The Information Economy

Reputation

Reputation

- Reputations are essential with experience goods
  - Where experience good after buying
- Reputation performs two functions
  - Allow people to learn about quality of product
  - Discipline bad behavior
- Offline
  - Long term relations, word-of-mouth, legal system
- Online reputation mechanisms
  - eBay – buyers and sellers rate each other
  - Yelp – customers review restaurants
  - Peer-to-peer networks – rate user's contribution to system

Reputation Mechanisms

▸ Information technology allows for precise management

- ▸ What type of information is solicited?
- ▸ When should it be solicited?
- ▸ How is information aggregated?
- ▸ What information is made available, and to whom?

▸ Examples

- ▸ Detailed information (surveys) vs. positive/negative?
- ▸ How filter out suspect reviews? Weight by trustworthiness?
- ▸ Provide recent reviews or entire history? (eBay vs. Yelp)

▸ Challenges

- ▸ Encourage participation
- ▸ Extract accurate, useful information
- ▸ Avoid strategic manipulation

Theory

Reputation and Learning

▸ Reputation provides information about underlying quality
  ▸ Helps solve "adverse selection"
  ▸ Epinions, Amazon's reviews

▸ Example: Product is 'high' or 'low' quality with equal prob
  ▸ High product yields v=10 with prob ¾, and v=0 with prob ¼
  ▸ Low product yields v=10 with prob ¼, and v=0 with prob ¾

▸ First customer
  ▸ Willing to pay: Pr(high)U(high) + Pr(low)U(low) = $5

▸ Second customer (if first liked product)
  ▸ Bayes rule: $Pr[high|v_1=10]$ = ¾
  ▸ Willing to pay: Pr(high)U(high) + Pr(low)U(low) = $6¼
  ▸ What if first did not like the product?

Reputation and Discipline

- Reputation punishes bad behavior
  - Helps overcome "moral hazard"
  - eBay rating, restaurant hygiene
- Example: Firm chooses 'high' or 'low' effort
  - Cost of effort to firm: $c_H > c_L$
  - Benefit of effort to customers: $v_H > v_L$
  - Assume high effort is socially optimal: $v_H - c_H > v_L - c_L$
  - Repeated game with discount rate δ
- Suppose customers "grim trigger" punishment
  - Pay v_H if never cheated; pay v_L if ever cheated before
- High effort sustainable if firm patient (i.e. δ high):

$$\frac{1}{1-\delta}(v_H - c_H) \geq (v_H - c_L) + \frac{\delta}{1-\delta}(v_L - c_L)$$.

Designing punishment schemes

▸ Is punishment severe enough to deter defection?

▸ Is punishment credible?

  ▸ Is punishment optimal after defection?

  ▸ Credible not to renegotiate?

▸ When to punish?

  ▸ Is deviation deliberate or by mistake?

▸ How do you recover from mistakes?

Cooperation harder to enforce when:

▸ Harder to detect defection (e.g. more randomness)

▸ Longer to detect defection (e.g. time to review)

▸ Harder to coordinate punishment (e.g. diffuse community)

▸ Higher benefits from defection (e.g. high value goods)

▸ Demand high (e.g. selling Wii's before Christmas)

▸ Firm is less patient (e.g. firm is failing)

▸ Re-entry is easy

▸ Ambiguity about what is acceptable behavior

▸ Exercise: How would you design a system to incentivize participation in peer-to-peer system?

Extensions

- Learning and Discipline
  - Three types of agents: bad, good and strategic.
  - Initially price is low because of "bad", so "strategic" are tempted to defect
  - "Bad" screened out, prices rise and "strategic" cooperate
  - If the game come to end, "strategic" cash in on reputation
- Reputation may be bad
  - Agent may not give honest advice because want to be perceived as "informed". Can cause herding
  - Doctors can turn away difficult cases

Online: Eliciting Feedback

‣ Under provision of reviews (public good)

- ‣ Pay reviewers (angie's list)
- ‣ Bribery (yelp)
- ‣ Community participation (Epinions)
- ‣ Memory aid (IMDb)
- ‣ Improve matching (Netflix)

‣ Non truthful reviews

- ‣ Cross-check reviews to check for reliability
- ‣ Review the reviews, or the reviewer
- ‣ Use robust statistics to exclude outliers

Online: Designing Feedback Mechanism

- **Issues**
  - Format of solicited feedback
  - The information on agent's profile
  - Longevity of review
  - When make review available?
- **eBay**
  - Positive, negative and neutral, and short comment.
  - Sums of positive, negative and neutral ratings
  - Available for 6 months
  - Review posts immediately

eBay

Reputation and eBay

▸ **eBay has first-mover advantage**

  ▸ Does not guarantee success: Altavista, WordPerfect

  ▸ Reputation system is key part of success

▸ **Reputation system protects buyers**

  ▸ Is good delivered on promptly?

  ▸ Is good as described?

  ▸ Outright fraud?

▸ **System creates switching costs for reputable sellers**

▸ **More important as eBay increases high-values sales**

  ▸ Art, cars, houses, land

How Valuable is Seller Reputation?

▶ Reputation is useful [for postcards]

  ▶ Having 2000 positive feedbacks and 1 negative yields 8% higher prices that having 10 positive feedbacks

  ▶ When have little feedback, negatives make little difference. Reflects cheapness of online profiles.

▶ After receive first negative feedback

  ▶ Weekly sales rates goes from +7% to -7%

  ▶ Subsequent negative feedback arrives 25% more rapidly

▶ Seller exit

  ▶ Exit more likely when reputation is low

  ▶ Just before exit, sellers receive lots of negative feedback

Does Reputation Work?

- Baseball card market on Ebay
  - Graded card: Ken Griffey Jr worth $1200 for 10, $150 for 9, $60 for 8.
- Graded market
  - Reputation of seller doesn't matter.
- Ungraded market
  - Higher claims lead to higher prices: $90 for 10, $70 for 9, $50 for others.
  - 10 claim not credible: should get card graded
  - When tested, quality independent of claims.
  - High claims had higher frauds (hit and run strategy).
  - Buyers and sellers of 10's less experienced
- Role of eBay reputation
  - High reputation less likely to claim "10"
  - Raises probability of sale, but not prices
  - Fixing claim, reputation has no effect on quality, lowers prob of fraud

Problems with Ebay Reputation

1. **Feedback not sufficiently rich**
   - Feedback often concerns time to delivery, not quality of card
   - Detailed review expires after 90 days

2. **Easy to build up reputation**
   - Market for feedback: buy "positive feedback book" $0.25
   - Build up as buyer, then become seller
   - Reputation is not weighted by value of transaction

3. **Feedback is bilateral**
   - Buyers fear retaliation from sellers
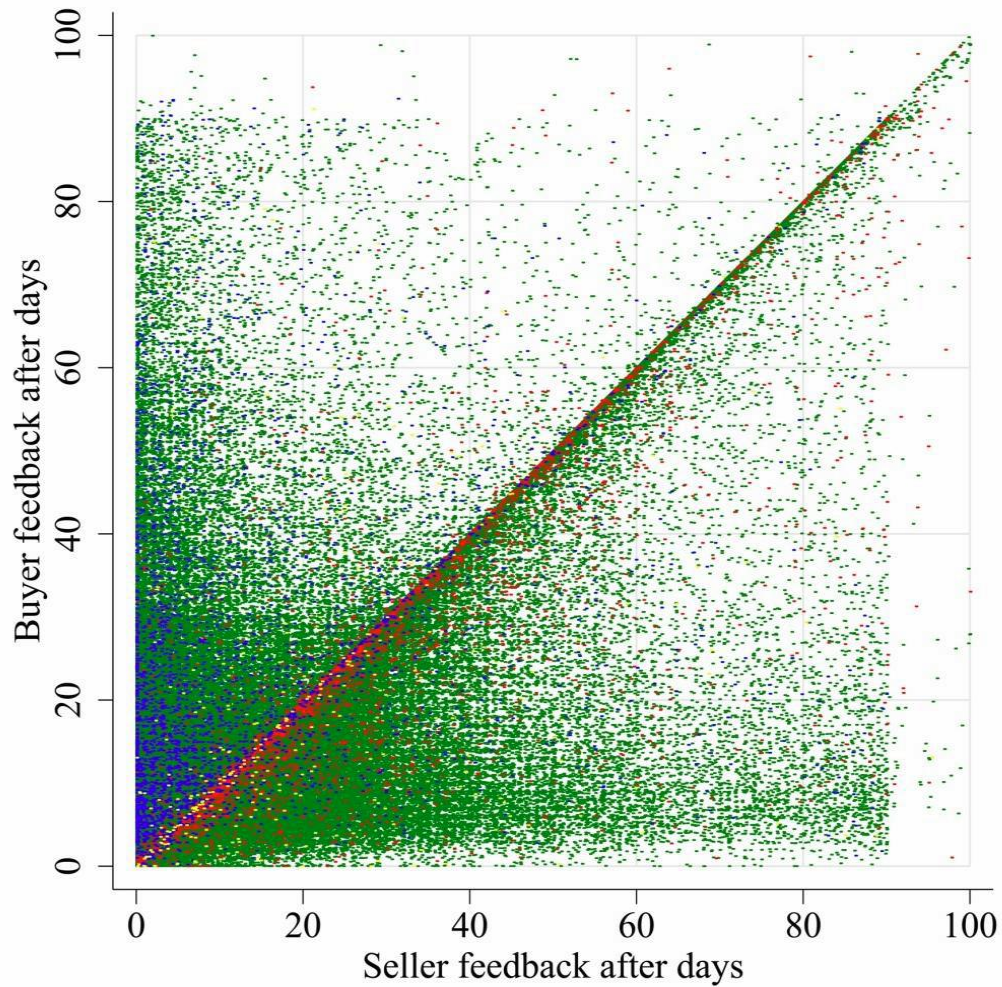
Mutually positive feedback (N=451,227)
Only buyer left bad feedback (N=2,884)
Mutually bad feedback (N=5,279)
Only seller left bad feedback (N=357)

The Trust Business

The Trust Business

▸ **For many firms their reputation is most important asset**
  - ▸ Financial firms (banks, life insurance, market makers)
  - ▸ Experience goods (Intel, Odwalla, Toyota)
▸ **Banks**
  - ▸ Banks invest money in long-term projects (e.g. mortgages)
  - ▸ If people believe bank will fail, this causes bank run
  - ▸ Failure becomes self-fulfilling
▸ **Intel**
  - ▸ In 1994 covered up Pentium bug
  - ▸ Refused to replace when discovered
▸ **Odwalla**
  - ▸ E. coli outbreak in 1996, led 66 people to become sick
  - ▸ Recall cost $6.5m (revenue $59m) and started to pasteurize

Enron

- ## Market cap of $60bn at end of 2000
  - Hid $8bn of debts and went bankrupt by end of 2001
  - Why aren't profitable parts of Enron still in business?
- ## Enron's Business
  - Long-term contracts for natural gas (and chemicals, metal etc)
  - Enron acted as middleman - party to every transaction
  - Every trader has credit exposure to Enron
- ## What happened?
  - At start of scandal Enron started to look shaky
  - Bid-Ask spread widened because of credit risk
  - Enron's profits fell, further increasing credit risk
- ## Lesson: loss of trust cannot be contained
  - It can spill into all aspects of firm's operations