

LEMA

Laboratory for Economic Management and Auctions, Penn State University

Experiments with the Effectiveness of Electronic Reputation Mechanisms

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Markets and reputation

- Successful markets are mixes of competitive and cooperative mechanisms.
- Cooperative mechanisms tend to be reputation based, legal enforcement being expensive.
- Traditional markets rely on both first hand (repeat business) and third party (word-of-mouth) reputation.
- Internet markets lean more heavily on third party reputation (feedback)
 - A great advantage of these markets is the ability to trade with a large, fluctuating set of partners.

Evidence that feedback a positive effect

- Feedback may affect final price on eBay

Lucking-Reiley et al. (1999), Houser and Wooders (2003), Ba and Pavlou (2003), Bajari and Hortacsu (forthcoming), Kalyanam and McIntyre (2001), Melnik and Alm (2003), Resnick et al. (2003), Dellarocas (2004), Greiner and Ockenfels (work in progress)

- Feedback may affect probability of sale on eBay

Resnick and Zeckhauser (2003), Eaton (2002)

- Newbies ask for lower prices on Half.com.

Ockenfels (2003)

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Evidence that feedback could do better

- “[F]raudulent schemes appearing on online auction sites are the most frequently reported form of Internet fraud. [...] These schemes induce their victims to send money for the promised items, but then deliver nothing or only an item far less valuable than what was promised.”

U.S. Department of Justice report

- “Internet transaction fraud is 12 times higher than in-store fraud. ”

GartnerG2 (2002)

see also the field study by *Jina and Kato (2003)*

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In economic theory, quality information is all that is necessary to a healthy feedback system, whether first or third party

Movie: MEMENTO

Leonard suffers from short term memory loss and decides who he can trust on the basis of photos and notes.



Theory implies that this is a sound system so long as the information is reliable.

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What factors influence the performance of feedback mechanisms?

Economic theory points at the role of good quality information.

Surely important.

Are there other factors?

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What factors influence the performance of feedback mechanisms?

- Economic theory points at the role of information.
Surely important.

Are there other factors?

Ex., people plausibly put more stock in their own dealings: the channels that information flows through matter (Granovetter, 1985)
⇒ partnerships more effective than feedback systems.

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A feedback mechanism

The screenshot shows the Amazon.com interface for a1textbooks. At the top, there are navigation links for 'VIEW CART', 'WISH LIST', and 'YOUR ACCOUNT'. Below that, a horizontal menu lists various categories: WELCOME, GARY'S STORE, BOOKS, ELECTRONICS, TOYS & GAMES, DVD, HEALTH & BEAUTY, and COMPUTER & VIDEO GAMES. There is also a 'SEE MORE STORES' link. The main content area is titled 'Ratings & Feedback' and shows the following information:

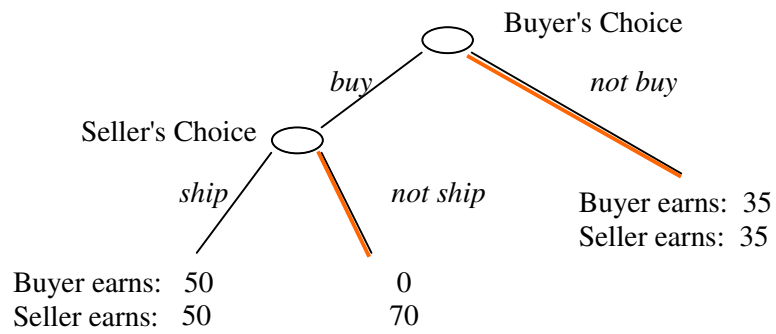
- Feedback Rating: ★★★★★ 4.5 out of 5.0
- Number of Ratings: 3734
- Number of Canceled Bids: 0

Below this, there are several individual feedback entries, each with a date and the buyer's name:

- 5 out of 5: "Great Transaction!!!"
Date: 02/22/2002 Rated by Buyer: reapersboy
- 5 out of 5: "Book arrived quickly and in excellent condition. THANKS!!"
Date: 02/22/2002 Rated by Buyer: barbameconn
- 5 out of 5: "quick shipping/excellent condition"
Date: 02/22/2002 Rated by Buyer: uhlthm8
- 1 out of 5: "I was e-mailed and told that charging me, the seller did not have the book."
Date: 02/22/2002 Rated by Buyer: maureen1272
- 5 out of 5: "Excellent service and timely delivery."
Date: 02/22/2002 Rated by Buyer: swilmarth
- 5 out of 5: "Smooth transaction."
Date: 02/22/2002 Rated by Buyer: pah5@duke.edu
- 2 out of 5: "No book.Didn;t really have it! No referral to anyone elsel never got the book!"
Date: 02/22/2002 Rated by Buyer: scm484
- 5 out of 5: "Pleased"
Date: 02/22/2002 Rated by Buyer: gingham@tcinternet.com

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The trust game



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Three markets, 30 rounds each

- **Feedback** ('Internet market platform'):
Random pairing.
Buyer is given feedback on the seller.
- **Strangers**
Random pairing.
No feedback about one another's history.
- **Partners**
Fixed pairing.
Same feedback as available in Feedback.

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Hypotheses

Since it is the feedback information, not its source, that matters:

- There is no buying or shipping in Strangers.
- There is no difference in buying and shipping between Feedback and Partners.

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Laboratory protocol

- Each market consists of 3 sessions.
- 144 participants: 16 per session (48 per market).
- Subjects: Penn State undergrads, various fields of study.
- Partitioned computers, all pairings anonymous.
- Subjects were half the time buyers, half sellers.
- All rules and payoffs of the game are public knowledge.
- Each subject paid earnings in cash & a \$5 show-up fee.

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This is round 9

You are the buyer
Please decide to buy or not buy

Buyer's Choice

Buy

Not Buy

Buyer Earns: 0.35
Seller Earns: 0.35

Seller's Choice

Ship

Not Ship

Buyer Earns: 0.5 0.0
Seller Earns: 0.5 0.7

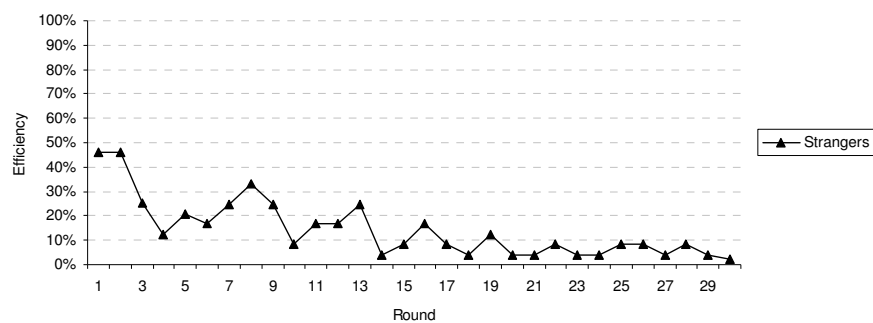
Seller's Feedback Summary
The seller shipped 4 time(s) in 5 round(s)

Seller's Feedback History
Round 8: shipped
Round 7: not shipped
Round 4: shipped
Round 3: shipped
Round 1: shipped

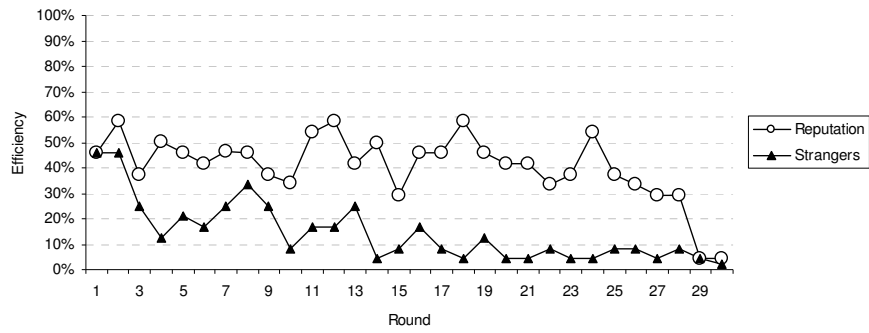
Your History

Round	Your Role	Buy Action	Ship Action	You Earn	Other Earns
1	Buyer	Buy	Ship	0.5	0.5
2	Seller	Buy	Ship	0.5	0.5
3	Buyer	Buy	Ship	0.5	0.5
4	Buyer	Buy	Ship	0.5	0.5
5	Seller	Buy	Ship	0.5	0.5
6	Seller	Buy	Not Ship	0.5	0.7

Efficiency measured as how often trade is realized

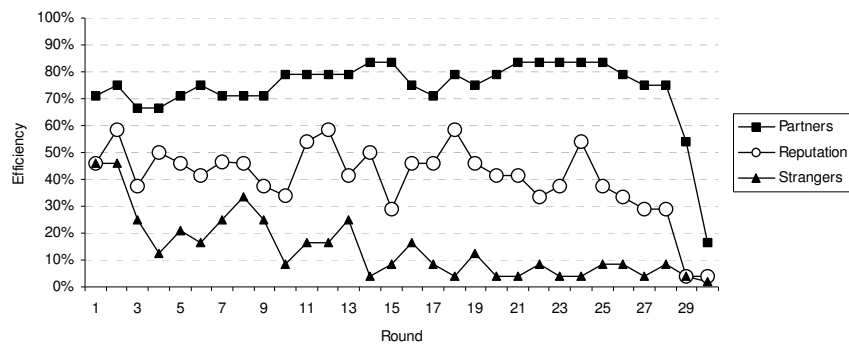


...plus Feedback



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...plus Partners



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Analysis of the data implies that partners do better than feedback because of two main effects

- Trust in the system effects
- The information dilemma

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Trust in the system

- Amjad Hanif (eBay) on challenges: "Confidence in and awareness of the feedback system."
- We find that buyer trust is a function of the seller's reputation *and* one's own experience.

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- Thus not shipping has two negative effects on trade
 - via the feedback and via the experience channel.

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Trust in the system

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 - Buyer trust is a function of the seller's reputation and one's own experience.
 - Thus not shipping has two negative effects on trade
 - via the feedback and via the experience channel.
- ⇒ Feedback buyers who have a bad experience lose faith in the market as well as in the untrustworthy seller.

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The information dilemma

- Brian Burke (eBay): "The first transaction is the most difficult."
- Example from our Feedback market:
On average ...
 - buying from a newby yielded a loss.
 - buying from a trustworthy seller yielded a profit.

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The information dilemma

- Brian Burke (eBay): "The first transaction is the most difficult."
- Example from our Feedback market:
On average ...
 - buying from a newby yielded a loss.
 - buying from a trustworthy seller yielded a profit.
- A trusting buyer in a feedback market generates *valuable* feedback information for others.
 - ⇒ Reluctance of buyers to buy from newbies
 - ⇒ If a buyer could choose she would choose.

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Can we leverage these observations for Internet market policy?

- System trust might be improved by public information of overall market trustworthiness to assure unlucky traders.
 - This assumes that the market is mostly trustworthy.
- The information dilemma highlights the economic value of forecast information
 - If buyers could choose their seller they would. Competition might help.

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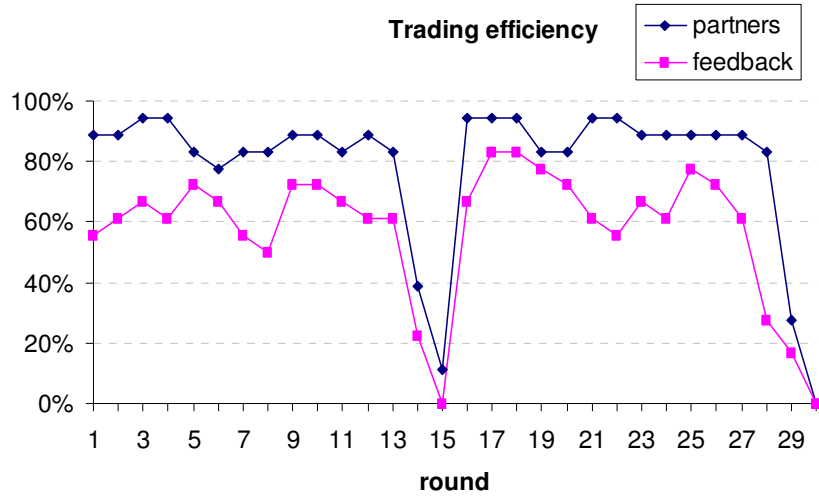
Endogenous matching experiment

Builds on the basic market structure of the first experiment but:

- Partners with endogenous matching: Each round, the buyer has two sellers to choose from: His partner seller and one other.
- Feedback with endogenous matching: Each round, the buyer has two sellers to choose from: Neither were past partners.

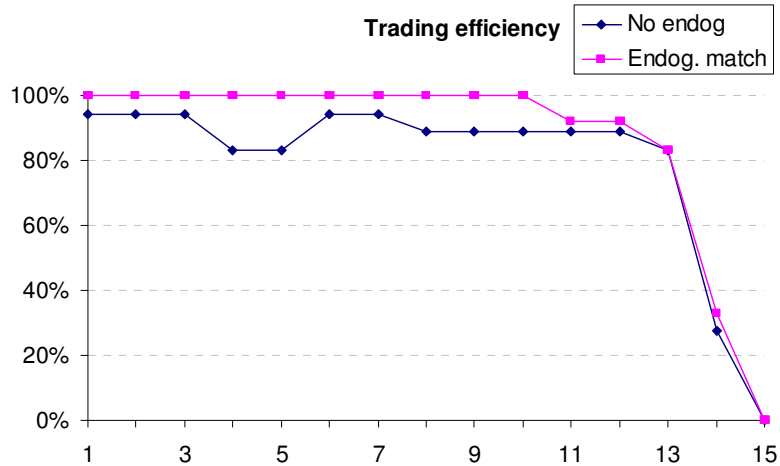
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Baselines without endogenous matching



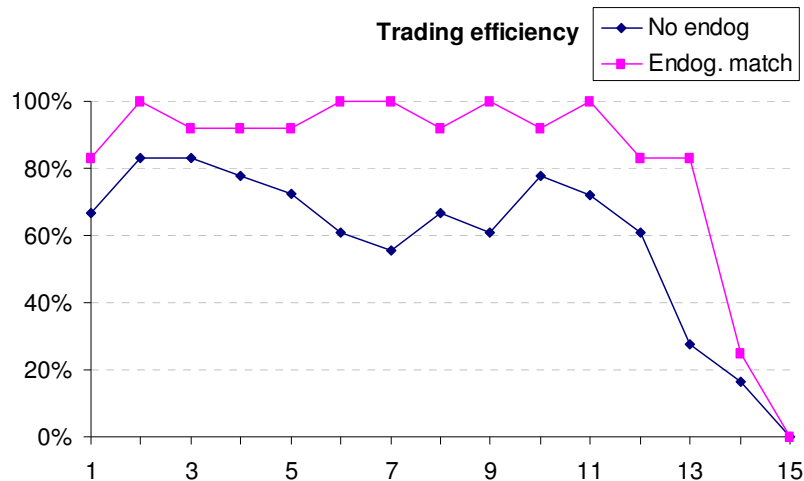
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Partners with and without endogenous matching (experienced)



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Feedback with and without endogenous matching (experienced)



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Implications

What might improve feedback performance?

- Better quality information
Of course. Devil is in the doing.
- Public information on market performance
Even when information is known accurate, bad experiences lower trust in the entire market.
- More competition in market
Reduces adverse selection. Increases pressure to maintain a trustworthy record.

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The End

Motivation

amazon.com. [VIEW CART](#) | [WISH LIST](#) | [YOUR ACCOUNT](#) | [HELP](#)

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Comparing Feedback and Strangers

- Theory captures the strategic use of information:
- Buy with probability 33 percent if seller did not ship last order and 65 percent otherwise.
- Thus, more shipping in Feedback (73 percent) than in Strangers (36 percent).
- Endgame effect in Feedback but not in Strangers.

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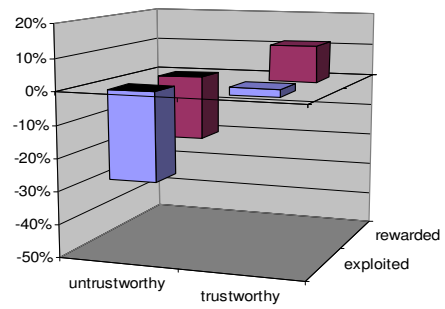
Comparing Feedback and Partners

- Information flows in Feedback markets create external benefits for both buying and shipping...
- ...that are internalized in Partners relationships.

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Marginal trust in Feedback...

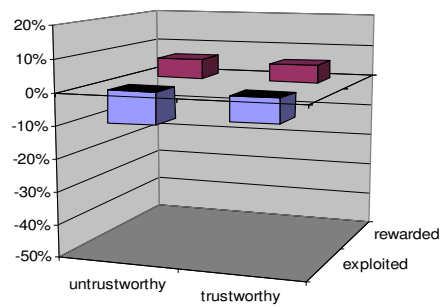
Reputation
average buy = 55.56 percent



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Marginal trust in Strangers ...

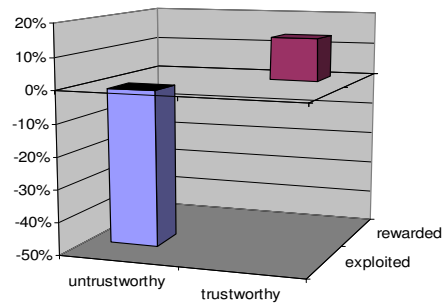
Strangers
average buy = 37.08 percent



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Marginal trust in Partners...

Partners
average buy = 83.33 percent



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Summary

- Behavior responds strategically to the information provided by the feedback system.
- However, it is not true that
 - Partners = Strangers + Information
 - (even when theory suggests otherwise).
- Thus, even under ideal conditions, feedback systems cannot substitute long relationships; the matching scheme limits what can be maximally reached.

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Economic theory implies...

- For the seller to have an incentive to ship, he need only expect that a future buyer will punish or reward his behavior;
 - whether these punishments or rewards come from the same or from different buyers is irrelevant.
- The buyer, to induce this shipping, need only be equipped with sufficient information about the sellers' histories;
 - whether this information comes from one's own experience or from different sources is irrelevant.