A Rose By Another Name: An Objective Analysis of an Established Market for Credence Attributes

By

Kristin Galloway and DeeVon Bailey*

Contact Information:

Kristin Galloway
Department of Economics
Utah State University
3530 Old Main Hill
Logan, Utah 84322-3530
Telephone: 435.797.2310
Email: krisgall@cc.usu.edu

DeeVon Bailey
Department of Economics
Utah State University
3530 Old Main Hill
Logan, Utah 84322-3530
Telephone: 435.797.2316
Email: d.bailey@usu.edu

* Galloway is a former graduate student in the Department of Economics, Utah State University. Bailey is a professor in the Department of Economics, Utah State University.

A Rose By Another Name: An Objective Analysis of an Established Market for Credence Attributes

Abstract

A second-price Vickrey-style auction is used to determine the willingness to pay (WTP) for credence attributes found in "cause" coffees. WTP estimates were then compared with actual market price information. The results indicate positive average bids for the cause coffees. However, premiums were found for fair-trade and shade-grown coffee in the actual price data and discounts for organic and sustainable coffee.

Key Words: auction experiments, credence attributes agricultural products

JEL Classification: Q13, Q17

A Rose By Another Name: An Objective Analysis of an Established Market for Credence Attributes

Introduction

The market for credence attributes[1] in food products has been a matter of significant interest in the agricultural economics literature in recent years (e.g., Hobbs; Hobbs et al.; Shogren et al. (1999); Loureiro and Umberger; Dickinson and Bailey (2002) and (2005); Lusk and Fox; Lusk, Roosen, and Fox.; and many more). Much of this discussion has focused on consumer willingness to pay (WTP) for various credence characteristics and how to determine the appropriate metric(s) for measuring WTP (e.g., Shogren et al. (1999)).

Determining the accuracy of the various methods for measuring WTP is important given the growing mountain of academic research suggesting that a sizeable proportion of consumers in the United States and elsewhere are willing to pay premiums for credence attributes in food products. It is also important from the perspective that WTP also serves as a measure for the potential cost and incentive for fraud if claims about food products are made but are not actually present in the product (e.g., McCluskey and Loureiro; Grolleau).

As mentioned previously, many studies suggest that some, or even many, consumers achieve added utility from credence attributes found in agricultural and food products. For example, Hobbs et al. and Dickinson and Bailey ((2002) and (2005)) suggest that consumers may value knowing that their red meat products can be traced back to the farm of origin. Hayes et al. have implied that consumers may value knowing that their food was produced using methods that reduce the chance of food-borne illness. In these and many other examples, researchers

---

[1] Credence attributes are aspects about, in this case a food product, which cannot be discerned by visual inspection or consumption, but rather are seller claims about the product. For food products, these claims are often linked to the production processes used to produce the product (Darby and Karni; McCluskey and Loureiro). Examples of credence characteristics for food products include being GM-free, exercising humane animal treatment, or practicing social responsibility or environmental responsibility

were attempting to determine whether or not consumers value credence attributes found in agricultural products.

WTP is generally measured either through simply asking consumers hypothetical questions about what they would pay for a particular credence attribute (also called stated WTP) such as added assurances about food safety or by observing actual purchasing behavior (also called revealed WTP or revealed preference) where consumers actually pay money for a product with a certain credence attribute(s). Revealed preference studies on WTP typically use either actual retail transaction data[2] (requires an existing product actually being sold in stores or other types of retail outlets) or by purchases by consumers participating in auction experiments. Experimental auctions are often used to elicit WTP for credence characteristics in food products when no actual retail product with the credence characteristic(s) under study is available or retail transaction data are either missing or prohibitively expensive for the researcher to purchase.

By examining an existing market that has been differentiated on the basis of credence attributes, it becomes possible to compare existing market data with data derived from an experiment. If the credence attributes are associated with premiums in both actual market data and derived data, this adds support to positive valuations found in other studies on agricultural products and may suggest that product differentiation based on credence attributes would be profitable in these markets. Also, if the derived (in this case auction) data and actual market data compare favorably, it lends support to the contention that methods, such as auction experiments, being used to derive non-market valuations for credence attributes yield demand revealing results. The experimental setting also provides an opportunity to ask for background information

---

[2] Such as retail scanner data for transactions or other means of observing and gathering data on actual transactions at retail.

from participants in the experiment that could be useful in determining which types of consumers will pay extra for credence attributes.

This study used a Vickery second-price auction to estimate WTP for "cause" coffee credence attributes in coffee. These credence attributes included organic features, fair-trade features, shade-grown features, and sustainable features. The auction procedure asked participants to bid on the difference between regular coffee products and coffee products containing the credence attributes. The auctions revealed positive average bids for each of the certified attributes compared to regular coffee. These positive average bids suggest that a premium price could be charged for coffee products containing these credence attributes. The largest positive average bid was for the sustainable product and the lowest was for the organic product. The auction bids were then compared with actual market price differences between non-certified and certified coffees obtained from surveying local and regional coffee retailers. The actual market price differences for the fair-trade, shade-grown, and organic attributes compared to non-certified coffee, revealed no statistical difference between auction bids and actual market prices However, the actual market price differences for the sustainable attributes compared to regular coffee were contradictory with the average auction bids for this same attributes. In the auctions there were positive average bids for sustainable coffee. However, the actual market price differences suggested a discount for sustainable coffee sustainable. Given that costs to produce sustainable coffee are probably higher than to produce regular coffee, it is likely that there are underlying features about organic and sustainable coffees that were not accounted for that were affecting the actual price difference observed in the marketplace.

Background and Methodology

In the United States, most agricultural products exist only as commodities at the preprocessing level without distinction or any type of product differentiation. The coffee market is one of the few agricultural markets in which product differentiation exists for lightly processed products (i.e., the product remains close to the commodity state). Products are differentiated by origin of the coffee, the roast of the coffee, and the blend of the coffee. The cause coffee market is even more unique being the only well-defined market in the United States in which the agricultural products has been differentiated solely on the basis of credence attributes. Consequently, the U. S. coffee market serves as an excellent case study for comparing actual market data to data derived from an auction experiment.

Resolving differences in consumer valuations for non-market characteristics in food products obtained by different methods and the usefulness of these valuations in identifying market opportunities has been a matter of interest in the agricultural economics literature for more than a decade (e.g., Shogren et al. (1994) and (1999); and Fox et al.; Umberger and Feuz). The Shogren et al. (1999) study relates in some respects to the analysis completed in the current study. Shogren et al. (1999) examined the percentage of consumers that would purchase irradiated chicken at different discounts and premiums compared to regular chicken under three different methods--retail trials, experimental auctions, and hypothetical market surveys. Their results suggest that experimental auction and surveys yielded a larger percent of consumers willing to pay less than a 10% premium for irradiated chicken than were observed in the retail trials. However, they also found that approximately the same percentage of consumers, under all three methods, were willing to pay a 10% premium or more for irradiated chicken compared to "normal" chicken.

The current study compares actual market price differences for enhanced characteristics in an agricultural product (cause coffee) to the differences in valuation obtained in an auction experiment for coffee with these same attributes. This is a different type of analysis than past studies for at least two reasons. First, the attributes being considered would typically be considered positive attributes rather than potentially negative attributes like irradiation (e.g., Fox et al.; Shogren et al. (1999)). Because many consumers have strong, possibly irrational, concerns about irradiation and because it is an attribute that is not routinely used in the United States to differentiate food products, consumers may have less information about how to value irradiation than other attributes. In the case of cause coffee, the attributes are probably more positive to consumers than irradiation which may eliminate much of the uncertainty and concern participants have about the product's safety and, hence, its value. Second, rather than examining the percentage of consumers being willing to purchase the product at each price level (market size), we compare experimental auction valuations to actual market price differences. Assuming that coffee retailers are profit maximizers who understand the price elasticities associated with the different types of cause coffee, market price differences should reveal actual demand characteristics. As a result, the derived valuations are compared to prices under profit maximization (demand revealing) conditions rather than being concerned with how much of each type of cause coffee can be sold at each price (i.e., Shogren (1999)).

The analysis begins by constructing an auction experiment to eliciting participants' bids for four types of cause coffees (organic, fair-trade, shade-grown, and sustainable) compared to regular or non-certified coffee. Regression techniques are then used to identify demographic and other characteristics affecting individual auction bids. Finally, the auction bids for the four

different cause coffees are compared to price differences for non-certified coffee and cause coffees in the retail market.

The Vickery Auctions

Consumer WTP for cause coffees was derived using Vickery second-price auction methods. Participants in the experiments included faculty, professional staff, classified staff, and students from Utah State University. Fliers were personally delivered to faculty and professional staff during recruitment. Similar fliers were emailed to the classified staff for recruitment purposes. Students were recruited using a sign-up sheet in a large classroom setting.

While limiting the sample will potentially create bias, participants were limited to coffee drinkers. This limitation assures that the participants are expressing their own consumption preferences rather than the preferences of another individual who is not present. Although in some circumstances large quantities of coffee may be purchased by a third party for office consumption or consumption at meetings etc., the data collected here reflected only the personal preferences of the participants.

Three separate groups participated in the Vickery auctions conducted using specific procedures. At the start of each session, each participant received $15, a sheet of instructions, a small candy bar, and a one-half pound bag of standard, whole coffee beans. The instruction sheet described the procedures that would follow and gave a brief description of the credence attributes found in the auction coffees. These instructions can be seen in the appendix. The standard bag of beans was a common Peruvian type whole bean that can be found with or without the credence attributes considered in the auctions. Participants were then able to place bids on four types of specialty coffee beans in the auctions: (1) organic coffee beans, (2) shade-

grown coffee beans, (3) fair-traded coffee beans, or (4) a bag of beans will all three attributes (referred to as sustainable coffee or triple-certified coffee interchangeably).

The experiment began with two practice rounds of bidding to ensure that each participant understood the instructions fully. In these practice rounds the participants bid to exchange the small candy bar that they were given for a full size candy bar of the same brand name. The bidding took place in a silent fashion with each participant writing out his/her bid on a bid sheet, folding the sheet and placing it in a box. The bids were then collected and recorded with special notice given on the recording sheet to the highest bidder and the second highest bid that was placed. After a "round" of bidding took place, the participants were told this second highest bid but no other information. This information could then be viewed as the market price of the exchange of the candy bar or, later, as the market price for the exchange of coffee beans.

After the two practice bidding rounds were performed, a quarter was flipped to determine which round was binding and the exchange was consummated by the highest bidder giving up his/her small candy bar and paying the amount of money bid by the second highest bidder in exchange for the large candy bar. Following this transaction, the participants bid for five rounds to "upgrade" their bag of coffee beans. A round consisted of bids being made for coffee bag 1 with all bids being collected, followed by bids on coffee bag 2 and so forth for all four coffee bags. The bidding took place in a fashion identical to the practice rounds. Prior to bidding for each coffee bag in the next round, participants were told the market price (2nd highest bid) during the preceding round for the coffee bag they would be bidding on in this round.

After all five rounds were conducted, a piece of paper was drawn from inside a bowl to first determine the binding round. The binding bag of coffee was also then selected at random in the same manner. The participants had been informed previously that any round of bidding on

any of the bags of coffee could be binding. Consequently, each bid had an equal probability of being the "winning" bid. The highest bidder in the binding round paid the second-highest price to exchange his/her bag of standard beans for the binding specialty bag of beans. Only one bag of specialty beans was exchanged in each participant group(three total).

After the auction was complete and the bags of beans and money had been exchanged, the participants were asked to fill out a survey. The first portion of the survey included basic demographic questions regarding age, gender, martial status, schooling, employment, income, and etc. The second portion of the survey included questions about the individual's grocery and coffee purchasing habits. The third portion of the survey was derived from questions asked by Aadland and Caplan in a recycling questionnaire. These questions were used to rank the individual's level of awareness and concern for society and the environment.

The questions in the fourth portion of the survey were asked to determine the individual's personal characteristics and attitudes. These questions were derived from a body of psychological literature with the majority of the questions stemming from the work of Dutta-Bergman and Wells. The final portion of the survey asked questions aimed at determining which agencies the participant would be most (and least) willing to trust to certify cause coffee products.[3]

Possible Concerns with Vickery Auctions

Several potential problems with Vickery auctions are mentioned in the literature. Shogren et al. (1994) suggested that repeated rounds of bidding allow participants to converge to their true WTP. The question that one must ask in this scenario is how many rounds of bidding are appropriate? Recently work (Dickinson and Bailey (2002) and (2005)) suggests that participants arrive at their true WTP after fewer rounds than have been used in previous studies (e.g., Hayes

---

[3] A copy of the survey instrument can be obtained on request from the authors.

et al.; Melton et al.). Fewer rounds also prevent participants from becoming bored with the auction procedures.

Another concern is the possibility of receiving both positive and negative bids. In this experiment, large numbers of negative bids were not anticipated, and are not expected to have a large influence on the results. However, negative valuations were allowed in this experiment.

In this experiment there was also a concern about participants not actually consuming the product that they were asked to value immediately at the end of the experiment. In the case of this research, one cup of coffee seemed too small of an item to bid on to find accurate WTP information. It was decided that, although this would add a small amount of noise to the data, the effect would not be large, and that the participants would not be forced to consume their bags of coffee beans.

Another possible concern associated with this particular experiment was that all of the participants study and/or work in the university setting. However, given that the research was being performed in Utah, a state with a dominant culture that does not support the consumption of coffee, the university setting could actually be thought of as more representative of the general population of the United States than the state of Utah. A comparison of the sample to the actual population of both Utah and the United States can be seen in Table 1. The participants' demographics mirror those of the United States in terms of percent female and average age. However, participants have higher income and education levels than the population in either the United States or Utah. Consequently, when interpreting the results, one must hold in mind that the participants have more income and education than average.

Regression Analysis

Panel data models are appropriate in this scenario because there were four different observations collected for each participant in the experiment; one observation for each type of cause coffee that is being auctioned. Three types of regression models were considered—a pooled regression using the ordinary least squares (OLS) method, a fixed effects model and a random effects model (Greene). The LaGrange Multiplier (LM) test developed by Breusch and Pagan and the Hausman test were used to determine which of the models was the most appropriate. Because the LM statistic for the regression model was very small, truncated at 0.00, it was determined that individual effects were not present in this model. Because this result eliminated the use of both the fixed effects model and the random effects model, it proved unnecessary to perform the Hausman test. Instead, it became obvious that the OLS model choice was the most appropriate.

The regression model took the following form:

$$
\begin{aligned}
AVEBID_{ij} = {} & \alpha_0 + \alpha_1 BAG1_j + \alpha_2 BAG2_j + \alpha_3 BAG3_j + \alpha_4 GENDER_j + \alpha_5 AGE_j \\
& + \alpha_6 MARITAL_j + \alpha_7 CHILDREN_j + \alpha_8 HS_j + \alpha_9 PGRAD_j + \alpha_{10} HOURS_j + \alpha_{11} MIDHIGH_j \\
& + \alpha_{12} HIGH_j + \alpha_{13} DONATE_j + \alpha_{14} HAPPY_j + \alpha_{15} SATLIFE_j + \alpha_{16} SATFIN_j + \alpha_{17} CUPS_j \\
& + \alpha_{18} AWISSUE_j + \alpha_{19} CONHEALT_j + \varepsilon_{ij}
\end{aligned}
$$

(1)

where the variable descriptions and names are found in table 2. The subscript "j" indicates the jth participant in the experiment and the "i" indicates the ith type of cause coffee auctioned.

All of the explanatory variables included in equation (1), with the exception of the *AGE, CHILDREN, HOURS,* and *CUPS,* variables are binary variables. The base for coffee type was Bag 4 which included all of the credence certifications. Both gender and marital status were dummy variables with the omitted categories being *MALE* and *SINGLE.* The education variable and the income variable were also binary variables with bachelor's degree and middle income

=0. The remaining variables were categorical variables which were transformed into binary variables in accordance with the methods stated in Kmenta.

The three "*BAG*" variables were included in the model as a way of comparing how average bids for the coffees containing the individual credence attributes(organic, fair-trade, and shade-grown) differed from the bids for the coffee which contained all of these attributes. It is hypothesized that all three of the "*BAG*" variables included in the model will have a negative coefficient given that *BAG 4* = 0.

For some of the variables, there was no *a prior* expectation on the sign of the estimated parameter. These variables included *GENDER, MARITAL, CHILDREN*, and *HOURS*. It is hypothesized that *AGE* will have a positive sign because as people grow older they, generally, become more concerned about future generations and the condition of the world that they will leave behind.

More education (*HS* and *PGRAD*) is expected to increase one's concern about environmental and social issues. Because the omitted category for education is for those participants holding a bachelor's degree the sign for *HS* is expected to be negative and for *PGRAD* positive. Income is expected to have a positive effect on the demand for these credence characteristics. The omitted income variable is for annual household incomes of less than $60,000. Consequently *MIDHIGH* and *HIGH* are both expected to have positive parameter estimates. This coefficient for *CUPS* is hypothesized to have a negative sign, indicating that an individual who drinks more coffee is more concerned with price or availability of the coffee rather than what is more socially conscious.

It is hypothesized that the sign for *DONATE* will be positive because individuals who are involved in environmental issues are aware of the issues and likely to value the concerns more

highly. The *HAPPY, SATLIFE,* and *SATFIN* variable were all included in the model to determine how and individual's level of contentedness might affect his/her valuation of the credence attributes in coffee. The signs of all three of these variables are hypothesized to be positive because people that are happier with their life and finances will probably be more concerned about others than those focusing on their own personal problems. The *AWISSUE* variable was chosen to determine how an individual's awareness in community issues will affect his/her valuation for credence attributes in coffee. It is expected that the sign for *AWISSUE* will be positive assuming that an individual's higher level of awareness leads him/her to value these credence attributes more than those who are unaware of these issues. *CONHEALTH* is also hypothesized to have a positive sign on the coefficient because health conscious individuals may be more socially-conscious than others or be more aware of the aspects of the products than those who are not health conscious.

Actual Prices

Actual prices were collected from the local cafe that supplied the coffee used in the experiments, as well as five local grocery stores and 18 different online coffee shops. Price data were collected only for regular, single-origin coffee. The original price data included 186 different coffee products from 32 different countries. One hundred and two of these products were not certified as having any of the credence attributes, while the remaining 84 coffees contained at least one of the certified attributes. Because of noticeable differences in the prices by origin, these data were then sorted by origin. The origins for which only a single price was available (certified or not) were eliminated because there was nothing with which the price could be compared. The final sample contained 125 different coffee products from 10 different

countries. Fifty-seven of these products contained none of the certified attributes while the remaining sixty-eight contain at least one of the certified attributes.

Results

A total of twenty-seven individuals participated in the experiments including ten students, ten faculty members, five classified staff members, and two professional staff members. One faculty member, having not completed all the necessary information in the survey following the auction, was dropped from the dataset. This left twenty-six participants who placed bids on four separate coffee choices and fully completed the survey following the auction, resulting in one-hundred and four viable observations.

Precisely half of the participants were males and the average age of participants was 35. Forty-six percent of participants were students, with 35% having completed some college, 12% having completed a bachelor's degree, and 46% having completed a post graduate degree. Forty-six percent were married. Eighty percent of the participants were employed with 31% in the low income bracket (less than $30,000 in annual income), 31% in the middle income bracket ($30,000 to $60,000 in annual income), 23% in the mid-high income bracket ($60,000 to $90,000 in annual income), and 15% in the high income bracket (greater than $90,000 in annual income). On the average, participants had 0.76 children, worked 30 hours per week for roughly $14 per hour. They also consumed just over two cups of coffee per day and purchased 0.2 pounds of coffee per week, on the average.

The results of the survey conducted directly following the auctions indicate a general concern among participants for the environment and natural resources. But there was a large amount of uncertainty on the part of participants about how best to solve environmental problems. The participants generally expressed a willingness to make changes in their personal

lives in order to benefit the environment. The participants also indicated a sense of happiness and satisfaction with their lives, although they were somewhat less satisfied with their finances.

When asked questions about whom they trusted to make certifications on the credence attributes in coffee, the largest percentage of the participants stated that they would trust special interest groups the most to make these certifications. None of the participants stated that they would trust retailers the most to make credence certifications. Along with retailers, foreign governments were indicated by the participants as being the groups that would be the least trusted to make certifications for the credence attributes.

Auction Bids

The main (unconditional) results of these experiments are illustrated in Figure 1. This graph shows a positive WTP for each of the four cause coffees. Organic coffee (Bag 1) had the lowest overall bidding of the four types with the average bid being $0.87. The average bids for fair-trade coffee (Bag 2) and shade-grown (Bag 3) coffee followed patterns that were very similar to one another and were everywhere greater than the organic coffee average bids. The overall average bid for fair-trade coffee was $1.22 and the average overall bid for shade-grown coffee was $1.24. The coffee with all three certifications (Bag 4) had the highest average bids throughout all rounds of bidding ($2.14).

The average bid frequencies for each coffee type are presented in Figure 2. Figure 2 demonstrates the percentage of the sample participants whose average bid for each coffee type fell within a certain increment. These increments start at zero and increase by $0.25 until reaching $3 at which point the increments increase by $1 up to $5. Despite a few negative bids in individual trials, none of the participants showed a negative average bid for any of the coffee types. A small fraction of participants had average bids of zero for three of the coffee types.

Individual average bids for organic coffee fell most frequently in the $0.75 to $1

increment. Sixty-nine percent of the participants had average bids less than or equal to $1 for the

organic coffee (including the 3.8% with zero average bids). Ninety-six percent had average bids

less than or equal to $2 for organic coffee. The highest average bid for a single participant for

organic coffee was $2.08.

Forty-two percent of the participants had average bids less than or equal to $1 (including

11.5% with zero average bids), and 88% had average bids less than or equal to $2 for the fair-

trade coffee. However 11.5% had average bids of greater than $2, and the highest average bid

for a single participant for fair-trade coffee was $4.60.

Thirty-eight percent of the participants had average bids less than or equal to $1

(including 3.8% with zero average bids), and 81% having average bids less than or equal to $2

for shade-grown coffee. For shade-grown coffee 19% of participants had average bids greater

than $2. The highest average bid for a single participant for shade-grown coffee was $2.60.

Twenty-three percent of participants had average bids less than or equal to $1 for

sustainable coffee, and only 50% had average bids less than or equal to $2. Eleven and one-half

percent of the participants that had average bids in the $2 to $3 increment, and 11.5% of the

participants that had average bids for sustainable coffee that were greater than $3. The highest

average bid for a single participant for sustainable coffee was $4.40.

Regression Results

Table 3 displays the OLS estimates for the average bids for the cause coffees. The dependent

variable in the model was the participant's average bid over the five rounds for each type of

cause coffee (four observations per participant). The independent variables that were used have

been grouped into three categories. The first category includes demographics characteristics of

the respondents, the second category represents the attributes contained in the coffee itself, and the final category includes personal characteristics or attitudes of the participants. The interpretation of the results provides interesting and useful information.

The parameter estimate on the *AGE* variable proved to be statistically significant at the 5% significance level with a positive sign. The value of this coefficient (0.1003) indicates that, *ceteris paribus*, a 50-year-old would pay $1 more for a half pound of cause coffee than a 40-year-old. This indicates that as people grow older they value the credence attributes more. The parameter estimate on the *MARITAL* variable had a statistically significant (p=0.0001) negative coefficient of −1.9335.

The *HIGH* income variable parameter estimate was positive and determined to be statistically significant (p=0.0139). This coefficient also had a rather large value of 1.1478 indicating a strong income effect associated with the credence attributes tested here. The parameter estimate on the *CUPS* variable had a negative coefficient and was statistically significant (p=0.0386). The small negative value indicates that as people drink larger quantities of coffee in a day, they will not be WTP as much for the additional credence attributes, suggesting that a quantity effect reduces the willingness to purchase quality.

The *PGRAD* variable displayed the only education variable with a statistically significant parameter estimate (p=0.0183). This estimated coefficient for *PGRAD* also had a positive sign and a value of 0.6507. This indicates that bachelor's degree holders, the omitted category, had a lower WTP than participants with post graduate degrees.

The three variables used to indicate the three credence attributes in the coffee (*Bag 1, 2, and 3*) all had statistically significant (p=0.0000) parameter estimates with negative signs. Because the omitted category was the tripled-certified or sustainable coffee, this negative

coefficient was expected. The coefficient for organic coffee (*BAG 1*) had the smallest value (-1.2689) indicating the lowest WTP of the three other coffees when compared to triple-certified coffee. Fair-trade coffee (*BAG 2*) had the second lowest WTP (-0.9182) followed by the shade-grown product (*BAG 3*) (-0.9027).

The last group of variables dealt with quality of life issues and also provided some interesting results. The *CONHEALT* variable yielded a statistically significant parameter estimate with a positive sign. The parameter estimate on the *SATLIFE* variable also had a positive coefficient (1.4214) and was statistically significant at the 1% level (p=0.0000).

Surprisingly, the parameter estimates for the *DONATE, HAPPY, SATFIN*, and the *AWISSUE* variables all had negative signs. Both the *DONATE* and the *HAPPY* coefficients were statistically significant with values that were quite large, -1.3407 and –2.4416, respectively. This may suggest that those donating to environmental causes are not impressed by the credence certifications provided for these coffees, possibly because they don't believe the certifications or that they believe the measures taken to obtain these certifications are ineffective or insufficient. Those happy with life (*HAPPY*) apparently are less concerned with these credence issues than those who are not and may indicate an effect some might consider "blissful ignorance" or people who do not let themselves dwell on environmental issues.

OLS regression results from the auction data indicated that an individual's average bid for the credence attributes are positively and significantly affected by age, education, income, life satisfaction, and health consciousness. An individual's average bid is negatively and significantly affected by marriage, donations to environmental causes, increased happiness, and the number of cups of coffee consumed in a single day.

Because a limited number of observations were used to conduct the regression analysis reported in Table 3, the results were also confirmed using bootstrapping techniques. The average regression coefficients obtained by bootstrap sampling compared favorably with the original regression estimates. It also confirmed that *AGE*, *SATLIFE*, and *CONHEALT* have a significant, positive affect on an individual's average bid for the credence attributes in coffee. Likewise, the average regression coefficients for the bootstrapped data indicated that *MARITAL*, *DONATE*, and *HAPPY* have a significant, negative affect on an individual's average bid for the credence attributes in coffee. The regression averages for the bootstrapped sample, however, did not confirm the significance of the effect of education, income, and consumption on an individual's average bid for the credence attributes in coffee.

Comparisons with Actual Prices

The actual price (market) data were gathered and transformed to quotes for ½ pound increments in order to make the quotes directly comparable to the auction bid data. The average market prices for the non-certified products and for each of the certified products for each origin can be seen in Table 4.

The results in Table 4 can be divided into three classes: premium, discount and mixed. For each of the certified coffees listed for Columbia, Mexico, and Papua New Guinea there is a premium price indicated. However, for both Ethiopia and Peru there is a discount price indicated for all of the certified coffees listed. Brazil, Costa Rica, Guatemala, and Sumatra all show mixed results with price premiums for the organic and fair-trade coffee but price discounts for both the organic and the triple-certified coffee. Both Sumatran and Guatemalan coffee show neither premiums nor discounts for the organic and shade-grown coffee.

The auction data (Figures 1 and 2) probably resemble the actual price data for the Colombian or the Mexican coffee most closely. The auction data and this price data are similar in that there are no price discounts evident for any of the certified coffees. The difference in the price data compared with the auction data comes from the fact that the premium for the triple-certified coffee is not as large as the premium for the fair-trade coffee and the shade-grown coffee. In the auction data, this premium is actually larger than both the premium for the fair-trade coffee and the premium for the shade-grown coffee.

A direct comparison between auction bids and actual market price differences between non-certified coffee and coffee with the enhanced characteristics represented in Bag 1 – Bag 4 is presented in Table 5. Average market prices for organic, fair-trade, and shade-grown coffee were positive and ordered the same as average auction bids for these characteristics. The average for auction bids was higher for each type of coffee except for shade grown coffee who average market price premium (compared to non-certified coffee) was larger than the average auction bid. The results in Table 5 suggest that, while auction bids tended to be larger that market price differences (i.e., the auction bid means were larger than actual average market prices), that statistically there was no difference (5% level or better) between the auction and market prices for Bags 1, 2, and 3. This demonstrates that the auction and the actual market have price distributions whose means are statistically indistinguishable for three of the four bags and suggests that comparisons between auction bidding and market data need to account for the distribution of prices for both and not just a single point within the distribution (Shogren et al. (1999)).

Variances in the market (F-test in Table 5) tended to be larger than in the auction experiments. This suggests that for this particular analysis that the auction market was an

unbiased and relatively efficient predictor of the market mean (compared to actual market prices) for three of the four characteristics considered.

We are uncertain why the auction experiments performed poorly in predicting actual market price differenced for triple-certified coffee (Bag 4). However, this appears to be able to be at least partially explained by a country of origin effect. Coffee that had a premium for triple-certification was from countries (Columbia and Mexico) whose non-certified coffee was relatively low priced compared to the other countries. This suggests that triple-certified coffee may signal "high (low) quality" for coffee from a generally "low (high) quality" country.[4]

The results suggest that a number of conditions can influence the ability of auction experiments to accurately estimate WTP for credence characteristics. Among these include the distribution on market prices and distribution on perceived qualities in the market for a given characteristic. In this case, auction experiments tended to overstate actual average WTP, but not enough to generate a statistical difference between market and auction prices. In fact, the auction experiments tended to yield average bids that were relatively efficient (smaller variances) in predicting market WTP compared to actual market prices.

Implications and Conclusions

In the recent past, many non-market valuations have been estimated for different food products with different credence characteristics. These valuations have been done using stated and revealed preference methods, including auctions methods similar to those used for this research. By gathering actual WTP in an actual market for credence characteristics, it becomes possible to compare the actual market price to prices obtained using an auction experiment. Also, if similar results are found in both the market and auctions, the results would support the notion that the

---

[4] The average price for non-certified coffee from Columbia and Mexico was $4.10 compared to $5.23 for the other countries in the study.

auction experiments were, at least in this case, demand revealing and provided accurate estimates for WTP for credence characteristics.

In this research, positive average bids were found for all of the credence attributes in "cause" coffee in the auction experiments. However, in the actual market triple-certified coffee was found to have an average discount to non-certified coffee. Cause coffee was used to complete this analysis because it is one of the only "lightly" processed food item in the United States, of which we are aware, that is differentiated solely on the basis of credence characteristics. When average auction bids were compared with the actual market price differences, the results indicated that the average auction prices predicted market average prices accurately (no statistical difference) in three out of four cases, and with less variation than actual market prices. While auction bids tended to be higher than market prices, in terms of the calculated mean of the distribution, the difference was not great enough to yield a statistical difference between the means for the auction experiments and the actual prices. This was caused, at least in part, by the greater variation that existed in market prices than in auction prices. These results illustrate an obvious but important point--that such comparisons must account for the distributions on both types of prices when comparisons are made. Consequently, auction experiments, in this case, while slightly overstating actual willingness to pay still provided reliable WTP estimates for cause coffee products.

References

Aadland, D. and A.J. Caplan. "Willingness to Pay for Curbside Recycling with Detection and Mitigation of Hypothetical Bias." *American Journal of Agricultural Economics,* 85 (May 2003): 492-502.

Darby, M., and E. Karni. "Free Competition and the Optimal Amount of Fraud." *Journal of Law and Economics,* 16(1973):67-88.

Dickinson, D. L., and D. Bailey. "Meat Traceability: Are U. S. Consumers Willing to Pay for It?" *Journal of Agricultural and Resource Economics,* 27(December 2002):348-364.

Dickinson, D. L. and D. Bailey. "Experimental Evidence on Willingness to Pay for Red Meat Traceability in the United States, Canada, the United Kingdom, and Japan." *Journal of Agricultural and Applied Economics,* forthcoming.

Dutta-Bergman, M. J. and W.D. Wells. "The Values and Lifestyles of Idiocentrics and Allocentrics in an Individualist Culture: A Descriptive Approach." *Journal of Consumer Psychology,* 12 (2002): 231-246.

Fox, J. A., J. F. Shogren, D. J. Hayes, and J. B. Kliebenstein. "CVM-X: Calibrating Contingent Values with Experimental Auction Markets." *American Journal of Agricultural Economics,* 80(August 1998):455-465.

Greene, W.H. *Econometric Analysis,* 5th Edition, Upper Saddle River, NJ: Prentice Hall, 2003.

Grolleau, G. "Proliferation and Content Diversity of Environmental Claims: An Explanatory Analysis Applied to Agro-Food Products." *Applied Economic Letters,* 9(April 2002):343-346.

Hayes, D. J., J. F. Shogren, S. Y. Shin, and J. B. Kliebenstein. "Valuing Food Safety in Experimental Auction Markets." *American Journal of Agricultural Economics,* 77(February 1995):40-53.

Hobbs, J. E. "Transaction Cost Analysis of Quality, Traceability, and Animal Welfare Issues in UK Beef Retailing." *British Food Journal,* 98(1996):16-26.

Hobbs, J. E., D. Bailey, D. L. Dickinson, and M. Hughes. "Traceability in the Canadian Red Meat Sector: Do Consumers Care?" *Canadian Journal of Agricultural Economics,* 53(March 2005):47-65.

Kmenta, J. *Elements of Econometrics,* 2nd Edition, New York: MacMillan Publishing Company, 1986.

Loureiro, M. L., and W. J. Umberger. "Estimating Consumer Willingness to Pay for Country-of -Origin Labeling." *Journal of Agricultural and Resource Economics,* 28(August 2003):287-301.

Lusk, J. L., and J. A. Fox. "Consumer Demand for Mandatory Labeling of Beef from Cattle Administered Growth Hormones or Fed Genetically Modified Corn." *Journal of Agricultural and Applied Economics*, 34(April 2002):27-38.

Lusk, J. L., J. Roosen, and J. A. Fox. "Demand for Beef from Cattle Administered Growth Hormones or Genetically Modified Corn: A Comparison of Consumers in France, Germany, the United Kingdom, and the United States." *American Journal of Agricultural Economics*, 85(February 2003):16-29.

McCluskey, J. J., and M. L. Loureiro. "Reputation and Production Standards." *Journal of Agricultural and Resource Economics*, 30(April 2005):1-11.

Melton, B.E. W.E. Huffman, J.F. Shogren, and J.A. Fox. "Consumer Preferences for Fresh Food Items with Multiple Quality Attributes: Evidence from an Experimental Auction of Pork Chops." *American Journal of Agricultural Economics,* 78 (November 1996): 916-924.

Shogren, J. F., J. A. Fox, D. J. Hayes, and J. Roosen. "Observed Choices and Food Safety in Retail, Survey, and Auction Markets." *American Journal of Agricultural Economics*, 81(December 1999):1192-1199.

Shogren, J. F., S. Shin, D. J. Hayes, and J. B. Kliebenstein. "Resolving Differences in Willingness to Pay and Willingness to Accept." *American Economic Review*, 84(March 1994):255-270.

Umberger, W. J., and D. M. Feuz. "The Usefulness of Experimental Auctions in Determining Consumers' Willingness-to-Pay for Quality-Differentiated Products." *Review of Agricultural Economics*, 26(Summer 2004):170-185.

U.S. Census Bureau. "State and County QuickFacts: Utah," (2000a). http://quickfacts.census.gov.

U.S. Census Bureau. "Profile of General Demographic Characteristics: United States," (2000b). http://factfinder.census.gov.

U.S. Census Bureau. "Profile of General Demographic Characteristics: Utah," (2000c). http://factfinder.census.gov.

Table 1. Demographics Characteristics of the United States and Utah Compared with the Sample

Characteristic	United States	Utah	Sample
Annual Median Household Income[a]	$41,994	$45,994	$46,923
Percentage with Bachelor's Degree or Higher[a]	24.40%	26.10%	56.70%
Percentage of Female Persons[a]	50.90%	49.90%	50.0%
Median Age[b]	35.3	27.1	35 (mean)

[a] Source: U.S. Census Bureau (2000a).

[b] Sources: U.S. Census Bureau (2000b); and U.S. Census Bureau (2000c).

Table 2. Variable Names and Descriptions Used in the Analysis.

Variables	Description	Mean
AVEBID	Average of bids for all five rounds for all coffee types	$1.37
BAG1	Certification information is available that this coffee has been grown and processed without the use of agro-chemicals = 1, 0 otherwise	$0.87
BAG2	Certification information is available that this coffee was grown by coffee farmers who are guaranteed a fair price for their product = 1, 0 otherwise	$1.22
BAG3	Certification information is available that this coffee was grown under a canopy of shade trees = 1, 0 otherwise	$1.24
BAG4	Certification information is available that this coffee meets all organic, fair trade, and shade grown requirements = 1, 0 otherwise	$2.14
GENDER	Female = 1, 0 otherwise	50%
AGE	Age of participant in years	35
MARITAL	Married = 1, 0 otherwise	46.15%
CHILDREN	Number of children had by participant	0.77
HS	High school diploma is the highest level of education achieved by the participant = 1, 0 otherwise	7.69%
PGRAD	Graduate degree is the highest level of education achieved by the participant = 1, 0 otherwise	46.15%
HOURS	Number of hours worked weekly by the participant	30.00%
MID	Household income $30,000-$59,999 = 1, 0 otherwise	30.77%
MIDHIGH	Household income $60,000-$89,999 = 1, 0 otherwise	23.08%
HIGH	Household income $90,000+ = 1, 0 otherwise	15.38%
DONATE	Participant donates money to environmental causes = 1, 0 otherwise	23.08%
HAPPY	Participant is a very happy person = 1, 0 otherwise	96.15%
SATLIFE	Participant is satisfied with current life situation = 1, 0 otherwise	80.77%
SATFIN	Participant is satisfied with current financial situation = 1, 0 otherwise	26.92%
CUPS	Numbers of cups of coffee the participant consumes in an average day	2.12
AWISSUE	Participant is aware of community issues = 1, 0 otherwise	43.31%
CONHEALT	Participant is conscious of health and physical well-being = 1, 0 otherwise	88.46%

Table 3. Classical OLS Estimation Results for Characteristics Influencing Bids for Cause Coffees in the Vickery Auction.

Item/Independent Variable	Coefficient	Item/Independent Variable	Coefficient
No. of Observations	104		
R^2	0.6480		
Intercept	0.8637		
	(0.6837)		
Demographics of Respondents:			
GENDER	0.0671	PGRAD[a]	0.6507**
	(0.2475)		(0.2705)
AGE	0.1003***	HOURS	-0.0121
	(0.0222)		(0.0083)
MARITAL	-1.9335***	MIDHIGH[b]	0.0525
	(0.4718)		(0.4516)
CHILDREN	0.3656	HIGH[b]	1.1478**
	(0.2163)		(0.4568)
HS[a]	0.6550	CUPS	-0.2308**
	(0.3408)		(0.1098)
Coffee Characteristics:[c]			
BAG 1 (Organic)	-1.2689***		
	(0.1841)		
BAG 2 (Fair-Trade)	-0.9182***		
	(0.1841)		
BAG 3 (Shade-Grown)	-0.9027***		
	(0.1841)		
Personal Characteristics of Respondents:			
DONATE	-1.3407***	AWISSIE	-0.1551
	(0.3947)		(0.2675)
HAPPY	-2.4416***	CONHEALT	0.6251**
	(0.7437)		(0.2679)
SATLIFE	1.4214***		
	(0.3109)		
SATFIN	-0.5281		
	(0.4951)		

Notes: Double and triple asterisks (*) denote significantly different than zero at the 5% and 1% levels, respectively. Values in parentheses are standard errors.
Numbers in parentheses are standard errors
[a] Base is Bachelor's degree.
[b] Base is middle income.
[c] Base is coffee bag 4 (sustainable).

Table 4. Average Actual Prices for 1/2 Pound Coffee by Origin Based on Surveys of Store and Online Retail Markets.

Country of Origin	Not Certified	Organic	Fair Trade	Organic Fair Trade	Shade-Grown	Organic Shade-Grown	Triple-Certified
Brazil	$4.03	$1.64	N/A	$5.98	N/A	$4.75	N/A
	Difference	-$2.39		$1.95		$0.72	
Colombia	$4.28	$5.37	$6.10	N/A	$5.82	N/A	$5.63
	Difference	$1.08	$1.82		$1.54		$1.35
Costa Rica	$5.04	$4.66	N/A	$5.98	N/A	N/A	$4.75
	Difference	-$0.38		$0.94			-$0.30
Ethiopia	$4.97	$4.88	N/A	$4.90	N/A	N/A	$4.69
	Difference	-$0.10		-$0.07			-$0.29
Guatemala	$4.75	$4.70	N/A	$5.66	N/A	$4.75	$4.63
	Difference	-$0.05		$0.91		$0.00	-$0.12
Mexico	$3.92	$4.75	N/A	$5.66	N/A	$6.99	$4.75
	Difference	$0.83		$1.74		$3.07	$0.83
Nicaragua	$4.98	N/A	N/A	$5.56	N/A	N/A	$4.75
	Difference			$0.58			-$0.23
P. New Guinea	$5.73	N/A	N/A	$5.98	N/A	N/A	N/A
	Difference			$0.25			
Peru	$6.98	$5.48	N/A	$5.06	N/A	N/A	$4.07
	Difference	-$1.50		-$1.92			-$2.90
Sumatra	$4.96	$4.84	N/A	$7.24	N/A	$4.96	$4.75
	Difference	-$0.12		$2.28		$0.00	-$0.21
Average Price	$4.96	$4.54	$6.10	$5.78	$5.82	$5.36	$4.75
	Difference	-$0.43	$1.14	$0.82	$0.86	$0.40	-$0.21

Table 5. Test of Significance Between Means and Variances for Auction and Empirical Market Data.

Coffee Type	Auction Mean	Auction Variance	Obs.	Market Mean	Market Variance	Obs.	t Statistic	F Statistic
Bag1	$0.8704	0.2352	26	$0.4667	5.3579	15	-1.3611	22.780**
Bag 2	$1.2211	1.0611	26	$0.5104	2.3285	23	-1.8855	2.110
Bag 3	$1.2366	0.5173	26	$1.6482	2.0497	11	0.9063	3.962**
Bag 4	$2.1393	1.4740	26	-$0.146	1.7443	19	-5.9600**	1.183

**Indicates statistically different than zero at the 1% level of confidence.
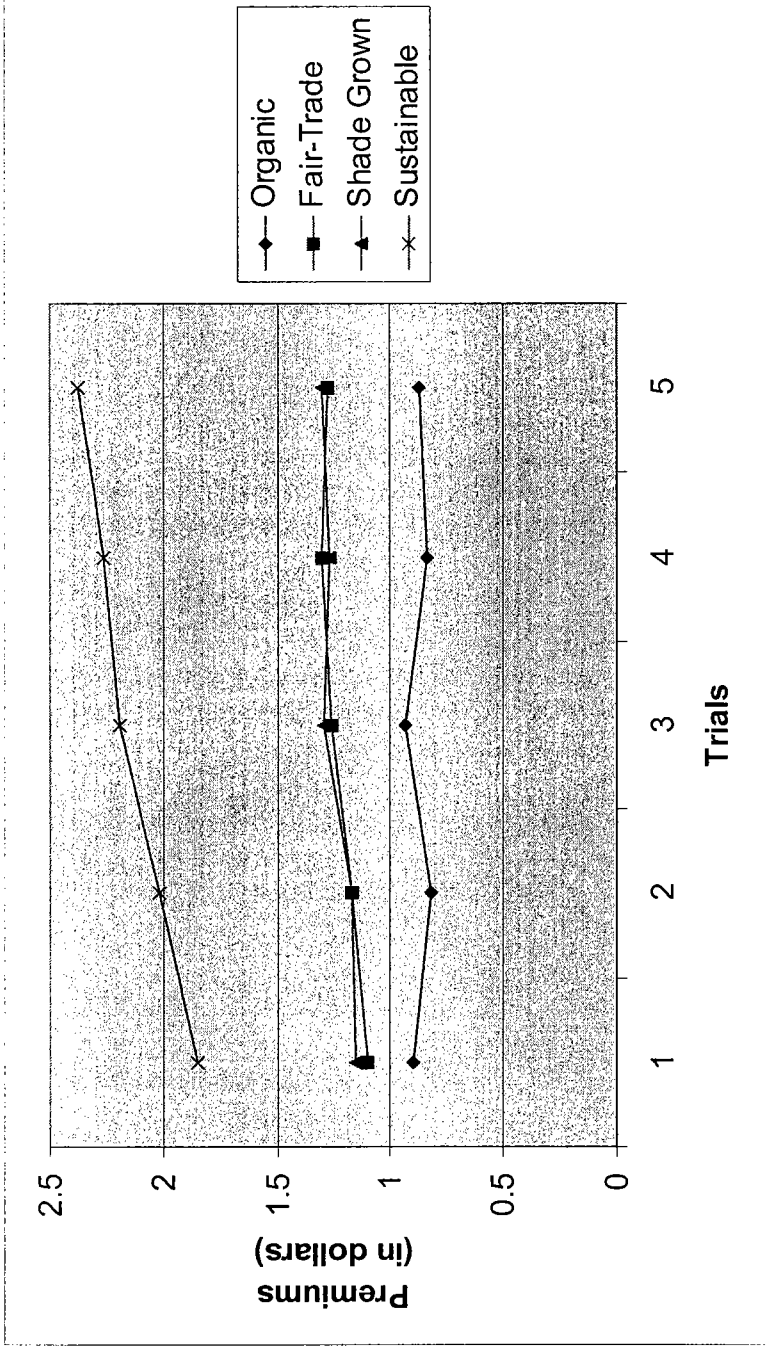
Figure 1. Average Bids for Each Round of Auction Experiment Bidding for Each Type of "Cause" Coffee.
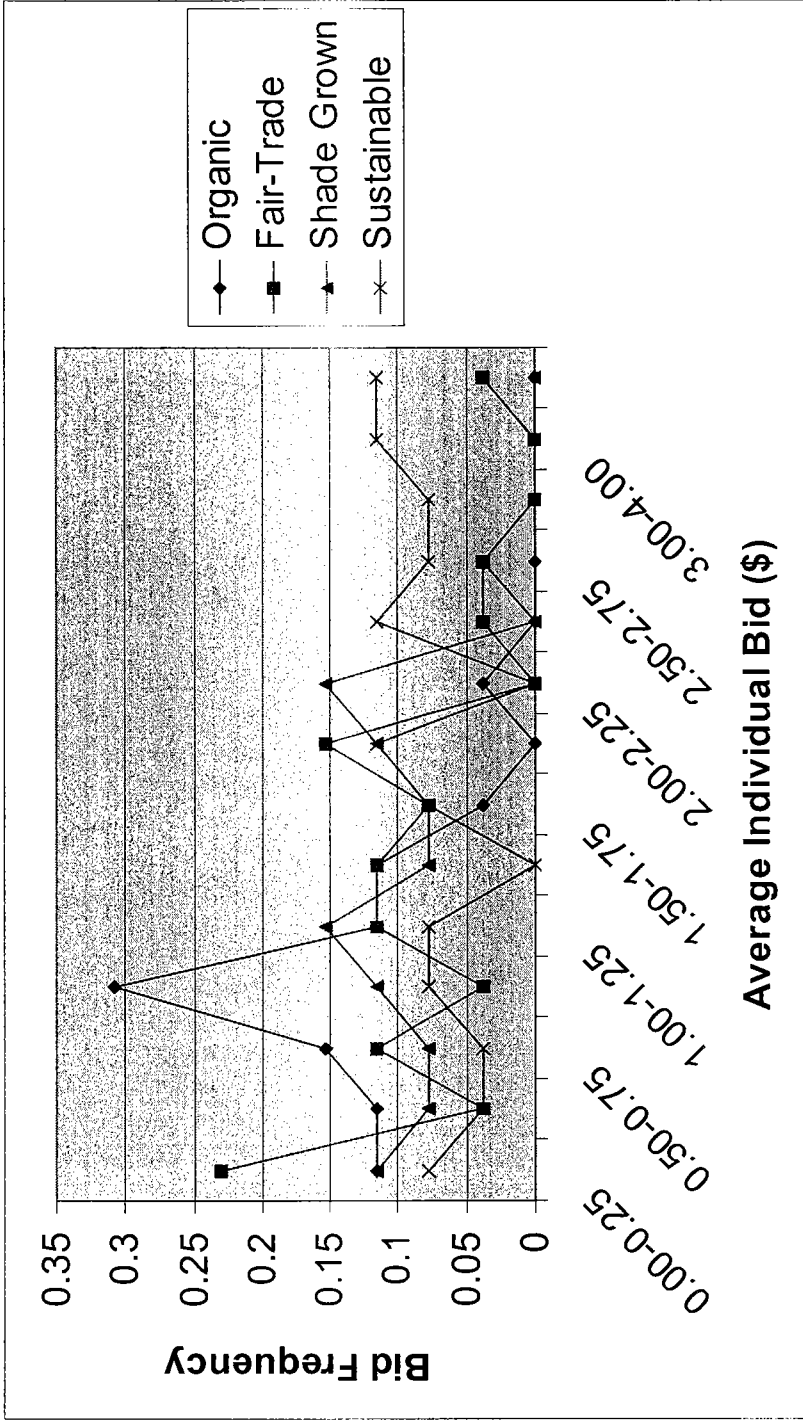
Figure 2. Average Bid Frequencies for Auction Experiments for "Cause" Coffees.

Appendix
Instructions (Included for Reviewers and not intended to be published)

Today you are participating in a decision-making experiment. Please read and follow the instructions carefully, and do not hesitate in asking any questions that you might have about the procedures in today's experiment.

You will be asked to decide how much you would be willing to pay for coffee with certain characteristics. These characteristics include (1) whether or not synthetic chemicals were used in the growth and processing of the coffee, (2) whether or not the coffee growers received a "fair" price for their product, and (3) whether or not the coffee was grown under a canopy of shade trees providing a habitat for migrating songbirds. We can truthfully verify all of the characteristics of the coffee products that will be described to you today, and no deceit is being used in claiming that the products possess the specified characteristics.

You will begin this experiment with $15 of starting income, a standard one-half pound bag of coffee. There are 4 "distinct" bags of coffee on the auction table of this experiment. Your instructions contain a description of the distinguishing characteristics of the coffee in each of these bags. We will refer to these bags as bag of coffee #1, #2, #3, and #4, and they are numbered this way on the auction table. You currently *own* the bag of coffee and the $15 of starting income given to you. You will soon have the opportunity to bid on exchanging your current bag of coffee with any one of the 4 distinct bags. At the end of this experiment you will either own your current bag, or you will own one of the distinct bags. You will not own more than one bag at the end of the experiment. Your take-home income will be the $15 minus the value of anything purchased in the experiment.

When deciding upon your willingness to pay for certain distinct food characteristics, you will be asked to record your monetary bid on a "bid sheet". Your instruction packet includes bid sheets (that can be torn out) for each distinct bag of coffee. You are not allowed to communicate *in any way or* to share your bids with other participants in this experiment. Bids are private information, and you should not attempt to discover the bids of any of the other participants in the experiment.

Coffee bidding

Bidding in this experiment involves determining how much you would be willing to pay to trade your current bag of coffee with each distinct bag. Ultimately, one bag of coffee will be auctioned off to the highest bidder, but the high bidder will only have to pay the amount of *the second highest* bid to exchange his/her current bag of coffee for the distinct bag. As such the second highest bid would be considered the "market price" for the distinct bag. You will have to make these bid decisions for each bag of coffee #1, #2, #3, and #4, and bidding will occur in 5 separate trials. Bids can be in increments as small as one cent. At the end of each bidding trial, the reigning market price (i.e., the second highest bid) of each bag of coffee will be announced, and the next trial of bidding will commence. **Only one** of the trials of bidding will be binding, and the binding trial will be determined by a random draw (each trial has an equal change of being the binding trial). Also, **only one** of the bags of coffee will actually be auctioned off to the highest bidder at the end of the experiment. The actual bag to be auctioned off will be *randomly*

determined at the end of the bidding *after* the binding trial has been chosen (and there is an equal chance that any one of the bags will be the one actually auctioned off).

When you write your bid for a given bag on the bid sheet, your bid should be the **highest** amount that you would be willing to pay to exchange your current bag of coffee with the distinct bag. Please do **not** state the *total* amount that you would pay for each distinct bag, but rather the amount that you would be willing to pay to exchange your current bag for the distinct bag. For example, if you are, at most, willing to pay $Y for your current bag (had it not been given to you) and, at most, $X for the distinct bag of coffee #1, then the difference $X-$Y indicates your maximum willingness to pay to exchange your current bag with bag of coffee #1. Your bid for bag of coffee #1 should then be the amount $X-$Y. If you prefer a given auction bag over your current bag, than your bid for that auction bag of coffee should be a positive amount. However, if you would actually prefer your current bag, then $X-$Y would be negative. Negative bids are allowed, but keep in mind that you would only bid a negative amount if your maximum willingness to pay for your current bag of coffee (were it not given to you) were actually *higher* than your maximum willingness to pay for the distinct bag. If you are indifferent between your current bag of coffee and a particular distinct bag, then your bid for that distinct bag should be $0.00. Remember, only one of the bidding trials will be binding and only one of the distinct bags will actually be auctioned off, and your bids do not effect which trial is chosen as the binding trial or which bag of coffee is auctioned off (it is just randomly chosen). *You should therefore treat each trial of bidding as the potentially binding trial and each distinct bag of coffee as if it were the one actually being auctioned off in terms of deciding your bid for each bag of coffee.*

In each bidding trial, once all participants have placed their bids for each bag of coffee (#1, #2, #3, and #4), the reigning market price for each bag will be announced before beginning the next bidding trial. Once the last bidding trial is completed, we will randomly choose one of trials as binding, and then we will randomly choose one of the bags to auction based on the bids from that binding trial. For the chosen auction bag of coffee, we will review each of the participant bids, and the winner bidder and market price (the second highest bid) will be announced. Remember, the individual who bid the *highest* amount for the auction bag of coffee will receive that bag, but he/she will pay *the second highest* bid. For example, if the highest bid for the auction bag was $H, and the second highest bid was $T, then the individual who bid $H must exchange his/her current bag of coffee for the auction bag, but he/she would pay $T for the exchange. That individual would then take home $15-$T dollars at the end of the experiment. All other individuals would take home $15 at the end of the experiment.

In order to ensure that all participants have fully understood these instructions, you have also been given a small candy bar. Before the coffee bidding takes place, there will be two practices rounds of bidding in which you will bid to exchange your small candy bar for the large candy bar placed on the auction table. The bidding procedure will be the same for these practice rounds as for the actual coffee bidding rounds, and the transaction will be carried out in the same manner described above (i.e., one of the practice rounds will be randomly chosen, the high bidder in that round will exchange his/her small candy bar with the large one, and we will collect the second high bid amount from that auction winner).

The following brief descriptions of Bags of Coffee #1, #2, #3, and #4 highlight the *verifiable* **characteristics of the coffee in that bag.** Such characteristics have not been certified and cannot be verified for the coffee in your current bag.

After reading the description of each of these bags of coffee, please place your bid for trial #1 for that bag on the bid sheet for trial #1. Please make sure the your bid for bag of coffee #1 is placed on the bid sheet for bag of coffee #1, your bid for bag of coffee #2 is placed on the bid sheet for bag of coffee #2, etc. When completed, you can tear off each bid sheet, fold it in half, and place it in the auction coffee bid box that will be passed around. Once everyone had done this, we will document the bids, announce the reigning market price for each bag of coffee, and continue on to the next trial of bidding. Once the final trial is completed, we will randomly select one of the trials to be binding, and then we will randomly select a bag of coffee to be auctioned off using the bids from that trial. Again, **please ask before you place your bid** if you have any questions.

Bag of Coffee #1
This coffee has been certified as having had no contact with synthetic chemical fertilizers or pesticides during the growth and processing of the product.

Bag of Coffee #2
This coffee has been certified so as to guarantee that the growers received a "fair" price for their product. The idea of this "fair" price is that it will provide a living wage for the farmers and improve the standard of living in coffee producing environments.

Bag of Coffee #3
This coffee is certified has having been grown under a canopy of shade trees which can provide a habitat for migrating songbirds, allow for soil conservation, and require the use of less chemicals in production.

Bag of Coffee #4
This coffee has been certified as having had no contact with synthetic chemical fertilizers or pesticides during the growth and processing of the product. **In addition**: (1) this coffee has been certified so as to guarantee that the growers received a "fair" price for their product and (2) it is certified has having been grown under a canopy of shade trees, which can provide a habitat for migrating songbirds, allow for soil conservation, and require the use of less chemicals in production.