Competition in Internet-Based Trading: Implications for 'Doing Business' in Partners and Strangers Markets

Gary Bolton
Penn State University, gbolton@psu.edu

Claudia Loebbecke
University of Cologne, claudia.loebbecke@uni-koeln.de

Axel Ockenfels
University of Cologne, ockenfels@uni-koeln.de


Research Context
Well functioning markets: Balancing cooperative and competitive behavior

Cooperation
- Making good on one's agreements
  - Reputation information
  - Feedback / reputation systems
  - Social (reputation) networks

Competition
- Buyers gain, sellers lose
  - Tit-for-tat
  - Signaling theory (in context of social networks)

Social Networks Shaping Internet Markets
- Many Internet markets relying on 'feedback systems', essentially social networks of reputation, to facilitate trust and trustworthiness
  - Well functioning markets: Balancing competitive and cooperative behavior
  - Cooperation assuming 'making good on one's agreements'

- Social networks: Generating trust and discouraging malfeasance
  - Distributing reputation information
  - Enabling tit-for-tat trading strategies
  - Bypassing costly legal measures

Two kinds of social networks …

Social Networks Distributing Reputation Info
(Granovetter 1985)

<table>
<thead>
<tr>
<th>Partners Network</th>
<th>Strangers Network</th>
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<tbody>
<tr>
<td>&quot;One's own past dealings with that person&quot;</td>
<td>&quot;Trusted information(s)&quot;</td>
</tr>
<tr>
<td>- Tit-for-tat: Buyer doing business with seller only if seller has been reliable with buyer</td>
<td>- Transactions mostly one-shot</td>
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<td>- Brick-and-mortar markets: Partnering secures trust and trustworthiness with little legal safety net (McMillan 2002)</td>
<td>- Tit-for-tat: Buyer doing business with seller only if seller has been reliable with third party (other) buyers</td>
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<td>- Internet markets: Enabling traders to break through geographical constraints to trade in larger and more competitive pools</td>
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</tbody>
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Agenda
(1) Research Context and Theoretical Background
(2) Research Question and Approach
(3) Laboratory Experiments
(4) Findings
(5) Implications and Limitations

Competition Enhancing or Curbing Social Network Efficiency (Signaling Theory)

Economic models
- Information about trader's reliability or quality of product as signal, i.e., information with imperfect forecast value

- Signal sufficiently reliable & buyers discriminating based on signal
  - Sellers: Incentive to maintain reputation for trustworthiness
  - Market: High transaction efficiency (Spence 1974, Cho & Kreps 1987)

- Signal not reliable or buyers failing to discriminate based on signal
  - Sellers: Little incentive to be trustworthy
  - Market: Low transaction efficiency, poss. shutting trade down (Akerlof 1970)

Competition may or may not increase effectiveness of reputation information
Research Question and Approach
Markets with no direct competition:
More trust, trustworthiness, and higher gains-from-trade in partners networks than in strangers networks (Bolton et al. 2004)

Does market competition narrow or widen this 'performance gap'?
How does market competition interact with strangers and partners networks to affect buyers’ trust in sellers, sellers’ trustworthiness, gains-from-trade?

To our knowledge:
No previous empirical study of this question so far
Series of laboratory online experiments

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Six Treatments

<table>
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<tr>
<th>Competition</th>
<th>Strangers Network</th>
<th>Partners Network</th>
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</thead>
<tbody>
<tr>
<td>No</td>
<td>Strangers networks with no competition</td>
<td>Partners networks with no competition</td>
</tr>
<tr>
<td>Matching</td>
<td>Strangers networks with matching competition</td>
<td>Partners networks with matching competition</td>
</tr>
<tr>
<td>Price</td>
<td>Strangers networks with price competition</td>
<td>Partners networks with price competition</td>
</tr>
<tr>
<td></td>
<td>(i.e., matching and price)</td>
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</tbody>
</table>

Base Buyer-Seller Interaction in Markets with No Competition
Buyer's Choice
- buy: 50, Seller earns 50, Buyer earns 50
- not buy: 0, Seller earns 70

Selected Seller's Choice
- ship: 35, not ship: 35

Buyer-Seller Interaction in Markets with Matching Competition
Buyer's Choice
- select a seller and buy: 35, not buy: 35

Selected Seller's Choice
- ship: 35, not ship: 35

Buyer earns 50, Selected seller earns 50, Other seller earns 35
Buyer-Seller Interaction in Markets with Price Competition

Select a seller and buy

Buyer's Choice

Selected Seller's Choice

Prices (P's)

Buyer earns

Selected seller earns

Other seller earns

not ship

not buy

Ship

Main Findings

- Buyers discriminating on basis of reputation information (buyers' trust being rewarded 88% of the time; i.e., high signal value)
- Buyers discriminating on basis of reputation information even in the face of price competition (large price break required to overcome seller's lesser reputation)
- Strangers networks and competition
  - Significantly higher gains-from-trade (than w/o competition)
  - Matching competition: Disciplining sellers
  - Price + matching competition: Transaction price stabilizing above marginal production cost (good reputation information being profitable)
- Largely erasing advantages of partners over strangers networks (competition promoting trust and trustworthiness)

Gains-from-Trade by Type of Competition and Type of Network

Matching and price competition: Performance of strangers networks (Buyers more trusting & sellers more trustworthy)

Trust: Buy Decisions by Round (in %)

Trustworthiness: Frequency of Ship Decisions Conditional on Buying by Round (in %)

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Findings in Brief

Online Trading Networks with

Matching and Price Competition

Performance of strangers networks ↑
(Buyers more trusting & sellers more trustworthy)

Erasing performance gap between network types

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Implications and Recommendations

Internet Market Design

- Offer search capabilities considering sorting on reputation factors & price
- Lower barriers to competition possibly embedded in reputation system
- If unavoidably low competition, encourage long-term buyer-seller relationships (e.g., allow for finding one's old transaction partners)

Trader Strategy

- Buyers: Increasingly use markets with competition (and thus attract sellers to such settings)
- Sellers: Invest in building reputation for reliability

Study Limitations and Possible Extensions

- Simplification of partner & strangers market
  (Anonymity except trading history — also for 'partners')
- Only one good
  (Price as only quality differentiating feature)
- Only two sellers to choose from
- Lab experiment with students as subjects
- Trader subgroups with additional relationships (e.g., McMillan '02)
- Several goods OR EVEN service / marketing as differentiating qualities
- Larger number of sellers
- Field experiment; field study

…. Questions, Comments, Complaints ?

claudia.loebbecke@uni-koeln.de

Thanks for your attention!
Selected References

Regression Analysis of Buyers' Criteria for Choice in Price Competition Markets

BuyerChooseSeller1 = 0.459 + 0.085*PARTNERS + 0.045*RepDiff - 0.008*PriceDiff - 0.338*LastRnd

(0.001) (0.001) (0.001) (0.001) (0.001) (0.001)

adj. -R2 = 0.258

where
- BuyerChooseSeller1 = 1 if choice is Seller 1, 0 otherwise (label 1 or 2 is arbitrary);
- PARTNERS = 1 if Buyer is in the partners network, 0 otherwise;
- RepDiff = (#Seller1 ships - #Seller1 no ships) - (#Seller2 ships - #Seller2 no ships);
- PriceDiff = Seller 1 Price - Seller 2 price;
- LastRnd = 1 if round 15, 0 otherwise;
- (x.xxx) = two-tailed p-value of coefficient.

Buyer average willingness-to-pay to deal with seller with net increment of one ship over his competitor: 0.045/0.008 = 5.6 tokens or about 13% of the selling price (see also Resnick et al. (2006) for similar result).