A Non-Hypothetical and Incentive Compatible Method for Estimating Consumer Willingness-to-Pay for a Novel Functional Food: The Case of Pomegranates

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A Non-Hypothetical and Incentive Compatible Method for Estimating Consumer Willingness-to-Pay for a Novel Functional Food: The Case of Pomegranates

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Introduction

- Functional foods: Health benefits beyond basic nutrition of energy, vitamins, and minerals
- Functional food industry: $27 billion in the United States in 2007
- Pomegranate: Functional food with many antioxidants
- Pomegranate fruit: Novel/unfamiliar product that reduces risk of: cardiovascular disease, neurodegenerative diseases, certain cancers
- Value elicitation for novel products: difficult with market data
- Experimental techniques may be preferred
- Nonhypothetical techniques: Better estimates of willingness-to-pay (WTP) and preferences than hypothetical techniques.
- Previous studies have nonhypothetical auctions for novel products\(^2\) or nonhypothetical rankings,\(^3\) but rarely both.
- Nonhypothetical rankings better at predicting retail sales than hypothetical choices and nonhypothetical choices.\(^4\)

Objective

- Develop a new nonhypothetical, incentive compatible technique combining 1) experimental auctions and 2) preference ranking techniques to provide more information on consumer preferences.

Methodology

- 203 subjects (split into 8 sessions) representative shoppers recruited according to Texas and grocery shopper demographics
- Two parts of procedures:
  1. An 11\textsuperscript{th}-price sealed-bid auction for the 7 products
  2. A nonhypothetical ranking procedure for 8 product options: the 7 products pictured plus the option of “no product”
- 20 buyers per session: 10 from auction, 10 from rankings
- 4 Rounds of Information: A) Baseline, B) Tasting Information, C) Health and Nutrition Information, D) Anti-Cancer Information
- Bid-Censoring: 18.4\% of bids left censored at $0.00

Econometric Models

- WTP=\(f(\text{socioeconomic factors, behavioral factors, information treatments, product characteristics})\)
- Full Bids: Random Effects Tobit Model
  \(y_{ijt} = x_{ijt}'\beta + \alpha + u_{ijt} + \epsilon_{ijt}\)
- Full Bids: Mixed Linear Model
  \(y_{ijt} = x_{ijt}'\beta + \alpha + u_{ijt} + \eta_{ijt}x_{ijt} + \epsilon_{ijt}\)
- Rankings: Mixed Rank-Ordered Logit Model

Results

- Mean Age: 42.8 years (Std. Dev: 17.5)
- Sex: 22.2 people (Std Dev: 1:2)
- Household Income: $56,693/year (36,972.57)
- Household Food Spending: $109.13/week (75.49)
- Mean Bids for Fruit Products by Information Treatment
- Mean Rankings for Fruit Products by Information Treatment
- Table 1. Random Effects Tobit Model Estimates: WTP for Pomegranate Products
- Table 2. Mixed Linear Model Estimates for WTP for Pomegranate Products
- Table 3. Mixed Rank-Ordered Logit Model Estimates for Pomegranate Preferences

Conclusions

- Interaction Effect: Product familiarity with product characteristics
- Ready-To-Eat, Juice products preferred over whole fruits; “No Product” option less preferred
- Texas Varieties 1 & 2 preferred in explicit rankings but no preference for Texas varieties in implied rankings
- Innovative nonhypothetical, incentive compatible combination auction and ranking procedure used
- Divergent results for nonhypothetical experimental auction and preference ranking procedure
- Individual-specific effects for the fruit product forms
- Interaction between information treatments and product characteristics
- Difficult to extrapolate experimental results to other products
- Product familiarity and reference price influenced auction bids more than demographics

Literature Cited


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