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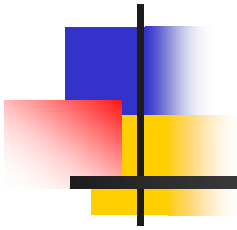
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The Trade Implications of 'Zero Tolerance' Policies in Food Markets

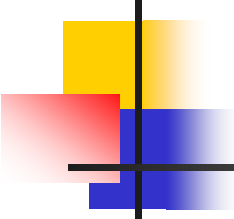


Jill E. Hobbs, William A. Kerr and Stuart J. Smyth
Department of Bioresource Policy, Business & Economics
University of Saskatchewan, Canada

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Email: jill.hobbs@usask.ca



Tolerance levels exist for many undesirable attributes

-insect fragments, stones, chemical residues, weed seeds, livestock antibiotics...
- But far less consensus for GM material
- Adoption of Zero Tolerance approach:
 - International trade tensions
 - Uncertainty and complexity in supply chains
 - Contradictory role of science



Outline

- Economic model of co-mingling
- Role of science and the emergence of zero tolerance
- Two case studies:
 - Canadian GM Flax in EU
 - ECJ ruling on pollen as a food



What is the socially optimal level of co-mingling?

- Where marginal costs of allowing non-zero co-mingling equal the marginal benefits
- Trade-off between the potential **impact costs** of unapproved GM varieties entering food supply chain Vs the **mitigation costs** from reducing the threat of co-mingling



The socially optimal level of co-mingling

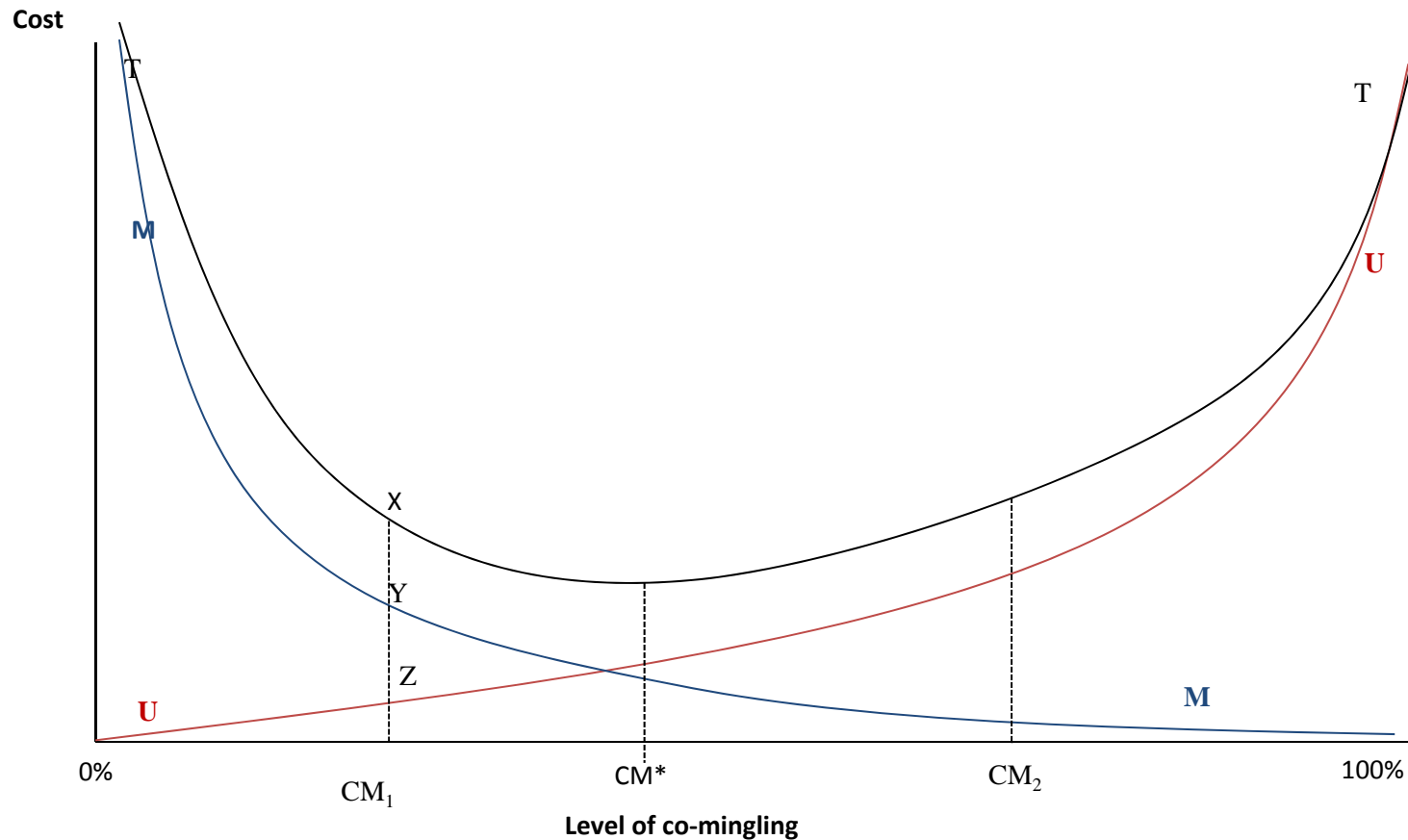
- **Impact costs (UU):**

- Risk (uncertainty) unforeseen human health and environmental consequences
- Reduction in consumer choice

- **Mitigation costs (MM):**

- Supply chain identity preservation & segregation
- Testing, certification, monitoring
- Opportunity costs of foregone markets
- Remedial measures re: cross-contamination

The socially optimal level of co-mingling





From moratorium to co-existence

- EU moratorium on approval and importation of GM crops: 1999-2003
- 2004: Member states instructed to develop frameworks for co-existence
- How was low level or adventitious presence handled?
 - Incidents resolved without suspension of international trade
 - Minimal political interference



Examples

- 2000, Canadian canola shipment to Europe 0.4% unapproved GM traits
 - Crop destroyed (France, UK) or harvested but prohibited from entering market (Sweden)
- 2002, UK. Impurities in canola seed for seed trials. Co-mingling 2.8%
 - Crop harvested and seed destroyed
- 2003, Trace amounts GM canola detected in Canadian mustard exports to EU.
 - Apparently little reaction. No information on what EU importers did with mustard shipment



Emergence of zero tolerance

- EU Directive 2001/18 establishes zero tolerance
- 2006, US rice exports to EU. Trace amounts of unapproved GM (LL601 rice). EU bans imports of US rice. Currently $<1/3$ previous level
- 2006, Herculex GM corn approved in US, not in EU. Trace amounts discovered. Trade disrupted until EU approval in 2009
- Challenges for animal feed industry.
 - ➔ 2011, threshold of 0.1% established for feed
- Zero tolerance remains for food



Case 1: Triffid Flax

- Canadian flax: mostly industrial, small human food market
- No supply chain segregation
- CDC Triffid flax. Approved in Canada 1998 but voluntarily de-registered (2001) due to export market uncertainty.
- Never grown commercially. Germplasm and seedstocks destroyed.
- No tests existed



The Case of Triffid Flax

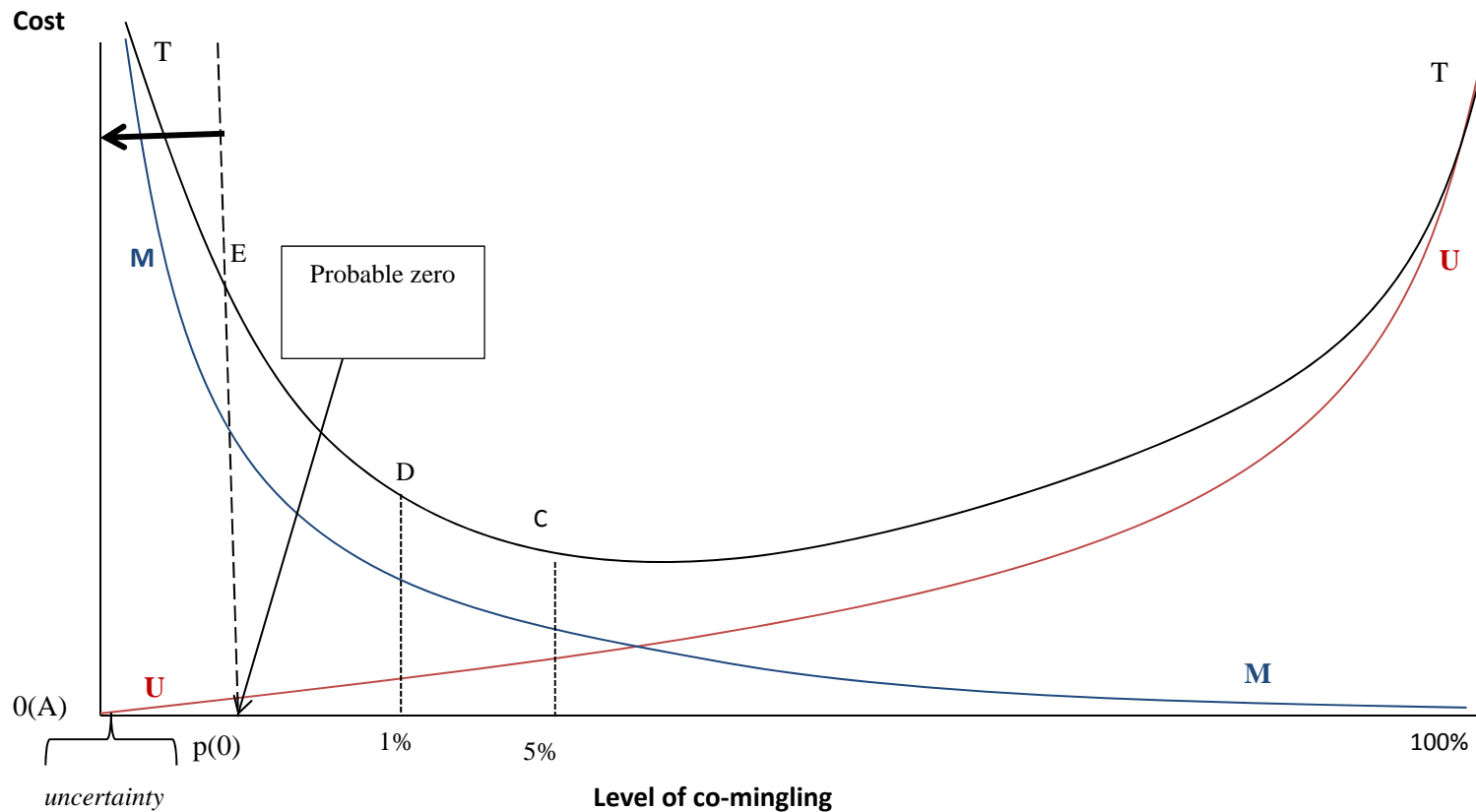
- 2009: firm develops new (PCR) test specific to Triffid flax
- Germany issues EU-wide Rapid Alert notification confirming presence of GM-flax in Canadian non-GM flax imports
- Widespread presence detected in EU: bakery, cereal products.
- Canadian flax imports banned
 - Significant costs on exporters and EU importers
 - Protocol developed for sampling along supply chain



Questions raised by the case

1. What did the zero tolerance import ban achieve?
 - Agronomically obsolete variety, approval will never be sought. Co-mingling widespread & prolonged (10 years).
2. "Zero" is defined by what can be detected.
 - improvements in testing technology move the boundary of probable zero. Costs of "zero" rise without an assessment of cost-benefit trade-off

Science and the shifting boundary of zero





Questions raised by the case

3. Private sector incentives to develop tests
 - Worldwide adoption of new Triffid flax test. Zero threshold determined by perceived profitability of improved test, not public policy.
4. Establishment of sampling criteria somewhat arbitrary. Where in supply chain? Cost-practicality trade-off
 - So what does zero really mean?

Case 2: Pollen, bees & honey

- September 6 2011 EU Court of Justice ruled that **pollen in honey constituted a foodstuff.**
- What's the big deal?





Confluence of events

- Asynchronous approvals: GM variety approvals proceeding at different rates
- EU zero tolerance policy for unapproved GM products
- Co-existence policy: conventional & organic crops (including honey) not suffer co-mingling with GM crops
 - Buffer zones around GM crops

Unintended consequences of zero tolerance?



- Pollen is now “ a food” .
- Honey producers unable to sell their product if pollen from GM crops is present
- Bees roam: 3-10km buffer zones?
- Co-existence rules could effectively prevent planting of GM crops
- Unintended consequence: exacerbate asynchronous approvals



Conclusions

- Cases illustrate sub-optimal outcomes from current zero tolerance policy
- Challenges in operationalizing zero and unintended consequences
- Determinants of 'zero' driven by exogenous factors
- Continuation of trade frictions