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 $\frac{3}{4}$, and v=0 with prob $\frac{1}{4}$
  - Low product yields v=10 with prob $\frac{1}{4}$, and v=0 with prob $\frac{3}{4}$

- First customer
  - Willing to pay: $\Pr(\text{high})U(\text{high}) + \Pr(\text{low})U(\text{low}) = \$5$

- Second customer (if first liked product)
  - Bayes rule: $\Pr[\text{high}|v_1=10] = \frac{3}{4}$
  - Willing to pay: $\Pr(\text{high})U(\text{high}) + \Pr(\text{low})U(\text{low}) = \$6\frac{1}{4}$
  - 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 \( \delta \)

- 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. \( \delta \) 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?
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
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