

Unless otherwise noted, the content of this course material is licensed under a Creative Commons Attribution - Non-Commercial - Share Alike 3.0 License.

<http://creativecommons.org/licenses/by-nc-sa/3.0/>

Copyright 2008, Jeffrey K. MacKie-Mason

You assume all responsibility for use and potential liability associated with any use of the material. Material contains copyrighted content, used in accordance with U.S. law. Copyright holders of content included in this material should contact [open.michigan@umich.edu](mailto:open.michigan@umich.edu) with any questions, corrections, or clarifications regarding the use of content. The Regents of the University of Michigan do not license the use of third party content posted to this site unless such a license is specifically granted in connection with particular content objects. Users of content are responsible for their compliance with applicable law. Mention of specific products in this recording solely represents the opinion of the speaker and does not represent an endorsement by the University of Michigan.

[jmmBlue](#)  
[tiddler](#)

[Links](#)  
[newJournal](#)

[Edit this Menu](#)  
[ASciencePad](#)

[new](#)  
[SiteMap](#)

[Help](#)



lecture notes si680

## Hidden Characteristics I: Lemons market example

Updated 27-March-08

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