Using a Modified Payment Card Survey on Chinese Consumers' Willingness to Pay for Fair Trade Coffee: Would the Starting Point Matter

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Abstract

Coffee consumption in China is increasing rapidly over the recent years. This study offers one of the few initial attempts to not only understand general consumption behavior associated with Chinese coffee, but to explore the viability of niche markets for coffee with the credence attribute "fair trade". A modified payment card approach was adopted as the consumer willingness to pay elicitation method. Survey results of 564 consumers from the city of Wuhan, China suggest a positive attitude toward coffee as an alternative drink and a willingness to pay a premium for "fair trade" coffee. This study also explores and describes the potential impact of starting point bias, which has been relatively well documented in the dichotomous choice literature but has not been thoroughly addressed in a payment card context.

JEL Code: D12, Q13

Key words: China, coffee, fair trade, payment card, starting point bias, willingness to pay

Introduction

Coffee is an important component of the total net agricultural exports from tropical countries. However, challenges associated with market volatility for this product have often resulted in large-scale impacts on the quality of life in hard-struck areas. When coffee prices fell to their lowest levels ever in 2001, the crisis impacted more than 25 million households in coffee-producing countries (Abrahim, 2006). Price fluctuation associated with coffee trade has an especially negative impact on small producers, as production by small-scale family farmers accounts for 75 percent of the world's coffee supply (Abrahim, 2006). As a result, countries with economies that are largely dependent upon coffee trade, such as those in Latin America, Asia, and Africa, need a strategy to counteract effects of the market's instability. Among other means, "fair trade" initiatives could be one of the solutions that help producers cope with the current coffee crisis.

Fair trade is an organized social movement and market-based approach to promote sustainability, and helps producers in developing countries to receive better trading conditions. Coffee was the first product to incorporate "fair trade" as a labeled attribute in 1989 (James 2000), and fair trade coffee accounts for the largest sales volume among all fair trade products. Although nearly half of total coffee consumption in the world is in European countries (World Resource Institute 2007), the market share for fair trade coffee in Europe is only about 1% (Galarraga and Markandya 2004). Hence, there is an opportunity for small-scale producers, especially in developing countries, to expand their exports of fair trade coffee.

Despite the fact that the Chinese coffee market is relatively new to major coffee marketers in developed countries (World Resource Institute 2007), the growth potential is promising (Allison 2009). For instance, popular U.S. coffee companies such as Seattle's Best, and Starbucks, have not

suffered any financial loss in China markets despite their reduced profits in the U.S. and other foreign markets during 2008 and 2009 (Sanchanta 2010). Studies on fair trade coffee in developed countries have found characteristics such as younger age, female, high income, and high awareness of social rights and ethics, are positively correlated with a higher willingness to pay (WTP) (McCluskey and Loureiro 2003; Galarraga and Markandya 2004; Pelsmacker, Driesen, and Rayp 2005; Arnot, Boxall, and Cash 2006; Basu and Hicks 2008; Catturani et al. 2008; Wolf and Romberger 2010; Cranfield et al. 2010). This study, nevertheless, emphasizes fair trade coffee in a developing country—China. As studies on coffee consumption behavior in developing countries being essentially nonexistent, exploring China's market will provide a baseline understanding of the consumption patterns within this emerging market. It will help identify if and how Chinese coffee consumption may differ from findings reported in previous studies of other countries. To a broader sense, this study also provides information that may contribute to improving market conditions for small and medium-scale coffee producers in the world through the identification of consumption behavior and competitive advantages for fair trade coffee.

This research will also generate a methodological contribution which may help narrow the estimated range of true WTP. While the dichotomous choice (DC) method in the Contingent Valuation (CV) literature has raised the concern of starting point bias, a similar but possible bias in other CV methods has not received similar attention. In this study, we examine the impact of starting points in the context of a payment card valuation framework.

Background

According to the World Fair Trade Organization (2009), consumers worldwide spent over 2.3 billion Euros for fair trade certified goods in 2007 and products certified as fair trade were

available in more than 60 countries. Pelsmacker, Driesen, and Rayp (2005), who measured the WTP for fair trade coffee with data collected from a survey of 808 Belgian consumers, reported about 40% of respondents specifically expressed willingness to help small-scale coffee producers with an average WTP for fair trade coffee equal to approximately ten percent over the price of a conventional cup of coffee. Canadian consumers who purchased fair trade coffee were also found to be less price-sensitive than those buying conventional coffee (Arnot, Boxall, and Cash 2006).

Additionally, in a study to compare the WTP for fair trade coffee in the U.S. and Germany, Basu and Hicks (2008) concluded that consumers' WTP was positively related to the intensity of the fair trade labeling program and the WTP amount flattened out before the labeling program reached highest intensity. Importantly however, Germany and American consumers were found to be overall consistent in terms of their response toward fair trade coffee. In another study on consumption of fair trade coffee in the U.S., Wolf and Romberger (2010) discovered that only a small percentage of respondents were interested in purchasing coffee branded as fair trade, leading the researchers to conclude that the quality of fair trade products might have been perceived as inferior. In a similar note, McCluskey and Loureiro (2003) pointed out that consumers must perceive the food product to be of high quality in order to pay a premium. In many of these studies conducted in developed countries, the impact of socio-demographics were found to be similar: younger age, female, high income, and high awareness of social rights and ethical concerns are positive related to higher WTP for fair trade coffee. This research fills the void by examining consumer WTP for fair trade coffee in an emerging market in a developing country—China.

Even though the National Oceanographic and Atmospheric Administration panel (NOAA, 1993) pointed out the strength of a CV study, the panel's recommendations did not include enough

details (Boyle and Bergstrom 1999). Bateman, Langford, and Rasbash (1999) conducted an experiment that provides useful information regarding both the interaction of the OE (Open-Ended) and DC (Dichotomous Choice) formats. These authors drew the conclusion that: “the OE iterative bidding format appears to suffer from the starting point bias observed in the two upper bounds of the DC bidding tree.” Although the CV method is commonly used to assess total economic value, there is considerable work still to be done in understanding and improving the technique.

One goal in CV research is to construct valid estimates for the WTP. Boyle and Bergstrom (1999) indicate that “many different formats have been used to frame CV questions, with DC, OE, and unanchored payment cards being most commonly employed in the literature today.” Some studies compare various elicitation methods, including the payment card approach, and favor the double bounded DC approach (2DC) due to its efficiency (Hackl and Pruckner 1999; Calia and Strazzera 2000). Nevertheless, the 2DC model (Hanemann, Loomis, and Kanninen 1991) has been proved to be sensitive to starting point bias, i.e. respondents anchor their WTP to the bid values offered (Flachaire and Hollard 2007). Further, a potential difficulty on a 2DC model is that it requires a much larger sample size than an OE survey (Hanemann and Kanninen 1999).

Although CV researchers can apply the iterative bidding method, where the DC questions is extended by a supplementary OE question asking respondents to state their maximum WTP, when the starting point effect exists, respondents’ final valuations are usually found to be positively correlated with the first amount of money they are asked to consider (Boyle, Bishop, and Welsh 1985). The application of the payment card approach goes beyond the OE and the bounded referendum approaches in that it provides several possible values for respondents to choose from (Hu 2006). Although the payment card approach remains to be an alternative to the

OE and the bounded referendum approaches, a possible impact of starting points under the payment card approach might still exist.

The payment card method has been applied to study consumer WTP for food items. Batte at al. (2007) examined WTP for organic food products while Hu (2006) used a similar approach to investigate consumer preference for genetically modified canola oil. None of the past studies have explicitly examined the issue of starting points. As a result, one of the goals of this study is examine the impact of starting points in a payment card approach. In this analysis, we adopt a slightly different payment card method to the previous literature where individuals are allowed to express zero as well as positive WTP.

Survey and Data

The survey was implemented in the city of Wuhan in China's Hubei province. Wuhan is the most populous city in the central region of the People's Republic of China. Data were collected by a face-to-face survey from 564 respondents during October and November of 2008. Surveyors, who were faculty members and students from a local college in Wuhan, approached potential respondents near coffee shops and grocery stores. During the survey process, surveyors applied generic wording to ensure that potential respondents would not be either encouraged or discouraged to participate. As expected, participants consist mostly of younger individuals, with a smaller portion of older consumers (50-year-old and above). This is very similar to other findings on Chinese coffee consumers—consumer groups are mostly composed of young people and white-collar workers (Beijing Zeefer Consulting Ltd. 2009).

Before implementing the survey, our questionnaire went through several rounds of testing to enhance clarity. In the questionnaire, each respondent was offered a logo (figure 1) of fair trade coffee with its definition: “coffee bearing this label means that traders have agreed to pay a fair price to marginalized coffee farmers who are organized in cooperatives around the world, particularly in developing countries in Asia, Africa, Latin America, and the Caribbean.” The logo is used as the official logo by the Fair Trade Labeling Organization International. Its definition was also translated into Chinese in the questionnaire.

The survey included general questions regarding consumer coffee consumption behavior and their socio- and demographic-information. The payment card WTP question asked consumers to indicate the amount they may be willing to pay for a medium cup of fair trade coffee in addition to a “comparable” conventional medium cup of coffee sold at market price. Consumers were asked to choose a value out of 16 categories that may best capture their true WTP. If consumers were not willing to pay any additional amount, they could choose the first category (¥0). They could also choose one from any of the other categories ranging from “¥0−¥0.99”, “¥1−¥1.99”, to up to “¥14 or more”.

When describing the “comparable” product, the questionnaire stated a standard medium cup of Columbia coffee which was defined to have identical taste and aroma as the fair trade coffee to be considered. In addition, the comparable product was also given a market price as a basis for consideration. The test of the impact of starting points was implemented by changing the offered market price for the comparable product. After a comprehensive market investigation, it was found that the range of ¥20-¥28 included almost all possible prices for a medium cup of coffee on the market. As a result, five versions of the survey were created where the market price

of the comparable product was listed differently in each version. These versions are labeled as V20 (¥20), V22 (¥22), V24 (¥24), V26 (¥26), and V28 (¥28). Although respondents were subject to the same payment card categories, they were randomly assigned to one of the five versions.

Figure 2 describes the distribution of the chosen payment card values by respondents in each of the five versions. Each dot in figure 2 represents the selection of WTP from respondents. Across these five different versions, 89% of the respondents were willing to pay at least some price premium for fair trade coffee. This suggests that overall the sample consumers were willing to pay additional for fair trade coffee. There are several other interesting patterns in figure 2. First, in each version, areas between category 1 (¥0) to 7 (¥5−¥5.99) had a higher density than the rest of the categories. This type of concentration to the lower values is not uncommon in the valuation literature (e.g., Hu 2006). Second, chosen WTP in V22 appeared to be more evenly distributed than the other versions.

Model

In our modified payment card survey, each selection represents an interval range that respondents can either select to pay zero or any value above zero. As a result, the choice variable indicating the WTP is observed in interval ranges but not the exact amount. Batte et al. (2007) indicates that the interval censored regression model is consistent with a two-stage Cragg model. To construct an exact WTP premium this study uses an interval censored regression model.

The theory of the interval censored model is similar to an ordered probit but the biggest difference between the two models is the probit model assumes (un)known boundaries of WTP. In an interval regression model, intervals boundary α's are known and true WTP is assumed to lie in

regions $(-\infty, \alpha_1]$, $(\alpha_1, \alpha_2]$, …, (α_J, ∞) as identified by respondents. Assume that a latent variable WTP^* indicates the true WTP by individual *i*:

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

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

$$
\begin{aligned}
&WTP = 0 && \text{if } WTP^* \le \alpha_1 \\
(2)\quad &WTP = 1 && \text{if } \alpha_1 < WTP^* \le \alpha_2 \\
&\vdots \\
&WTP = J && \text{if } WTP^* > \alpha_J
\end{aligned}
$$

Normality is assumed for the interval censored regression. The probability that a respondent chooses the range between upper and lower boundaries is then

$$
\begin{aligned}
(3)\quad \Pr\left[\alpha_{j-1} < WTP^* \le \alpha_j\right] &= \Pr\left[WTP^* \le \alpha_j\right] - \Pr\left[WTP^* \le \alpha_{j-1}\right] \\
&= F^*\left(\alpha_j\right) - F^*\left(\alpha_{j-1}\right)
\end{aligned}
$$

Maximum likelihood estimation (MLE) can be used to obtain consistent estimates of the parameter vector β and the error standard deviation σ. Given the answers individuals provided, WTP^* lies in corresponding intervals, i.e., $y^* \le 0$, $0 < y^* \le 0.99$, … , and $14 \le y^*$. The interval censored regression is more efficient than an ordered probit model, since the estimation procedure utilizes information on the scale of WTP* to produce an estimate of σ, instead of treating σ as a nuance parameter.

The questionnaire does not offer a category suggesting negative WTPs, because we treat the negative amounts as the zero category. A negative value of WTP suggests that for these consumers, in order for them to consume fair trade coffee, they may have to be compensated. One may contemplate several causes for why consumers may not be willing to pay a positive premium

for fair trade coffee: the process of fair trade coffee production may not be sustainable for the environment; fair trade growers may have hired child labor; and/or no producers may not actually receive the benefit associated with fair trade. Regardless of the cause, it is reasonable to set the lower bound as zero. Our empirical specification for equation (1) is:

(4) $$WTP = y^* = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_{17} X_{17} + \varepsilon$$

where the dependent variable (WTP) is explained by independent variables (X_s), while the β_s are parameters to be estimated. The explanatory variables consist of demographic, consumption, and ethical concern characteristics variables. Robust estimators are applied for any possible heteroskedasticity in the interval censored regression. For each variable, the definition and statistical summary are presented in table 1.

Following a review of variables included in previous studies, the independent variables for demographic characteristics in this study included: *Gender (male)*, *Age*, *Income (household)*, *Job (full time)*, *Family size*, and *Marriage*. The independent variables for consumption characteristics in this study included: *Buy coffee*, *Made coffee (have experience brew a cup of coffee in the past)*, *Buy fromshop*, *Black coffee (usually consumes non-flavored)*, *Consumed amount (in a week)*, *Light drinker (between 1-5 years of experience)*, *Heavy drinker (over 5 years of experience)*, *Consumption-EI (expect to increase consumption next year)*, and *Consumption-DI (expect to decrease consumption next year)*.

In addition, there are two variables used as proxies for consumers' ethical 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)*. Ethical concern of consumers has been greatly discussed by many previous studies and many

different methods may be used to gather this type of information. In this study we simply asked if respondents knew about fair trade and organic foods and use these two variables as a proxy of consumers' existing ethical concerns before they entered the survey.

Empirical Results and Discussions

The results provide a case-study example of how Chinese consumers may treat and respond to fair trade coffee through their WTP. Table 1 shows that males consisted of about 60% of the respondents. About 16% of the respondents were married. Around 37% of the respondents were employed full-time during the survey period. One can easily argue that the average age (about 24 years old) of the respondents is too low; however, the profile of coffee consumers in China mostly are of the younger generation. Preliminary pilot studies confirm that coffee drinkers in China are rarely over 40 years of age, and only a small percentage of coffee consumers are over 30 years of age (Beijing Zeefer Consulting Ltd. 2009).

On average, family size among respondents was approximately three people per household. Moreover, 68% of the respondents had bought a cup of coffee and 72% had made a cup of coffee in the last 30 days. Around 63% of our respondents showed that they were used to drinking regular black coffee (or with only creamer). Based on the quantity consumed, on average, the respondents drank about 4.6 small cups of coffee per week. However, 56% of our respondents said they had been regular coffee drinkers for up to five years, and only 9% of the respondents had been regular coffee drinkers for over five years. In terms of future coffee consumption, our survey included a question asking respondents how they would expect their coffee consumption to be higher or lower in the next year. To this question, 33% answered that they would increase

consumption, 10% decided to decrease, and the rest of the respondents would like to remain at the same consumption level. As to the questions of how much consumers knew about organic and fair trade coffee, 44% of the respondents knew at least something about organic coffee, but only 33% of the respondents knew any relevant information about fair trade coffee. These results reveal the potential importance of future product education if producers wish to make fair trade (and/or organic) coffee more visible to consumers.

Since the questionnaire of this study applies five different versions to test for the impact of starting points, it is interesting to know whether the respondents reply differently under each version. Table 2 shows the results of a series of Z-test results for the distribution of chosen WTP categories under each version. For instance, comparing the proportion of consumers who chose category "¥0" under versions V20 and V22 respectively, the statistics Z-test score is 72.46. This is significant at the 1% level indicating significant difference between the two proportions. On the contrary, the Z-score for testing the equality of proportion of consumers who chose category "¥0" under the V24 and V28 versions is 2.11, which fails to reject the null hypothesis. Similar interpretations can be made for the rest of the Z-scores in the table. Overall, the results in table 2 indicate that 156 out of the 160 hypotheses for equal proportion are rejected at the 1% level of significance. Since all survey versions are identical, this is a preliminary indication that the starting point does contribute to difference in indicated WTP.

Given the result in table 2, five separate models were estimated using data collected under each version of the survey featuring different starting points. Before presenting our empirical results, we applied a series of likelihood ratio tests for parameter equality among all six models. Table 3 shows the results of these tests. A separate model was estimated using only the data

obtained under each version and the results were compared. In addition, each model is compared with a model using data pooled from all four other versions together. The model using pooled data from the all four versions is referred to as the 4-version Pooled model. For instance, when the coefficient estimates under V20 were compared to the 4-version Pooled model, it was compared to a model using data from V22, V24, V26, and V28. Similar interpretations can be applied for other tests in the first column in table 3.

First of all, the coefficient estimates in the 4-version pooled model are different to the coefficient estimates using data from the V22 version but not other versions. Second, there did not appear to be much variation in parameter estimates among the five single-version models. However, V22 is a notable exception. Consistent with the scatter plot in figure 2, coefficient estimates under V22 are significantly different to some other groups, particularly V24 and V26. While it is not exactly clear why V22 stands out as the unique group, it does show clear evidence on the impact of starting points.

Following the results in table 3, we focus the comparison of the empirical analysis on three models estimated based on the pooled data (from all five versions), data under version V22, and data based on the rest of the four versions except for the V22 version. “POOLED,” “V22 (¥22),” and “VOTHERS” represent these three models respectively. The reason that these three specific models were analyzed is because they exhibit significant differences between their coefficient estimates while in the VOTHERS model, no difference was found between all four versions it pooled.

As a result, this study confirms the impact of starting point. The starting point may influence the distribution of indicated WTP values in a payment card elicitation question and the

estimated parameters and Wald (χ^2) may also be affected. Table 4 shows the empirical results of models "POOLED," "V22 (¥22)," and "VOTHERS." Comparing significant coefficients in POOLED, V22 (¥22), and VOTHERS, only variables *Gender (male)* and *Make coffee* show identical signs across these three models. Since the pooled data allow more consumers to be included in the analysis. Interpretation will be focused on the POOLED model with some highlights of the other two models. Based on the estimated coefficients of the POOLED version, the results imply that female respondents were willing to pay ¥0.8 more for fair trade coffee than male respondents, and those who do not make coffee by themselves compared to respondents who made coffee by themselves would be willing to pay about ¥1.4 more for a medium cup of fair trade coffee.

Consistent with findings in Pelsmacker, Driesen, and Rayp (2005), our results do confirm that females on average have higher WTP than males in developing countries, such as China. Among demographic variables in the POOLED version, variable *Family size* is 10% significant and indicates that respondents in a larger household size, on average, tend to pay about ¥0.3 more for a medium cup of fair trade coffee. Based on the demographic characteristics variables, coffee marketers could make a specific case focusing on women and larger families as potential consumers for fair trade coffee in Chinese markets.

Among variables in both POOLED and VOTHERS intended to capture respondents' general coffee consumption patterns, four variables were significant (at least 5% level of significance). These variables are: *Made coffee, Light drinker (within 5 years), Consumption-EI (expect to increase), and Consumption-ED (expect to decrease)*, where the estimated parameters had a consistent sign. These results could have important implications for coffee marketers in

China. For example, they may consider concentrating fair trade labeling efforts on coffee products (likely be consumed at home) in grocery stores rather than those in coffee shops and restaurants.

The variable *Light drinker* is one of the interesting findings. This dummy variable indicates that the respondent had been a regular coffee drinker for up to 5 years, while the dummy variable *Heavy drinker* indicates those with longer than 5 years history as a regular coffee drinker. The result of the variable *Light drinker* shows that compared to both occasional coffee drinkers (the omitted category) and long term coffee drinkers (represented by variable *Heavy drinker*), respondents who had regularly been a coffee drinker for up to five years were willing to pay about ¥1.2 less for a medium cup of fair trade coffee. This may suggest that consumers who have been drinking coffee for a few years may be less excited about these features compared to less-experienced drinkers, who may still be excited about their new taste thus may favor additional features of their coffee. Yet, for long-term coffee drinkers, their experiences may enable them to form preferences for features they truly prefer, such as fair trade, in addition to the price factor.

Comparing the expectation of future coffee consumption with those who decide to remain at the same level in the following year, respondents who would like to increase their coffee consumption (variable *Consumption-EI*) would be willing to pay about ¥1.2 more for a medium cup of fair trade coffee. However, for respondents who would like to decrease their coffee consumption (variable *Consumption-ED*) in the following year, their WTP would be around ¥1.7 less than those who would stay at the same level. The effects of these two variables showed that consumers' WTP for fair trade coffee were closely related to the volume of the expected coffee consumption. Moreover, the estimated parameter of variable *Consumption-ED* represented the highest magnitude of WTP among all significant variables in this study. This suggests how much

coffee consumers would like to purchase in the following year, and is likely one of the most important determinants on their WTP for fair trade coffee.

Neither of the variables *Known fair trade* or *Known organic* was significant in the POOLED version. Since fair trade coffee incorporates information that may not be familiar to everyone, one would expect that if consumers were aware of this featured product, they might have a higher WTP for fair trade coffee. Similarly, organic coffee is correlated to ethical and environmental consumption behavior, and one would expect that if consumers knew about organic coffee, they would be willing to pay more for fair trade coffee due to similar ethical/sustainable concerns. However, the results of these two variables in the POOLED version did not support our hypotheses.

There are several causes for the outcome of the ethical concern characteristics. One of the most important reasons could be that fair trade coffee (in fact, even coffee itself) is still a very new product in China, and unlike in many western countries coffee is not a significant part of their culture or a very common beverage in their life. In this circumstance, many consumers may not have formed a well-established purchasing preference for their coffee, and therefore their WTP does not necessarily incorporate all concepts included in fair trade coffee. We expect this result could change over the years when consumers have become more stable in their preferences. Although our ethical concern variables *Known fair trade* and *Known organic* did not show at the significance level, it is still too early to claim that the ethical concern does not exist in the Chinese coffee market for fair trade coffee. However, respondents on both demographic and consumption characteristics in the city of Wuhan do show the correspondent results to previous studies in developed countries.

Conclusions

Our study investigated coffee consumption and WTP of Chinese consumers on fair trade coffee using a survey implemented in Wuhan city, China. The key objective was not just to discover Chinese consumers' WTP for fair trade coffee, but also to contribute to the general literature on fair trade coffee and to offer some basis for the comparison to other countries, particular to consumers in western countries. Furthermore, another objective of our modified payment card survey for the elicitation of the WTP is to test the effects of starting point that may affect the results of the traditional payment card approach. It is shown that starting point does potentially matter. However, only one of the five different starting points offered appeared to cause a difference than the other offered starting point indicating that the impact may not overwhelmingly apparent in all WTP questions with different starting points.

Overall, most respondents indicated their WTP in categories 1 to 7 given in the payment card question in each version. While the scatter map (figure 2) suggested potential impact of starting points, the formal econometric analysis confirmed it. Overall, based on the comparison of estimated parameters among three versions, our payment card valuation question does present the impact from starting points.

Our estimation results do recognize that Chinese consumers are willing to show their appreciation of fair trade coffee through their stated WTP: about 89% of respondents would like to pay some additional amount for a cup of fair trade coffee above the market price of a conventional cup. Our respondents, averaging over all versions of the survey, were willing to pay around ¥4.4 more for a medium cup of fair trade coffee. In terms of demographic factors affecting consumers' WTP, it is found that women and those with larger family sizes would most likely pay premiums

for fair trade coffee. A straightforward message for coffee marketers is to target female consumers in a larger family to profit through this potential niche market.

In terms of consumption habit, whether respondents had made a cup of coffee in the past, whether they had been a regular coffee drinker for up to five years, and how much they would change their coffee consumption in the following year all had an important impact on their WTP for fair trade coffee. Coffee marketers can also adopt corresponding marketing strategies to focus on the target groups, while relevant policy makers can use proper management tools to facilitate this on the fast-expanding market. These results of consumption behavior provide marketing strategies to coffee marketers to target new occasional coffee drinkers who may expect to increase their coffee consumption in the near future. Finally, the average age of respondents in this study tends to be of the younger generation, which is consistent with the majority of current coffee consumers in China. However, it is not hard to expect that this young generation will be the main coffee consumers in the next five or ten years, as they have more disposable income at hand and the coffee market in China will have more consumption than today.

Since consumers' prior knowledge of fair trade or organic coffee did not have a significant impact on their WTP, this study results reveal that consumer WTP is more related to their consumption habits. Although the independent variables related to ethical and environmental concerns were not significant in this study, many demographic and consumption variables did show significant impact on fair trade coffee WTP, and were mostly consistent with previous studies. As mentioned previously, the Chinese coffee market is a potentially high growth market, yet there has been no significant studies addressing Chinese consumers' preference and WTP for

coffee. Even though coffee, including fair trade coffee, is not a primary beverage in China yet, this analysis gives some suggestions as to how marketers can approach the Chinese coffee market.

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Table 1. Definitions and Sample Statistics of Variables (N = 564)

Variable	Description of variable	Mean	Std. Dev.	Min.	Max.
WTP	The mid-point price for each chosen interval of willingness to pay	4.38	3.92	0	14.5
Gender (male)	Discrete variable=1 if respondent is male	0.60	0.48	0	1
Age	The age of the respondent (continuous variable)	24.46	5.68	18	54
Income (household)	Total household income (Yuan) earned per month before tax (continuous variable)	5,953	4,325	500	17,500
Job (full time)	Discrete variable=1 if respondent is employed full time	0.37	0.48	0	1
Marriage	Discrete variable=1 if respondent is married	0.16	0.36	0	1
Family size	Total number of family members in a household (continuous variable)	3.11	1.05	1	10
Buy coffee	Discrete variable=1 if respondent purchased at least one cup of coffee in last month	0.68	0.46	0	1
Made coffee	Discrete variable=1 if respondent made a cup of coffee in last 30 days	0.72	0.44	0	1
Buy from shop	Discrete variable=1 if respondent buys coffee in a coffee shop	0.68	0.46	0	1
Black coffee (non-flavored)	Discrete variable=1 if respondent usually buys a regular black coffee or black coffee with creamer or sugar	0.63	0.48	0	1
Consumed amount (in a week)	The amount of coffee consumption in terms of number of small cups for one week (continuous variable)	4.68	5.13	0	52
Light drinker (within 5 years)	Discrete variable=1 if respondent has been a regular coffee drinker for up to 5 years	0.56	0.49	0	1
Heavy drinker (over 5 years)	Discrete variable=1 if respondent has been a regular coffee drinker for over 5 years	0.09	0.29	0	1
Consumption-EI (expect to increase)	Discrete variable=1 if respondent expects that next year coffee consumption will increase	0.33	0.47	0	1
Consumption-ED (expect to decrease)	Discrete variable=1 if respondent expects that next year coffee consumption will decrease	0.10	0.31	0	1
Known fair trade	Discrete variable=1 if respondent has at least some level of prior knowledge of fair trade coffee	0.33	0.47	0	1
Known organic	Discrete variable=1 if respondent has at least some level of prior knowledge of organic coffee	0.44	0.49	0	1

Table 2. The Hypothesis Test (Z-test) for the Proportion of a Population

Versions / WTP	20 to 22	20 to 24	20 to 26	20 to 28	22 to 24	22 to 26	22 to 28	24 to 26	24 to 28	26 to 28
¥0	72.46	23.81	77.08	22.91	47.31	2.41	50.18	51.05	((2.11))	54.10
¥0−¥0.99	34.22	31.04	174.71	127.91	((2.06))	204.45	92.84	201.84	94.73	295.16
¥1−¥1.99	14.67	112.37	78.85	68.16	99.87	92.72	81.99	194.16	182.25	9.95
¥2−¥2.99	69.92	3.40	22.52	126.48	72.23	93.04	54.90	18.61	127.78	150.67
¥3−¥3.99	210.21	36.84	6.36	153.03	236.01	219.77	63.09	32.33	182.62	161.68
¥4−¥4.99	109.14	71.64	10.63	28.46	35.48	100.04	82.13	64.53	46.56	18.17
¥5−¥5.99	38.64	39.08	69.83	101.88	((1.80))	30.06	62.27	28.15	60.29	33.61
¥6−¥6.99	62.87	4.35	53.66	57.36	57.33	10.63	6.34	48.21	51.88	4.29
¥7−¥7.99	122.53	133.08	5.17	81.66	225.20	129.49	43.66	134.13	194.68	88.01
¥8−¥8.99	95.49	78.54	31.50	101.77	166.78	123.93	4.46	51.63	174.61	130.84
¥9−¥9.99	55.99	19.51	72.95	145.22	35.48	15.18	90.61	51.63	124.99	77.45
¥10−¥10.99	44.79	13.59	60.16	87.29	30.34	103.64	41.62	73.06	72.24	146.60
¥11−¥11.99	62.87	4.35	102.82	((0.62))	57.33	149.73	63.63	106.13	5.12	102.37
¥12−¥12.99	53.44	6.19	145.72	58.88	58.95	105.64	4.46	150.43	64.46	102.37
¥13−¥13.99	138.27	50.89	62.60	58.88	100.70	95.08	97.13	8.15	5.12	3.02
14 or more	107.99	9.92	8.29	29.42	116.53	101.17	135.05	18.55	18.68	38.12

Note: All statistics Z-tests show at the 1% level of significance, but not include the results in double parentheses.

Table 3. The Likelihood Ratio Test on Parameter Equality among Models Using Data from Different Versions

	4-version Pooled	V20 (¥**20)**	V22 (¥**22)**	V24 (¥**24)**	V26 (¥**26)**	V28 (¥**28)**
4-version Pooled	(1.0000)					
V20 (¥**20)**	(0.5173)	(1.0000)				
V22 (¥**22)**	(0.0200)**	(0.1496)	(1.0000)			
V24 (¥**24)**	(0.2849)	(0.2330)	(0.0028)***	(1.0000)		
V26 (¥**26)**	(0.4234)	(0.4301)	(0.0279)**	(0.6643)	(1.0000)	
V28 (¥**28)**	(0.3786)	(0.4013)	(0.1079)	(0.3899)	(0.1390)	(1.0000)

Note: LR test chi-square probability in parentheses.
Asterisks indicate levels of significance: * = 0.10, ** = 0.05, and *** = 0.01.

Table 4. The Empirical Results for the WTP: POOLED, V22, and VOTHERS

Variable	POOLED	V22 (¥22)	VOTHERS
Gender	-0.823**	-1.252*	-0.734*
(male)	(-2.07)	(-1.67)	(-1.65)
Age	-0.040	-0.333***	-0.001
	(-0.96)	(-3.52)	(-0.03)
Income	-9e-06	0.00016*	-0.00004
(household)	(-0.19)	(1.85)	(-0.88)
Job	0.391	0.235	0.395
(full time)	(0.88)	(0.30)	(0.79)
Marriage	0.827	2.241	0.736
	(1.44)	(1.51)	(1.20)
Family size	0.314*	-0.285	0.485**
	(1.72)	(-1.05)	(2.26)
Buy coffee	-0.160	1.746*	-0.571
	(-0.36)	(1.95)	(-1.10)
Made coffee	1.359***	1.902**	1.162**
	(3.00)	(2.11)	(2.29)
Buy from shop	0.486	-0.432	0.648
	(1.21)	(-0.60)	(1.40)
Black coffee	-0.527	-0.886	-0.442
(non-flavored)	(-1.37)	(-1.19)	(-0.99)
Consumed amount	0.024	-0.040	0.055
(in a week)	(0.54)	(-1.09)	(0.90)
Light drinker	-1.240***	-1.033	-1.288***
(within 5 years)	(-3.10)	(-1.46)	(-2.80)
Heavy drinker	-0.440	-1.440	-0.463
(over 5 years)	(-0.59)	(-1.16)	(-0.53)
Consumption-EI	1.200***	0.864	1.316***
(expect to increase)	(2.92)	(0.98)	(2.82)
Consumption-ED	-1.738***	-0.115	-2.035***
(expect to decrease)	(-2.73)	(-0.10)	(-2.86)
Known fair trade	0.130	0.162	-0.100
	(0.33)	(0.17)	(-0.22)
Known organic	-0.594	0.492	-0.734*
	(-1.56)	(0.58)	(-1.72)
constant	4.193***	11.008***	3.276**
	(3.26)	(4.52)	(2.30)
Log Pseudo-likelihood	-1472.18	-263.39	-1191.75
Wald χ^2	60.99	42.29	59.17
Pseudo R^2	0.083	0.216	0.099
Number of obs.	564	108	456

Note: t stats in parentheses. Asterisks indicate levels of significance: * = 0.10, ** = 0.05, and *** = 0.01.

Figure 1. International fair trade certification mark by the fair trade labeling organization international

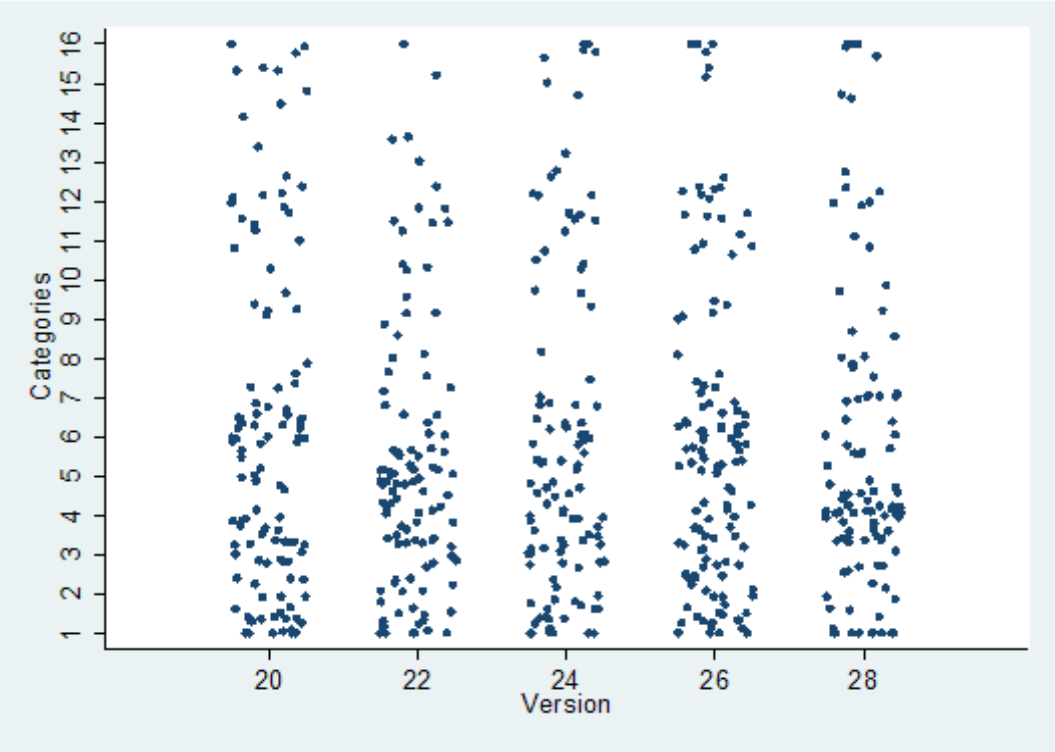

Figure 2. The distribution of WTP for fair trade coffee respect to different versions