MICROECONOMICS III
CLASS 9

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SIGNALING

Adverse selection is an outcome of an informational deficiency.

What if information can be improved by high-quality sellers signaling credibly that they are high-quality?

<u>Examples:</u> warranties, professional credentials, references from previous clients

EXAMPLE

A labor market has two types of workers: high-ability and low-ability.

- A high-ability worker's marginal product is a_H.
- A low-ability worker's marginal product is a_L.
- $a_H > a_L > 0$

A fraction h of all workers are high-ability

- $(1 – h)$ is the fraction of low-ability workers

EXAMPLE

Each worker is paid his expected marginal product.

If firms know each worker's type, they pay:

- each high-ability worker $w_H = a_H$,
- each low-ability worker $w_L = a_L$.

If firms cannot tell workers' types, then every worker is paid the pooling wage rate; i.e., the expected marginal product:

- $w_P = (1 - h)\, a_L + h\, a_H$

EXAMPLE

If $w_H > w_P$ then high-ability workers have an incentive to find a credible signal

Assume that workers can acquire education.

Education costs: a high-ability worker c_H per unit and a low-ability worker c_L per unit.

- $c_L > c_H$
- Employer differentiates wages based on the education level
- Suppose education has no effect on workers' productivities; i.e., the cost of education is a deadweight loss.

EXAMPLE

High-ability workers will acquire e_H education units if

(i) $w_H - w_L > c_H e_H$

(ii) $w_H - w_L < c_L e_H$.

- (i) says acquiring e_H units of education benefits high-ability workers.
- (ii) says acquiring e_H education units hurts low-ability workers.

How much education should low-ability workers acquire?

- Zero – the cost of education exceeds the benefits

SIGNALING

Signaling can improve information in the market.

- But total output does not change and education is costly, so signaling worsens the market efficiency.

Hence, improved information need not improve gains-to-trade.

Education pays off even if everything that we learn during our studies is useless for our work.

- The university diploma is a signal of talent and willingness to work hard.

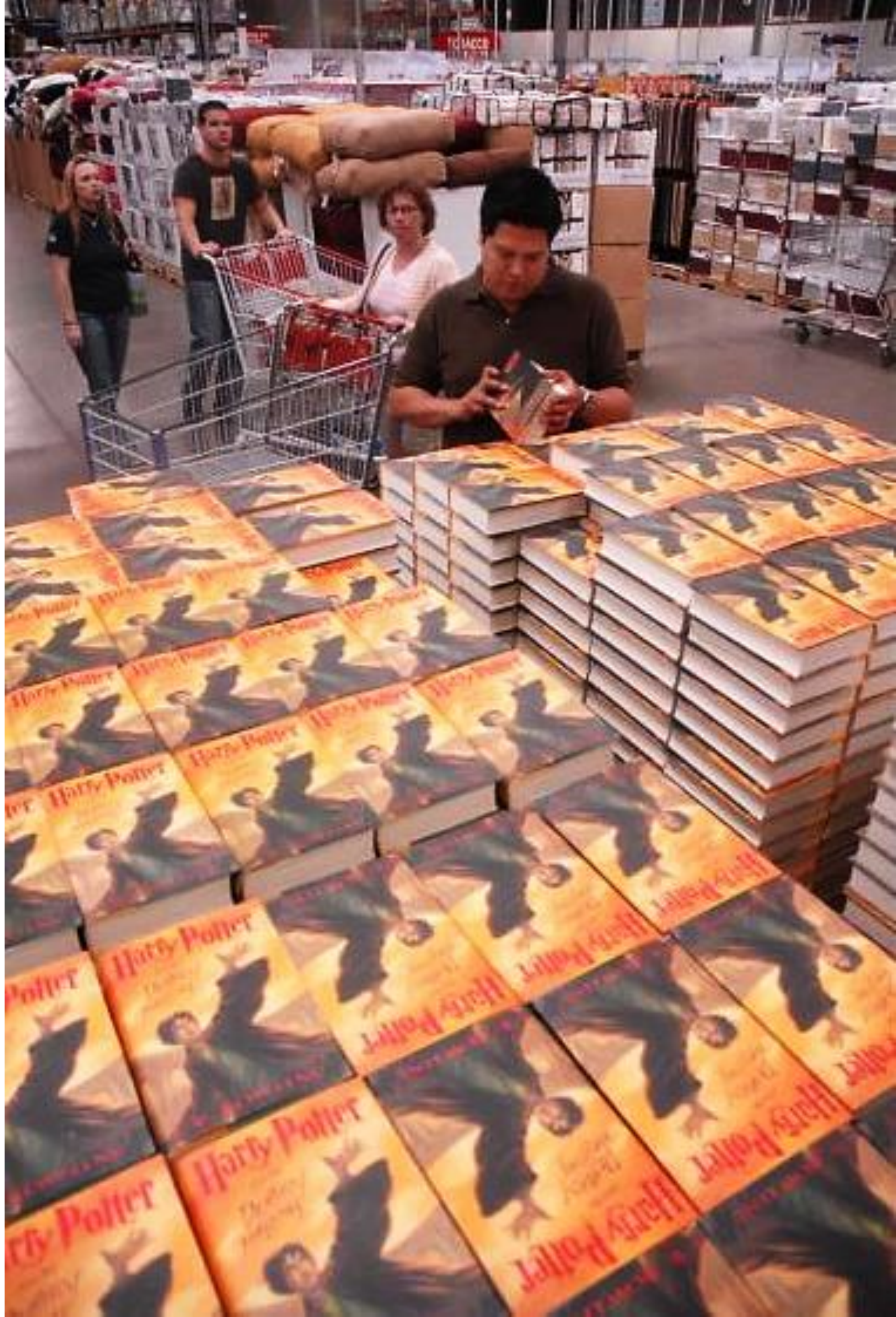
In order for the signal to work, the signal must:

- be relatively costly for the "low quality" group,
- be understandable for both sides of the market.

SIGNALING

Other example:

- Piles of books are a signal of quality.
  - Because printing something of low quality in such a large quantity could result in bankruptcy.
- Similarly: expenses on advertisement, marketing campaigns, etc.



MORAL HAZARD

If you have full car insurance, are you more likely to leave your car unlocked?

- What about more risky driving?

Moral hazard is a reaction to incentives to increase the risk of a loss, and it is a consequence of asymmetric information.

MORAL HAZARD

If an insurer knows the exact risk from insuring an individual, then a contract specific to that person can be written.

If all people look alike to the insurer, then one contract will be offered to all insures

- High-risk and low-risk types are pooled, causing low-risks to subsidize high-risks

EXAMPLE

A car is worth $50,000.

The yearly risk of theft is 10%, but if an owner avoids unsafe areas, then it is 5% yearly.

An owner values the effort of avoiding unsafe areas at the level of $500.

If an owner does not have insurance, he cares.

- He will stay away from the high-risk areas

EXAMPLE

If the insurer pays compensation in case of a loss, there is no need to care.

The insurance price (premium) will be 5,000 + markup

- It could be 2,500 + markup.
- Social loss of $2,000 per insured car.

Solution: Participation of the insured in the costs of theft (min. 20%)

- Or the deductible of $2500

MORAL HAZARD

Moral hazard may be a problem for the entire society, not just for the parties of a transaction.

- And it may lead to an inefficient resource allocation.

Example: A driver with insurance will drive ‘too much’, without taking into account expected costs of accidents.

MORAL HAZARD

Examples of efforts to avoid moral hazard by using signals are:

- higher life and medical insurance premiums for smokers or heavy drinkers of alcohol,
- lower car insurance premiums for contracts with higher deductibles or for drivers with histories of safe driving