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Consumer Demand for Ethical Products and the Role of Cultural Worldviews: The Case of Direct- Trade Coffee

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Consumer Demand for Ethical Products and the Role of Cultural Worldviews: The Case of Direct-Trade Coffee

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Abstract: Ethically-labeled products – those that address environmental and human-welfare issues – are increasingly prevalent in consumer decision-making. This research estimates the value consumers place on *direct trade* coffee, a relatively new and complex ethical product. Direct trade coffee is defined by having three attributes that differentiate it from standard coffee: (i) price premiums are paid directly to farmers; (ii) harvesting practices are sustainable; and (iii) the quality of the product is enhanced. The first two attributes of direct trade coffee lead to social benefits while the third is strictly a private benefit. Using a discrete-choice experiment, we find that consumers are willing to pay significant premiums for each of the three attributes, and are willing to pay slightly more for those attributes with social benefits. While we find evidence of heterogeneity in responses, cultural worldviews do not appear to play a significant role in shaping consumers' values for direct trade coffee.

JEL codes:

Keywords: ethically-labeled products, impure public goods, direct trade coffee, discrete choice experiments,

1. Introduction

Examples of ethically-labeled products – those that consider environmental and human welfare issues – are becoming increasingly prevalent. These range from well-established certified products like Fair Trade coffee and Rainforest Alliance tea to small-scale locally sourced meat and produce. Other examples include dolphin-safe tuna, organic fruit, cruelty-free cosmetics and conflict-free diamonds. Although the idea that consumers often purchase a single good that yields both private and social benefits is not new (e.g., Anderson and Cunningham 1972), recent attention has been given to estimating the premiums consumers are willing to pay for such products. This paper contributes to this literature by examining consumer demand for *direct trade* coffee, a relatively new ethically-labeled product in which coffee roasters buy directly from farmers to ensure fair wages are paid, quality remains high and harvesting methods are sustainable. Through choice experiments, our research design allows us to isolate the premiums consumers are willing to pay for each attribute of this relatively complex product. We also contribute to the literature by exploring the heterogeneity in consumer responses to ethical products. In particular, we examine how consumers’ cultural worldviews influence the amount they are willing to pay for direct-trade coffee and its individual attributes.

The success of direct-trade coffee and other ethically-labeled goods largely depends on the extent consumers are willing to pay for them. Previous studies suggest that a majority of consumers are willing to pay significant premiums for products made following ethical practices. Examples include dolphin-safe tuna (Hicks et al. 2002), clothing made in “good working conditions” (Prasad et al. 2004; van Dick et al. 2009), sustainable paper goods and detergents (Bjorner et al. 2004), electricity generated from renewable resources (Kotchen and Moore 2007) and eco-labeled apples (Blend and van Ravenswaay 1999).

A number of studies in the marketing and economics literatures have estimated consumer responses to the Fair Trade label. Fair Trade is perhaps the most widely-known ethical label, and since it is often linked with coffee, it is particularly relevant to this study.¹ Fair Trade

¹ The Fair Trade initiative originated in the late 1980s from a non-governmental organization in the Netherlands concerned with paying coffee farmers sufficient wages to maintain acceptable living standards. Organizations with similar initiatives sprouted over Europe and North America, and by the late 1990s an umbrella organization was formed called the Fair Trade Labelling Organization International (FLO). Total sales of Fair Trade goods in the United States in 2017 totaled over \$1 billion (FLO, <<http://fairtradeamerica.org/~media/Fairtrade%20America/Files/Reports/2017-Fairtrade-International-Annual-Report.pdf>>).

certification has the objective of improving the living conditions of farmers in developing countries. This is achieved through setting a minimum price for all Fair Trade coffee sold plus a guaranteed premium for producers that must be used to improve the quality of life of the producer and their communities. The premiums can be used for things like funding local schools, infrastructure, improving quality and access to environmental amenities as well as developing improved production practices.

Most of the empirical estimates of the premium consumers are willing to pay for Fair Trade coffee are derived from survey studies. Using a sample of coffee consumers from Ghent University in Belgium ($n = 808$), De Pelsmacker et al. (2005) find an average willingness to pay of 0.19 Euros (about 10%) for a single cup of coffee. In a study published that same year, Loureiro and Lotade (2005) survey consumers in four supermarket locations in Colorado and Wyoming ($n = 284$) and find that the average consumer is willing to pay a premium of about \$0.22 per pound (about 3.4%) for Fair Trade labeled coffee over a similar non-certified regular coffee. They find additional premiums for organic and shade-grown varieties. In a survey of coffee buyers in the United States, Hertel et al. (2009) find that over 75% of respondents ($n = 508$) were willing to pay at least \$0.50 more per pound of coffee that was Fair Trade certified, and over half were willing to pay \$1.00 or more per pound. Using a choice experiment, Van Loo et al. (2015) find consumers in Northwest Arkansas ($n = 81$) were willing to pay an average premium of \$0.68 per 12 oz of Fair Trade coffee. The study does not report a common baseline price for 12 oz of standard coffee and so a percentage premium cannot be immediately uncovered.

Two studies use field experiments to report a revealed preference for Fair Trade coffee over standard coffee. Hainmueller et al. (2015) conducted a field experiment in 26 supermarkets in New England and found that sales rose by almost 10% when the coffees carried a Fair Trade label compared to similar coffees carrying a generic (placebo) label. They also find demand for Fair Trade coffee to be less elastic to price increases. That consumers of Fair Trade coffee are less price responsive than those of regular coffee is consistent with an earlier finding by Arnot et al. (2006) from a single vendor field experiment.

We contribute to the literature on estimating willingness to pay for ethical products – and in particular ethically produced coffee – by considering direct trade coffee. Although closely related, Fair Trade and direct trade coffees are different in a few important ways. Typically, with

Fair Trade coffee, the coffee supply chain is highly complex with multiple key stakeholders. For example, a number of growers in a shared geographic location can establish a cooperative which makes decisions for their community as a whole. In most cases the cooperative sells coffee to middlemen that import coffee from growers and then export to retailers. While the Fair Trade system was established to provide an anticipated suite of benefits to farmers – such as guaranteeing a minimum price to farmers, enabling improved market access, etc. – there is scant evidence that such a certification achieves these goals. For example, in 2013-14, only 28 percent of Fair Trade coffee was sold in Fair Trade markets under Fair Trade terms, so the promise of minimum prices and producer premiums is often not realized.²

A direct trade supply chain system allows roasters to engage directly with farmers to provide a guaranteed price agreement. An added benefit is that this simpler and more transparent supply chain can also facilitate a long-term educational relationship between the roaster and farmer that can help improve farming practices and support the growth of a superior (higher cupping score) coffee. As such, as well as creating a roaster-farmer direct price premium guarantee, the purpose of the new direct trade supply chain mechanism is to empower coffee-growing communities as well as teaching them eco-friendly and socially responsible growing practices, and how to evaluate the quality of their product.

While the previously discussed literature sheds light on consumers' willingness to pay for some of the attributes that define direct trade coffee, to our knowledge ours is the first study to focus squarely on direct trade coffee. In particular, our objective is to elicit willingness to pay estimates for three types of attributes embodied in direct trade coffees. One is that direct trade ensures that the price premium is paid to farmers and their communities. This can be thought of as the *producer premium* attribute. Another is that direct trade coffee can lead to more sustainable and ecologically sound harvesting practices. This can be thought of as the *environmental* attribute. The third is that direct trade can lead to a higher quality and better tasting coffee for the end consumer. This can be thought of as the *quality* attribute. Willingness to pay measures for each attribute are estimated through a discrete choice experiment (DCE)

² See 2015 report on Scopes and Benefits of FairTrade, p. 74 in <https://www.fairtrade.net/fileadmin/user_upload/content/2009/resources/2015-Monitoring_and_Impact_Report_web.pdf>

with a sample of coffee consumers drawn from the Amazon Mechanical Turk (MTurk) workforce.³

We also contribute to the literature by exploring some of the individual characteristics that help explain differences in willingness to pay estimates. One of the take away messages from the survey literature on preferences for Fair Trade is that there is tremendous variability in the size of the premiums consumers are willing to pay. Moreover, the findings on the influence of sociodemographic characteristics also vary substantially. Both Loureiro and Lotade (2005) and De Pelsmacker et al. (2005) found that more highly educated consumers were willing to pay more for Fair Trade coffee, while Hertel et al. (2009) found the opposite effect (though insignificant). Loureiro and Lotade (2005) and Hertel et al. (2009) found that wealthier consumers are willing to pay more for Fair Trade and older consumers are willing to pay less. Van Loo et al. (2015), in contrast, report no significant differences across gender, income and education. De Pelsmacker et al. (2005) found no significant differences in gender and age, but in terms of personal values, the more *idealistic* and less *conventional* consumers had stronger preferences for Fair Trade coffee.⁴

Our approach is novel in that it analyzes heterogeneity in stated values for ethical products by examining how cultural beliefs can influence consumer decision making. The metric we use – developed by Kahan et al. (2011) – is not bound to geographic location, but to individual worldviews. The cultural worldview instrument produces a broad metric that captures how a person views their relationship between individuals and society. The metric has helped explain perceptions and policy preferences on issues such as climate change and green energy (Cherry et al. 2018), vaccines (Kahan 2013), nuclear power (Marris et al. 1998), social preferences (Cherry et al. 2017) and genetically modified food (Sjoberg 2003). Respondents to the worldview survey answer questions that place them on a spectrum across two dimensions – *individualism-communitarianism* and *hierarchical-egalitarian*.

From our total sample of $n = 953$ respondents, we find that the average consumer has a strong positive preference for all direct trade attributes. We find an average willingness to pay of

³ The environmental, quality, and producer premium attributes of direct-trade coffee and their levels used, representing the new supply chain concept, were discussed a verified with a U.S.-based coffee roaster (Bald Guy Brew Coffee Roasting Company, Boone NC, <https://www.baldguybrew.com/>) who is engaged in a direct trade relationship with coffee farmers in Costa Rica.

⁴ Their study used the Rokeach (1973) scale to categorize personal values.

\$0.22 per ounce for the *producer premium* attribute, \$0.18 per ounce for the *environmental* attribute and \$0.14 per ounce for the *quality* attribute when compared to regular varieties. While the *producer premium* and *quality* attributes are statistically different, the *producer premium* and *environmental* attributes and the *quality* and *environmental* attributes are marginally significant. Further, while we find evidence of heterogeneity in responses, cultural worldviews do not appear to play a significant role in shaping consumers' values for direct trade coffee.

2. Survey design and summary statistics

The primary focus of our survey is the choice-experiment used to elicit coffee drinkers' values for each attribute of direct trade coffee. In order to explore heterogeneity in decision making, the survey instrument also collected information related to coffee consumers' monthly coffee purchasing behavior, their attitudes and preferences toward Fair Trade coffee (which has close links to the producer premium attribute of direct trade coffee), sociodemographic information, and their cultural worldviews using an instrument popularized by Kahan et al. (2011).

2.1 Description of the choice sets

Before respondents made decisions, the survey instrument included descriptions of each of the three attributes associated with direct trade coffee. Respondents were told that there are three key attributes to a new direct-trade supply chain for coffee. The first is called the *environmental* attribute, in which they are told that the supply chain system will enable the buyer to directly educate the farmers in how to grow and harvest coffee using sustainable and eco-friendly methods (e.g., the coffee will be grown and harvested using fewer chemicals, creating less waste and using less energy, and is sustainable for holistic environments of plants and animals).

The second is the *quality* attribute for which respondents are informed that the buyer will also educate farmers on the best coffee growing practices and how to evaluate their coffee for quality. For example, farmers would be trained on picking coffee cherries when they are perfectly ripe. This will generate higher quality, artisanal coffee (i.e., higher "cupping" scores).

Next, respondents are informed of the *producer premium* attribute, in which, under the new system, a guaranteed amount of their purchasing money will go directly to the farmer/grower to ensure they can maintain a decent standard of living. Respondents are asked to rate the level of importance (on a four-point Likert scale between "Not very important at all" to

“Very important”) for these three attributes of the new direct trade coffee. Table 1 shows that the majority of respondents (over two-thirds) feel that all attributes are either important or very important to them.

Table 1. Respondents’ stated importance of direct trade coffee attributes

		1 = Not important at all	2 = Somewhat important	3 = Important	4 = Very important
Environmental attribute	How important is it to you that your coffee is grown and harvested using sustainable and eco-friendly methods?	7.9%	25.8%	43.3%	22.9%
Quality attribute	How important is it to you that farmers are better educated in coffee growing practices to create higher quality, artisanal coffee?	7.0%	22.9%	41.5%	28.3%
Producer premium attribute	How important is it to you that a guaranteed amount of your purchasing money will go directly to the farmer/grower?	6.9%	18.3%	39.0%	35.6%

2.2 Choice experiment

After the attributes are described, each respondent is then provided with four choice-set scenarios. In a given choice set, respondents are asked to identify their preferred choice among three alternatives: two new direct trade coffee types and a status-quo option. Each alternative is defined by the three attributes of direct trade coffee (i.e., environmental, quality and producer premium) and a description of the corresponding markup in price relative to the typical coffee consumed by the respondent.

The three attributes and levels are shown in Table 2. For the *environmental* attribute, respondents are either told that the new coffee type will be grown using (1) traditional methods or (2) an eco-friendly method that uses fewer chemicals, less energy, and less waste. For the *quality* attribute, the two potential levels for the new coffee type are either (1) use of traditional

harvesting methods that produce a regular coffee type or (2) use of best harvesting practices (that includes picking the cherry only when it’s ripe) to produce higher quality coffee. For the *producer premium* attribute, respondents receive either information on (1) a traditional supply chain with no guarantee of any purchasing money going to the farmer or (2) under a new improved supply chain, a guaranteed amount will go to the farmer. In terms of the markup in the retail price of coffee, respondents randomly receive one of four price premiums for direct trade coffees – either \$1, \$3, \$7, or \$10. The premiums are relative to each consumer’s “regular” bag of coffee.

Table 2: Choice experiment attributes, levels and prices

Attribute	Impact on supply chain	Possible Levels
Environmental attribute	Growing method	<ol style="list-style-type: none"> 1. Use traditional methods 2. Farmers use eco-friendly methods (such as using fewer chemicals, less energy, and less waste)
Quality attribute	Harvesting better quality coffee	<ol style="list-style-type: none"> 1. Use traditional harvesting methods to produce regular quality coffee 2. Farmers use best harvesting practices (such as picking coffee beans only when ripe) to produce high quality coffee
Producer premium attribute	More money going to farmer	<ol style="list-style-type: none"> 1. Traditional supply chain in place that does not guarantee part of the purchase price goes to the farmer 2. An improved supply chain system is developed so a guaranteed amount of the purchase price goes directly to the farmer
Price	Price premium for direct-trade coffee above regular coffee purchase	Consumer pays x more for a bag of the new coffee type compared to a regular bag of coffee where $x = \$1, \$3, \$7, \text{ or } \10

We began the design process with an orthogonal design, which focuses on attribute level balance and makes no predetermined assumptions about the preferences of respondents. With the three attributes, each having two possible levels and the distribution of possible prices, it is impractical to implement a full factorial design, and therefore we use a fractional factorial design. The optimal design was determined with the Ngene software package (Chocimetrics 2018). As part

of an iterative design process, we conducted a pilot study of 100 respondents. The pilot study data was used to calculate parameter estimates for use as fixed priors in an efficient discrete-choice experimental design. The efficient design attempts to lead to parameter estimates that minimize standard errors.⁵

Using this approach, we construct five blocks of four choice sets – yielding 20 unique choice-set scenarios. In practice, each individual respondent is randomly assigned to 1 of the 5 blocks and then faces four choices between their typical coffee purchase and two new direct trade coffee options. Figure 1 depicts an example of one choice-set scenario randomly presented to a respondent.

Figure 1: An example choice set

Choose an option to indicate your preferred coffee type:

Attributes	Option A	Option B	Option C
Growing Method	Farmers use eco-friendly methods (such as using fewer chemicals, less energy, and less waste)Use traditional methods	Use traditional methods	You purchase your regular bag of coffee
Harvesting for Quality	Use traditional harvesting methods to produce regular quality coffee	Farmers use best harvesting practices (such as picking coffee beans only when ripe) to produce high quality coffee	
Money Going to the Farmer	An improved supply chain system is developed so a guaranteed amount of your purchasing money goes directly to the farmer	Traditional supply chain in place that doesn't guarantee that any of your purchasing money goes to the farmer	
Price Premium	You pay \$10 more for a bag of this new coffee type than for your regular bag of coffee	You pay \$1 more for a bag of this new coffee type than for your regular bag of coffee	

⁵ The Ngene software develops an efficient design by determining the optimal asymptotic variance-covariance matrix using the experimental components and prior information about parameter estimates, as determined from the pilot study. We used the D-error measure for the multinomial-logit model to determine our efficient design. Our model's D-error efficiency measure was 0.081.

The online survey was created using the Qualtrics, Inc. software and the sample of respondents was selected using Amazon Mechanical Turk (MTurk), which is an online workforce that has become increasingly popular for social science research (e.g., Cherry et al. 2017; Berlinksy et al. 2012; Mason and Suri 2002). Recent research has examined and compared the demographic characteristics of MTurk users to other sampling techniques and found that MTurk users are more representative of the U.S. population than samples derived from experimental lab studies and in-person convenience samples (Paolacci, Chandler, and Ipeirotis 2010; Berinsky, Huber, and Lenz 2012; and Buhrmester, Kwang, and Gosling 2014).

2.3 Descriptive statistics

A total of 1,000 surveys were submitted over the two waves of data collection (100 respondents from the pilot study and another 900 from the study). Forty-three surveys were dropped due to incomplete responses, yielding a usable sample of 957 completed surveys.

Table 3 reports key descriptive statistics for the demographic characteristics for the 957 respondents in our sample. The majority of respondents are white (70%), relatively young (average of 36 years old), and male (57%). The majority have had some college experience or have completed degrees (67%). Most respondents earn less than 100 thousand dollars a year (87%). In terms of baseline coffee purchase, the average price paid per ounce of coffee (at retail) is \$0.56, or \$8.96 per pound.

Table 3. Descriptive statistics

	Mean	Std. Dev.	Min	Max
Some High School	0.01	0.08	0.00	1.00
High School Grad	0.11	0.31	0.00	1.00
2-Year Degree	0.21	0.41	0.00	1.00
Some College	0.44	0.50	0.00	1.00
College Grad	0.13	0.34	0.00	1.00
Prof. or Doctoral Degree	0.10	0.30	0.00	1.00
Income < \$50K	0.41	0.49	0.00	1.00
Income > \$50K, < \$100K	0.46	0.50	0.00	1.00
Income > \$100K	0.13	0.33	0.00	1.00
Gender (Male = 1)	0.57	0.50	0.00	1.00
Race (White = 1)	0.70	0.46	0.00	1.00
Age (in Years)	36.28	11.42	20.00	82.00
Price (\$)	7.73	18.42	0.00	57.50
Bag Size (Ounces)	14.89	5.17	0.00	64.00
Price per Ounce	0.56	1.19	0.00	30.00

2.4 Cultural worldviews

Following the emerging literature on the role of cultural worldview on individual preferences about varying social issues, we include eight cultural worldview questions from Kahn et al. (2011) in the survey. The first four questions relate to an *individualism-communitarian* dimension, while the remaining four questions correspond to a *hierarchy-egalitarian* dimension. For each question, respondents are provided with a five-point Likert scale, ranging from “1 = Strongly Disagree” to “5 = “Strongly Agree” (see Appendix for instrument). Respondents are assigned to both dimensions based on their scores from these two sets of questions (with scores ranging from 4 to 20 points). Respondents that score above the median on the *individualism-communitarian* dimension are classified as individualistic types, with those then scoring at the median or below, as communitarian types. Likewise, those that score above the median on the *hierarchy-egalitarian* dimension are coded as a hierarchical type, with those at the median level or below then considered as an egalitarian type.

3. Empirical methodology

In total, five models are run. The *full model* examines coffee respondents' willingness to pay for the direct trade attributes. The additional four models then analyze respondent heterogeneity in willingness to pay values for these attributes across cultural beliefs.

Within our discrete choice experiment, we analyze individuals' preferences with the random utility model (RUM) (McFadden 1974), where the utility associated with a given choice can be decomposed between observed and unobserved components of those choices. Let U_{njt} denote the utility individual n has for alternative j in choice situation t . In RUMs, we can decompose U_{njt} into an observable component of utility, V_{njt} , and an unobserved component of utility, ε_{njt} , such that

$$U_{njt} = V_{njt} + \varepsilon_{njt} \quad (1)$$

In our application, the observed component of utility (indirect utility) is assumed to be linear in observed attributes for each alternative j and the corresponding parameters, α , β , ϕ , and δ , such that

$$V_{njt} = \alpha_{squo} + \sum_{k=1}^K \beta_{nk} x_{njtk} + \exp(\phi) c_{njt} + \delta_{FT}, \quad (2)$$

where x_{knjt} are the k explanatory variables, c_{njt} is the cost of a 12 oz cup of coffee, α_{squo} captures the marginal utility of the status quo option, β_{kn} captures the marginal utility of the k explanatory variables, $\exp(\phi)$ is the exponential transformation of the cost parameter, and δ_{FT} is a normally distributed error component with zero mean capturing unobserved utility associated with the hypothetical fair trade coffee options. Carson and Czajkowski (2019) show that taking the ratio of two normally distributed parameters, the common practice for welfare measurement, leads to measures without well-defined moments. In order to address this, they propose the use of the exponential transformation of the cost parameter in order to estimate confidence intervals.

In the utility function, U_{njt} , the unobserved component of utility, ε_{njt} , is assumed to be independently and identically (IID) extreme value. The cumulative distribution function of ε is

$$F(\varepsilon) = \exp(-e^{-\sigma_n(\varepsilon)}) \quad (3)$$

where σ_n represents a positive scale factor for individual n . The distribution has

$$E(\varepsilon_{njt}) = 0.57721/\sigma_n \text{ and } var(\varepsilon_{njt}) = \frac{\pi^2}{6\sigma_n^2}. \quad (4)$$

We utilize the mixed multinomial logit model (MMNL) (Train 2009). In the MMNL the marginal utility for attribute k is

$$\beta_{nk} = \bar{\beta}_k \pm v_k z_n \quad (5)$$

where $\bar{\beta}_k$ represents the mean for the distribution of parameters, v_k represents the spread of preferences around the mean, and z_n represents random draws from a specified distribution for each individual n .

The probability that respondent n in choice task t is observed to choose alternative j is

$$P_{njt} = \int_{\beta} P_{njt}(\beta) f(\beta|v) d\beta \quad (6)$$

Where $f(\beta|v)$ is the probability density function of β , given the distributional parameters v .

Since the integral in (6) does not have a closed form solution, we approximate the model using simulation. We compute the simulated log-likelihood function using the expected probability computed from (6) using 2500 Halton draws. The simulated maximum likelihood model is

$$SLL = \sum_{n=1}^N \log E\left(\prod_{t \in T} \prod_{j \in J} (P_{njt})^{y_{njt}}\right). \quad (7)$$

4. Results

Table 6 reports the results from the pooled MMNL model which includes the decisions made by all participants in the study. The model specification includes a status quo variable – the “alternative specific constant” (ASC) – representing the purchase of the individual’s typical coffee, as well as sociodemographic and individual coffee preference variables interacted with the status quo dummy variable.

From the constant term in Table 6, we find a negative but statistically insignificant coefficient on the status quo option, which suggests, after accounting for interactions with the status quo dummy variable, only a weak preference for direct trade coffee types over a consumer’s baseline coffee choice ($p=.1308$). The status quo dummy variable also controls for

status quo bias. From interaction terms with consumer coffee preferences and the status quo variable, we find that individuals with experience roasting coffee and those who already purchase Fair Trade coffee are less likely to choose the status quo option ($p = .0000$ and $p = .0228$, respectively). Individuals reporting no general knowledge of coffee (such as types, farming or roasting techniques, etc.) are more likely to choose their regular coffee ($p = .0840$). For sociodemographic interactions, we find that white and older consumers are more likely to choose their regular coffee over the new direct trade option ($p = .0161$ and $p = .0000$, respectively). Finally, relative to the highest-earning income quartile, consumers on lower income levels are less likely to choose direct trade coffee – a finding that is previously been observed across Fair Trade studies (see for example, Loureiro and Lotade 2005; and Hertel et al. 2009).

Table 6: Estimates from the pooled MMNL model

Parameter	Coefficient	t-ratio
ASC (Status Quo)	-0.630	-1.51
ASC (Status Quo) * ROAST	-0.471**	-2.28
ASC (Status Quo) * MALE	0.156	0.92
ASC (Status Quo) * WHITE	0.464**	2.41
ASC (Status Quo) * NO KNOWLEDGE	0.536*	1.73
ASC (Status Quo) * HIGH SCHOOL	-0.025	-0.08
ASC (Status Quo) * TECH SCHOOL	-0.148	-0.57
ASC (Status Quo) * SOME COLLEGE	0.329	1.51
ASC (Status Quo) * GRAD SCHOOL	0.174	0.61
ASC (Status Quo) * FAIR TRADE	- 1.316***	-7.64
ASC (Status Quo) * AGE	0.036***	5.00
ASC (Status Quo) * INCOME Q1	-0.750***	-2.80
ASC (Status Quo) * INCOME Q2	-0.964***	-3.27
ASC (Status Quo) * INCOME Q3	-0.999***	-3.59
Environmental Attribute	0.509***	7.63
Quality Attribute	0.402***	6.01
Producer Premium Attribute	0.623***	9.24
Price per oz (NPOZ_SP)	1.034***	25.59
Standard Deviation		
ENVL (Triangular Distribution)	1.903***	7.22
QUAL (Triangular Distribution)	2.248***	8.87
PREM (Triangular Distribution)	2.246***	9.20
Error Component (Normal Distribution)	1.781***	15.62
Model Fit		
Sample	953	
Observations (N)	3812	
Log-Likelihood (Base)	-4187.9	
Log-Likelihood (Model)	-3367.1	
Akaike Information Criterion/N	1.778	
McFadden Rsquared	1.778	

Note: The superscripts ***, **, and * indicate significance at the 0.01, 0.05, and 0.1 level, respectively

Considering the direct trade attributes, the positive and significant coefficients ($p < 0.01$) for all three attributes suggest that the presence of each attribute increases the likelihood a consumer will purchase the direct trade option. Of the three attributes, individuals have the strongest preference for the *producer premium*, guaranteeing that more money goes directly to the farmer. The next strongest preference is for the *environmental* attribute.

Our estimates capture individual preference heterogeneity for the three direct trade attributes using a triangular distribution for individual-level preferences. The triangular distribution is a symmetric distribution without the extreme values associated with the normal distribution. It has been argued that this may lead to more behaviorally realistic results (Train 2009; Hensher, Rose, and Green 2015). We do not account for preference heterogeneity in the per-ounce price of coffee.

Before estimation, we multiply cost by -1 in order to obtain a strictly positive coefficient. The price per-ounce coefficients in Table 6 and 7 are estimates of ϕ , necessitating that we exponentiate the result, $\exp(\phi)$, for the correct interpretation and estimation of MWTP ($\beta_{nk}/\exp(\phi)$). We find the influence of the (negative) price of coffee (per ounce) to be positive and highly significant. Simply put, this means coffee buyers prefer products with a lower price – a result that is consistent with theory. Results also indicate heterogeneous preferences for choice attributes via statistically significant results for the standard deviations of the three fair trade attributes (Environmental, Quality, and Producer Premium).

4.1 What types of consumers choose direct trade coffee?

Table 7 presents the results from MMNL models similar to Table 6, but segmented by the cultural worldview of the respondent. Recall, respondents are categorized as being either *communitarians* or *individualists*, and either *egalitarians* or *hierarchicals*.

In each of the sub-models, we find statistically insignificant coefficients on the status quo option, indicating that, after accounting for interactions with the status quo dummy variable, all subgroups exhibit no preference for direct trade coffee type over their typical coffee choice. Interacting individuals' coffee-related behavior and sociodemographic variables with the status quo option indicates largely similar coffee preferences across worldview types. For example, all model results indicate that individuals who already purchase Fair Trade coffee are less likely to choose the status quo option ($p < .001$). Younger consumers are more likely to choose the new

direct trade coffee over their typical coffee choice ($p < .01$). All worldview types are less likely to choose the direct trade options as the price premium for coffee increases ($p < 0.001$). As with the pooled model, the highest-earning income cohort is more likely to choose direct trade coffee. A few significant differences do appear when comparing worldview types. For example, the preferences of communitarians look to be the least responsive to differences in income, while income matters most to individualists. Whether an individual roasts their own coffee beans has a significant negative effect on choosing the status quo option, but only for communitarians ($p = .0008$).

All three direct trade attributes have positive and significant coefficient estimates ($p < 0.001$), and, like the pooled model, the producer premium has the largest impact. While we highlight these differences in more detail in our welfare estimates, in summary, we find that all cultural worldview types place the greatest attribute value on the *producer premium*. Across worldview types, egalitarian consumers exhibit the strongest preferences for all attributes. Meanwhile, communitarian consumers exhibit the greatest variation in preferences. For example, communitarian preferences for the *producer premium* are more than twice than those for the *quality premium*.

Table 7: Estimates from MMNL model segmented by cultural worldviews

Parameter	Communitarians		Individualists		Egalitarians		Hierarchicals	
	Coefft	t-ratio	Coefft	t-ratio	Coefft	t-ratio	Coefft	t-ratio
ASC (Status Quo)	0.009	0.02	-0.866	-1.40	-0.836	-1.46	-0.613	-0.96
ASC (Status Quo) * ROAST	-1.157***	-3.34	-0.056	-0.20	-0.220	-0.64	-0.381	-1.36
ASC (Status Quo) * MALE	-0.023	-0.10	0.276	1.17	0.372	1.49	0.016	0.07
ASC (Status Quo) * WHITE	0.455*	1.68	0.561**	1.96	0.103	0.36	0.663**	2.30
ASC (Status Quo) * NO KNOWLEDGE	0.298	0.52	0.514	1.22	0.369	0.71	0.600	1.47
ASC (Status Quo) * HIGH SCHOOL	-0.700	-1.40	0.459	1.19	-0.203	-0.44	-0.090	-0.24
ASC (Status Quo) * TECH SCHOOL	-0.173	-0.50	-0.119	-0.32	-0.266	-0.67	-0.177	-0.50
ASC (Status Quo) * SOME COLLEGE	0.388	1.15	0.279	0.96	0.250	0.73	0.324	1.10
ASC (Status Quo) * GRAD SCHOOL	-0.327	-0.84	0.640	1.60	0.211	0.40	0.309	0.88
ASC (Status Quo) * FAIR TRADE	-1.569***	-6.28	-1.124***	-4.71	-1.467***	-5.52	-1.143***	-4.87
ASC (Status Quo) * AGE	0.023**	2.24	0.046***	4.51	0.037***	3.55	0.042***	3.99
ASC (Status Quo) * INCOME Q1	-0.442	-1.28	-1.168***	-2.93	-0.081	-0.22	-1.190***	-2.95
ASC (Status Quo) * INCOME Q2	-0.546	-1.41	-1.594***	-3.67	-0.961**	-2.29	-0.828*	-1.89
ASC (Status Quo) * INCOME Q3	-0.643*	-1.85	-1.593***	-3.81	-0.699*	-1.83	-1.248***	-3.00
Environmental Attribute	0.586***	5.44	0.442***	5.13	0.722***	6.13	0.357***	4.14
Quality Attribute	0.329***	3.06	0.421***	4.79	0.504***	4.33	0.356***	4.20
Producer Premium Attribute	0.790***	7.53	0.530***	5.87	0.887***	7.66	0.500***	5.77
Price per oz (NPOZ_SP)	1.236***	22.55	0.858***	13.78	1.502***	29.02	0.629***	8.85
Standard Deviation								
ECO (Triangular Distribution)	2.239***	5.89	1.709***	4.24	2.195***	5.39	1.922***	5.56
QUAL (Triangular Distribution)	2.252***	5.34	2.185***	6.61	2.985***	7.36	1.714***	4.58
PREM (Triangular Distribution)	2.445***	6.76	2.117***	6.44	2.739***	6.81	2.074***	6.46
Error Component (Normal Distribution)	1.577***	9.31	1.812***	11.75	1.782***	10.01	1.695***	10.98
Model Fit								
Sample	429		524		458		495	
Observations (N)	1716		2096		1832		1980	
Log-Likelihood (Base)	-1885.2		-2302.7		-2012.7		-2175.2	
Log-Likelihood (Model)	-1464.5		-1879.		-1501.0		-1816.6	
Akaike Information Criterion/N	1.733		1.815		1.663		1.857	
McFadden Rsquared	0.223		0.184		0.254		0.165	

Note: The superscripts ***, **, and * indicate significance at the 0.01, 0.05, and 0.1 level, respectively

Similar to the pooled model in Table 6, we capture individual preference heterogeneity for the three direct trade attributes using a triangular distribution. All estimates of parameter means and standard deviations are significant at the 1 percent level. The size of the standard coefficients on the standard deviations relative to the mean coefficients suggest a considerable amount of preference heterogeneity among consumer preferences for all subgroups.

4.2 Welfare estimates

Confidence intervals for the mean MWTP estimates are calculated using the Krinsky-Robb Method based on model estimates and 10,000 draws from a multivariate normal distribution (Krinsky and Robb 1986) and are presented in Table 8 along with the means. We use the complete combinatorial approach to perform statistical tests on the differences in the empirical distributions of MWTP estimated using the Krinsky-Robb procedure (Poe, Girard, and Loomis 2005). The complete combinatorial procedure assesses differences by comparing every MWTP estimate generated from the Krinsky-Robb parametric bootstrapping procedure.

4.2.1 MWTP for each attribute using the pooled model

Table 8 shows that the mean MWTP for the *environmental attribute* in the pooled model is \$0.18 per ounce (with a 95% confidence interval (CI) between \$0.14 and \$0.23, per ounce). The mean MWTP for the *quality* attribute within the full model is \$0.14 per ounce (95% CI: \$0.10, \$0.19). Finally, the mean MWTP for the *producer premium* attribute is \$0.22 (95% CI: \$0.17, \$0.27) for the pooled model. While the largest MWTP is attached to the producer premium, these differences are not significantly different than that of the environmental attribute (\$0.22 vs. \$0.18, $p=0.1132$), but it is significantly different than the mean MWTP for quality attribute (\$0.22 vs. \$0.14, $p=0.0103$). As a point of reference, an additional \$0.22 per ounce for the producer premium attribute translates to about a 40% increase from the average baseline price per ounce of coffee of \$0.56 (Table 3).

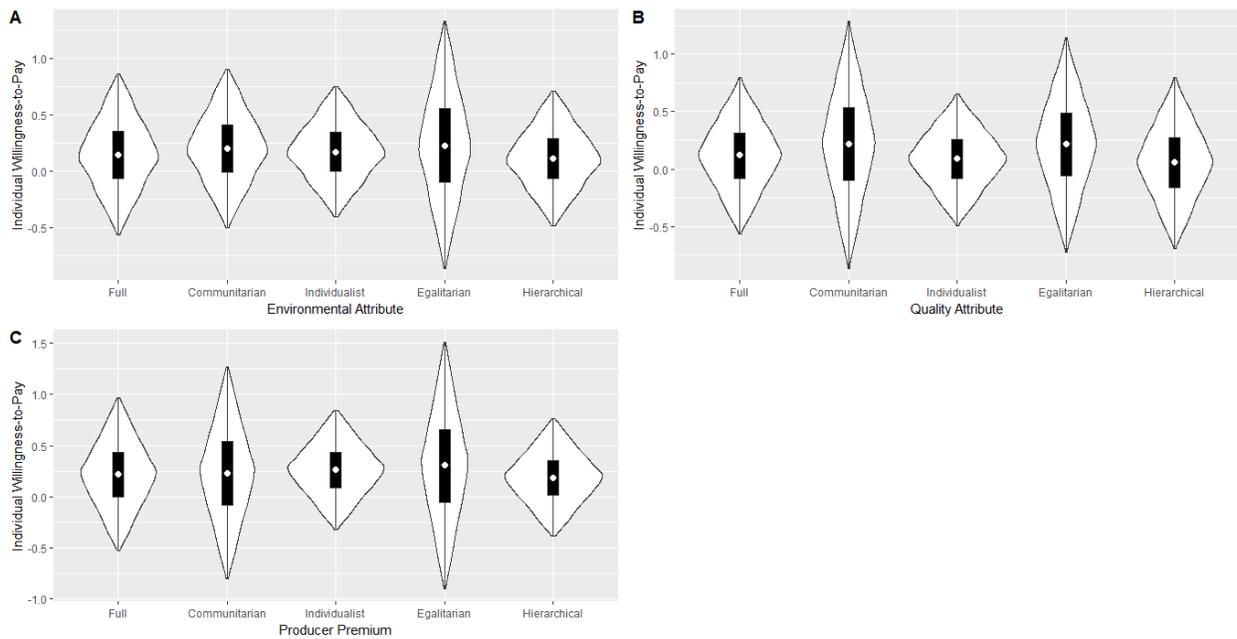
Table 8: Mean MWTP estimates with 95% confidence intervals

	Pooled model	Communitarians	Individualists	Egalitarians	Hierarchicals
	\$0.18	\$0.17	\$0.19	\$0.16	\$0.19
Environmental Attribute	(\$0.14,\$0.23)	(\$0.11,\$0.23)	(\$0.12,\$0.26)	(\$0.11,\$0.21)	(\$0.10,\$0.29)
	\$0.14	\$0.10	\$0.18	\$0.11	\$0.19
Quality Attribute	(\$0.10,\$0.19)	(\$0.03,\$0.16)	(\$0.11,\$0.25)	(\$0.06,\$0.16)	(\$0.10,\$0.28)
	\$0.22	\$0.23	\$0.22	\$0.20	\$0.27
Producer Premium	(\$0.17,\$0.27)	(\$0.17,\$0.29)	(\$0.15,\$0.30)	(\$0.15,\$0.25)	(\$0.18,\$0.36)

4.2.2. MWTP for each attribute by cultural worldview

To help compare MWTP values in the pooled model and across worldview type, Figure 2 depicts the distribution of individual-level MWTP for the four worldview types, broken out by attribute.

Figure 2. Individual MWTP for Sustainable Growing Practices of Direct Trade Coffee – A. *Environmental Attribute*, B. *Quality Attribute*, C. *Producer Premium*



For the *environmental* attribute (Panel A), the MWTP ranges from \$0.16 per ounce for egalitarians, \$0.17 per ounce for communitarians, and \$0.19 per ounce for individualists and hierarchicals. Using the complete combinatorial approach, the mean MWTP values are not significantly different based on cultural worldviews.

For the *quality* attribute (Panel B), the MWTP estimates range from \$.10 per ounce for communitarians, \$0.11 per ounce for egalitarians, \$0.18 per ounce for individualists and \$0.19 per ounce for hierarchicals. We find statistically significant differences between Individualists and Communitarians ($p=0.0476$), Individualists and Egalitarians ($p=0.0748$), Hierarchicals and Communitarians ($p=0.0467$), and Hierarchicals and Egalitarians ($p=0.0713$). Finally, for the *producer premium* attribute (Panel C), the MWTP estimates range from \$.20 per ounce for egalitarians, \$0.22 per ounce for individualists, \$0.23 per ounce for communitarians and \$0.27 per ounce for hierarchicals. We only find a statistically significant difference between the hierarchicals and the egalitarians ($p=0.0959$).

5. Discussion and conclusion

This research uses a discrete choice experiment (DCE) design to isolate and measure consumers' willingness to pay for attributes specific to a new type of direct trade coffee. While closely related to Fair Trade coffee, direct trade coffee differs in offering a less complex supply chain system that enables a direct relationship to develop between the coffee farmer/harvester and the buyer/roaster. As such, this supply chain system enables coffee roasters to buy directly from farmers, ensuring that a contractual promise of fair wages is met (a *producer premium* attribute). Ancillary benefits from the direct farmer/buyer relationship are that the buyer can help educate the farmer in growing/harvesting practices to improve their product across different elements. Two examples are educating farmers to produce coffee with more sustainable and ecologically/environmentally sound harvesting practices (an *environmental* attribute). Also, educating the farmers on the optimum times to pick the coffee cherry that can lead to a higher quality and better tasting coffee (a *quality* attribute).

Our DCE design elicits consumer willingness to pay measures for the *producer premium*, *environmental* and *quality* attributes associated with a new direct trade coffee type. Having sampled 957 coffee consumers, results from a generalized mixed logit model show that while

consumers have positive preferences for all three direct trade coffee attributes, their strongest preference is toward the *producer premium*. While other research indicates a consumer premium toward Fair Trade products in general, our design allows the premiums that consumers are willing to pay for each attribute of this relatively complex product – with both private and public good attributes – to be isolated. We find that consumers will pay a larger premium for the coffee attributes that have a public-good component over attribute with purely private benefits (i.e., quality).

We further contribute to the literature by exploring heterogeneity in stated values for an ethical product by examining how cultural beliefs can influence consumer decision making. Pulling from the emerging literature on the role of cultural worldview on individual preferences, we examine consumers' coffee preferences across both an *individualism-communitarian* and *hierarchy-egalitarian* dimension. Results suggest that, like the average consumer, all cultural worldview types are willing to pay the most for the *producer premium*. Perhaps most striking is that more collectivist and egalitarian types of coffee consumers are willing to pay significantly more for the producer premium than for quality (significant at the .01 level).

While other research has shown that consumers will pay a premium for fair trade products, this is the first evidence that consumers' willingness to pay for different attributes of an ethical product varies significantly based on their cultural worldviews. These findings suggest that researchers and marketers of ethical products should consider the role of individuals' cultural worldviews when assessing consumers' willingness to pay for the good and its individual attributes.

References

- Anderson, W.T. and W.H. Cunningham. 1972. "The Socially Conscious Consumer." *Journal of Marketing* 36(3): 23–31.
- Annot, C., P.C. Boxall and S. Cash. "Do Ethical Consumers Care About Price?" A Revealed Preference Analysis of Fair Trade Coffee Purchases." *Canadian Journal of Agricultural Economics* 54: 555-565.
- Berinsky, A. J., Huber and G.S. Lenz. 2012. "Using mechanical turk as a subject recruitment tool for experimental research." *Political Analysis*, doi:10.1093/pan/mpr057.
- Blend, J.R. and E.O. Van Ravenswaay. 1999. "Measuring Consumer Demand for Ecolabeled Apples." *American Journal of Agricultural Economics* 81:1072-1077.
- Buhrmester, M., T. Kwang, and S. Gosling. (2011). Amazon's Mechanical Turk a new source of inexpensive, yet high-quality, data?" *Perspectives on Psychological Science*, 6(1): 3–5.
- Bjørner, Thomas. 2004. Environmental Labeling and Consumers? Choice? An Empirical Analysis of the Effect of The Nordic Swan." *Journal of Environmental Economics and Management* 47: 411-434.
- Carson, R. T., & M. Czajkowski. 2019. A new baseline model for estimating willingness to pay from discrete choice models. *Journal of Environmental Economics and Management* 95: 57-61.
- Cherry, T.L., S. Kallbekken, and S. Kroll. 2017. "Accepting Market Failure: Cultural Worldviews and the Opposition to Corrective Environmental Policies." *Journal of Environmental Economics and Management* 85: 193-204.
- ChoiceMetrics. 2018. Ngene 1.2 User Manual & Reference Guide. Sydney, Australia: ChoiceMetrics ltd.
- De Pelsmacker P., L. Driesen, and G. Rayp. 2005. "Do Consumers Care about Ethics? Willingness to Pay for Fair-Trade Coffee." *Journal of Consumer Affairs* 39(2): 363-385.
- Hainmueller, J., M.J. Hiscox, and S. Sequeira. 2015. "Consumer Demand for Fair Trade: Evidence from and Multistore Field Experiment." *The Review of Economics and Statistics* 97(2): 242-256.
- Hertel, S., L. Scruggs, and C.P. Heidkamp. 2009. "Human Rights and Public Opinion: From Attitudes to Action." *Political Science Quarterly* 124(3): 443-459.
- Hicks, Robert & F. Teisl, Mario & Roe, Brian. 2002. "Can Eco-Labels Tune a Market? Evidence from Dolphin-Safe Labeling." *Journal of Environmental Economics and Management* 43. 339-359.

- Kahan, D.M., Jenkins-Smith, H., Braman, D., 2011. "Cultural Cognition of Scientific Consensus." *Journal of Risk Research* 14 (2): 147–174.
- Kahan, D.M. 2013. "A Risky Science Communication Environment for Vaccines." *Science* 342(6154)" 53-54.
- Krinsky, I. and Robb, A.L., 1986. On approximating the statistical properties of elasticities. *The Review of Economics and Statistics*, pp.715-719.
- Kotchen, M.J. and M.R. Moore. 2007. "Private Provision of Environmental Public Goods: Household Participation in Green-electricity Programs." *Journal of Environmental Economics and Management* 53: 1-16.
- Marris, C., I.H. Langford, and T. O’Riordan. 1998. "A Quantitative Test of the Cultural Theory of Risk Perceptions: Comparisons with the Psychometric Paradigm." *Risk Analysis* 18: 635-647.
- Poe, G. L., Giraud, K. L., & J. B. Loomis. 2005. Computational methods for measuring the difference of empirical distributions. *American Journal of Agricultural Economics*, 87(2), 353-365.
- Prasad, M., H. Kimeldorf, and R. Meyer. 2004. "Consumers of the World Unite: A Market-based Response to Sweatshops." *Labor Studies Journal* 29: 57-79.
- Paolacci, G., J. Chandler, and P. G. Ipeirotis. 2010. Running Experiments on Amazon Mechanical Turk. *Judgment and Decision Making*, 5(5): 411–19.
- Sjoberg L. 2003. Attitudes and Risk Preferences of Stakeholders in a Nuclear Waste Siting Issue." *Risk Analysis* 23(4): 739-749.
- Van Dick, R, P.A. Tissington, and G. Hertel. 2009. "Do Many Hands Make Light Work? How to Overcome Social Loafing and Gain Motivation in Work Teams." *European Business Review* 21(3): 233-245.
- Van Loo, E.J., V. Caputo, R.M. Nayga, H.S. Seo, B. Zhang, and W. Verbeke. 2015. "Sustainability Labels on Coffee: Consumer Preferences, Willingness-to-Pay, and Visual Attention to Attributes." *Ecological Economics* 118: 215-222.