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Experimental Direct Incentive Scheme and Reverse Auction for Soil Erosion Control in Sumberjaya

The Objectives

The design of a direct incentive scheme for increasing and maintaining good water quality of Way Besai river;
The estimation of the range of WTA values that would be enough to motivate individuals in participating in a program that restricts their land management using an actual experimental auction.

What is direct incentive scheme or payment for environmental services?

A conservation approach as an alternative to command and control is based on a willing buyer – willing seller model. Sellers deliver conservation outcomes in exchange for a negotiated payment in cash or in kind. Payments are conditional on performance or conservation outcome.
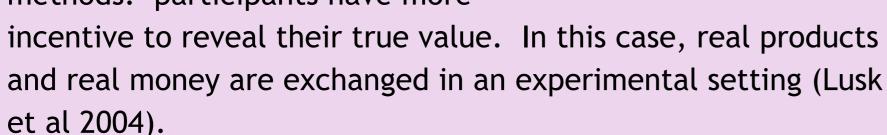
Why direct incentive scheme?

- Lower transaction cost because of relatively simpler institutional arrangement.
- "You get what you pay for"

Why reverse auction?

- Experimental auction methods are becoming more commonplace in non-market valuation
- More benefits relative to previously used contingent valuation survey methods: participants have more incentive to reveal their true value. In this case, real products and real money are exchanged in an experimental setting (Lusk et al 2004).
- Useful in low-income countries where markets are imperfect and households can behave in ways very different from profit maximization (Ferraro 2004).
- A valuable tool in market research and policy applications but still the reliability and consistency of value estimates needs careful assessment.

Policy Relevance

... recommendations potentially useful to policy makers
- An innovative way to determine level of incentive for conducting government programs.
- Inputs on alternative scenarios in developing a reward scheme for environmental services.
- Strong scientific basis for negotiation
- Inputs for efficient (and effective) budget allocation (in public funding scheme)

On going

- Analysis of observable characteristics of farmers in determining conservation costs
- Comparison of hypothetical and actual auction outcomes
- Assessment of compliance and non-compliance of auction participants
- Observation of conservation adoption by non-contracted farmers

Research Activities

1. Focus Group Discussions
- Finding and exploring environmental problems and their preferred conservation techniques
- Agreeing on contract contents

Soil conservation activities	▪ Sediment pits: 300 per hectare, standard dimensions size: 100x150x40 cm evenly distributed ▪ Ridging: 50 percent of plot ▪ Vegetation strips: surrounding pits and ridging ▪ Maintaining all the land conservation structure above for a year.
Payment schedule	50 percent at inception; 50 percent at one year contingent on performance
Duration and monitoring	One year with monitoring every three months; termination if 50% contracted activities not completed by midterm monitoring date

- Cancellation or non-compliance results in:
- ineligibility for second payment installation
- friction and conflict among community members
- indication of corruption

In the event of a natural disaster that cannot be foreseen, the contract will be terminated.

2. Farmers' Training
Creating common understandings among farmers of land management techniques as basis for further process: auction and environmental contract development

3. Laboratory Experiment
- Participants: undergraduate students
- Scenario: willingness to accept to clean their rooms
- Provide guidance for revisions to the auction implementation for the field test and the final auction.
- Feedback obtained from the students indicated areas where the instructions or activities unclear or misleading
- Familiarize enumerators with the auction design and process

4. Field Experimental Auction
Performed in the field with farmers:
- a follow up activity to the laboratory experiment
- an additional pre-test for the actual auction implementation

Hypothetical auction: farmers knew that they did not have to implement the contract

Auction Outcomes (in Rupiah)	Site 1	Site 2	Pooled	Pooled (without outlier)
Number of participants	48	34	82	
Number of winners	19	15	34	
Number of hectares contracted	10.75	14.25	25	
Contract price per hectare	1,600,000	1,500,000	1,545,263	
Median bid	2,000,000	1,500,000	1,635,000	
Mean bid	2,802,083	2,420,882	2,644,024	2,368,025
Minimum bid	900,000	600,000	600,000	600,000
Maximum bid	25,000,000	7,000,000	25,000,000	10,000,000
Std deviation bid	3,772,844	1,814,895	3,104,198	1,852,565

5. Actual Auction
- Implemented at two pilot sites (48 & 34 farmers – 82 farmers)
- Winning farmers will have to implement the contract
- Element of the auction
  - An n-sided, sealed bid
  - Uniform 2nd price Vickrey design
  - Budget constraint (20 million Rp) and random tie breaking rule.
  - ID number announced for provisional winners between rounds
  - Number of participants and number of rounds constant between the two auctions,
  - Number of rounds pre-announced in advance.