Adverse Selection

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Information Asymmetry
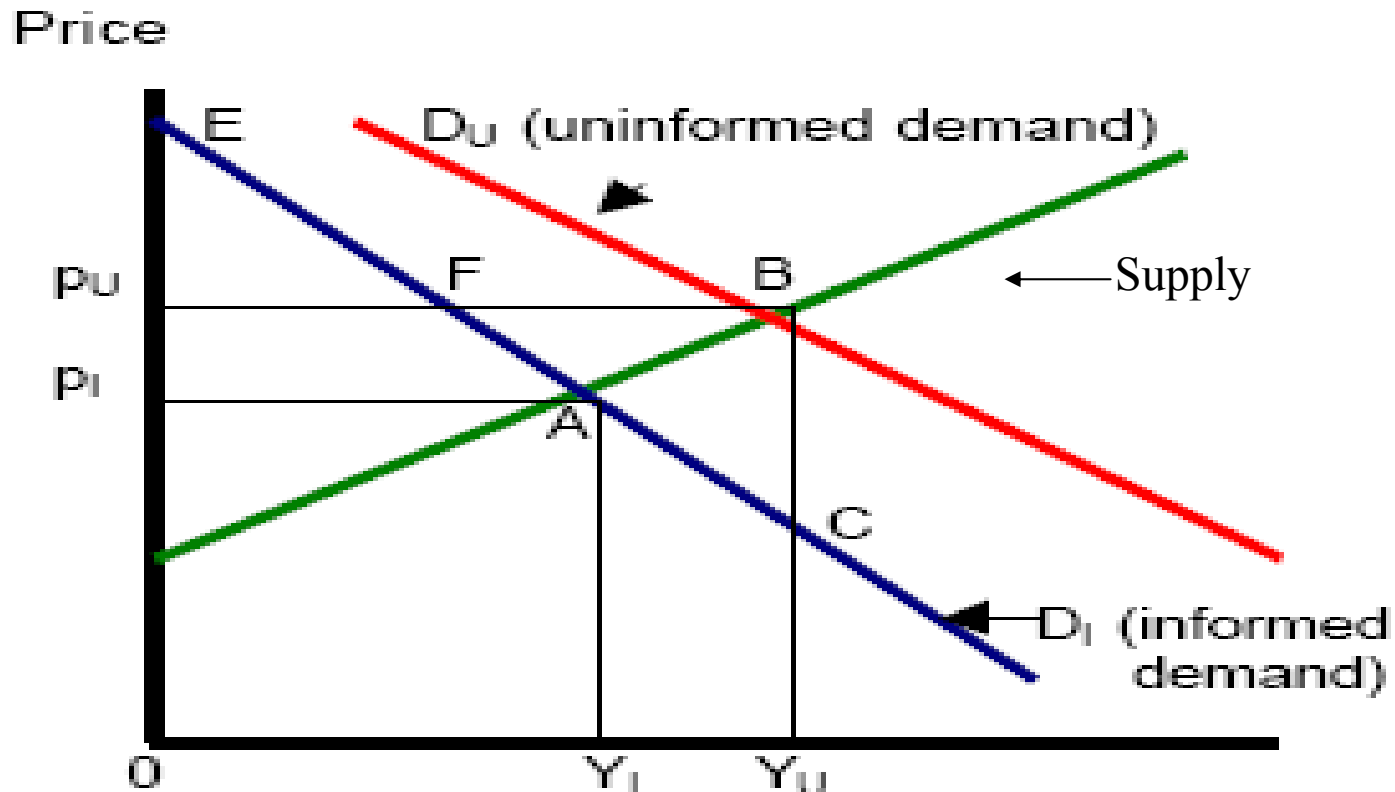

Figure 10:
Market Failure From Information Asymmetry

Source: Weimer and Vining (1999), p. 108

Net Loss to Society

➢ Gain in producers' surplus=$p_U B A p_I$

➢ Loss in consumers' surplus=

$A p_I E - (OECY_U - Op_U BY_U) = A p_I E - (p_U EF - FBC) = A p_I p_U F + FBC$

➢ Net loss to society is loss in consumers' surplus – gain in producers' surplus or

➢ $A p_I p_U F + FBC - p_U B A p_I = ABC$

Incentives to provide information

- When consumers ***overestimate*** quality through lack of information, producers have no incentive to provide information

- When consumers ***underestimate*** quality through lack of information, producers have every incentive to provide information

Search and Experience

- Sometimes information can be obtained by search: information is obtained prior to purchase

- Sometimes information can only be obtained through experience: information is obtained after purchase

Adverse Selection

- Adverse selection arises when high-quality products, and high-quality customers, are forced out of the market

- This this entirely due the operation of the market we regard this non-availability of high-quality products, and high-quality customers, as ***market failure***

- George Akerlof, in his classic paper "The Market for Lemons" explained why this happened

How Does Adverse Selection Happen? Buyers

- If I know that a car being offered to me is a good quality car, I am prepared to pay $\$p_H$

- For a low quality car I am prepared to pay $\$p_L$

- But I do not know whether the car being offered to me is good or bad

- This information is available only to the seller: hence *information asymmetry*

- But I do know that, on average, a proportion α of cars offered are bad cars

- So, given my lack of information, for the car that is offered to me, I am prepared to pay a price:

➢ $p=(1-\alpha)p_H + \alpha p_L$

How Does Adverse Selection Happen? Sellers

- Sellers know the quality of their cars
- Sellers of good cars will be disappointed by the low price, p, being offered on their cars
- For some sellers of good cars, p is lower than their *reservation price*
- These sellers will withdraw their cars from the market
- As a consequence, the proportion of bad cars being offered will *rise* from α to β
- As a consequence, the price a buyer will be prepared to pay for the car offered will *fall* to:
- ➢ $p=(1-\beta)p_H + \beta p_L$

The Process Continues

- This will cause more good cars to be withdrawn from sale
- The proportion of bad cars in the market will rise further
- The price buyers are prepared to pay will fall further
- Finally, there will not be any good cars being offered for sale
- Adverse selection has occurred!!

Source of Adverse Selection

- Source is externality Between Sellers and between buyers

- When a seller of a low-quality product increases output he reduces average quality, reduces price and hurts sellers of high quality products

- When the age at which one can legally drive is reduced, more high risk customers are insured, average risk goes up, premiums rise and low risk drivers are hurt

Speaking Mathematically

- The quality of a used car is $q \in [0,1]$
- q is ***uniformly distributed*** over the interval $[0,1]$
- The expected quality is $E(q)=0.5$
- Buyers are prepared to pay γq for a car of quality q, $\gamma > 0$
- Sellers are prepared to accept q for a car of quality q
- If q was observable, a car of quality q would sell for a price $p(q) \in [\gamma q, q]$, depending on bargaining strength of buyer and seller

Speaking Mathematically

- But q is **not** observable
- What is observable is average quality: $\bar{q}=0.5$
- So the buyers are prepared to pay $\gamma\ \bar{q}$
- Suppose the equilibrium price is p
- Then sellers for whom q > p will withdraw their cars
- Only sellers for whom q ≤ p will remain in the market

The Market Destroyed

- Average quality will fall to $\bar{q}=p/2 < 0.5$
- So buyers are now prepared to pay $\gamma\,\bar{q} = \gamma(p/2) = (\gamma/2)p < p$ for a car
- So no cars will be sold at price p
- Since p was chosen arbitrarily, no cars will be sold at any price
- Adverse selection has destroyed the market for used cars!!

Signalling to Overcome Adverse Selection

- The seller of high quality products can send a *signal* of quality

➢ Reputation

➢ Warranties

➢ Informative Advertising

➢ Recommendation

➢ Certification by Professional Associations

Problems with Signalling

- A Signal should be credible
- A signal should separate high and low quality sellers
➢ A signal sent by a seller of a high quality product should not also be capable of being sent by the seller of a low quality product
- A signal should not be too costly for high quality sellers to send
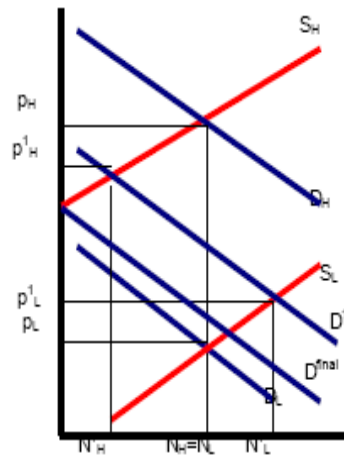
Market for "Lemons"

Source: Pindyck and Rubinfeld (2001), p. 597

Figure 11
The Market for Lemons