

# Economic Transactions and Ecological Models

Scott Swinton

GLWESS Models workshop, May 3, 2012

# Economic Transactions

- Exchanges between people
- Both sides in exchange must be willing
  - Consistent with objectives of each actor
- Think of transaction as two decisions
  - “Buyer” willing to pay?
  - “Seller” willing to accept payment?

# Decision makers, transactions & links to objectives

## **Dec. maker & transaction**

- Farmers
  - PES & BMP insurance
  - BMP verification
- Drain commissioners
  - Drainage fees
- Ag retailers
  - Certific of farm advice (sale of consulting svcs, ag inputs)
  - Certific of farm products (purchase for re-sale)

## **Objectives (assumed)**

- Profit, environ quality, risk mgt (incl regulatory)
- Maintenance cost, environ quality
- Profit, firm reputation, risk mgt (incl regulatory)

# Behavioral change is goal of transactions

## Decision makers

- Farmers
- Drain commissioners
- Ag retailers
  - As sellers of consulting
  - As buyers of products (that might be certified)

## Behavior change examples

- Less fertilizer; buffers strips, manure mgt
- Buffer strips, etc
- Consulting on BMPs, reduced fertilizer sale, special market channel for certified products

# What decision makers need to know for transactions

- What behavioral change desired?
- For that change,
  - Costs vs Benefits?
  - Changes in risk exposure (so not just changes in mean values of costs & bens.)
- Costs & benefits are based on
  - Biophysical quantity changes
  - Valuation of those changes by decision maker

# What we need from ecological models

- ***What change in farming practices?***
  - So DM can estimate changes in
    - Direct costs & benefits
    - Indirect costs & benefits (e.g., environmental)
- ***What change in ecological outcomes?***
  - So policy maker can estimate potential value to society of off-farm externalities

# A few potential challenges

## Ecological research

- Validation for these settings.
- Attribution of off-site effects to changed behavior on farm or land.
- Scaling down to incremental effect of practice change on indiv farm.
- User-friendliness of models.

## Transactions research

- Motives of decision makers
- Valuation of indirect benefits/costs
  - Reputation
  - Stewardship
- Manipulability of transactions
- Replicability beyond pilot
  - Legal basis