Traceability and Country of Origin Labelling

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Outline

• Background: country of origin labelling and consumer responses
• Information asymmetry and quality signals
• Examples of livestock traceability systems
• Functions of a ‘traceability’ system
• Evaluating consumer willingness-to-pay for traceability information
• Trade implications
Country of Origin Labelling

• Do consumers value country of origin labelling?
• Intrinsically valued for ethnocentric reasons?
• Or as a quality signal?
• Or as a food safety signal?
• Previous consumer research is mixed on the purpose and potential value of COOL for consumers
Quality Signals

- Importance of food safety and food quality
- Intrinsic quality attributes
e.g. fat content, colour, tenderness . . .
- Extrinsic quality cues e.g. brand name, price, country of origin
- Experience attributes e.g. food safety
- Credence attributes
  - Country of origin; GMOs; on-farm production methods; animal welfare; environment; many food safety problems
Information Asymmetry

• Consumers incur information costs in determining whether experience or credence attributes are present

• Solutions?
  ▶ Signal presence of credence attributes

• Country of origin as a quality or safety signal?

• But proxy measures of value can lead to measurement errors for consumers (Barzel)

• More efficient to signal quality/safety directly
Individual Supply Chain Traceability Initiatives . . .

- Tracesafe (UK)
  - Differentiates beef on the basis of traceability to the farm of origin, with an implied safety assurance (Fearne)

- Van Drie Group (Netherlands)
  - Vertically integrated veal production system; traceable from retail shelf to farm of origin with quality assurances (Buhr)
Individual Supply Chain Traceability Initiatives

• Processors
  CEO Maple Leaf Foods:
  - Traceability is “the holy grail of the food supply chain”
  - Researching DNA identification technology to facilitate traceback to farm of origin

• Retailer driven:
  - On-farm QA requirements
  - But may not explicitly require traceability to the farm and may not label traceability
Industry-wide Traceability Initiatives

• Canadian Cattle Identification Agency
  ❖ Facilitates traceback of cattle in the event of food safety or herd health problem
  ❖ A preventative risk reduction strategy
  ❖ Unique cattle ID number maintained to point of carcass inspection

• Australian National Livestock Identification System
  ❖ Voluntary component - DNA sampling for traceback
  ❖ Voluntary vendor declaration of production methods (feeding, hormones)
  ❖ Focus on eating quality
Regulatory Initiatives . . .

- EU Beef Labelling Regulation (EC 1760/2000)
- Compulsory beef labelling and traceability

1. Cattle ID and registration
2. Labelling & traceability for beef products
   - traceability number
   - origin (born, reared, slaughtered, processed)
3. Rules for voluntary labelling with additional information
Regulatory Initiatives

- Agricultural Policy Framework (Canada)
  - Food safety and quality pillar
  - Target of 80% of domestic food traceable
  - Voluntary

- US mandatory Country of Origin Labelling
  - Born, raised and slaughtered in US to receive US COO label
  - Implications for traceability, logistics and record-keeping
Demystifying Traceability . . .

1) Reactive traceback function
   - allows traceback of products or animals in the event of a food safety problem
   - *ex post* cost reduction (private & social costs)
   - protects firms who practice due diligence from free riders

→ most livestock traceability systems
“If a health or safety issue were to happen in Canada, over half of our production could suddenly be without a market. We need to do what we can today to ensure market access, both domestically and internationally. A National Identification Program will help protect our markets. . . . If we as an industry do not put into place our own national identification system, we will lose market share and may find a system not of our choosing imposed upon us” (CCIA, 2002).
2) Enhance the effectiveness of Tort Liability law as an incentive for firms to produce safe food

- civil legal penalties & loss of reputation
- reduces monitoring and enforcement costs for downstream food processors & retailers

→ also an *ex post information* function
3) Reduce information costs for consumers

- labelling the presence of credence attributes e.g. animal welfare, environmentally-friendly, food safety, country of origin

- proactive information provision and quality verification

⇒ an *ex ante* information function
Ex Post Traceback Vs Ex Ante Quality Verification

• Most livestock identification & traceability systems are reactive, they allow traceback in the event of a problem
• But this does not allow ex ante provision of information on credence attributes
• An ex post, reactive traceability system does not reduce consumer information asymmetry from credence attributes
EU Beef Labelling/Traceability Regulation

- On the surface seems to consumers offer ex ante quality verification ..............
- BUT in reality it is an *ex post* reactive labelling system:

“... Member States report that their consumers, even when well informed, have not notably changed their patterns of consumption of beef.”

(Commission of the European Communities, 1999)
The Challenge

• Transform credence attributes into search attributes through identification & labelling
• This requires \textit{ex ante} provision of information on process attributes
• What do consumers really want?
Consumer WTP: Myth or Reality?

- Researching consumers’ willingness-to-pay
- Collaboration with DeeVon Bailey and David Dickinson, Utah State University - USDA funded project: USA, UK, Japan, Canada
- Additional funding from AAFC
- Willingness to pay for traceability, food safety and on-farm production assurances in meat
Experimental Auctions

• Laboratory markets/experimental auctions
• Elicit non-hypothetical bid data
• Subjects given a free lunch, including beef (ham) sandwich and Cdn$20
• Bid to exchange their sandwich for a sandwich with additional verifiable characteristics
Four ‘Auction’ Sandwiches

1) An extra assurance of *humane animal treatment*

2) An extra assurance regarding *food safety* standards over and above the industry norm

3) Meat that was *traceable* to the farm of origin

4) Meat *traceable* to the farm of origin, with an extra assurance of *humane animal treatment* and an extra assurance of *food safety*
Canadian Experiments

- Saskatchewan & Ontario in 2002
- 204 respondents (104 beef, 100 pork)
- Groups of 12-14
- Range of demographics
  - Saskatchewan: faculty, professional staff, students, maintenance staff
  - Ontario: subjects recruited from consumer research company database
Bidding

• Vickrey 2nd price auction
• 10 rounds of bidding for each sandwich
• Sealed-bid
• “Market information” provided at the start of each round (2nd highest bid)
• At the end of 10 bidding rounds, one sandwich and one round randomly selected as the binding round/sandwich
• Only one sandwich is ‘auctioned’ off
• Auction ‘winner’ exchanges sandwich and pays the exchange price (2nd highest bid price)
• Rational strategy is to bid true WTP
Figure 1: Average WTP Bids - Beef
N=100
(Base sandwich value = $2.82)
Figure 2: Average WTP Bids - Pork
N=100
(Base sandwich value = $2.85)
# Average Willingness to Pay - Canadian Results

Averaged across all subjects, last 5 rounds.
(Canadian dollars; percentages as a % of base sandwich value)

<table>
<thead>
<tr>
<th>ATTRIBUTE</th>
<th>BEEF</th>
<th>PORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic traceability</td>
<td>20¢ (7%)</td>
<td>28¢ (10%)</td>
</tr>
<tr>
<td>Extra food safety assurance</td>
<td>56¢ (20%)</td>
<td>47¢ (17%)</td>
</tr>
<tr>
<td>Humane animal treatment assurance</td>
<td>50¢ (17.6%)</td>
<td>44¢ (15.6%)</td>
</tr>
<tr>
<td>Traceability plus two assurances</td>
<td>$1.12 (40%)</td>
<td>93¢ (33.4%)</td>
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</tbody>
</table>
Average Willingness to Pay
US Results
(Bailey & Dickinson, 2002)

<table>
<thead>
<tr>
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<th>PORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic traceability</td>
<td>23¢ (7.6%)</td>
<td>50¢ (16.7%)</td>
</tr>
<tr>
<td>Extra food safety assurance</td>
<td>63¢ (21%)</td>
<td>59¢ (17.6%)</td>
</tr>
<tr>
<td>Humane animal treatment assurance</td>
<td>50¢ (16.7%)</td>
<td>53¢ (20%)</td>
</tr>
<tr>
<td>Traceability plus two assurances</td>
<td>$1.06 (35%)</td>
<td>$1.14 (38%)</td>
</tr>
</tbody>
</table>

*US dollars. Percentage of base sandwich value = US$3
What do we really mean by ‘Traceability’?

• “Traceability” by itself may not deliver much value to most consumers

• Most people want to know their food is safe before they eat it!

• Quality assurances with respect to specific credence attributes, bundled with traceability, have more appeal

• Traceability may be a necessary but not sufficient condition for ex ante verification of quality attributes
Trade Implications

• COOL allowed under Article IX - Marks of Origin provided that it does not:
  - seriously damage product
  - materially reduce its value
  - unreasonably increase its cost

• National Treatment principle of WTO
  - Will raise costs for US industry
  - US livestock & meat packing industry probably ill-prepared
Traceability: Conclusions

- Important to understand consumer attitudes to food safety & food quality issues, traceability & labelling

- **Traceability** ➔ can reduce the costs and risks of food safety problems

- **Traceability** ➔ can reduce supply chain monitoring and enforcement costs

- But **traceability** needs to be bundled with other quality assurances to deliver value to consumers
COOL: Conclusions

• Do consumers value COOL intrinsically or only as a quality or safety cue?
• More efficient to have a direct quality signal e.g. third party certification or regulation of safety standards/processes
• COOL could backfire without the quality and safety standards in place to back the ‘brand’ or if there is free-riding.