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# Assurance Contract in the Private Provision of Ecosystem Services: Evidence From A Pilot Field Experiment

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Supply

Demand

Landowners, farmers,  
wetland managers that  
provide ecosystem  
services.

Water quality, carbon sequestration, habit protection.

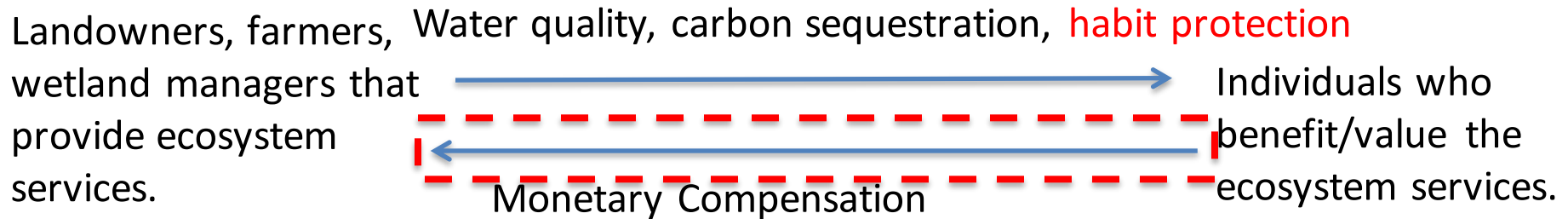
Individuals who  
benefit/value the  
ecosystem services.

Government,  
Conservation Programs.

*Distortionary tax. No  
control over donations.*

Supply

Demand



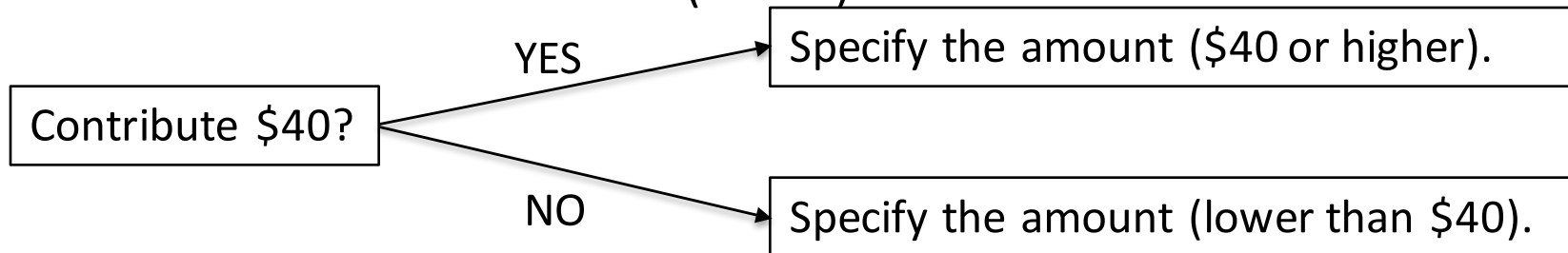
- Most researches on ecosystem markets focus on the supply side: how to induce ecosystem service providers to provide more, or induce non-providers to provide ecosystem services.
- We focus on the demand side of the problem: ***How to induce ecosystem service beneficiaries to pay for such services.***

We conduct a field experiment that directly connects the ES provider and beneficiaries.

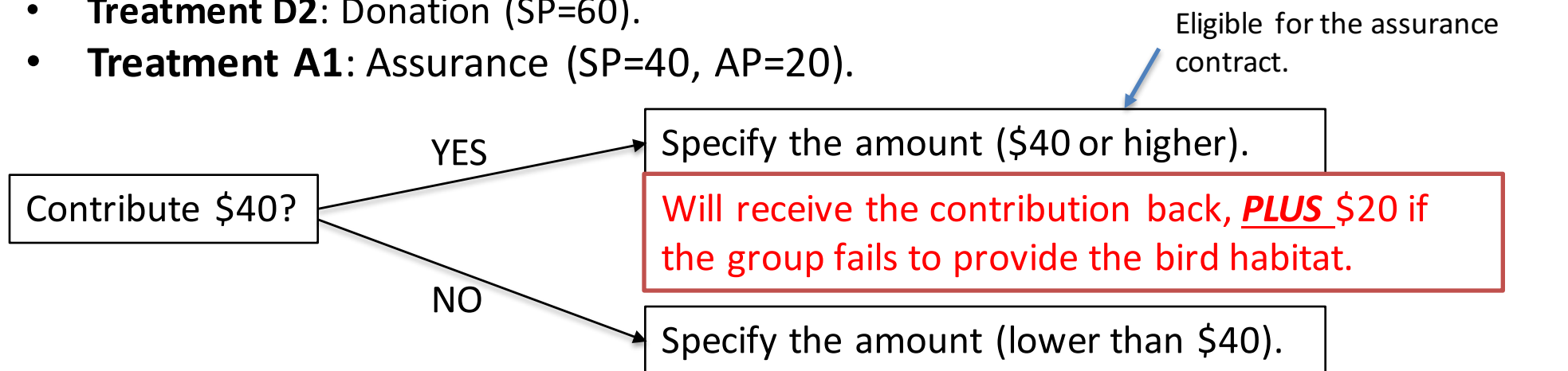
- Supply: Bird Habitat through delaying harvest.
- Demand: Local residents who care about the bird habitat.
- Location and Time: Jamestown and Aquidneck Island, RI in 2014.
- Mechanism: Provision point mechanism with money back guarantee.
- Compare the total contribution from local residents with the cost of delaying hay harvest (providing the bird nesting habitat) for one field.

## Treatment

- **Treatment D1:** Donation (SP=40).



- **Treatment D2:** Donation (SP=60).
- **Treatment A1:** Assurance (SP=40, AP=20).



- **Treatment A2:** Assurance (SP=40, AP=40).
- **Treatment A3:** Assurance (SP=60, AP=40).

### Theoretical Remarks:

- A positive assurance payment reduces, but do not completely eliminate the non-provision equilibrium strategies

### Intuitions:

- Assurance contract encourages commitments to pay by offering compensation to individuals who commit to making a donation, and paying that compensation when the group fails to provide the public good (and no donations are collected).
- It removes the fear that your efforts will be wasted (assurance against transaction cost).
- If enough people contribute to the bird habitat will be provided and we won't have to pay the assurance payment!
- This basic idea is from Tabarrok (1998). We extend and combine it with provision mechanism.

## Implementation

- Post mails and Internet (<http://www.bobolinkproject.com>).
- Randomly assign subjects to treatment.

Results: Donation Amount, Regression Results using OLS and Interval Regression

	(1)	(2)	(3)	(4)
	OLS	OLS	Interval	Interval
AP20	0.178 (0.240)	0.197 (0.253)	-0.120 (0.153)	-0.0993 (0.158)
AP40	0.188 (0.254)	0.175 (0.258)	-0.0368 (0.162)	-0.0400 (0.162)
SP60	0.613** (0.285)	0.607** (0.290)	0.390** (0.186)	0.385** (0.188)
AP40*SP60	-1.017** (0.431)	-0.981** (0.448)	-0.535* (0.285)	-0.512* (0.289)
Mail		-0.0134 (0.198)		0.0401 (0.123)
Donated_2013		0.136 (0.184)		0.0418 (0.116)
_cons	3.831*** (0.177)	3.781*** (0.241)	4.214*** (0.115)	4.166*** (0.152)
Insignia			-0.874*** (0.109)	-0.875*** (0.109)
<i>N</i>	67	67	67	67

Presence of Assurance Contract does not increase donation.

A higher suggested price increases donation.

A higher suggested price combined with assurance contract decreases donation.

## Results: Donation Probability, web donation only

	Pledged	Rejected	Pledge Probability	Total
<b>No Assurance</b>	6	9	40%	15
<b>Assurance</b>	18	7	72%	25
<b>Total</b>	24	16	60%	40

Assurance contract induces a higher donation probability. The difference in pledge probability is significant based on a Chi-square test.

## Log file from the web donation (Part of the data).

Status	Time	Assurance
pledge	2014-04-11 21:20:37	1
pledge	2014-04-15 20:50:33	0
pledge	2014-04-15 20:50:33	0
pledge	2014-04-14 12:35:09	1
pledge	2014-04-14 21:37:56	0
pledge	2014-04-12 09:15:04	1
pledge	2014-04-12 08:12:46	1
pledge	2014-04-16 18:06:58	1
pledge	2014-04-15 20:47:57	0
rejected	2014-04-13 14:08:20	1
rejected	2014-04-15 15:56:54	1
rejected	2014-04-12 07:55:10	1
rejected	2014-04-15 14:54:13	0
rejected	2014-04-15 14:54:46	0
rejected	2014-04-15 14:55:04	0
rejected	2014-04-15 14:55:45	0



## Outcomes:

- The cost for the bird habitat is \$4,500 (pre-contract with a farmer), we raised \$4,377 from 67 individuals.
- We returned all the contributions, plus \$1240 assurance payment for those eligible.

## Limitations and future directions:

- Sample size. Lab experiment to test the field experiment results.
- Dynamic setting. Build trust and reputation.
- Selection bias. Assurance contract attracts risk-loving individuals?