Signaling
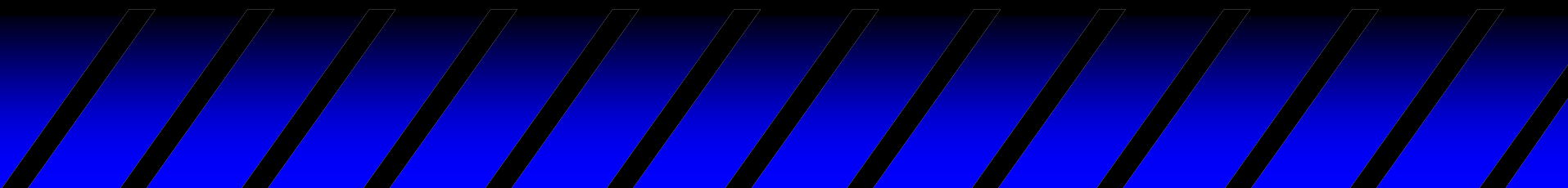
◆ **Adverse selection is an outcome of an informational deficiency.**

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

◆ **E.g. warranties, professional credentials, references from previous clients etc.**

Signaling

◆ **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.**

◆ **$a_L < a_H$.**

◆ **A fraction h of all workers are high-ability.**

◆ **1 - h is the fraction of low-ability workers.**

Signaling

◆ **Each worker is paid his expected marginal product.**

◆ **If firms knew each worker's type they would**

– **pay each high-ability worker $w_H = a_H$**

– **pay 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**

$$w_P = (1 - h)a_L + ha_H$$

Signaling

- $w_P = (1 - h)a_L + ha_H < w_H$
- So high-ability workers have an incentive to find a credible signal: workers can acquire "education".
- Education costs a high-ability worker c_H per unit
- and costs a low-ability worker c_L per unit.
- $c_L > c_H$.

Signaling

◆ **Suppose that education has no effect on workers' productivities; i.e., the cost of education is a deadweight loss.**

◆ **High-ability workers will acquire e_H education units if**

(i) $w_H - w_L = a_H - a_L > c_H e_H$

(i.e. acquiring e_H units of education benefits high-ability workers), and

(ii) $w_H - w_L = a_H - a_L < c_L e_H$.

(i.e. acquiring e_H education units hurts low-ability workers).

Signaling

$$a_H - a_L > c_H e_H \quad \text{and} \quad a_H - a_L < c_L e_H$$

together require

$$\frac{a_H - a_L}{c_L} < e_H < \frac{a_H - a_L}{c_H}.$$

Acquiring such an education level credibly signals high-ability, allowing high-ability workers to separate themselves from low-ability workers.

Signaling

◆ **Q: Given that high-ability workers acquire e_H units of education, how much education should low-ability workers acquire?**

◆ **A: Zero. Low-ability workers will be paid $w_L = a_L$ so long as they do not have e_H units of education and they are still worse off if they do.**

Signaling

- **Signaling can improve information in the market.**

- **But, total output did not change and education was costly so signaling worsened the market's efficiency.**

- **So improved information need not improve gains-to-trade.**