Is Trust all about Information?

Theory and Evidence from an Economic Perspective

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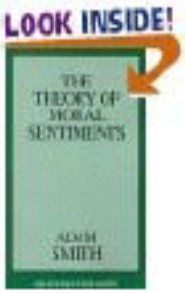
The Theory of Moral Sentiments (Great Books in Philosophy)

by Adam Smith



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5 out of 5: "Great Transaction!!"
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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 elseI never got the book!"
Date: 02/22/2002 Rated by Buyer: scm484
5 out of 5: "Pleased"
Date: 02/22/2002 Rated by Buyer: gingram@tcainternet.com

Evidence that feedback has some effect

- Feedback may affect final price on eBay.com.
  Houser and Wooders (2002), Lucking-Reiley et al. (1999), Ba and Pavlou (2003), Bajari and Hortacsu (2002), Kalyanam and McIntyre (2001), Melnik and Alm (2003), Resnick et al. (2003), Dellarocas (2004), Greiner and Ockenfels (2004)
- Feedback may affect probability of sale on eBay.com.
  Resnick and Zeckhauser (2003), Eaton (2002)
- Newbies ask for lower prices on Half.com.
  Ockenfels (2003)

Evidence that there are problems

„The ‚information asymmetry' problem constitutes perhaps the biggest limitation posed to the impressive growth of online auctions. In online auctions transactions take place between complete strangers who may not live in the same state or the same country, making it very difficult for buyers to directly inspect the goods, or to make sure that the good will be delivered at all. This creates opportunities for misrepresentation of objects and fraudulent behavior by sellers, which may limit trade in these markets."

Bajari and Hortacsu (forthcoming)

see also *McMillan* (2003)

Evidence that there are problems

“fraudulent 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.”

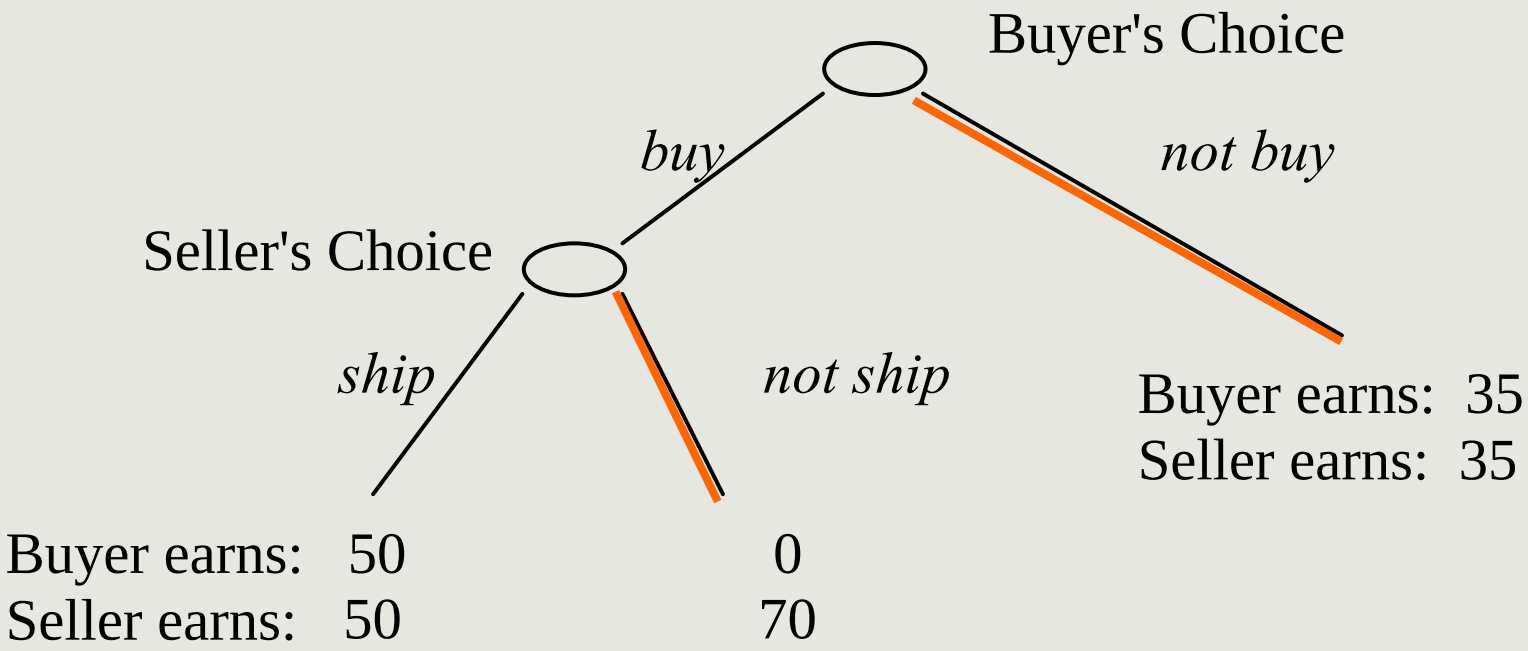
U.S. Department of Justice report

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

GartnerG2 (2002)

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

The trust game



One-shot version

- There will be no shipping and thus no buying if traders are rational and selfish.
- In an anonymous one shot version experiment by Bolton et al. (forthcoming), 37 percent of sellers were willing to ship.
- This intrinsic motivation to ship (more precisely, the distribution of the underlying preferences) is what I call social capital.

One-shot version

- But to make trust profitable, one needs at least twice this amount.
- Thus, if trust rests solely on social capital, there is little hope that trust among strangers can be stable.
- The challenge is to multiply the impact of social capital by letting it interact with clever *institutional design*.

Repeated version

By creating an open market that encourages honest dealings, I hope to make it easier to conduct business with strangers over the net. Most people are honest. And they mean well. Some people go out of their way to make things right. I've heard great stories about the honesty of people here.

But some people are dishonest. Or deceptive. […] It's a fact of life. But here, those people can't hide. We'll drive them away. Protect others from them. This grand hope depends on your active participation. Become a registered user. Use our Feedback Forum. Give praise where it is due; make complaints where appropriate.

Pierre Omidyar (2001)

Three experimental markets, each lasting 30 rounds

REPUTATION ('Internet market platform')

- Random pairing. Buyer is given feedback on the seller.

STRANGERS

- Random pairing. No feedback about one another's history.

PARTNERS

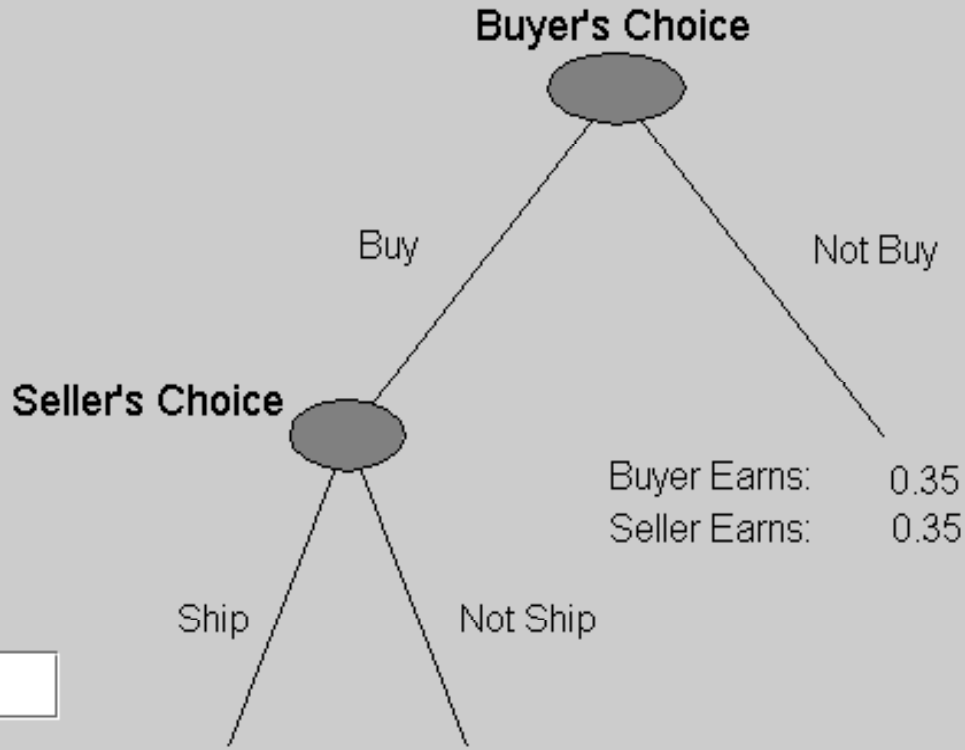
- Fixed pairing. Same feedback as available in Reputation.

This is round 9

You are the buyer

Please decide to

buy or not buy



Buy | Not Buy

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

Laboratory protocol

- Each market consists of 3 sessions.
- 16 subjects per session (48 per market) for a total of 144 participants.
- Subjects: Penn State undergraduates, various fields of study.
- Computers separated by partitions. All pairings are anonymous.
- Subjects were half the time buyers, half sellers.
- All rules and payoffs of the game and all procedures are public knowledge.
- Each subject was paid his or her earnings in cash plus a $5 show-up fee.

Economic theory suggests …

Matching does not matter!

It is the information, not its source
or its dissemination, that matters.

Thus, there is no trust and
trustworthiness in Strangers …

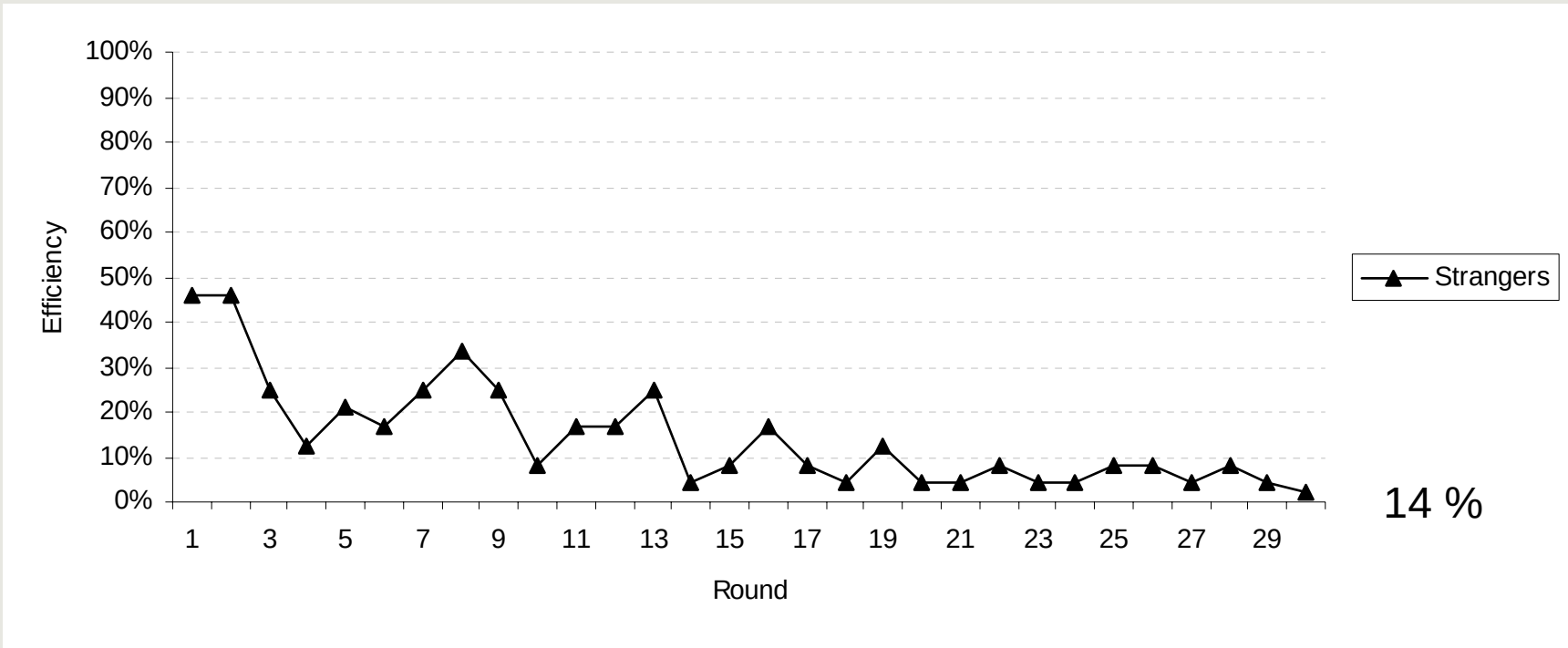
… and there is no difference between
Reputation and Partners.

Intuition

- For the seller to have an incentive to be trustworthy, 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.

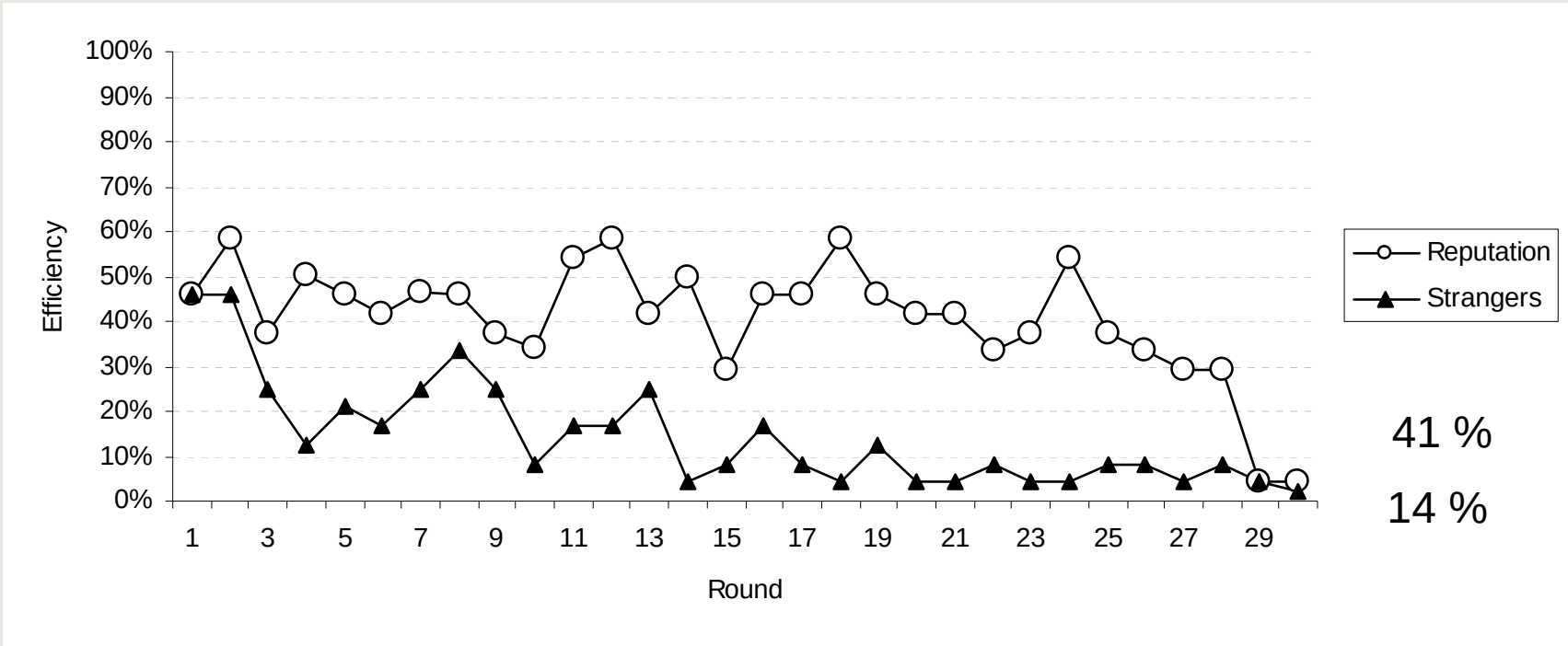
- The buyer, to induce this trustworthiness, need only be equipped with sufficient information about the sellers' histories; whether this information comes from one's own experience or from different sources is irrelevant..

Efficiency measured as how often trade is realized

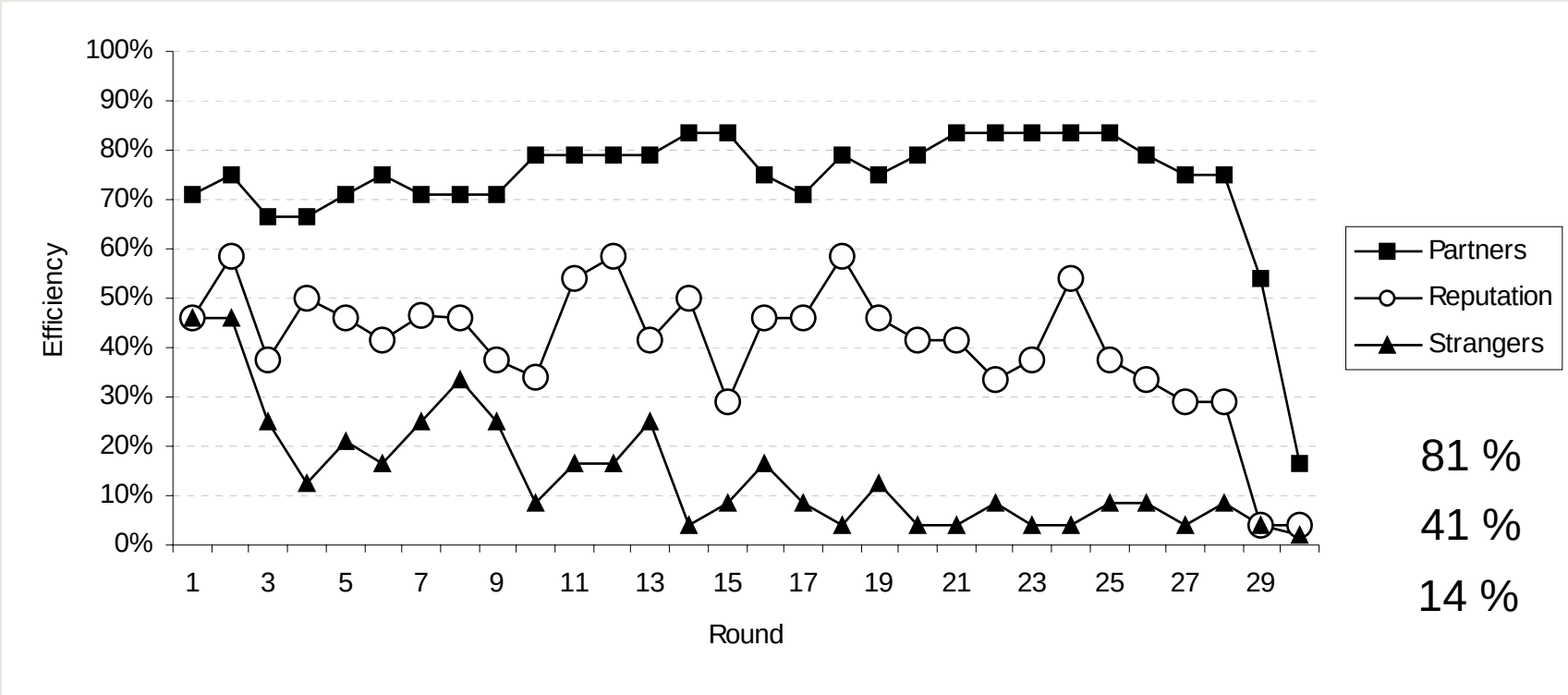


14 %

… plus Reputation



… plus Partners

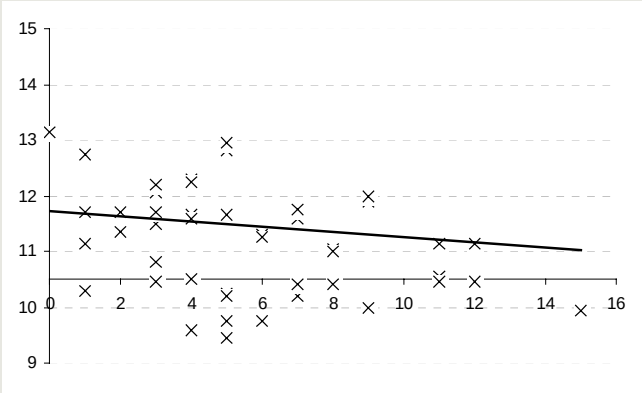
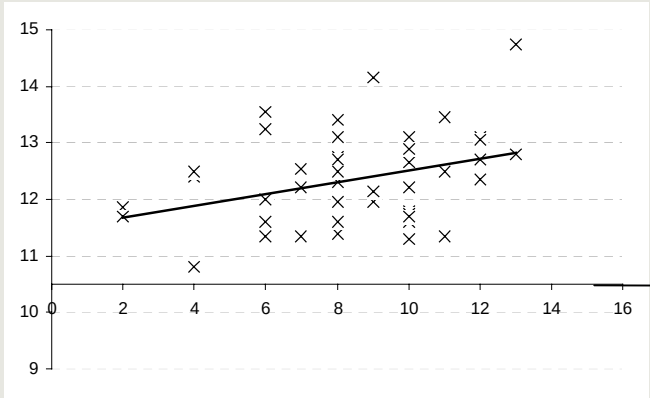
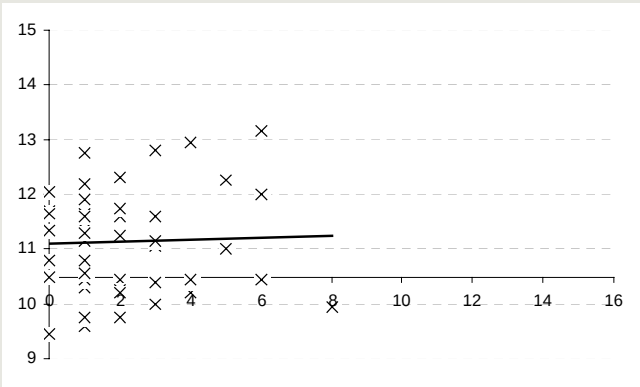
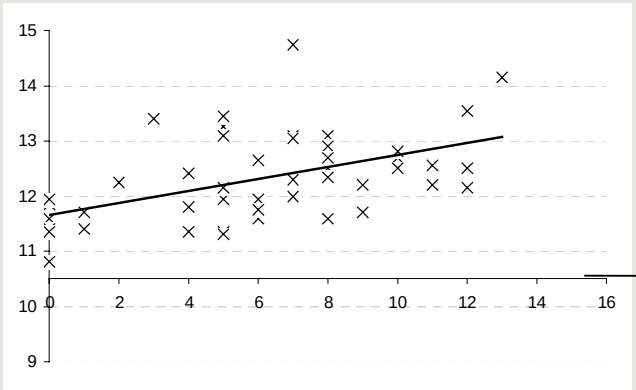


Comparing Reputation and Strangers

Theory captures the strategic use of information:

- Trust with probability 33 percent if seller did not ship last order and 65 percent otherwise.
- Thus, more trustworthiness in Reputation (73 percent) than in Strangers (36 percent).
- Endgame effect in Reputation but not in Strangers.

Correlation between total payoffs and frequency of buying and shipping

	Strangers	Reputation	
Buy			spe payoff
	ρ = - .307 (p = .034)	ρ = .288 (p = .047)	
Ship			spe payoff
	ρ = - .038 (p = .795)	ρ = .504 (p = .000)	

Comparing Reputation and Partners

Information flows in Reputation markets
create external benefits
of both trust and trustworthiness

…

that are internalized in Partners relationships.

“Trust in the system”

Amjad Hanif (eBay) on challenges: “Confidence in and awareness of the feedback system.”

Buyer trust is a function of the seller’s reputation *and* one’s own experience.

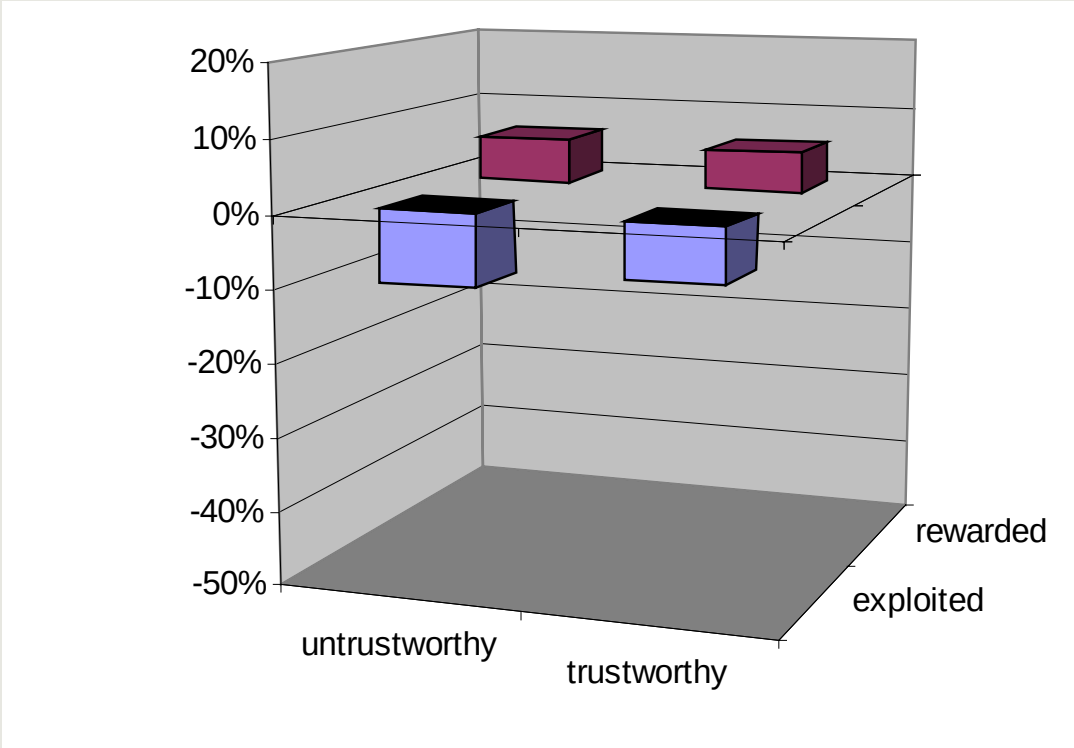
Thus, trustworthiness has two positive effects on trade - via the feedback and via the experience channel.

The experience channel effect is not internalized in Reputation.

Marginal trust in Strangers …

Strangers

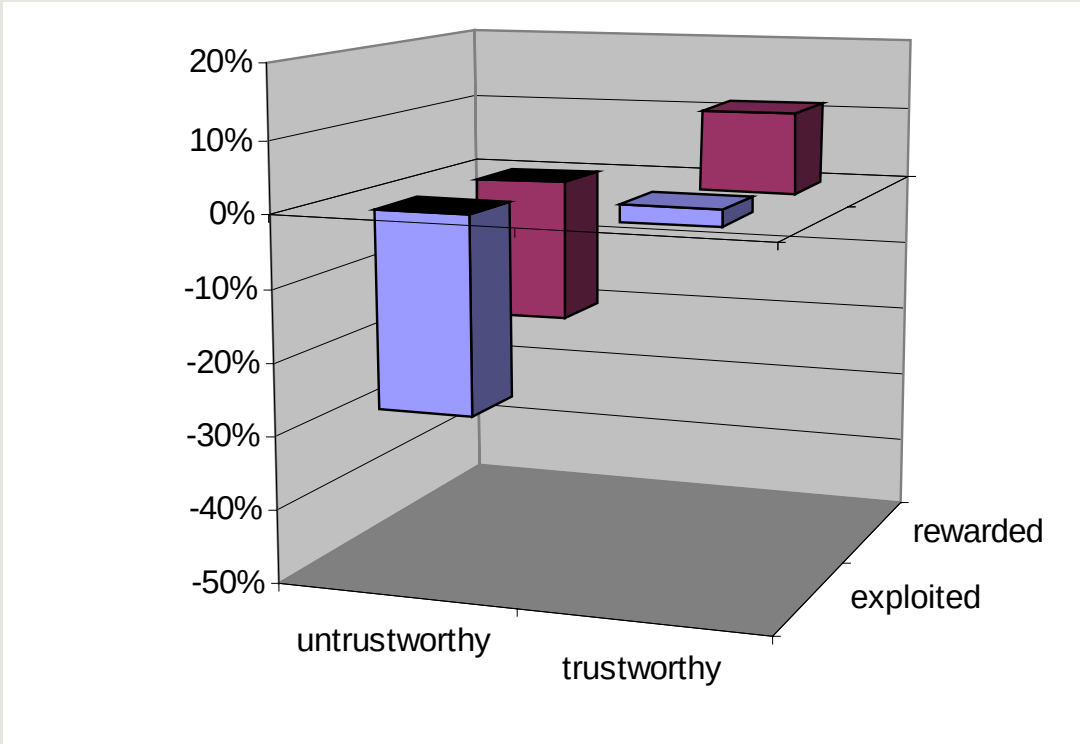
average buy = 37.08 percent



Marginal trust in Reputation …

Reputation

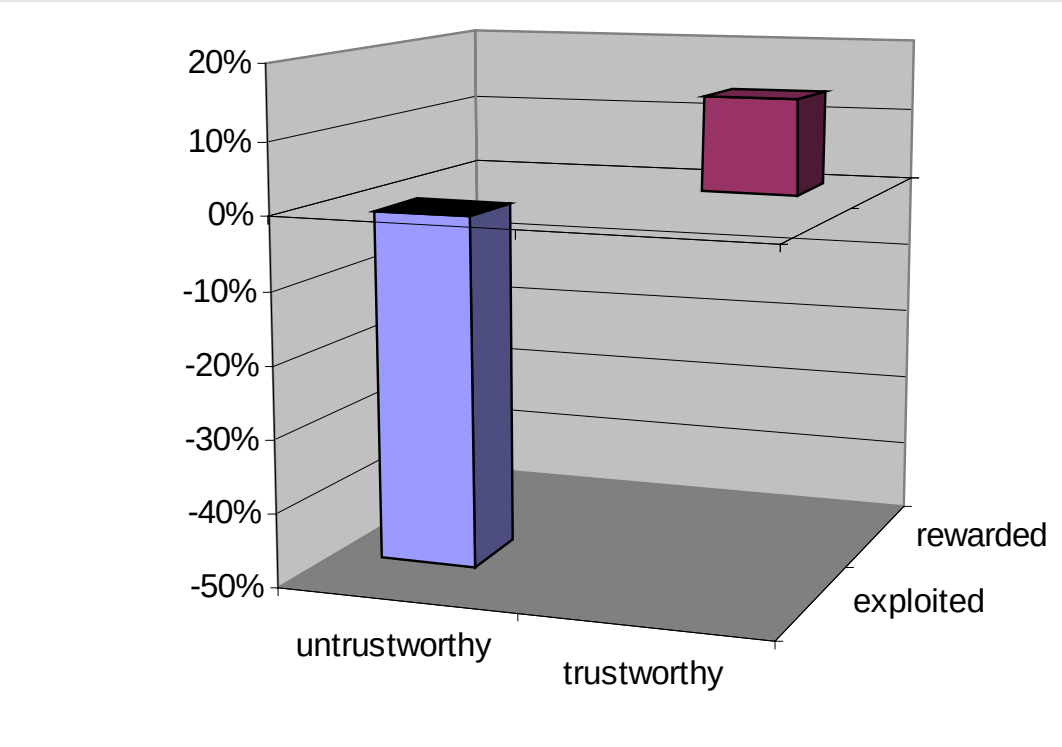
average buy = 55.56 percent



Marginal trust in Partners …

Partners

average buy = 83.33 percent



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“The informational dilemma”

Brian Burke (eBay): “The first transaction is the most difficult.”

Example from our Reputation market: On average …

- buying from a newby yielded a loss.
- buying from a trustworthy seller yielded a profit.

A trusting buyer in a Reputation market generates valuable feedback information for *other* buyers.

Conclusions

Trust and trustworthiness respond strategically to the information provided by the reputation system.

However, it is not true that Partners = Strangers + Information.

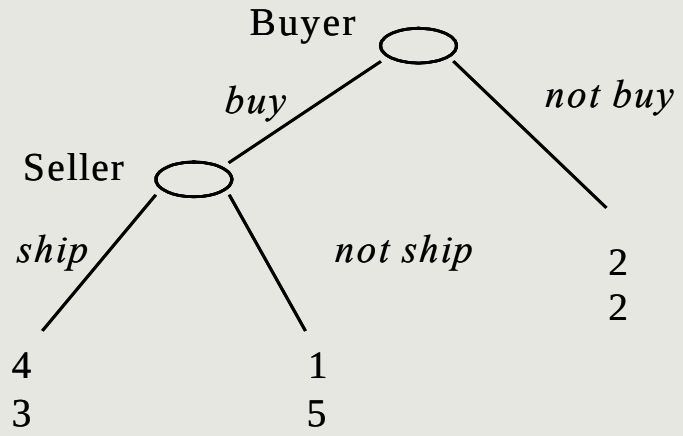
A satisfactory explanation of trust in Internet markets will require a model that grapples with how the social capital inter-plays with the institutional design.

The challenge is to improve the existing reputation mechanisms to promote trust and, by the same token, efficiency.

However, even under *ideal* conditions, online communities (with reputation systems) cannot substitute offline relations: the matching scheme limits what can be maximally reached.

The End

A further study of the informational dilemma



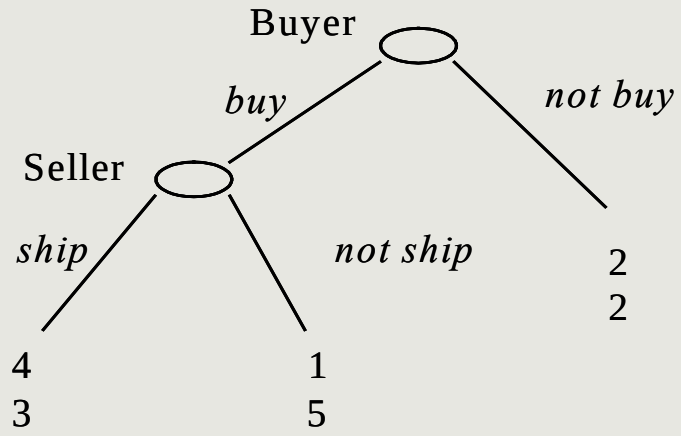
20 sequences of 8 periods.

Partner: within a sequence, we had no rematching.

Stranger: random rematching within a sequence (+ feedback!).

8 buyers, 7 sellers and 1 ‚artificial' trustworthy seller (Common knowledge).

A further study of the informational dilemma



Gang of four: The sequential equilibrium makes no difference between Partners and Strangers!

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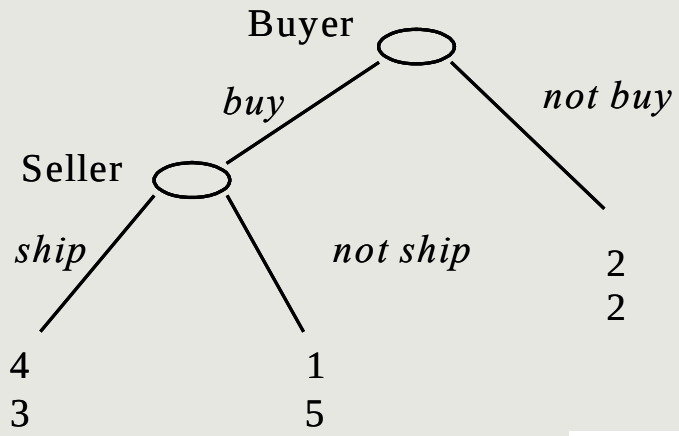
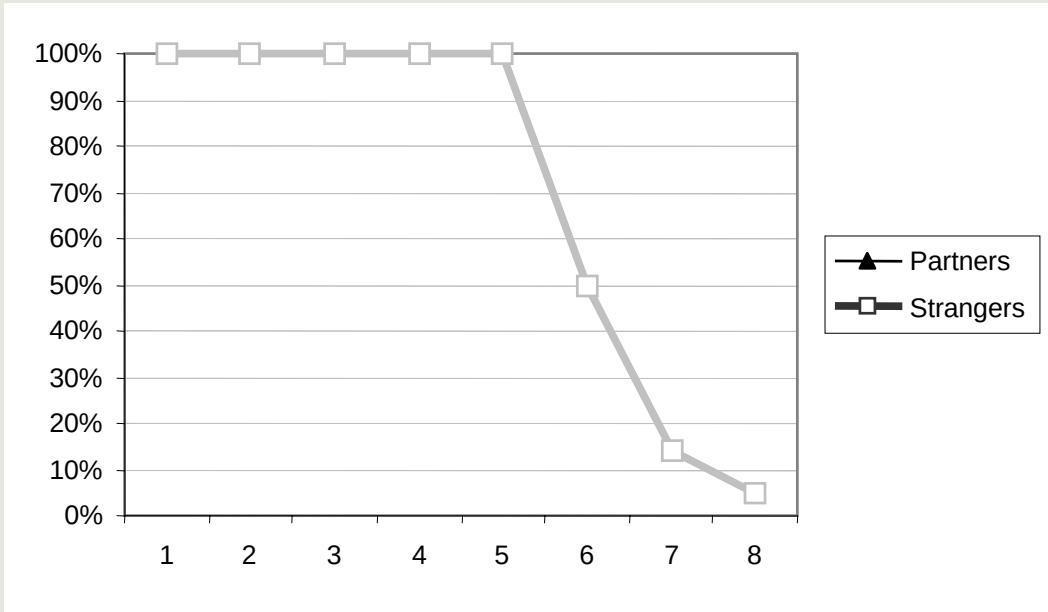
Predictions and results for experienced subjects



The Figure shows the predicted % trust.

Gang of four: The sequential equilibrium makes no difference between Partners and Strangers!



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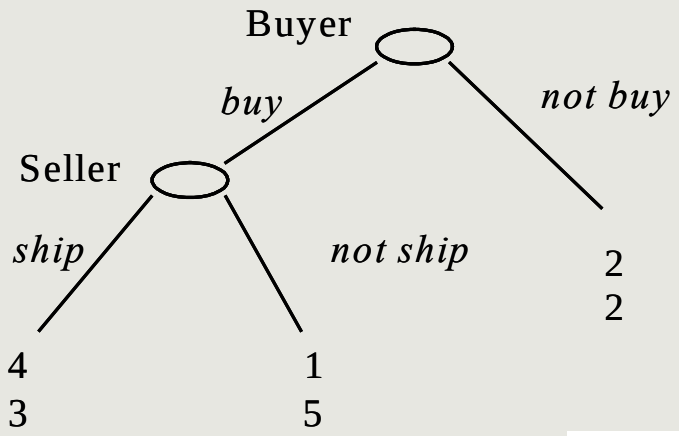
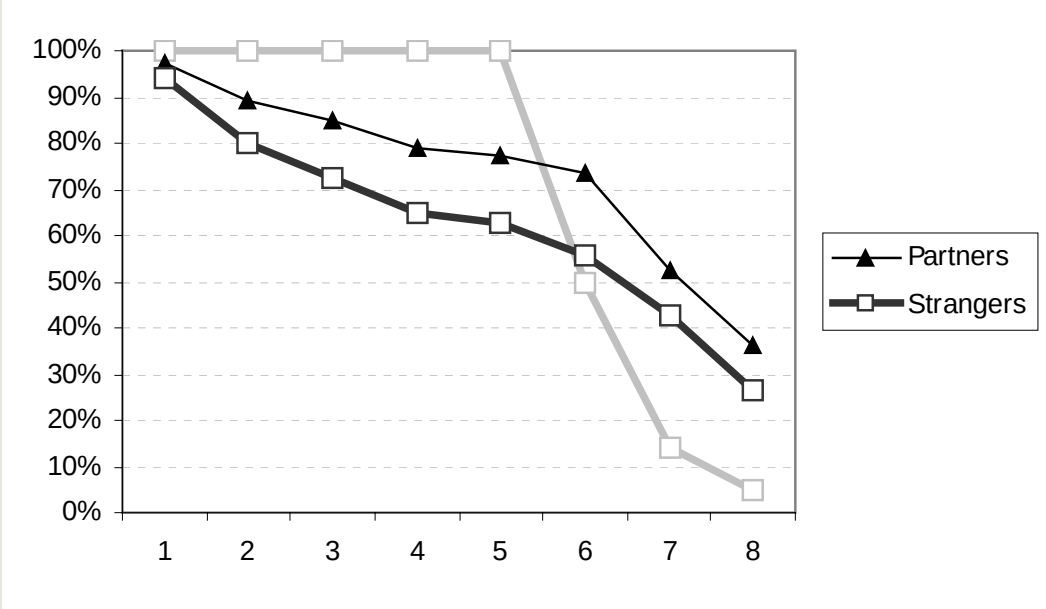


Gang of four: The sequential equilibrium makes no difference between Partners and Strangers!

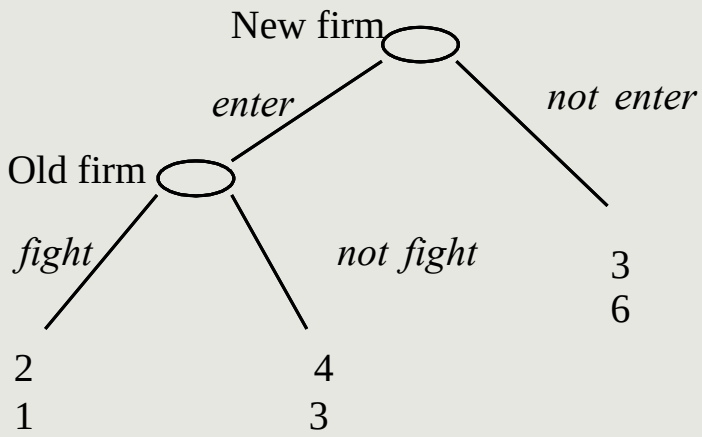
The Figure shows % trust of experienced buyers.

There is 18% more trust in Partners than in Strangers.

(There is a significant but small difference for trustworthiness.)



The chain store game



20 sequences of 8 periods.

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8 new firms, 7 old firms and 1 ‚artificial' fighter.

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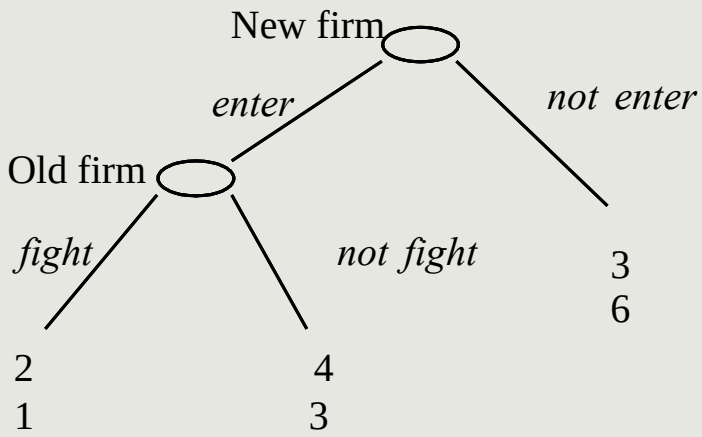

Kreps and Wilson: „the analysis is unchanged if there is a single rival with repeated opportunities to enter“

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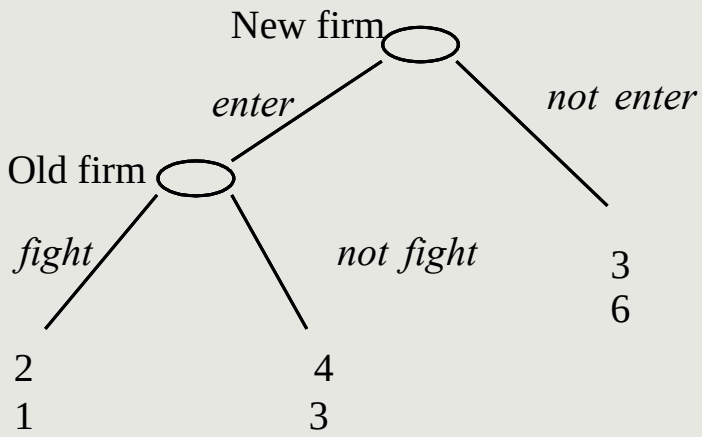
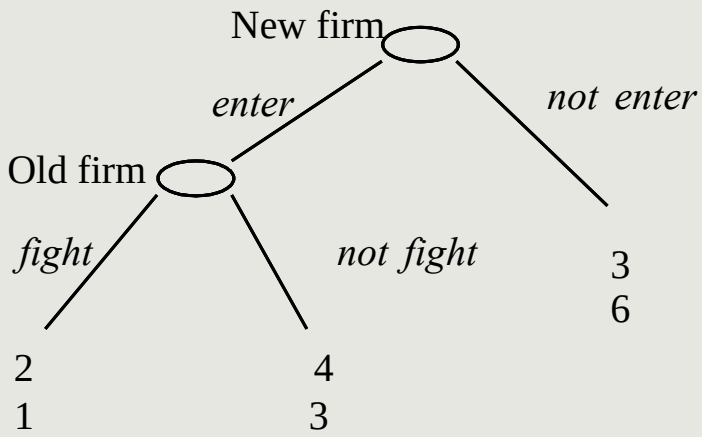


Kreps and Wilson: „the analysis is unchanged if there is a single rival with repeated opportunities to enter“

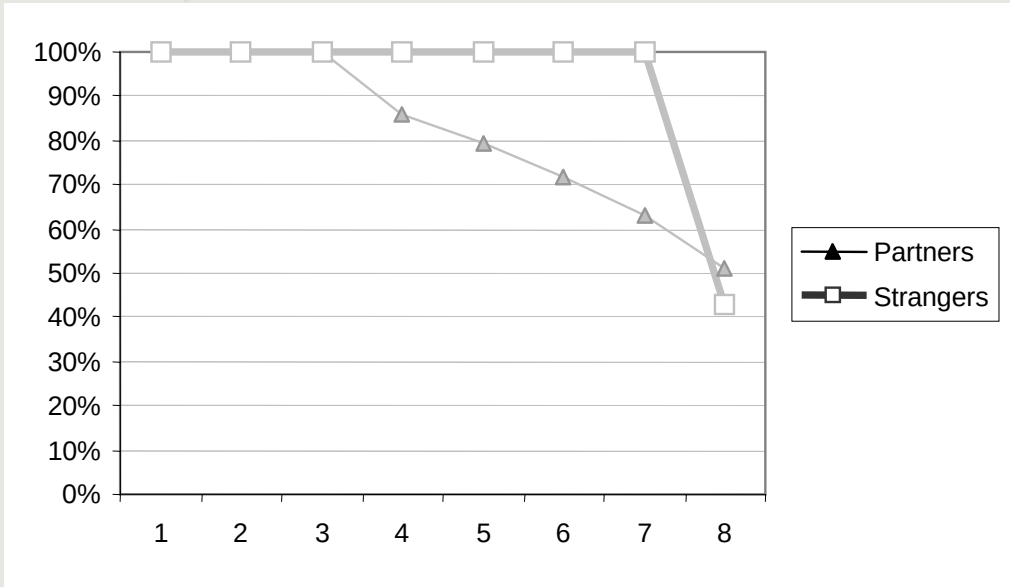
Bolton and Ockenfels (2003):
Due to the informational dilemma this is not true! In sequential equilibrium there is more entry and less fighting in Partners than in Strangers.

The chain store game



The Figure shows the predicted % of fight.

Kreps and Wilson: „the analysis is unchanged if there is a single rival with repeated opportunities to enter“



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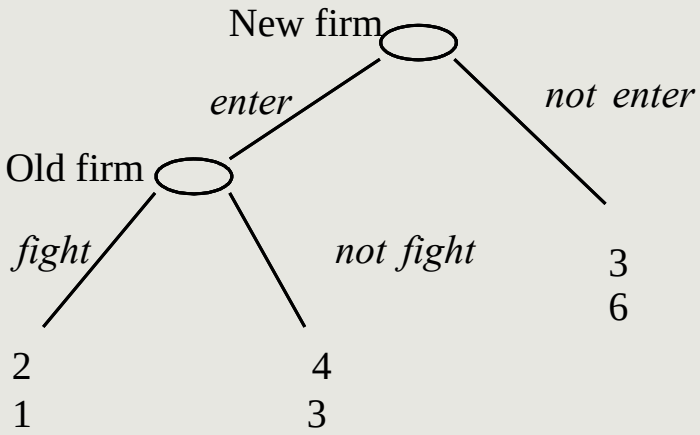

Kreps and Wilson: „the analysis is unchanged if there is a single rival with repeated opportunities to enter“

The Figure shows % fight of experienced buyers.

There is 18% less fight in Partners than in Strangers.

(There is 9 % more entry.)