Determining the Impact of State-Specific Signs and Labels on Tomato Marketing

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Selected Poster prepared for presentation at the Southern Agricultural Economics Association’s 2016 Annual Meeting, San Antonio, Texas, February 6-9, 2016

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Florida is the largest supplier of fresh tomatoes in the U.S., accounting for nearly half of the total crop value. However, from Mexico, the farms value of Florida tomato industry slumped from $620 million in 2010 to $268 million in 2012 and the national value dropped from $1.4 billion to $0.86 billion.

Table 5: Parameter results of the ordered logistic regression of consumers’ stated choice of tomatoes from the first simultaneous equation system.

### Empirical Models

1. **First, a binary logistic regression model** is used to determine the effects which affect consumer’s behavior of reading COOL information on tomatoes.

   \[
   
   \text{Probability}(\text{prefer US}) = \frac{1}{1 + e^{-r}}
   \]

2. **An ordered logistic regression** is used to determine the factors, including latent preference, demographics, and reading COOL information, that influence consumer choice of the tomatoes with various COOLs.

   \[
   
   \text{Probability}(\text{prefer US}) = \frac{1}{1 + e^{-r}}
   \]

3. **A linear regression** is estimated with ordinary least square methods (OLS) to determine factors that impact consumers’ WTP for Florida/US and Mexican tomatoes. WTPD = γ1 + γ2 (Scenario 2) + γ3 (Scenario 3) + γ4 (City) + γ5 (US) + γ6 (DOA) + ε.

   In models 1, 2, and 3, where X is a vector of all possible latent preference variables and Z is the vector of all demographic variables. Dorgined is a binary variable indicating consumer reacts to COOL labeling on the tomatoes. \( \gamma \) is an ordered variable (1=choose Florida/US labeled tomatoes, 2=prefer Mexico, and 3=no preference).

4. **Simultaneous equations** are conducted between the behavior of reading COOLs and consumer’s stated choice of tomatoes in all three scenarios. Through running the simultaneous equations, the endogenous variable Dorgined can be controlled so the estimated results are more valid and accurate.

   \[
   
   \text{Choice} = \beta_1 + \beta_2 \text{Dorgined} + \beta_3 \text{Scenario} + \beta_4 \text{City} + \beta_5 \text{DOA}
   \]

Model Results

- **Table 4: Parameter results of the binary logistic regression of consumers' behavior of reading COOL tomato information in the experiment.**

- **Table 5: Parameter results of the ordered logistic regression of consumers' stated choice of tomatoes from the first simultaneous equation system.**

Conclusions

- The majority (>50%) of the participants choose Florida/US tomatoes rather than Mexican tomatoes or no preference.
- On average, consumers are willing to pay a higher premium for Florida/US tomatoes than for Mexican tomatoes under all COOL scenarios.
- The “Grown in Florida” sign plus US sticker effectively increases the probability of reading COOLs on the tomatoes when consumers purchase fresh tomatoes, compared with other COOL strategies including US stickers and Florida stickers.
- Different COOL strategies have no significant direct impact on consumer’s choice of the tomatoes.
- Through applying simultaneous equations, it can be inferred that the strategy of using the “florida grown” sign alone would persuade the consumers’ “prefer Mexico” choice of tomatoes indirectly via first attracting consumers to read COOLs on the tomatoes. This finding makes reading behavior could improve the probability of choosing Florida/US tomatoes.
- When it comes to WTP, the results are consistent with previous studies (e.g. Mabiso et al. in 2005) that consumers would be willing to pay a premium domestic tomatoes such as the ones labeled with “Grown in the US”.
- Furthermore, the results indicate Florida sticker, and “Grown in Florida” sign plus US sticker strategy can still increase the premium consumers are willing to pay for Florida/US tomato compared to Mexican tomatoes. Under these two COOL scenarios, there is a smaller difference between WTP for Florida/US and Mexican tomatoes.

References and Acknowledgements


*State funds for this project were matched with Federal funds under the Federal-State Marketing Improvement Program of the Agricultural Marketing Service, U.S. Department of Agriculture.