CONCERN FOR INEQUITY: A DEEPER LOOK INTO FARMERS MARKETS

By

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CONCERN FOR INEQUITY: A DEEPER LOOK

INTO FARMERS MARKETS

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CHAPTER I

INTRODUCTION

In 2006, there were 4,385 farmers markets in the United States with annual sales totaling more than $1 billion. Farmers markets allow consumers to purchase locally grown produce which provides more money to local farmers because the money goes directly to the farmer and cuts out the middleman. Previous research has found that consumers that attend farmers markets have a higher price premium for purchasing locally grown produce than consumers that shop at traditional grocery stores. In a related but unexplored area of purchasing locally grown produce, economists have begun to test whether people always seek to maximize their own utility or if they care about others as well. A wealth of evidence has begun to accumulate in the growing field of behavioral and experimental economics that people care not only about their own monetary well-being but also the well-being of others.

This thesis will add to the behavioral and experimental economics literature through a framed field experiment that is designed to elicit shopper's preferences for local and non-local farmers. A local farmer is defined as any farmer residing in the state of Oklahoma and a non-local farmer is any farmer outside of Oklahoma. The design, implementation, and results of this experiment will be presented in two parts. The first part focuses on whether shoppers at farmers markets exhibit higher levels of inequality aversion compared to shoppers at traditional grocery stores. This thesis reports on the

results from a framed field experiment administered to fifty-one respondents at a farmers market and a traditional grocery store in Edmond, OK. The experiment consisted of four tickets that shopper's provided bids on to purchase each ticket for a distribution of money for themselves and a local or non-local farmer. Each ticket was designed to measure a consumer's inequality aversion in a Fehr and Schmidt utility function, which is a specific utility functional form that shows individuals receiving disutility from having larger monetary payouts or smaller monetary payouts than someone else. Ticket 1 had a distribution of $4 to the respondent and $7 to a local farmer, and ticket 2 had the same distribution of money but a non-local farmer would receive $7. These tickets were designed to measure aversion to disadvantageous inequity in a Fehr and Schmidt utility function because the respondent would receive less than the denoted farmer. A respondent who would provide a high bid on tickets 1 & 2 would not mind the denoted farmer receiving more than them. So they would not be very averse to disadvantageous inequity. Ticket 3 had a distribution of $4 to the respondent and $1 to a local farmer and ticket 4 had the same distribution of money but a non-local farmer would receive $1. Tickets 3 & 4 were designed to measure a shopper's aversion to advantageous inequity because they would be receiving a larger monetary payout than the farmer. Therefore, the higher the consumers bid, the more averse they are to advantageous inequity and would not like benefitting more than the farmer. For each ticket, the higher the respondent's bid or willingness-to-pay for the ticket, the higher their concern for inequity (they do not like being better off than the denoted farmer). The results show that there is not a statistical difference in people that shop at farmers markets and grocery stores. However, people exhibit a higher concern for inequity towards local farmers than non-local farmers.

One of the biggest contributions of this thesis is that it used a field experiment instead of a traditional lab experiment. The second part of this thesis discusses the advantages and disadvantages of lab and field experiments. It also discusses my experience conducting a field experiment at a farmers market and a grocery store in Edmond, OK.

CHAPTER II

FAIRNESS, FARMERS MARKETS, AND LOCAL PRODUCTION

The significant changes in agriculture in recent decades, including consolidation and vertical integration, the adoption of controversial technologies, and food safety scares have led some to question whether the benefits and costs of these developments have been equally distributed among all participants in the agricultural supply chain. These concerns have sparked mainstream consumer interest in "alternative" products like organics, fair-trade, local and regional origin, farmer's markets, no-GMO, no growth hormone, etc. that advertise improved sustainability and product quality. Why are such products becoming more popular? Unfortunately, existing market data are insufficient to conclusively identify and explain the growing appeal of such products.

A wealth of evidence has begun to accumulate in the growing field of behavioral and experimental economics that people care not only about their own monetary well-being but also the well-being of others (e.g., see the review by Roth 1995). Evidence from laboratory experiments further suggests that people care about inequality, efficiency, and distribution of outcomes (e.g., Engelmann and Strobel 2004). The literature on the economics of charitable donations has found similar results, but have also noted that other-regarding behavior is significantly influenced by framing of the task or decision (Eckel and Grossman 2008), being in the lab vs. the field (Levitt and List 2007), and by individual-specific effects (Carpenter, Connolly, and Myers 2008). The

underlying theme within this literature is that people have other-regarding preferences and that this behavior changes depending on the context and frame of the experiment.

Although there are a number of motivations that might cause people to seek out "alternative" food products, there is some evidence that other-regarding preferences play a significant role. For example, Lusk and Briggeman (2008) found that willingness-to-pay (WTP) for organic food was positively correlated with the extent to which people believe "fairness" (defined as the extent to which all parties involved in the production of food equally benefit) is important when purchasing food. Darby et al. (2008) conducted a set of face-to-face interviews at farmers markets and grocery stores and found that Ohio consumers were willing to pay more for fresh strawberries that were grown in Ohio or were "locally grown." Others have found similar preferences by shoppers at farmers markets (Loureiro and Hine 2002 and Schneider and Francis 2005) and by shoppers at non-farmers markets (Zepeda and Leviten-Reid 2004) for purchasing locally produced food. This line of recent literature suggests, even though it has not been directly addressed, that consumer preferences for "alternative" production systems might be influenced by people's preferences for fairness and distribution of benefits in the food supply chain. Supporters of farmers markets often also support equity-driven social movements, such as Food Justice, animal welfare, and Fair-Trade (Hinrichs 2000).

Our study elicits people's other-regarding preferences through a framed field experiment in which people bid to buy tickets that provide monetary payouts to themselves and different types of farmers. To formalize the notion of fairness, we build on the definition proposed by Fehr and Schmidt (1999), who argued that people are averse to advantageous inequity (I have more money than you) and disadvantageous

inequity (you have more money than me). We measure these two types of inequality aversion in a framed field experiment in two distinct locations – a farmers market and a traditional grocery store, both located in Edmond, Oklahoma. In each location, we measure consumers' concern for inequity between themselves and a local farmer (any farmer in the state of Oklahoma) and themselves and a non-local farmer (any farmer outside of Oklahoma).

The results provide insight into whether concern for inequity is a factor that partially explains why people shop at farmers markets and why there exists a willingness-to-pay premium for local food products. Shoppers at farmers markets may exhibit higher levels of inequality aversion than at traditional grocery stores because (i) different types of people tend to shop at farmers markets than at grocery stores and/or (ii) people change their preferences depending on the shopping location. Additionally, shoppers may perceive local farmers as struggling, marginalized, and deserving of special attention. Our experimental results, coupled with information obtained in a follow-up survey, provide insight into these issues.

Conceptual Framework

Traditional economic models assume that people act in a manner to maximize their own self-interest and are not concerned with others. As previously indicated, there is some evidence to suggest otherwise. Fehr and Schmidt (1999) developed a theoretical model to capture an individual's concern for inequity. To simplify Fehr and Schmidt's theoretical exposition, assume a decision-maker (i) maximizes their utility of receiving a monetary payout (x_i) and a payout to another individual (x_j),

$$(1) \qquad U_i(x_i, x_j) = x_i - \alpha_i \max[x_j - x_i, 0] - \beta_i \max[x_i - x_j, 0],$$

where, α_i represents the decision-maker's disutility from disadvantageous inequity and β_i represents the decision-maker's disutility from advantageous inequity.

The underlying idea behind equation (1) is that utility is discounted as the difference between x_i and x_j increases. Aversion to disadvantageous inequity (i.e., when $x_j > x_i$) is reflected in the α_i parameter. A larger α_i reflects greater aversion to disadvantageous inequity. If $x_i > x_j$, then utility decreases because the decision-maker is in an advantageous payout position thus β_i reflects the aversion to advantageous inequality.

In our study, we build on Fehr and Schmidt and other studies that have calibrated or elicited the α_i or β_i inequity parameters (e.g., Dannenberg, Sturm, and Vogt 2007). This is accomplished through a simple and straightforward willingness-to-pay (WTP) experiment that still allows one to discuss concerns for inequity and is easy to implement in the field. To focus attention on WTP, equation (1) is slightly modified by introducing the parameter λ, which is i's WTP a portion of their allocation x_i such that j will receive x_j. More formally,

$$(2)\ U_i\left((x_i - \lambda_i), x_j\right) = (x_i - \lambda_i) - \alpha_i \max\left[x_j - (x_i - \lambda_i), 0\right] - \beta_i \max\left[(x_i - \lambda_i) - x_j, 0\right]$$

To illustrate how concerns for inequity impact a decision-maker's λ_i, consider these simple thought exercises. A decision-maker that is highly averse to disadvantageous inequity will have a larger α_i, so when $x_j > x_i$, they would not be willing to forgo a portion of x_i because that would only exacerbate the "unfairness" between themselves and the other individual. Therefore, λ_i would either be very small or zero. Inversely, the decision-maker may have a small α_i, which would lead to a higher λ_i

because an individual with a small α_i is not as affected or concerned with having less money than someone else.

Take another decision-maker that is highly averse to advantageous inequity or has a high β_i. This decision-maker would be willing to pay more of their own payout to minimize the inequity ($x_i - \lambda_i - x_j$). What is interesting about this situation is that an individual may be willing to pay enough to make their net effective payout ($x_i - \lambda_i$) less than the payout to someone else (x_j). In other words, a decision maker could be so averse to advantageous inequity that they effectively put themselves in a disadvantageous inequity position. Although this seems like an odd situation, it is one we observed in our empirical study.

Now, consider the most someone would be willing to pay to obtain a "ticket" where they receive x_i and another person receives x_j. If the ticket is not purchased x_i= x_j=0, and U_i=0. Thus, we can set equation (2) equal to zero and solve for λ_i. If $x_j > x_i$, then $\lambda_i = \frac{\alpha_i(x_i - x_j) + x_i}{1+\alpha_i}$. The derivative of λ_i w.r.t α_i is $-\frac{x_j}{(1+\alpha_i)^2}$, and is strictly negative over positive x_j payouts (except if α_i = -1 because the derivative is undefined). This means WTP is directly related to the Fehr and Schmidt (1999) preference parameter, with a higher WTP corresponding to a greater concern for others as discussed above. If $x_i > x_j$, then $\lambda_i = \frac{x_i - \beta_i(x_i - x_j)}{1-\beta_i}$. The derivative of λ_i w.r.t β_i is $\frac{x_j}{(\beta_i - 1)^2}$ and is strictly positive over positive x_j payouts (except if β_i = 1 in which case the derivative is undefined). Once again, this means a higher WTP corresponds to a greater higher concern for others.

Placing the Fehr and Schmidt (1999) model in a WTP framework eases the implementation of our field experiment while maintaining the intuition and integrity of

their model of disadvantageous and advantageous inequality aversion. That is, given an estimated value for WTP or λ_i, one could easily use the equations above to calculate the implied α_i or β_i.

Experimental Method and Empirical Model

To measure preferences for inequality aversion, we presented each subject with 4 tickets (or purchase options) that had various payouts to the respondent, and either a randomly selected local farmer or a randomly selected non-local farmer. Here is the payout structure of each ticket: ticket 1, $4 to the subject and $7 to a local farmer; ticket 2, $4 to the subject and $7 to a non-local farmer; ticket 3, $4 to the subject and $1 to a local farmer; ticket 4, $4 to the subject and $1 to a non-local farmer. Therefore, tickets 1 and 2 represented disadvantageous payouts and tickets 3 and 4 represented advantageous payouts. Likewise, tickets 1 and 3 involve payouts to local farmers, whereas tickets 2 and 4 involve payouts to non-local farmers.

People placed bids to buy each ticket, which correspond to the theoretical parameter λ_i, derived in the previous section. Note that our method purposefully avoids the use of the word "give" in an attempt to avoid invoking a social norm to give. As will be explained momentarily, we also followed a standard experimental format to ensure a respondent will answer in a truthful manner (i.e., answers were anonymous and confidential, experiment was non-hypothetical and incentive compatible, etc.). An appendix is available that has the written text for the experiment and (Toler et al. 2008).

Although people placed bids to buy four tickets, only one ticket was randomly selected as the binding. For the binding ticket, a Becker-DeGroot-Marschak (1964) (BDM) mechanism was used to determine if the ticket was purchased. In particular, a

random 'secret price' was drawn between the values of $0 and $5. If the subject's bid was less than the 'secret price,' then the subject did not win the auction (they paid nothing, they received nothing, and the farmer received nothing). If the bid exceeded the 'secret price,' the subject paid the 'secret price', received the residual payout, and watched as the survey administrator placed the payout to either the local or non-local farmer in a pre-stamped, pre-addressed envelope. The envelopes were shown and were clearly visible to each individual prior to the biding. This BDM mechanism is incentive compatible, meaning people have a dominant strategy to truthfully state their maximum WTP for each ticket. The experiment instructions explicitly explained why it was in each person's interest to state the *most* they were WTP for each ticket. After the auction, each respondent completed a short follow-up survey asking questions about demographics, prior attendance at farmers markets, reasons for shopping there, etc.

Each subject provided four bids (i.e., four λ_i values) corresponding to each of the four tickets. Each ticket was designed to measure a specific form of inequity aversion relative to a local or non-local farmer. A regression can be estimated to identify how inequity aversion varies across local and non-local farmers and how inequality aversion differs at farmers market and traditional grocery stores. To implement the model, dummy variables were created corresponding to the four tickets (t=1, 2, 3, or 4) related to disadvantageous inequity ($DISADV_{i,t=1 \text{ and } t=2}$), local farmers ($LOCAL_{i,t=1 \text{ and } t=3}$), and disadvantageous inequity with a local farmer ($DISADV*LOCAL_{i,t=1}$). The empirical model is,

(3) $\lambda_{i,t} = \mu_{0i} + \mu_1 DISADV_{t=1 \text{ and } t=2} + \mu_2 LOCAL_{t=1 \text{ and } t=3} + \mu_3 DISADV * LOCAL_{t=1} + \varepsilon t$

where μ_{0i} is the intercept and given the construction of the dummy variables, is directly interpreted as the WTP for ticket 4, and represents the situation when the participant was in an advantageous position relative to a non-local farmer. The remaining μ's are coefficients corresponding to the aforementioned dummy variables and $\varepsilon_{i,t}$ is the error term. Given that each person submitted four bids, there are repeated measures for each subject, and as such, equation (3) was estimated using a random effects specification allowing for within-subject correlation of the error term.

To determine if WTP varied across the grocery store and farmers market settings, equation (3) was estimated for both samples (the unrestricted models), for the pooled data (the restricted model), and a likelihood ratio test was conducted. Data was collected at the Edmond Farmers Market and at a traditional grocery store, Crest Foods, in Edmond, Oklahoma. Data was collected in both locations during June and July, 2008. People were randomly intercepted as they entered the farmers market or grocery store and were asked to participate in the study. In each location, 51 subjects participated, for a total sample size of 102 subjects.

Results

Table 1 reports the descriptive statistics of the participants. Most individuals in our data have shopped at a farmers market. The frequency of shopping at a farmers market is not surprisingly greater for those subjects in the farmers market treatment (51 percent go 3 or more times a month) as opposed to the traditional grocery store treatment (73 percent go 1-2 times a month). For those subjects that had shopped at a farmers market, most stated their primary reason for shopping there was because of higher quality food (50 percent). Supporting the local community was the next most stated reason (33 percent) and the

least stated reasons for shopping at a farmers market were promoting a more equitable food production and distribution system (8 percent), entertainment or experience (5 percent), and lower food prices (5 percent). These reasons are consistent across both treatments. The majority of the sample was female, the average age was 47 and the average total household income was $67,500, which is similar to the U.S. Census Bureau's 2006 median total household income estimate for Edmond, Oklahoma, $62,635.

Table II-1. Descriptive Statistics of the Experimental Data

Variable	Pooled	Farmers Market	Grocery Store
Have you ever shopped at farmers markets? (yes = 1; 0 otherwise)	0.86	1	0.73
If you have shopped at a farmers market, then how often:			
1-2 times a month	0.59	0.49	0.73
3-4 times a month	0.31	0.37	0.22
5 or more times a month	0.10	0.14	0.05
If you have shopped at a farmers market, then why:			
To support the local community	0.33	0.33	0.32
Lower food prices	0.05	0.02	0.08
Higher food quality	0.50	0.47	0.54
To promote a more equitable food production distribution system	0.08	0.12	0.03
Entertainment or experience	0.05	0.06	0.03
Some other reason	0	0	0
Gender (Male = 1; Female = 0)	0.33	0.35	0.31
Age	47.44	48.31	46.57
	(14.04)	(13.56)	(14.48)
Total Household Income[a]	$67,499.67	$65,293.80	$69,705.53
	($26,019.81)	($27,045.22)	($24,822.82)
Number of Observations	102	51	51

Notes: Standard deviations are in parentheses.

[a] Respondents checked one of the following ranges: under $20,000; $20,000 to $34,999; $35,000 to $49,999; $50,000 to $64,999; $65,000 to $79,999; $80,000 to $94,999; and over $95,000. Continuous income is calculated by using the range midpoint and $20,000 for the under range and $95,000 for the over range.

Table 2 reports the mean WTP for each ticket at the farmers markets and grocery store. The highest average WTP for any ticket at both locations was ticket 1, which paid $4 to the subject and $7 to a local farmer. However, the average WTP for ticket 1 was slightly higher at the farmers market ($3.80) than the grocery store ($3.35). Changing from a local to non-local farmer (i.e. moving from ticket 1 to ticket 2), decreases average WTP by about $1 in the farmers market and grocery store. Tickets 3 and 4 put the subject in an advantageous monetary position. Although the WTP for tickets 3 and 4 are less than their disadvantageous counterparts, subjects were still willing to pay more for the local than the non-local farmer ticket. What is interesting is that subjects, on average, were willing to pay almost $3 for ticket 3. Paying more than $3 for ticket 3 would change the subject's net monetary payout from an advantageous monetary position to a disadvantageous monetary position. In the sample, 54 percent of the subjects stated they would be willing to pay more than $3 for ticket 3. Thus, these subjects have a large inequity concern for the local farmer. To test if WTP for each ticket differs across

Table II-2. Average Willingness-to-Pay for the Tickets at the Farmers Market and Grocery Store

Ticket	Farmers Market	Grocery Store
Ticket 1: $4 to You and $7 to a Local Farmer	$3.80	$3.35
	($1.14)	($1.28)
Ticket 2: $4 to You and $7 to a Non-local Farmer	$2.56	$2.60
	($1.37)	($1.37)
Ticket 3: $4 to You and $1 to a Local Farmer	$2.76	$2.81
	($1.34)	($1.38)
Ticket 4: $4 to You and $1 to a Non-local Farmer	$2.04	$2.15
	($1.24)	($1.22)
Number of Observations	51	51

Note: Standard deviations are in parentheses.

location, we conducted a Wilcoxon Mann-Whitney test. The WTP for tickets 2-4 do not statistically differ across location but ticket 1's WTP is statistically different at the 10 percent level.

A likelihood ratio test is conducted to see if WTP differed across the two locations (farmers market and traditional grocery store). The log likelihood value for the restricted model and the unrestricted model, respectively are -626.38 and -625.44, which produces a chi-square test statistic of 1.88. Given that there are 4 degrees of freedom, the p-value is 0.75. Thus, we fail to reject the hypothesis that the coefficients in equation (3) differ across the farmers' market and grocery store. That is, the appropriate model specification is the restricted model where the data is pooled across location. These results imply that people shopping at farmers markets were no more or less concerned about inequity or local farmers than were people shopping at a traditional grocery store. Apparently in this experiment, field context did not matter.

Although we found no difference across location, one might contend that preferences for inequality differ across individuals based on their familiarity with farmers markets, number of times they shop at farmers markets, why they shop at farmers markets, and other socio-economic and demographic information. However, likelihood ratio tests fail to reject the hypothesis that the parameters in equation (3) vary by any of these variables.

Table 3 presents the regression results from equation (3) fit to the pooled data. Recall that the intercept corresponds to WTP for ticket 4, which is the least desirable ticket. Still, this WTP is positive ($2.10) and statistically significant thus our sample exhibited an aversion to advantageous inequity. Subjects were willing to pay $0.48 more

for the disadvantageous tickets than the advantageous tickets. In other words, preferences for fairness in allocating money between the subject and both types of farmers are quite high. However, subjects were WTP $0.69 more for a ticket that identified local farmers as the recipient instead of a non-local farmer recipient, and this amount further increased when the local farmer would receive $7 (by an additional $0.30). These results imply that our sample of participants demonstrated a high level of other-regarding behavior toward local farmers; especially when the local farmer would receive a larger payout than they would receive.

Table II-3. Pooled Regression Results of the Effect of Inequality and Farm Type on Willingness-to-Pay (WTP) for Tickets

Variable	Estimates
Intercept[a]	2.10***
	(0.13)
WTP for a Disadvantageous over Advantageous Inequity Position[b]	0.48***
	(0.13)
WTP for a Local over Non-local Farmer Recipient[c]	0.69***
	(0.13)
WTP for Disadvantageous Inequity * Local Farmer Recipient[d]	0.30*
	(0.18)
Number of Observations[e]	408
Log Likelihood	-626.38***

Notes: Statistical significance at the 1 and 10 percent level are denoted *** and *, respectively. Standard errors are in parentheses.

[a] Coefficient corresponds to WTP for ticket 4, in which the participant receives $4 and non-local farmer receives $1.

[b] Coefficient corresponds to change in WTP as one moves from tickets 1 and 2 (participant receives $4 and local and non-local farmer receive $7, respectively) to tickets 3 and 4 (participant receives $4 and local and non-local farmer receive $1, respectively).

[c] Coefficient corresponds to change in WTP as one moves from tickets 1 and 3 (participant receives $4 and local farmer receives $7 and $1, respectively) to tickets 2 and 4 (participant receives $4 and local farmer receives $7 and $1, respectively).

[d] Coefficient corresponds to the WTP for ticket 1 (participant receives $4 and local farmer receives $7).

[e] A total of 102 individuals provided four WTP values for a total of 408 observations.

Conclusions and Implications for Oklahoma Farmers Markets and Retailers

In this study, we examined preferences toward money allocations to local and non-local farmers among consumers who shop at a farmers market and a traditional grocery store. Following Fehr and Schmidt (1999), fairness was conceptualized as advantageous and disadvantageous inequality aversion, which was measured by determining people's WTP for monetary allocations to themselves and to a randomly selected local or non-local farmer.

The results of this study are consistent with similar studies that found individuals exhibit other-regarding behavior. Our study is unique in that we ventured into the field to elicit inequity concerns, and did so using a simple willingness-to-pay experiment. We also contribute to the literature by investigating whether field setting (farmers markets vs. grocery store) influences other-regarding preferences toward local and/or non-local farmers.

We found that people preferred money allocations going to local farmers over identical allocations to non-local farmers. Previous research has shown consumers are willing to pay a price premium for "locally grown" products and our results would support these findings. Somewhat surprisingly, we could not reject the hypothesis that such preferences were the same for shoppers at a farmers market and a traditional grocery store. One potential reason for this result is a large percentage of our data had shopped at a farmers market so they would exhibit other-regarding preferences for local farmers whether they were approached at a grocery store or at a farmers market. Another reason is that the word "local" may create a connection or a common bond between consumer and producer since both live in Oklahoma.

Regardless of why we did not find a difference between farmers market and grocery store shoppers, our sample did exhibit inequity concerns for local farmers and a willingness-to-pay to alleviate these concerns. Consumers in our sample exhibited a preference for fairness in the distribution of benefits in the food supply chain, especially when those benefits accrued to a local farmer. These results and previous findings of consumers' preference for locally produced foods at farmers markets (Darby et al. 2008) and non-farmers markets (Zepeda and Leviten-Reid 2004), indicates there may be a large, untapped potential for supporting local farms through both farmers markets and conventional marketing channels at a traditional grocery store.

This research has major implications for farmers markets and retailers. One of the biggest findings of this research is that consumers in Oklahoma prefer local farmers verses non-local farmers. Therefore, farmers markets as well as grocery stores need to emphasize locally grown products. This can be more simply done at the farmers market since the farmer is there and can directly advertise that he/she grew the product. In order for a grocery store to capture this premium for locally grown food, they need to advertise that the product is locally grown. Retailers on the West Coast have been successful at this because they have devoted an entire section at the grocery store for local products. In order for retailers in Oklahoma to be successful they must have a separate section for local products in order for consumers to differentiate where the product is from. By promoting local products, the retailers will be able to capture more business and help support the local economy.

CHAPTER III

EXPOSITION OF LAB VS. FIELD EXPERIMENTS:

One of the major contributions of this study was the use of a field experiment as opposed to a lab experiment. Historically, experimenters have not looked at field behavior in a serious manner and have just used a traditional lab setting to elicit responses. Harrison and List 2004 state that there are six factors to determine the field context of an experiment; the nature of the subject pool, the nature of the information that the subjects bring to the task, the nature of the commodity, the nature of the task or trading rules applied, the nature of the stakes, and the nature of the environment that the subject operates in. We will take a look at what these six factors are and how we applied them to this study.

The nature of the subject pool defines participants as "standard" and "non-standard." A "standard" participant is one that the experimenter has easy access to using. An example of a "standard" participant would be a professor bringing surveys to a classroom and using his/her students as respondents. A "non-standard" participant is one that the experimenter has never been in contact with before and is sought in the environment in which the research examines. Therefore, the people taking the experiment do not know the person conducting the experiment and also are a true representation of the field being studied. In our experiment, people shopping at the farmers market and at

the grocery store were “non-standard” participants. This is because they were sought in the environment, farmers market or grocery store, which this research examined.

The nature of the information the subjects bring to the task is a very important attribute of a field experiment. Subjects used in a lab experiment can have very little knowledge of the area being studied. Also, they may only be there for monetary incentives or because their professor is making them take it. Field experiments use subjects that are participating in the field of study being examined. For example, to examine if concern for inequity towards a local farmer was a reason why people shopped at farmers markets we conducted our survey at a farmers market and at a grocery store. Subjects in a lab setting may have never shopped at a farmers market and would not represent the population that does shop at a farmer’s market. Nature of the environment is similar to nature of the information the subjects bring to the task in that people have more vested interest if they are in the field of study.

Due to the nature of the commodity, abstract goods and services are artificial and can influence behavior. For example, if you were asked by someone how much you would be willing-to-pay for a pair of Nike shoes but did not have to actually pay for them, your stated WTP may be much higher than your actual WTP. For our experiment we had consumers state their WTP for an allocation of money that they would actually receive and that a local or non-local farmer would actually receive. We used an actual payout that they would receive and a farmer would receive to elicit their true WTP.

“The nature of the task that the subject is being asked to undertake is an important component to a field experiment, since one would expect that field experience could play a major role in helping individuals develop heuristics for special tasks” Harrison and List

2004. People come into an experiment with different pre-conceived notions about what the experiment is trying to ask and answer it in a manner that they think the experimenter wants them to answer. It is important that the experiment does not form a bias toward what it is trying to examine and it should be very easy for the subject to follow. In our experiment the subjects knew that we were examining WTP for different farm types at a farmers market as well as a grocery store. The payouts were the same for each farm type and it was unclear as to what exactly we were studying.

The nature of the stakes means that respondents will act differently given the different incentives they have for taking a survey. A respondent may participate in a lab experiment for many reasons. One of the biggest reasons that people participate in lab experiments is due to monetary incentives. If a subject participates in a lab experiment for monetary incentives then they do not have a vested interest other than making money and may not truly represent the population. If a subject is paid a significant amount of money, say $100, they will participate differently than somebody that is only paid $1. If our study was done in a laboratory we would have had to pay consumers to come take our survey. This could affect their WTP for each ticket on our survey because they may feel that since they already have money they will state a higher WTP to help the farmer.

One of the reasons that experimenters have traditionally used lab settings is because they would simply ask themselves if they felt like the students would generate the same responses as people in the field. They would usually state they felt they did and move on with their study. Harrison and List 2004 state that, “it is easy to say the experiment would be the same for real people but it is much harder to do so because of some serious and often unattractive logistical problems.”

One of the biggest concerns with lab experiments is that they are usually given at a time most convenient for the experimenter to students. These students are selected some way, i.e. signed up on a web-site to take surveys for money, which may leave out "certain individuals with characteristics that are important determinants of underlying population behavior (Harrison and List, 2004)." Rustrom 1998 also found that paying people to come take a lab experiment will form biases in respondent's answers.

In our field experiment, we found that who you test your pilot study on can also play a major factor in the success of your experiment. We initially developed an experiment based on a survey given by Danenburg and Sturm. Their study was given to respondents that had knowledge in their field of study and were also given a significant monetary incentive, $100. We tested our pilot study with secretaries from within the Ag-Economics department at Oklahoma State University. After they took the experiment, they stated that the survey was easy to follow and that they did not think that it was too long. We did not do any further testing and prepared to administer it in the field. When we administered our experiment at the grocery store we observed that the respondents were having difficulty understanding the questions being asked and also that it was taking them too long. After three hours we only had seven respondents participate in our experiment and we could only use one of them.

After our first day of administering our initial experiment we knew that we needed to re-think our strategy. The next week we revised our survey by applying WTP to the Fehr and Schmidt utility function which made it much easier for the respondent to understand which in turn cut the survey time in half. We ran another pilot test on our new survey but this time with people outside of the department that did not know what we

were studying. They were able to follow the experiment by reading instructions and it took them less than five minutes.

After we concluded our pilot study, we proceeded by administering our experiment at the grocery store. We continued to have a low response rate, but all of the responses we were getting were capable of being used. When we administered our experiment at the farmers market we had a much higher response rate, 51 in six hours. We attribute the higher response rate at the farmers market due to the fact that many people attend the farmers market for an "experience" and are not in a rush. People that are shopping at grocery stores usually have a list of items that they need and are there to get-in and get-out. From this we can expand on the importance of field vs. lab experiments. When conducting a field experiment, you need to understand the people who are going to be participating in your experiment. For example, when we administered our initial experiment at the grocery store we were getting responses that were not useful because the subjects were in a hurry and did not want to take the time to take a long survey.

When conducting an experiment, you need to consider if your question can be answered in a lab or field setting. Thus, you need to determine the implications of both and determine which setting is most appropriate. Once you determine which setting to conduct your experiment, you need to make sure that you are prepared. Make sure that you have an understanding of what type of people you are going to encounter. This will enable you to have a higher rate of success on your experiment.

References

Becker, G.M., M.H. DeGroot, and J. Marschak. 1964. "Measuring Utility by a Single-response Sequential Method." *Behavioral Science* 9(3): 226-232.

Carpenter, J., C. Connolly, and C.K. Myers. 2008. "Altruistic Behavior in a Representative Dictator Experiment." *Experimental Economics* 11(3): 282-298.

Dannenberg, A., B. Sturm, and C. Vogt. 2007. "Do Equity Choices Matter in Climate Negotiations? An Experimental Investigation." ZEW – Centre for European Economic Research Discussion Paper No. 07-063.

Darby, K., M.T. Batte, S. Ernst, and B. Roe. 2008. "Decomposing Local: A Conjoint Analysis of Locally Produced Foods." *American Journal of Agricultural Economics* 90(2): 476-486.

Eckel, C.C. and P.J. Grossman. 2008. "Subsidizing Charitable Contributions: A Natural Field Experiment Comparing Matching and Rebate Subsidies." *Experimental Economics* 11(3): 234-252.

Engelmann, D. and M. Strobel. 2004. "Inequality Aversion, Efficiency, and Maximin Preferences in Simple Distribution Experiments." *American Economic Review* 94(4): 857-869.

Fehr, E. and K.M. Schmidt. 1999. "A Theory of Fairness, Competition, and Coopeartion." *Quaterly Journal of Economics* 114(3): 817-868.

Harrison, Glenn and John A. List. 2004. "Field Experiments." *Journal of Economic Literature*. 42(4): 1009-1055.

Hinrichs, C.C. 2000. "Embeddedness and Local Food Systems: Notes on Two Types of Direct Agricultural Marketing." *Journal of Rural Studies* 16(3): 295-303.

Levitt, S. and J. List. 2007. "What Do Laboratory Experiments Measuring Social Preferences Tell Us About the Real World?" *Journal of Economic Perspectives* 21(2): 153-174.

Loureiro, M. and S. Hine. 2002. "Discovering Niche Markets: A Comparison of Consumer Willingness to Pay for Local (Colorado Grown), Organic, and GMO-Free Products." *Journal of Agricultural and Applied Economics* 34(3): 477-487.

Lusk, J.L. and B.C. Briggeman. 2008. "Food Values." *American Journal of Agricultural Economics*, forthcoming.

Roth, A.E. 1995. "Bargaining Experiments." in Handbook of Experimental Economics. (J.H. Kagel and A.E. Roth Eds.) Princeton, NJ: Princeton University Press.

Schneider, M. and C. Francis. 2005. "Marketing Locally Produced Foods: Consumer and Farmer Opinions in Washington County, Nebraska." *Renewable Agriculture and Food Systems* 20: 252-260.

Toler, S., B.C. Briggeman, J.L. Lusk, and D.C. Adams. 2008. "AJAE Appendix: Fairness, Farmers Markets, and Local Production." Unpublished.

Zepeda, L. and C. Leviten-Reid. 2004. "Consumers' Views on Local Food." *Journal of Food Distribution Research* 35(3): 1-5.

Appendix: Experimental Procedures

Determining Sample Size

To determine the number of subjects for our experiment at the farmers market and at the grocery store, we conducted a pilot study based on the model used by Dannenberg, Sturm, and Vogt. Respondents from our pilot study were students and staff at Oklahoma State University. Results of our study had an average value of α_i equal to 0.1633 and a standard deviation, σ_α equal to 0.378. To estimate our sample size (S) we used the following equation,

$$S = \frac{2(Z_A + \Phi^{-1}(1-\beta))^2 \sigma_\alpha^2}{\Delta^2}, \quad (1)$$

where Z_A represents the z-statistic testing the likelihood of rejecting the null hypothesis that the difference in parameters across treatment is zero, which we set to 1.96, which corresponds to the 95% confidence interval. We set the power of this test or the probability of rejecting the null equal to $(1 - \beta)$, where β equals 0.2 and the sample average is assumed to come from a normal distribution. Note that Φ is the normal cumulative distribution function. Finally, the margin of error, Δ, is the critical effect size (or minimum detectible difference) that represents the minimum difference in α_i between the two treatments that can be identified between the farmers market and traditional grocery store ($\Delta = 0.162$). Entering these numbers into equation (1) yielded a sample size of 51 respondents that would need to be surveyed in the two locations.

Experimental Instructions and Follow-up Survey

Division of Agricultural Sciences and Natural Resources

Department of Agricultural Economics
308 Agricultural Hall
Stillwater, Oklahoma 74078-6026
Fax: 405-744-8210
405-744-6157 or 405-744-6156

With funding from the United States Department of Agriculture (USDA), we are investigating consumer preferences for local and non-local foods. A local farmer lives in the state of Oklahoma and non-local farmer lives outside of Oklahoma. On the next page, we would like you to: (1) participate in an 'auction' to purchase a set of payouts to yourself, a local farmer and a non-local farmer; and (2) answer several demographic and opinion based questions about yourself.

Your response to this survey is voluntary, it will be kept anonymous and should take 5 minutes to complete. There are no known risks associated with this survey which are greater than those ordinarily encountered in daily life. If you have questions about your rights as a research volunteer, you may contact Dr. Shelia Kennison, IRB Chair, 219 Cordell North, Stillwater, OK 74078, 405-744-1676 or irb@okstate.edu.

Thank you for your time and if you have any question, please contact us.

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A3

Below are four tickets. Please write down the *most* you are willing to pay to receive the dollar amount paid to you and a random local or non-local farmer on each ticket. After you write these amounts, an 'auction' will proceed as follows.

1. We will randomly select *one* of the tickets as the binding ticket to auction.

2. For the randomly selected ticket we will determine a 'secret price' by randomly drawing a number between $0 and $5.00.
    a. If your stated willingness to pay is less than the randomly drawn 'secret price,' then you **will not purchase** the ticket. You will receive no money and a local or non-local farmer will receive no money.
    b. If your stated willingness to pay is greater than the 'secret price,' then you **will purchase** the ticket for an amount equal to the 'secret price.' Note: the net dollar amount you will *actually* receive is the difference between the dollar shown on the ticket payable to you and the 'secret price.' For example, if ticket 1 is randomly selected as binding, the randomly determined 'secret price' is $1, and your stated willingness to pay is higher than $1, then you will receive $4 - $1 = $3 and a local farmer will receive $7.

NOTE: You will never end up paying a price higher than the dollar amount you write on each ticket. Therefore, your best strategy is to state the *most* you are willing to pay for each ticket, which provides *actual* payouts to you and a randomly selected local or non-local farmer.

Ticket 1

You will receive $4
Local farmer will receive $7

The *most* I am
willing to pay for this ticket is $_____

Ticket 2

You will receive $4
Non-local farmer will receive $7

The *most* I am
willing to pay for this ticket is $_____

Ticket 3

You will receive $4
Local farmer will receive $1

The *most* I am
willing to pay for this ticket is $_____

Ticket 4

You will receive $4
Non-local farmer will receive $1

The *most* I am
willing to pay for this ticket is $_____

A4

Demographic questions

1. Have you ever shopped at a farmers market? If yes answer 2 & 3. Otherwise proceed to question #4.
Yes
No

2. On average, how often do you shop at farmers markets during the months of April through August?
Never 3–4 times a month
1–2 times a month 5 or more times a month

3. Which of the following best describes why you shop at farmers markets? Please check only one, if you check 'Other' please indicate why.
To support the local community
Lower food prices
Higher food quality
To promote a more equitable food production distribution system
Entertainment or experience
Other _____

4. To what extent do you agree with the following statements? Answer each statement using the following scale:

Strongly Disagree	Disagree	Indifferent	Agree	Stongly Agree
1	2	3	4	5

a. On average, local farmers make higher profits when I buy from farmers markets rather than traditional grocery stores.

1 2 3 4 5

b. On average, non-local farmers make higher profits when I buy from farmers markets rather than traditional grocery stores.

1 2 3 4 5

c. On average, local farmers make less profit than non-local farmers.

1 2 3 4 5

5. What is your current age in years?_____

6. What is your gender? Male Female

7. What was your total household income (before taxes) for 2007?
Under $20,000 $20,000-$34,999
$35,000-$49,999 $50,000-$64,999
$65,000-$79,999 $80,000-$94,999
Over $95,000

8. What is your level of education?
No high school diploma High school graduate
AA/Technical Degree Bachelor's degree
Master's degree or higher

9. Are there any children in your household under the age of 12?
Yes
No

A5

VITA

Steve Toler

Candidate for the Degree of

Master of Science

Thesis: CONCERN FOR INEQUITY: A DEEPER LOOK INTO FARMERS MARKETS

Major Field: Agricultural Economics

Biographical:

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Education: Graduated from Edmond Memorial High School, Edmond, Oklahoma, May 2003; received a Bachelor of Science degree in Agricultural Business with a Minor in Marketing from Oklahoma State University, Stillwater, Oklahoma, Spring, 2007; completed the requirements for a Master of Science in Agricultural Economics from Oklahoma State University, Stillwater, Oklahoma, December 2008.

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Major Field: Agricultural Economics

Scope and Method of Study: In 2006, there were 4,385 farmers markets in the United States with annual sales totaling more than $1 billion. Farmers Markets allow consumers to purchase locally grown produce which provides more money to local farmers because the money goes directly to the farmer and cuts out the middlemen. Previous research has found that consumers that attend farmers markets price premium for purchasing locally grown produce is higher than any of their other motivations for attending farmers markets price premiums. Recently, economists have begun to think in terms of concern for inequity to get a better understanding of people's motivation for undertaking certain activities. This paper focuses on whether concern for inequity is a reason why consumers shop at farmers markets compared to the traditional grocery store.

Findings and Conclusions: This study reports on the results from an experiment conducted at a farmers market and a traditional grocery store in Edmond, OK. The survey consisted of four tickets that were designed to elicit a consumer's willingness-to-pay for advantageous and disadvantageous inequity for a local and non-local farmer. The results show that there is not a statistical difference in people that shop at farmers markets and grocery stores. However, people exhibit a higher concern for inequity towards local farmers than non-local farmers.

ADVISER'S APPROVAL Dr. Brian Briggeman