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lecture notes si680

Hidden Characteristics I: Lemons market example

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Reference: G. Akerlof (1970), "The Market for 'Lemons': Qualitative Uncertainty and the Market Mechanism", *Quarterly Journal of Economics* 89:488-500.

Problem: Purchase durable good in second-hand market (e.g., car). Seller has personal knowledge about quality of good that is very costly or impossible for buyer to uncover through inspection. (THINK eBAY)

Model

Car quality $k \sim U[0, 1]$, 0 is worst quality

Seller willing to accept $p_0 k$

Buyer willing to pay $p_1 k$

For any transactions to occur, necessary that $p_1 > p_0$

Simplify: $p_1 = \frac{3}{2}p_0$

ASK QUESTION: If quality can be determined? Cars of type k would sell for $P \in [p_0 k, p_1 k]$, depending on relative bargaining power.

ASK QUESTION: If quality cannot be determined by buyer? Buyer calculates average (expected) quality, *conditional on offered selling price*, decides to buy based on average quality.

Reasoning

- If price is P , then only sellers would be those for whom $P \geq p_0 k$, so only qualities offered will be $k \leq P/p_0$
- Since we assumed qualities were evenly distributed, the average will be the midpoint between 0 and P/p_0 : average quality offered at P will be $P/(2p_0) = \bar{k}$
- At that average quality, buyers receive average utility $p_1 \bar{k} = (p_1/2p_0)P = \frac{3}{4}P$
- But price greater than expected utility: $P > \frac{3}{4}P$, so no transactions take place.
- True for any price P except $P = 0$ (only cars of lowest quality sell)

Comments

- Crucial insight: The *sellers know* their quality, so they don't offer qualities that have right **average** for P , but instead offer qualities less than or equal to quality associated with P : they offer the lemons only

- Result in this example is not just an inefficiency, but disappearance of market!
- But strong assumption: there is *no* information to help buyers distinguish quality
- If there is some discriminating information, can have transactions, but inefficient (some valuable transactions don't occur)

What to do? Warranty

- A low quality seller less willing to offer long warranty since breakdown soon is likely
 - If cost of servicing warranty is more than gain from selling at "peach" (high quality) price, don't offer warranty
- This might sort out good and bad cars
 - To sort multiple levels of quality would need multiple types of warranty
 - For warranty to work, depends on two things: price premium for peaches, and cost differential for servicing warranties