Module 5: "Dynamic games of incomplete information"

Lecture 38: "Adverse Selection Problem"

The Lecture Contains:

- Market for Lemons: Adverse Selection
- Market for Lemons: A numerical example
- Ways Out

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Market for Lemons: Adverse Selection

- Adverse selection arises because of incomplete information.
- There are examples of many markets where
  - buyers do not know the exact quality of the goods that they buy
  - sellers who have higher experience with the product know the exact quality
- The most common example is that of used car markets
- In such a market, because of the incomplete information, all the bad products (lemon) will drive out the good products.
  - Selection in the market has been adverse in favor of only the bad products
  - In the other words only lemons are left in the market and hence the name

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Market for Lemons: A numerical example

- Suppose there are two types of products, good and bad (or lemons)
- Expected repair cost for good product-200 units, for lemon-1700 units
- Potential buyer values the object at 3200 units (before considering repair cost)
  Net valuation of good product- 3000 units
  Net valuation of bad product- 1500 units
- Intrinsic valuation of seller-2700 units
  Net valuation of seller for good product- 2500 units
  Net valuation of seller for bad product- 1000 units
- All these value are put up in the following table

	Good quality	Lemon
Net valuation of buyer	3000	1500
Net valuation of seller	2500	1000

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Numerical Example [Contd.]

- If the buyer knows exactly which product is a lemon and which one is a good quality product
  - There is no adverse selection
  - price of lemon would settle between 1000 to 1500
  - price of good quality product would settle between 2500 & 3000
  - Both qualities would be sold in the market
- In case of incomplete information, buyer cannot distinguish lemon from a good quality product
- Suppose it is in common knowledge that half of the products are likely to be lemon and the other half good product.

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Numerical Example [Contd..]

- Average valuation of a buyer for a product = $\frac{1500+3000}{2} = 2250$
- Buyer will not offer any price> 2250 units
- Seller of lemon will accept the price as he values the good at 1000 units
- Seller of good quality product will not accept as he values the good at 2500 units.
- Only lemon will be left in the market
  - bad will drive all good products out of the market
  - adverse selection

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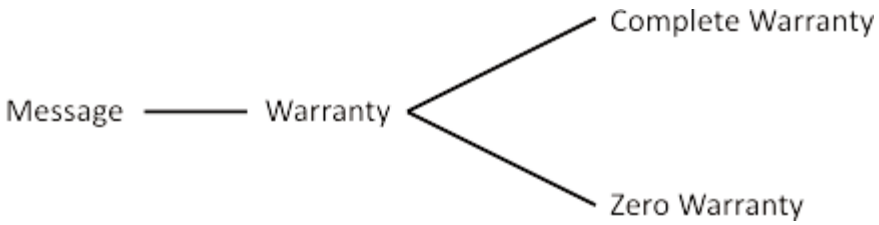
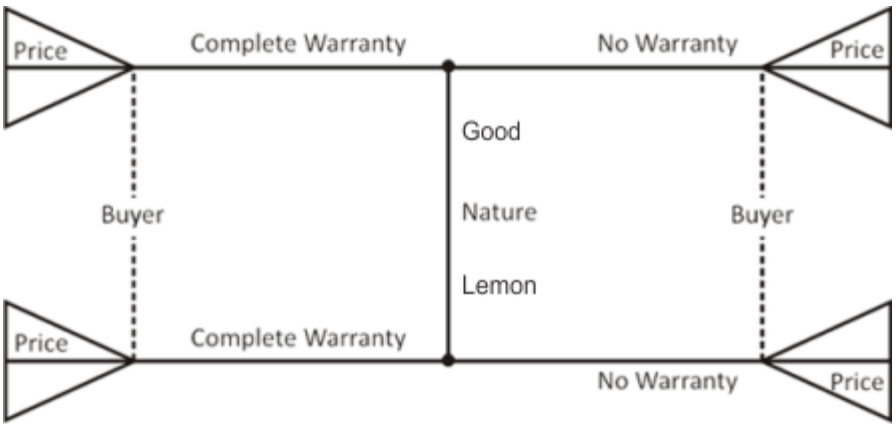
Ways out

- Sellers of good quality would want to distinguish them from sellers of lemon
  - want to signal the superior quality of their products.
- Seller of good quality offers a warranty against possible repair after purchase
  - warranties can be offered for any fraction of repair costs between 0 & 100 percent
- One example of a signaling application
  - Seller - sender
  - Two types - good quality product seller & lemon seller



- Buyer - Receiver
  - Action - the price that they pay



Perfect Separating Equilibrium: A lemon seller offers no warranty, a good quality seller does

- If such an equilibrium exists the adverse selection problem will be solved.