Market Forces or Regulation?

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Lunch ~ N ~ Learn Seminar
Organization of Agricultural and Natural Resource Markets

- Do markets work? When does government policy improve social welfare relative to pure market outcomes?
- Social welfare
  - Includes consumers, farmers, other members of the agrofood chain
  - Environment and health considerations
Three Research Topics

• Can private collective action improve food safety outcomes relative to government regulations alone?
  • Regulations implementing part of 2011 Food Safety Modernization Act currently out for comment

• Can we develop scientifically and economically feasible non-chemical alternatives to methyl bromide?
  • U.S. must phase out methyl bromide under the Montreal
  • Clean Air Act fumigants emit volatile organic compounds

• Can public-private extension partnerships substitute for pesticide use regulations and improve environmental quality?
  • Clean Water Act, section 303(d) impairment
Can Private Collective Action Improve Food Safety?

- Regulations used to protect food safety
  - Classic analysis focuses on regulatory approach, fines, inspection, compliance
- Instead focus on private collective action and the legal doctrine regarding liability
  - Assume regulations fixed
  - Underlying premises: when there’s a bad food safety event
    - the responsible firm will be liable
    - there will be a negative market effect for all firms
- Motivating examples
  - California Leafy Green Products Handler Marketing Agreement
  - California Tomato Growers cooperative
Firms’ choices and liability regimes

- Firms choose actions to enhance food safety
  - Actions specified by regulations
  - Choose to act individually and take more actions than specified by regulations
  - Choose to act collectively and take more actions than specified by regulations
- Firm’s responsibility for damages
  - Strict liability: pays regardless of its actions
  - Negligence: court assesses reasonableness of actions taking into account the regulatory standards
  - No liability: pays nothing regardless of its actions
    - Lack of traceability
Private Collective Action

- Voluntary private collective action will never reduce social welfare relative to firms only complying with regulatory standards
  - May increase it, depending on the liability regime
- Collective action under no liability at least as socially beneficial as under strict liability or negligence
  - Producers benefit more under no liability
- Consistent with idea of self-regulation
  - A negligence standard does not improve welfare relative to a no liability standard when the possibility of voluntary collective action is taken into account.
    - Extrapolate: an excessively strict standard will not improve welfare (STILL IN PROCESS)
Food Safety Research Funding

• This research was funded by the USDA’s Economic Research Service under a cooperative agreement.

• This analysis was undertaken by independent researchers and does not represent the views of the Economic Research Service.
Alternatives to Methyl Bromide

- Are there technically and economically feasible alternatives to methyl bromide?
  - Many important uses in agriculture
  - U.S. committed to phaseout under Montreal Protocol
- The U.S. has invested a substantial amount in research on alternatives to methyl bromide
- Multi-disciplinary research efforts
  - Technical, economic feasibility required
- Early research focused on replacing with similar chemicals
- Federal funding has enabled a shift to researching non-chemical alternatives
Non-Chemical Alternatives

- Public research funding is particularly critical when intellectual property protections do not apply fully
- Solarization, mustard seed meal, anaerobic soil disinfection, steam
- Multiple years of federally funded research have resulted in steam approaching economic feasibility in strawberry production
  - In progress
- 2011-12 results indicate that net returns are within 8% of returns from using a pesticide containing methyl bromide
  - Likely to improve further in 2012-13
Steam Application Research Funding

- This research was funded by the **USDA NIFA Methyl Bromide Transitions program** through competitive grants.
- Funds leveraged with industry resources
Extension vs. Regulation

- Reducing pesticide use to improve environmental quality
  - Mandatory use regulations
    - Ban is most extreme
  - Voluntary reduction of use

- Can public-private extension partnerships induce farmers to reduce their use of specific pesticides or classes of pesticides?
CA Almonds and Organophosphate Use

- Almond growers treat trees in the rainy season to control certain pests
  - Organophosphates: cheap, reliable control
  - Others: more expensive, more variable, more management-intensive
- Rain transfers pesticides to surface water
- Organophosphates (OPs) are a major surface water contaminant
BIOS Program

• Biologically Integrated Orchard Systems Program
• Cooperating entities
  • University of California
  • Community Alliance with Family Farmers (non-profit)
• Demonstration plots (30 acres)
  • Participants willing to adopt alternatives to organophosphates
  • Substantial technical assistance to participants
• Field days, newsletters, focus groups, etc.
• Farmer-to-farmer outreach
  • Demonstration participants expected to mentor other growers
BIOS Program **Reduced**
Organophosphate Use

- Looked at the OP use of a farmer in a BIOS project area relative to farmers elsewhere.

- During the BIOS program,
  - Probability that a farmer used OPs fell 3%
  - If he applied OPs, the share of acreage on which he applied OPs stayed constant or declined

- After the BIOS program,
  - Probability that a farmer used OPs fell 9%
  - If he applied OPs, the share of acreage on which he applied OPs stayed constant or declined

- Public-private extension partnerships another tool for improving environmental quality
Success of BIOS Led to Expansion of Approach

- Biologically Integrated Farming Systems program built on success of BIOS and expanded model to twelve crops
- Cooperating entities
  - University of California
  - Community Alliance with Family Farmers
  - US EPA
  - California Department of Pesticide Regulation
Conclusion: Markets and Regulation

Implications for government actions

- Liability rule affects firms’ decisions regarding food safety-enhancing actions given regulatory requirements
- Federal support for targeted research can help markets adapt to regulations
- Extension can alter behavior and reduce negative environmental impacts, so it can substitute for (or complement) regulations