Food Authenticity, Technology and Consumer Acceptance

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THE ISSUE:
- Traceability and authenticity issues in food markets:
- Traceability: growing consumer interest in source of food
- Authenticity: misrepresentation, unbekilled substitution of ingredients
- Implications:
  - Collective industry reputation (e.g. fake Canadian ice wines)
  - Food safety (melamine in milk, China)
  - Substitution of cheaper ingredients (joke)
  - Mislabelling: consumer & environmental implications (e.g. fish species)
- Challenge: provision of credible assurances to consumers (reputation effects)

Research Questions
- Will consumers accept molecular tagging as a traceability technology (Vs RFID)?
- Does acceptance differ across product category (apple juice Vs salami)?
- How does information affect consumer acceptance of a new technology (i.e. positive Vs neutral technology information, Vs information on the issue of adulteration)?

Data & Choice Experiment Design
- Survey data gathered online across Canada in December 2010
- Sample representative of Canadian population by region (province), gender and education. Oversampling of older consumers and those with higher incomes
- Discrete choice experiments used to evaluate consumer acceptance of molecular tagging technology
- Two survey designs: apple juice (430 responses) and salami (433 responses)
- Four information treatments: information on the problem of adulteration Vs positive information about the technology

Technology Attribute Descriptions
- Molecular tagging (MT) – assurance that product is authentic and is not diluted or substituted with inferior material. This is inserted in the food product and is a secure form of identification that can not be removed or manipulated.
- Radio frequency identification (RFID) – traceability of product from farm to processing/packaging to retail shelf. This technology is attached to the package, as an external label, but could be removed.
- RFID & MT – strongest assurance that product is authentic (unadulterated) with the ability to provide full traceability of product from farm to retail shelf. The authenticity verification is provided through molecular tagging technology inserted into the product, with traceability provided by an external label.
- Regular label on package – no additional verification of authenticity or traceability claims

Choice Set Design (apple juice)

Example of a Choice Set (juice)

Analysis
- Tests for pooling data when scale parameters allowed to vary suggest that product-specific effects exist:
  - Apple juice and salami data analysed separately
- Tests for pooling data across the information treatments show that adulteration information matters whereas positive technology information does not
- Estimate pooled model for info treatments 1+2 and for 3+4 (apple juice); all information treatments pooled for salami
- Conditional Logit and Random Parameters Logit Models estimated

Conclusions
- Initial consumer acceptance of the technology appears to be low, however, information matters.
- Highlighting the problems of adulteration reduces resistance more effectively than providing positive technology information
- The effects appear to be product specific across a juice product versus a processed meat product.
- Other proxy signals (country of origin, brand) resonate strongly with consumers and tend to have a larger impact on willingness-to-pay.

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http://www.afmcanada.ca/