

Optimal Border Policies for Invasive Species under Asymmetric Information

Linda Fernandez and Glenn Sheriff

Discussant:

Duncan Knowler
School of Resource and Environmental Management
Simon Fraser University, Vancouver BC

Overview

- Asks the question: Can exporters of goods carrying potentially invasive species be provided incentives to truthfully reveal the risk associated with their shipments
- Game-theoretic trade model involving two agents: the border inspectors in the importing country & the exporting country, with former as first-mover
- Allows for endogenous invasion risk since exporters can abate risk, and abatement costs are allowed to vary
- Asymmetric information problem since the border inspectors cannot observe exporters level of abatement
- Authors show that under asymmetry the optimal abatement by exporters does not change from the symmetry but that a fumigation charge may be necessary

Comments

- Principle-agent formulation seems appropriate given need to design appropriate incentives, but is importer always first mover ..
- Do exporters have the option for no abatement .. If not, would this change results if permitted ..
- Can you test the model empirically with a numerical simulation ..
- Both importer and exporter are risk neutral; importer can be justified (risk spreading), but exporter ...
- What about insurance and environmental bonds; could these play a role ..
- Authors mention the political infeasibility of making compensation payments to exporters ..

A further thought ...

- Does the horticulture industry involve more invasion risk than we acknowledge?
- This paper cites several trade-related invasive plant examples involving the horticulture industry
- Other papers are concerned with the invasiveness of imported horticulture plants themselves
- Appropriate policies for each situation may differ
- Is there a need for a joint modeling effort?

Minor stuff

- (p7) Terminology
 - `depreciate` to denote decline in value of perishable goods as inspection intensity increases, causing marketing delays
 - `discount factor` to describe this loss
- (p9) Contracting aspects a little unclear .. E.g. exporter's assigned contract – make more explicit
- (p10) Error in reference to equations (27) and (28)
- (p12) Equation (31) is missing an `I`
- (p12) High-cost exporter, low-cost exporter ... You mean `abatement` not production cost but may be confusing
- Brevity is a virtue ..

Mean ranking of five policy options to combat invasive plant releases in the horticulture industry, by stakeholder group

