce hypothetical bias, prior to the actual survey, the questionnaire was tested in several rounds of focus group discussions. All surveyors, who were faculty members and students, were also trained to use consistent and generic wording to approach potential respondents near coffee shops and grocery stores throughout the city. The estimated response rate of the survey was 30%, which was calculated by dividing the number of individuals who agreed to participate in the survey over all individuals approached.

The survey questionnaire had three sections. The first section asked respondents their general coffee consumption behavior and perceptions. The second section explored consumer WTP and the last section included questions on consumer demographic information. On average, respondents could complete the questionnaire in 10 minutes.

The key component is the WTP section. In this section, every respondent was given a fair trade certified logo (Figure 1) with a basic definition about fair trade coffee.

**Figure 1. Fair trade certified logo**



In order to investigate whether the product information would have any potential influence on consumers' WTP, three types of information was created and each respondent was provided only one type of such information. In other words, there were a total of three versions of the questionnaire. These three types of fair trade coffee information are individually used as the context where respondents' WTP for fair trade coffee was assessed. The only difference among these three versions was the product information about fair trade coffee that was given to each respondent. Consumers were randomly assigned to one of the three versions.

The three different types of product information about fair trade coffee is given in appendix 1: Type A offered only the basic definition about fair trade coffee; Type B displayed the basic information and also specific information of fair trade on its implications on sustainability and the environment; Type C offered all information provided in Type B with additional discussion on societal benefits of fair trade and fair trade coffee. These three types of information, each sequentially offering more implications about fair trade coffee, was designed to capture potential consumer WTP associated with the various benefits associated with fair trade coffee. All questionnaires, including the three types of information, were administered in Chinese. Of the total of 564 observations collected, individuals in each of the three versions were 185, 195, and 184.

Following the fair trade logo and one of the three versions of information, individuals were asked about their WTP for fair trade coffee. Colombian coffee is well known in Chinese coffee market (Langdon, 2007), so the Colombian coffee was used as a

norm for consumers' WTP. Respondents were asked to compare a medium cup of fair trade coffee with a similar medium cup of regular Columbian coffee and indicate a premium for the fair trade coffee. A payment card approach was applied. The premium was given as a list of specific amounts: category 1 (CNY¥0), category 2 (CNY¥0.0–0.99), category 3 (CNY¥1.0–1.99), and up to category 16 (CNY¥14 or above). At the time of the study, one US dollar equals about CNY¥6.8 yuan. After respondents read through the information about fair trade coffee, they were asked to select one of sixteen categories for their WTP, including zero. Alberini (1995) suggested that this type of interval data is often better than a dichotomous choice question with a follow up question. Following the recommendations from the National Oceanic and Atmospheric Administration (NOAA) panel in 1993, the questionnaire provided choices, including the “zero-bid” (zero WTP) and other positive values.

### EMPIRICAL MODEL

Each selection in the payment card survey represented an interval range. Respondents could select either a zero value or any value above zero. Therefore, the choice variable indicating the WTP was observed in interval ranges but not as an exact amount. Batte Hooker, Haab, and Beaverson (2007) pointed out that the interval censored regression model is consistent with the continuous Cragg model (Cragg, 1971), and the only difference is that in the second stage of estimation, the interval censored model specifies the payment card nature of the data. To construct an exact WTP premium this study applies an interval censored regression model.

The interval censored model takes into consideration the known boundaries of WTP, and the chosen range indicating the underlying maximum WTP for fair trade coffee. Since the interval data boundary  $\alpha$ 's are known, true WTP is assumed to locate in regions  $(-\infty, \alpha_1]$ ,  $(\alpha_1, \alpha_2]$  ...,  $(\alpha_j, \infty]$  as chosen by respondents. Assuming a latent variable  $WTP^*$  indicates the true WTP by individual  $i$ :

$$(1) \quad WTP^*_i = x_i' \beta + u_i, \text{ and } WTP^* | x \sim \text{Normal}(x' \beta, \sigma^2),$$

Where  $\sigma^2 = \text{Var}(WTP^* | x)$  is assumed not to depend on  $\mathbf{x}$ , and  $u_i$  is a mean zero constant variance error term. Let  $\alpha_1 < \alpha_2 \dots < \alpha_j$  denote the known boundary limits and define

$$WTP = 0, \quad \text{if } WTP^* \leq \alpha_2,$$

$$\begin{aligned}
 (2) \quad WTP = 1 & && \text{if } \alpha_1 < WTP^* \leq \alpha_2 \\
 & \vdots && \\
 WTP = J & && \text{if } WTP^* > \alpha_J.
 \end{aligned}$$

Normality is assumed in the interval censored regression. Performing maximum likelihood estimation (MLE) can obtain consistent estimates of the parameter vector  $\beta$  and the error standard deviation  $\sigma$ . Given the selections individuals provided,  $WTP^*$  locates in corresponding intervals, i.e.,  $j^* \leq 0, 0 \leq j^* \leq 0.99, \dots, 14 \leq j^*$ .

The empirical model in this study consists of three types of characteristics: demographic, consumption, and environmental concerns. The model specification is:

$$\begin{aligned}
 (3) \quad WTP = j^* = & \gamma_0 + \gamma_1 (\text{male}) + \gamma_2 (\text{age}) + \gamma_3 (\text{income}) + \gamma_4 (\text{job}) + \gamma_5 (\text{family}) + \gamma_6 (\text{marry}) \\
 & + \gamma_7 (\text{buy a cup}) + \gamma_8 (\text{made coffee}) + \gamma_9 (\text{buy from shop}) + \gamma_{10} (\text{black coffee}) + \gamma_{11} (\text{amt. consume}) + \\
 & \gamma_{12} (\text{beginner}) + \gamma_{13} (\text{seasoned}) + \gamma_{14} (\text{inc. consume}) + \gamma_{15} (\text{dec. consume}) + \gamma_{16} (\text{known FT}) + \gamma_{17} \\
 & (\text{known ogn}) + \varepsilon,
 \end{aligned}$$

where the dependent variable (WTP) was the chosen category of the payment card question, while the  $\gamma$ s were parameters to be estimated.  $\varepsilon$  was assumed to be a normally distributed error term. Robust estimators were applied for potential heteroskedasticity in the interval censored regression.

The independent variables for demographic characteristics in this study included: *male*, *age*, *income*, *job*, *family*, and *marry*. The independent variables for consumption characteristics included: *buy a cup*, *made coffee* (*brewed a cup of coffee in last month*), *buy from shop* (*purchased from coffee shop*), *black coffee* (*usually consumes non-featured*), *amount consumed* (*weekly average*), *beginner consumers* (*less than 1 year of drinking coffee experience*), *seasoned consumers* (*over 5 years of drinking coffee experience*), *increase consumption* (*expect to increase consumption next year*), and *decrease consumption* (*expect to decrease consumption next year*). Among these variables, the occasional consumers (between 1-5 years of consumption history) and those consumers who were to maintain the same level of coffee consumption in the following were the omitted categories in the analysis.

The last two variables included in the model were used as proxies for consumers' social and environmental concerns: *Known fair trade* (*self-reported of having previous knowledge of fair trade products*) and *Known organic* (*self-reported of having previous knowledge of organic food*). In

this study we simply asked if respondents knew about fair trade and organic foods and used these two variables as a proxy of consumers' knowledge about product information. To address the concern that these two variables may be highly correlated, we calculated the conditional index between them. The index was much smaller than 15 (the commonly accepted rule of thumb) indicating no multicollinearity. Variable definition and descriptive statistics of the overall sample are shown in Table 1. Tables 2-1 and 2-2 describes the sample characteristics of the three sub-samples representing the three versions of the questionnaire.

**Table 1. Definitions and sample statistics of variables (N = 564)**

Variable	Description of variable	Mean	Std. Dev.	Min.	Max.
<i>WTP</i>	The mid-point price for each chosen interval of willingness-to-pay	4.49	3.89	0	14.5
<i>male</i>	Binary variable=1 if respondent is male	0.59	0.48	0	1
<i>age</i>	The age of the respondent (continuous variable)	24.41	5.68	18	54
<i>income</i>	Total household income (Yuan) earned per month before tax (continuous variable)	5,805	4,347	500	17,500
<i>job</i>	Binary variable=1 if respondent is employed full time	0.38	0.47	0	1
<i>family</i>	Total number of family members in a household (discrete variable)	3.1	1.05	1	10
<i>marry</i>	Binary variable=1 if respondent is married	0.17	0.36	0	1
<i>buy a cup</i>	Binary variable=1 if respondent purchased at least one cup of coffee in last month	0.68	0.46	0	1
<i>made coffee</i>	Binary variable=1 if respondent made a cup of coffee in last month	0.72	0.44	0	1
<i>buy from shop</i>	Binary variable=1 if respondent buys coffee from coffee shop	0.66	0.46	0	1
<i>black coffee</i>	Binary variable=1 if respondent usually buys a regular black coffee or black coffee with creamer or sugar	0.62	0.47	0	1
<i>amt. consumed</i>	The amount of coffee consumption in terms of number of small cups in one week (continuous variable)	4.58	5.14	0	52
<i>beginner</i>	Binary variable=1 if respondent has been a regular coffee drinker for up to 5 years	0.56	0.49	0	1
<i>seasoned</i>	Binary variable=1 if respondent has been a regular coffee drinker for over 5 years	0.09	0.29	0	1
<i>inc. consume</i>	Binary variable=1 if respondent expects to increase coffee consumption next year	0.33	0.47	0	1
<i>dec. consume</i>	Binary variable=1 if respondent expects to decrease coffee consumption next year	0.1	0.31	0	1
<i>known FT</i>	Binary variable=1 if respondent has at least some level of prior knowledge of fair trade coffee	0.34	0.46	0	1
<i>known Ogn</i>	Binary variable=1 if respondent has at least some level of prior knowledge of organic coffee	0.45	0.48	0	1



**Table 2-1. Sample statistics of variables**

Variable	Set A <sup>a</sup> (N <sub>1</sub> =185)				Set B <sup>b</sup> (N <sub>2</sub> =195)			
	Mean	Std. Dev.	Min.	Max.	Mean	Std. Dev.	Min.	Max.
<i>WTP1<sup>d</sup></i>	5.13	4.15	0	14	4.22	3.75	0	14
<i>WTP2<sup>e</sup></i>	4.55	3.69	0	13.99	4.27	3.4	0	13.99
<i>male</i>	0.6	0.48	0	1	0.56	0.48	0	1
<i>age</i>	25.05	6.24	18	50	24.07	5.63	18	54
<i>income</i>	5817.64	4304.85	500	17500	5946.02	4261.27	500	17500
<i>job</i>	0.44	0.49	0	1	0.35	0.46	0	1
<i>family</i>	3.09	1.16	1	10	3.18	1.06	1	10
<i>marry</i>	0.21	0.38	0	1	0.15	0.34	0	1
<i>buy a cup</i>	0.7	0.45	0	1	0.63	0.48	0	1
<i>made coffee</i>	0.7	0.45	0	1	0.72	0.44	0	1
<i>buy from shop</i>	0.62	0.47	0	1	0.66	0.46	0	1
<i>black coffee</i>	0.63	0.46	0	1	0.68	0.46	0	1
<i>amt. consumed</i>	4.49	4.46	0	33	4.65	5.51	0	52
<i>beginner</i>	0.55	0.49	0	1	0.58	0.49	0	1
<i>seasoned</i>	0.08	0.28	0	1	0.09	0.29	0	1
<i>inc. consume</i>	0.38	0.48	0	1	0.31	0.46	0	1
<i>dec. consume</i>	0.11	0.31	0	1	0.09	0.29	0	1
<i>known FT</i>	0.34	0.46	0	1	0.37	0.47	0	1
<i>known Ogn</i>	0.49	0.49	0	1	0.47	0.49	0	1

<sup>a</sup> Dataset A consists of respondents who received information Type A.

<sup>b</sup> Dataset B consists of respondents who received information Type B.

<sup>c</sup> Dataset C consists of respondents who received information Type C.

<sup>d</sup> Lower bound of the average of the chosen payment category.

<sup>e</sup> Upper bound of the average of the chosen payment category.

**Table 2-2. Sample statistics of variables (continued)**

Variable	Set C <sup>c</sup> (N <sub>3</sub> =184)			
	Mean	Std. Dev.	Min.	Max.
<i>WTP1<sup>d</sup></i>	3.9	3.46	0	14
<i>WTP2<sup>e</sup></i>	4.34	3.24	0	13.99
<i>male</i>	0.6	0.48	0	1
<i>age</i>	24.24	5.09	18	46
<i>income</i>	6081.32	4429.25	500	17500
<i>job</i>	0.35	0.46	0	1
<i>family</i>	3.07	0.92	1	6
<i>marry</i>	0.16	0.35	0	1
<i>buy a cup</i>	0.72	0.44	0	1
<i>made coffee</i>	0.74	0.43	0	1
<i>buy from shop</i>	0.7	0.44	0	1
<i>black coffee</i>	0.54	0.49	0	1
<i>amt. consumed</i>	4.88	5.36	0	45
<i>beginner</i>	0.53	0.5	0	1
<i>seasoned</i>	0.1	0.3	0	1
<i>inc. consume</i>	0.3	0.46	0	1
<i>dec. consume</i>	0.11	0.32	0	1
<i>known FT</i>	0.31	0.45	0	1
<i>known Ogn</i>	0.39	0.47	0	1

## RESULTS

In our sample, respondents consist of more of younger individuals and less of older consumers (50-year-old and above). This sample structure in age is similar to the findings on the composition of Chinese coffee consumers—Chinese consumers were mostly composed of young people and white-collar workers (Beijing Zeefer Consulting Ltd., 2009).

From Table 1, male consumers were the majority of the sample, about 59%. Only a small portion of respondents were married, about 17%, and about 38% of respondents had a full-time job. The average age of our total sample was about 24 years old. The family size, on average, was about three people, and household income per month before tax was about CNY¥5,800. A total of 68% of respondents purchased at least one cup of coffee in the last month; 72% had made a cup of coffee in the last month; and 66% purchased coffee from a coffee shop. Moreover, 62% of respondents presented themselves as a drinker of black coffee. The amount of coffee consumed suggested that respondents, on average, had about 4.6 small cups weekly.

For the consumption history, approximately 56% of respondents stated being regular coffee drinkers for up to five years while about 9% had over five years of experience being a regular drinker. About 33% of respondents stated that they would expect to raise their coffee consumption in coming year, and 10% would cut back. For product knowledge, the survey asked how consumers might know about organic and fair trade coffee. About 45% of respondents stated that they knew some relevant information about organic coffee while 34% stated having exposure to fair trade coffee—clearly room for improving product information among Chinese consumers. It also strengthened the importance to understand the impact of different types of product information on consumer WTP.

Subgroup datasets A to C in Table 2 corresponded to the sample under the three information treatment. Mean and standard deviation of each variable were not statistically different when compared to those in Table 1. The two WTP variables (*WTP1* and *WTP2*) indicated the lower and upper bound of the sub-sample average of the chosen payment category respectively. Equality test\* for the proportion of respondents between the three subgroups rejected the null that the average lower and upper bounds were equal. This is

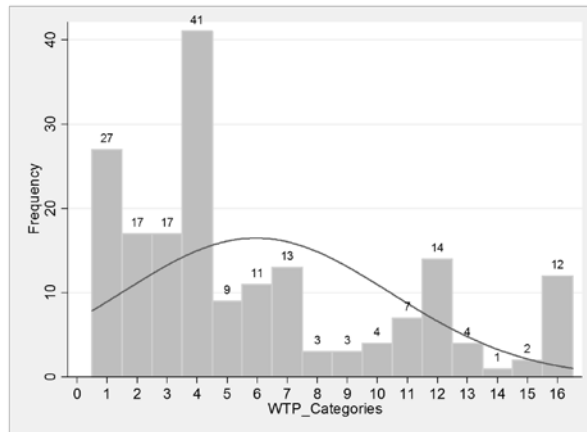
---

\* The detailed Z-test scores are available upon request.

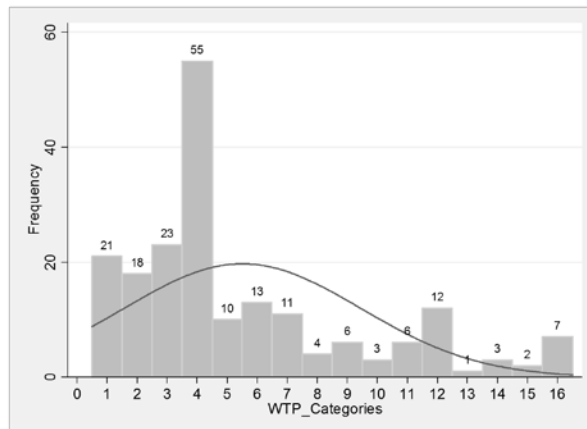
an indication that given different product information, consumers might have responded with different WTP.

Figures 2, 3, and 4 describe the frequency of respondents' chosen payment card values based on the product information they receive, respectively. Note that the kernel normal distribution curves in these three figures are similar and the majority of consumers under each version chose category 4 (CN¥2.0-2.99). Across these three different versions, approximately 89% of 564 respondents were willing to pay at least some premium for fair trade coffee. In sum, the sampled consumers were found to be willing to pay more for fair trade coffee.

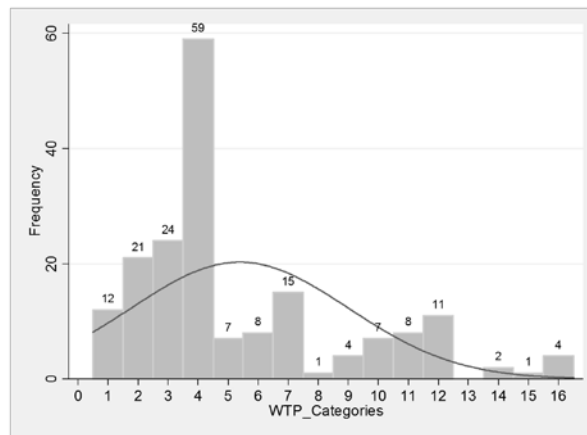
**Figure 2. The frequency of reported WTP for fair trade coffee based on information**



**Figure 3. The frequency of reported WTP for fair trade coffee based on information Type B**



**Figure 4. The frequency of reported WTP for fair trade coffee based on information Type C**



To further differentiate the impact of different types of product information on WTP, equation (3) was estimated using information type as indicator variables. Two models were estimated: one using information treatment indicators as intercept shifters and the other used these indicators as both intercept and slope shifters. Results are reported in Table 3. As suggested by the estimation result, information did not appear to play a role as model intercept shifter. Different types of information did affect the impact of various explanatory variables to consumer WTP. To best feature and compare the impact of the three types of product information on WTP, data can be further partitioned according to information treatments.

Data obtained when Type A, B, and C information was offered are labeled as set A, B, and C. A series of log likelihood ratio (LR) tests were conducted between models using different subsets of the data. A summary of these tests is presented in Table 4. The estimated coefficients under information Type A were significantly different to those obtained under information Type C and there were no other significant differences between estimated coefficients under the three subgroups alone. When data obtained under information Type A and B were combined, the estimated coefficients were different to those estimated under Type C.

**Table 3. Interval regression results for WTP: Information treatment as dummy variables**

Variables	Information treatment as slope shifters only	t-stat	Information treatment as both intercept and slope shifters	t-stat
<i>Male</i>	-0.873**	(-2.19)	-1.108*	(-1.91)
<i>Age</i>	-0.062	(-1.48)	-0.136*	(-1.85)
<i>income</i>	-0.002	(-0.06)	0.029	(0.41)
<i>Job</i>	0.596	(1.32)	0.472	(0.66)
<i>family</i>	0.323*	(1.76)	0.764**	(2.34)
<i>marry</i>	0.974*	(1.70)	2.078**	(2.23)
<i>buy a cup</i>	-0.232	(-0.51)	-0.794	(-1.02)
<i>made coffee</i>	1.357***	(2.99)	0.153	(0.25)
<i>buy from shop</i>	0.683	(1.63)	1.169**	(1.96)
<i>black coffee</i>	-0.576	(-1.48)	-1.185**	(-2.10)
<i>amt. consumed</i>	0.026	(0.57)	0.079*	(1.69)
<i>beginner</i>	-1.137***	(-2.84)	-1.607**	(-2.51)
<i>seasoned</i>	-0.403	(-0.55)	-1.478	(-1.57)
<i>inc. consume</i>	1.175***	(2.88)	0.282	(0.44)
<i>dec. consume</i>	-1.643**	(-2.55)	-1.448	(-1.55)
<i>known FI</i>	0.193	(0.48)	-0.175	(-0.27)
<i>known Ogn</i>	-0.739*	(-1.90)	-0.463	(-0.76)
Type A* <i>male</i>			0.780	(0.79)
Type A* <i>age</i>			0.026	(0.24)
Type A* <i>income</i>			-0.051	(-0.46)
Type A* <i>job</i>			-0.177	(-0.16)
Type A* <i>family</i>			-0.241	(-0.57)
Type A* <i>marry</i>			-0.216	(-0.14)
Type A* <i>buy a cup</i>			0.619	(0.54)
Type A* <i>made coffee</i>			1.675	(1.50)
Type A* <i>buy from shop</i>			0.257	(0.25)
Type A* <i>black coffee</i>			0.296	(0.30)
Type A* <i>amt. consumed</i>			-0.120	(-1.33)
Type A* <i>beginner</i>			0.880	(0.88)
Type A* <i>seasoned</i>			3.461*	(1.71)
Type A* <i>inc. consume</i>			1.420	(1.44)
Type A* <i>dec. consume</i>			-2.219	(-1.44)
Type A* <i>known FI</i>			0.715	(0.72)
Type A* <i>known Ogn</i>			-0.314	(-0.32)
Type B* <i>male</i>			-1.182	(-0.21)
Type B* <i>age</i>			0.142	(1.49)
Type B* <i>income</i>			0.0004	(0.01)
Type B* <i>job</i>			0.169	(0.17)
Type B* <i>family</i>			-0.764*	(-1.75)
Type B* <i>marry</i>			-3.027**	(-2.16)
Type B* <i>buy a cup</i>			1.187	(1.12)
Type B* <i>made coffee</i>			1.744*	(1.78)
Type B* <i>buy from shop</i>			-1.671*	(-1.84)
Type B* <i>black coffee</i>			1.631*	(1.89)
Type B* <i>amt. consumed</i>			-0.048	(-0.47)
Type B* <i>beginner</i>			0.812	(0.88)
Type B* <i>seasoned</i>			1.073	(0.76)
Type B* <i>inc. consume</i>			0.779	(0.81)
Type B* <i>dec. consume</i>			0.897	(0.63)
Type B* <i>known FI</i>			0.327	(0.36)
Type B* <i>known Ogn</i>			-0.583	(-0.67)
Type A	0.652	(1.41)	-1.840	(-0.59)
Type B	0.127	(0.30)	-2.901	(-1.00)
<i>constant</i>	4.251***	(3.23)	6.148***	(2.91)
Log Pseudo-likelihood	-1468.373		-1450.347	
Wald $\chi^2$	62.71		110.20	
Number of observation	564		564	

Note: Asterisks indicate levels of significance: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Similarly, coefficient estimates obtained after combining data collected under information Type B and C were significantly different to those under Type A. Consistent with results found in Table 3, these statistics indicated that the coefficient estimates can be significantly different if different amount of product information was given. To reflect these differences, three separate models were estimated under each type of information respectively.

**Table 4. Log likelihood ratio test on parameter equality for Sets A, B, and C**

	Set A	Set B	Set C	Set A+B	Set A+C	Set B+C
Set A	-					0.0774*
Set B	0.1822	-			0.3646	
Set C	0.0384**	0.2210	-	0.0972*		

Note: LR chi-square probability in parentheses. \* p<0.10, \*\* p<0.05, \*\*\*p<0.01.

These estimation results are shown in Table 5. The empirical results of model under information Type A (basic definition about fair trade coffee) show that five coefficient estimates were significantly different from zero. The benefit of the interval regression model is that each coefficient estimate can be interpreted as the marginal value of WTP (Batte *et al.*, 2007). Among the demographic variables, only the coefficient of *family* was significantly different from zero and has a positive sign, which means that consumers would like to pay about 0.52 yuan per cup more if they were from a family with one more member based on the sample average of about three members. Similar interpretations could be applied to other variables as well.

Among the consumption characteristic variables in the model under subgroup A, the coefficients of *made coffee*, *buy from shop*, *increase consumption*, and *decrease consumption* were all significantly different from zero. This indicated that given the basic definition about fair trade coffee, consumers with experience in making coffee, purchased coffee from shops, and expected to increase coffee consumption in the following year were willing to pay more for fair trade coffee. These marginal WTP measures ranged from CNY¥1.4 to CNY¥1.9 per cup. However, certain groups of consumers; i.e., those who expect to decrease their coffee consumption, would be willing to pay less for fair trade coffee.

**Table 5. Interval regression results for WTP: Information treatment subsample result**

Variables	Set A	Set B	Set C	Set A+B+C
<i>Male</i>	-0.324 (-0.39)	-1.291** (-2.04)	-1.119** (-1.98)	-0.850** (-2.12)
<i>Age</i>	-0.115 (-1.35)	-0.006 (-0.10)	-0.137* (-1.88)	-0.062 (-1.45)
<i>Income (100 Yuan)</i>	-0.002 (-24.30)	0.003 (39.15)	0.002 (35.29)	-0.511 (-11.03)
<i>Job</i>	0.325 (0.38)	0.641 (0.91)	0.486 (0.69)	0.638 (1.42)
<i>Family</i>	0.520* (1.85)	0.0001 (0.00)	0.759** (2.37)	0.318* (1.73)
<i>Marry</i>	1.934 (1.59)	-0.948 (-0.90)	2.057** (2.25)	1.004* (1.74)
<i>buy a cup</i>	-0.170 (-0.20)	0.393 (0.55)	-0.806 (-1.06)	-0.238 (-0.53)
<i>made coffee</i>	1.939** (2.00)	1.898** (2.49)	0.115 (0.19)	1.333*** (2.94)
<i>buy from shop</i>	1.419* (1.67)	-0.502 (-0.73)	1.176** (2.01)	0.631 (1.51)
<i>black coffee</i>	-0.914 (-1.08)	0.445 (0.68)	-1.157** (-2.08)	-0.554 (-1.43)
<i>amt. consumed</i>	-0.043 (-0.54)	0.030 (0.33)	0.077* (1.65)	0.024 (0.53)
<i>beginner</i>	-0.760 (-0.95)	-0.795 (-1.20)	-1.552** (-2.49)	-1.144*** (-2.85)
<i>seasoned</i>	2.057 (1.10)	-0.405 (-0.39)	-1.413 (-1.52)	-0.429 (-0.58)
<i>inc. consume</i>	1.758** (2.26)	1.061 (1.48)	0.259 (0.42)	1.224*** (2.99)
<i>dec. consume</i>	-3.905*** (-2.98)	-0.550 (-0.51)	-1.394 (-1.54)	-1.632** (-2.56)
<i>known FT</i>	0.596 (0.78)	0.152 (0.24)	-0.208 (-0.32)	0.193 (0.48)
<i>known Ogn</i>	-0.779 (-0.96)	-1.046* (-1.70)	-0.455 (-0.76)	-0.695* (-1.79)
<i>constant</i>	4.345* (1.82)	3.247 (1.64)	6.246*** (3.00)	4.496*** (3.49)
Log Pseudo-likelihood	-473.401	-503.329	-466.967	-466.967
Wald $\chi^2$	41.39	26.59	36.81	36.81
Pseudo R <sup>2</sup>	0.135	0.104	0.143	0.143
Number of observation	185	195	184	184

Note: t stats in parentheses. Asterisks indicate levels of significance: \* p<0.10, \*\* p<0.05, \*\*\*p<0.01.

The estimated coefficients under information Type B (the basic definition about fair trade coffee plus specific information about sustainability and the environment) show that three coefficients were significantly different from zero. This result indicated that given more information about sustainability and the environmental issues, consumers who were female and who also made their own coffee would like to pay CN¥1.2 and CN¥1.9 per cup more for fair trade coffee respectively. However, consumers with some level of prior knowledge about organic coffee were willing to pay less. It is worth further investigation on how the change of Chinese consumers' perception on organic coffee might relate to their WTP for products' environmental claims.

Estimation result under information Type C (Type B plus additional information on societal benefits) showed that eight coefficient estimates were significantly different from zero. Among the demographic variables under this subgroup, female consumers who had younger age, who had more family members in a household, and who were also married were willing to pay more for fair trade coffee. These marginal WTP measured varied from CN¥0.1 per cup for an additional year in age to CN¥2 per cup for being married. Moreover, among consumption variables, consumers who purchased coffee from shops, who liked the featured coffee (non-regular black coffee), and who were used to consume large amount of coffee every week were likely to pay more for fair trade coffee. However, when compared to occasional coffee drinkers, beginner drinkers (regular coffee drinkers for 1 to 5 years) were likely to pay less for fair trade coffee. This implied that the occasional coffee drinkers were likely to pay more for fair trade coffee if given more comprehensive product information.

Although statistical tests in Table 4 showed that each sub-sample should be analyzed separately, for comparison purpose, a model was estimated using all three subgroups pooled data. Among demographic variables, consumers who were female, who had more family members in a household, and who were married were willing to pay more for fair trade coffee. Marginal WTP measures for these variables ranged from CN¥0.3 to CN¥1 per cup. Furthermore, among consumption variables, consumers who made their own coffee or who expected to increase coffee consumption in the following year were likely to pay more for fair trade coffee. Reversely, those who expected to decrease their coffee consumption would be willing to pay less for fair trade coffee. Again, occasional or seasoned coffee drinkers were likely to pay more for fair trade coffee.

Interestingly, variable *Known fair trade* was not significant in any of the three models. This suggested that consumers' prior knowledge on fair trade had no impact on their WTP for fair trade coffee. There could be multiple reasons why this was the case. One plausible cause is that consumers who indicated that they had heard about the concept of fair trade did not truly know the meaning of the concept. This in turn provided an opportunity to further explore the implications of fair trade information and consumer WTP.

Given the variation in coefficient estimates, this study further calculated the predicted premium of WTP for fair trade coffee under different consumers' profiles and information treatment in Table 6. Variables *male* and *made coffee* were the factors used to make the comparisons. Each of these two variables was a dummy variable, hence, there



were four combinations between them. The results revealed that male consumers who did not make a cup of coffee were willing to pay the lowest premium for fair trade coffee no matter what types or how much amount of product information were provided. Meanwhile, female consumers who made a cup of coffee were likely to pay the highest premiums for fair trade coffee no matter what types or how much amount of product information were provided.

**Table 6. Predicted premium of WTP for fair trade coffee under different consumer profiles**

	Set A	Set B	Set C
<b>Female consumer</b>			
Did not make a cup of coffee	CNY1.04 / US\$0.16	CNY3.40 / US\$0.51	CNY2.12 / US\$0.32
Make a cup of coffee	<u>CNY2.98 / US\$0.45</u>	<u>CNY5.30 / US\$0.79</u>	<u>CNY2.23 / US\$0.33</u>
<b>Male consumer</b>			
Did not make a cup of coffee	<u>CNY0.72 / US\$0.11</u>	<u>CNY2.11 / US\$0.32</u>	<u>CNY1.00 / US\$0.15</u>
Make a cup of coffee	CNY2.65 / US\$0.40	CNY4.01 / US\$0.60	CNY1.11 / US\$0.17

Note:      represents the lowest premium;      represents the highest premium.

Some of these findings exhibit similarities as previous studies in developed countries. For instance, in surveys conducted in the US, Basu and Hicks (2008) and Wolf and Romberger (2010) found that consumers did not have equal reaction towards all levels of information regarding fair trade. Besides the above studies, consumer heterogeneity in their WTP for fair trade coffee was found in Canada (Arnot *et al.*, 2006) and Germany (Basu and Hicks, 2008). A study on Belgian consumers did not find respondents' demographic information to be significant (Pelsmacker *et al.*, 2005). In terms of WTP, the magnitude found in this study is also consistent with many developed countries. Pelsmacker *et al.* (2005), Arnot *et al.* (2006), and Wolf and Romberger (2010) all reported around 10%-20% premium for fair trade coffee.

In sum, this study shows that giving different amount and type of product information may create potential variations in consumer perceptions and WTP for fair trade coffee. Chinese consumers in general were willing to pay more for fair trade coffee, but the information they receive and their premium for fair trade coffee did not follow a linear relationship; it was not necessarily true that more information led to higher WTP.

## CONCLUSION AND IMPLICATIONS

This study investigated whether different amount of product information on fair trade coffee would be associated with different consumer WTP. Respondents were randomly assigned to one of three different information treatments in a survey. The product information revealed various implications of fair trade coffee and ranged from basic to including comprehensive details. Results indicated that Chinese consumers were generally willing to pay additional amount for fair trade coffee. Product information played an important role in determining what types of consumer characteristics were responsive to fair trade coffee.

The factors of demographic characteristics demonstrated that female consumers who were younger, who had more family members in the household, and who were also married were willing to pay more for fair trade coffee when comprehensive product information was provided. When basic or information on sustainability and the environmental implications was provided, only female consumers or consumers with more family members in a household were willing to pay a premium for fair trade coffee.

When the most comprehensive product information was provided; that is, the information including both sustainability/environmental implications as well as societal consequences, consumers who purchased coffee from shops, who liked the featured coffee (non-regular black coffee), who were used to consume large amount of coffee every week, and who were occasional or seasoned coffee drinkers were willing to pay more for fair trade coffee. When intermediate product information was provided (only on sustainability/environmental), only consumers with experience in making coffee were willing to pay a premium for fair trade coffee. When basic product information was provided, consumers with experience in making coffee, purchased coffee from shops, and who were expecting to increase coffee consumption were willing to pay a premium for fair trade coffee.

The amount of product information provided and consumer WTP did not have a monotonic relationship. More product information did not necessarily lead to higher WTP. Chinese consumers responded differently to fair trade coffee based on different factors in their demographic and consumption characteristics. Most variables related to social and environmental consciousness were shown to be insignificantly different to zero. There could be a few possible reasons. Some may be related to the intrinsic nature of the data used in the current study. For instance, the data were collected in one city in China. Surveying additional consumers in more locations in China might reveal heterogeneity.

The cross-sectional data were a snapshot of the potential market consumption. A panel dataset might help identify the role of social and environmental concerns on consumers' consumption behavior.

Some other reasons may be linked to the characteristics of Chinese consumers. First, the proportion of individuals with strong opinions on social and environmental issues might be relatively small in China compared to developed countries. Second, consumers who reported awareness might not have clear comprehension of the many dimensions these concepts might entail. Third, compared to tea, coffee is still a relatively new beverage for most Chinese consumers. Concerns of the social and environmental implications of fair trade coffee might not have clearly formed. Nevertheless, with the strong growth of coffee market in China, consumers' general positive attitude found in this study suggested an optimistic future for fair trade coffee in China.

## REFERENCES

- Alberini, A. 1995. Efficiency vs. bias of willingness-to-pay estimates: Bivariate and interval-data model. *Journal of Environmental Economics and Management* 29(2): 169-180.
- Arnot, C., P.C. Boxall, and S.B. Cash. 2006. Do ethical consumers care about price? A revealed preference analysis of fair trade coffee purchases. *Canadian Journal of Agricultural Economics* 54(4): 555-565.
- Basu, A.K. and R.L. Hicks. 2008. Label performance and the willingness to pay for fair trade coffee: A cross-national perspective. *International Journal of Consumer Studies* 32(5): 470-478.
- Batte, M.T., N.H. Hooker, T.C. Haab, and J. Beaverson. 2007. Putting their money where their mouths are: Consumer willingness to pay multi-ingredient, processed organic food products. *Food Policy* 32(2): 145-159.
- Beijing Zeefer Consulting Ltd. 2009. *China coffee market overview 2009-2010: The guidance for selling coffee in China*. Michigan: Farmington Hills, the Gale Group.
- Bougherara, D. and P. Combris. 2009. Eco-labelled food products: What are consumers paying for? *European Review of Agricultural Economics* 36(3): 321-341.
- Caswell, J.A, and E.M. Mojduszka. 1996. Using informational labeling to influence the market for quality in food products. *American Journal of Agricultural Economics* 78(4): 1248-1253.

- Caswell, J.A. and D.I. Padberg. 1992. Toward a more comprehensive theory for food labels. *American Journal Agricultural Economics* 74(2): 460-468.
- Cragg, J. 1971. Some statistical models for limited dependent variables with application to the demand for durable goods. *Econometrica* 39(2): 829-844.
- Galarraga, I, and A. Markandya. 2004. Economic techniques to estimate the demand for sustainable products: A case study for fair trade and organic coffee in the United Kingdom. *Economia Agraria y Recursos naturales* 4(7): 109-134.
- Langdon, S. 2007. Competing in the middle kingdom: Personal narratives of Colombians doing business in China. <http://www.escuelaing.edu.co/micrositio/admin/documentos/EOS1-10.pdf> (accessed March 22, 2012).
- Loureiro, M.L. and J. Lotade. 2005. Do fair trade and eco-labels in coffee wake up the consumer conscience? *Ecological Economics* 53(1): 129-138.
- McCluskey, J.J. and M.L. Loureiro. 2003. Consumer preferences and willingness to pay for food labeling: A discussion of empirical studies. *Journal of Food Distribution Research* 34(3): 95-102.
- Pelsmacker, P.D., L. Driesen, and G. Rayp. 2005. Do consumers care about ethics? Willingness to pay for fair-trade coffee. *Journal of Consumer Affairs* 39(5): 363-385.
- Wolf, M.M. and C.L. Romberger. 2010. Consumer attitudes towards fair trade coffee. Paper presented at the Australian Agricultural and Resource Economics Society National Conference, Adelaide, Australia, February 10-12.
- World Fair Trade Organization. 2009. Fair trade advocacy office, fair trade movement welcomes support by the European Commission to fair trade. [http://www.wfto.com/index.php?option=com\\_content&task=view&id=965&Itemid=1](http://www.wfto.com/index.php?option=com_content&task=view&id=965&Itemid=1) (accessed March 22, 2012).

## **APPENDIX** (Three types of fair trade coffee information)

### **Type A - Basic definition about fair trade coffee**

Fair trade coffee is certified by an international company following the standards maintained by Fair trade Labeling Organizations (FLO) International. Coffee bearing this label suggests that traders have agreed to pay a fair price to marginalized coffee farmers who are organized in cooperatives around the world, particularly developing countries in Asia, Africa, Latin America, and the Caribbean.

### **Type B - Type A plus specific information on the sustainability and environment**

Fair trade coffee is certified by an international company following the standards maintained by Fair trade Labeling Organizations (FLO) International. Coffee bearing this label suggests that traders have agreed to pay a fair price to marginalized coffee farmers who are organized in cooperatives around the world, particularly developing countries in Asia, Africa, Latin America, and the Caribbean. Currently, traders qualify for fair trade label on their products guarantees a minimum price to coffee farmers regardless of the market price. It not only enables the farmers to maintain a sustainable livelihood, but also helps them to gain market access to the mainstream and value-added market; build a long-term trading partnership with the consumers; develop production knowledge and skills; obtain needed financial credits; improve environmental conservation; connect with consumers for the need of social justice. An estimated of 700,000 small coffee farmers worldwide directly benefit from fair trade sales.

**Type C - Type B plus additional information on societal benefits**

The concept of fair trade can be dated back more than half a century ago. It is a trading partnership, based on dialogue, transparency and respect, that seeks greater equity in international trade. Backed by consumers, fair trade contributes to sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers. The fair trade principle applies to many different products including coffee, bananas, cocoa, cotton, flowers, fresh fruit, honey, juices, nuts and oilseeds, rice, spices and herbs, sugar, tea, wine, and handicrafts. An estimated 7.5 million disadvantaged producers will benefit from the fair trade initiative including Chinese producers.

Fair trade coffee is certified by an international company following the standards maintained by Fair trade Labeling Organizations (FLO) International. Coffee bearing this label suggests that traders have agreed to pay a fair price to marginalized coffee farmers who are organized in cooperatives around the world, particularly developing countries in Asia, Africa, Latin America, and the Caribbean. Currently, traders qualify for fair trade label on their products guarantees a minimum price to coffee farmers regardless of the market price. It not only enables the farmers to maintain a sustainable livelihood, but also helps them to gain market access to the mainstream and value-added market; build a long-term trading partnership with the consumers; develop production knowledge and skills; obtain needed financial credits; improve environmental conservation; connect with

consumers for the need of social justice. An estimated of 700,000 small coffee farmers worldwide directly benefit from fair trade sales.