Asymmetric information

Notes on Behavioural Economics

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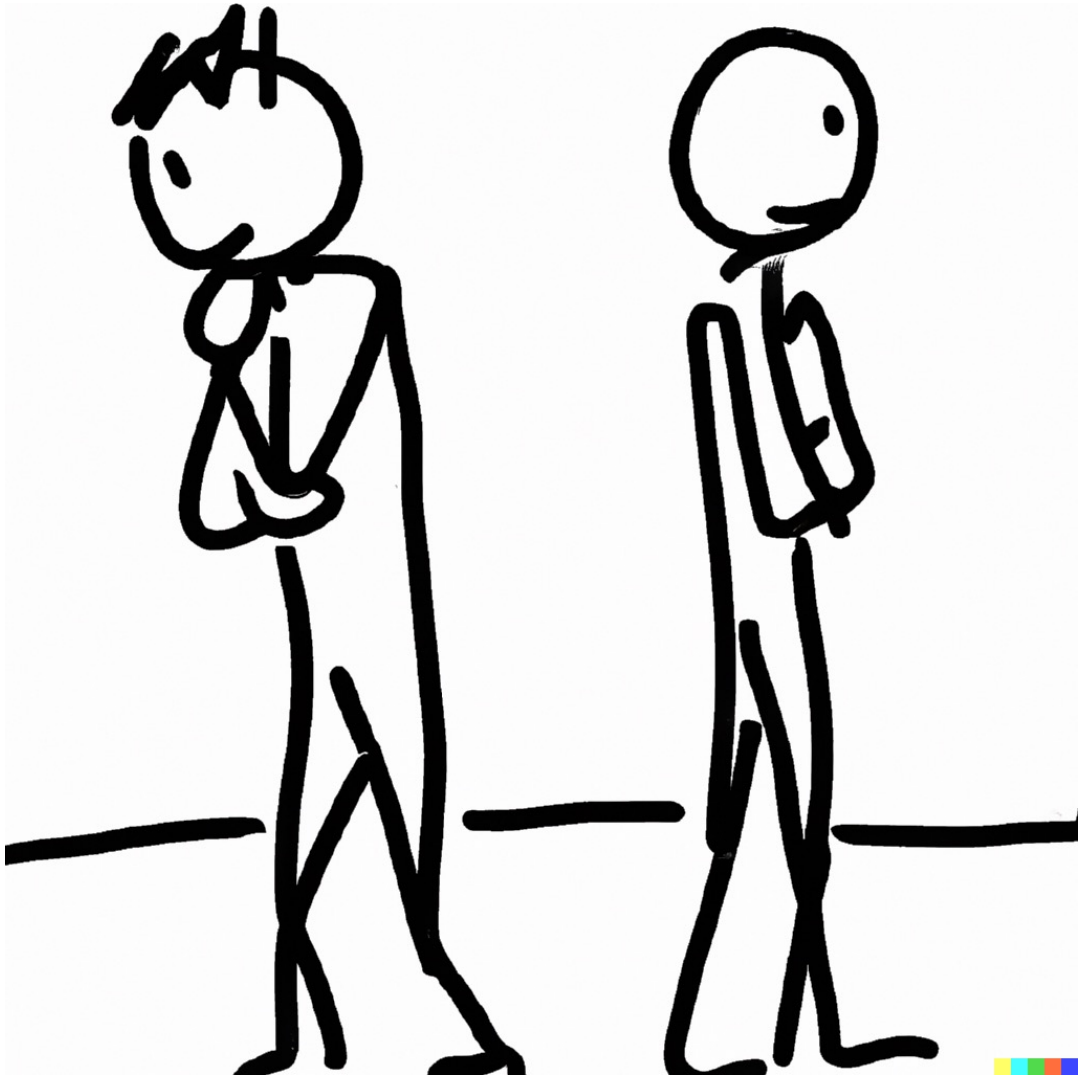


The market for lemons

Price p is fixed

Quality is unobservable.

The market for lemons

Good cars: q

Lemons: $1 - q$

Seller

- Good cars: $10,000
- Lemons: $5,000

Buyer:

- Good cars: $15,000
- Lemons: $7,500

μ = probability that a car that is sold is good

If sellers are willing to sell their good cars: $\mu = q$

If not: $\mu = 0$

$$\mathrm{E} = \mu 15000 + (1 - \mu)7500 = 7500 + 7500\mu$$

Condition for sale of a lemon:

$$5000 \leq p \leq 7500 + 7500\mu$$

Condition for sale of a good car:

$$10000 \leq p \leq 7500 + 7500\mu$$

If $q \geq \frac{1}{3}$

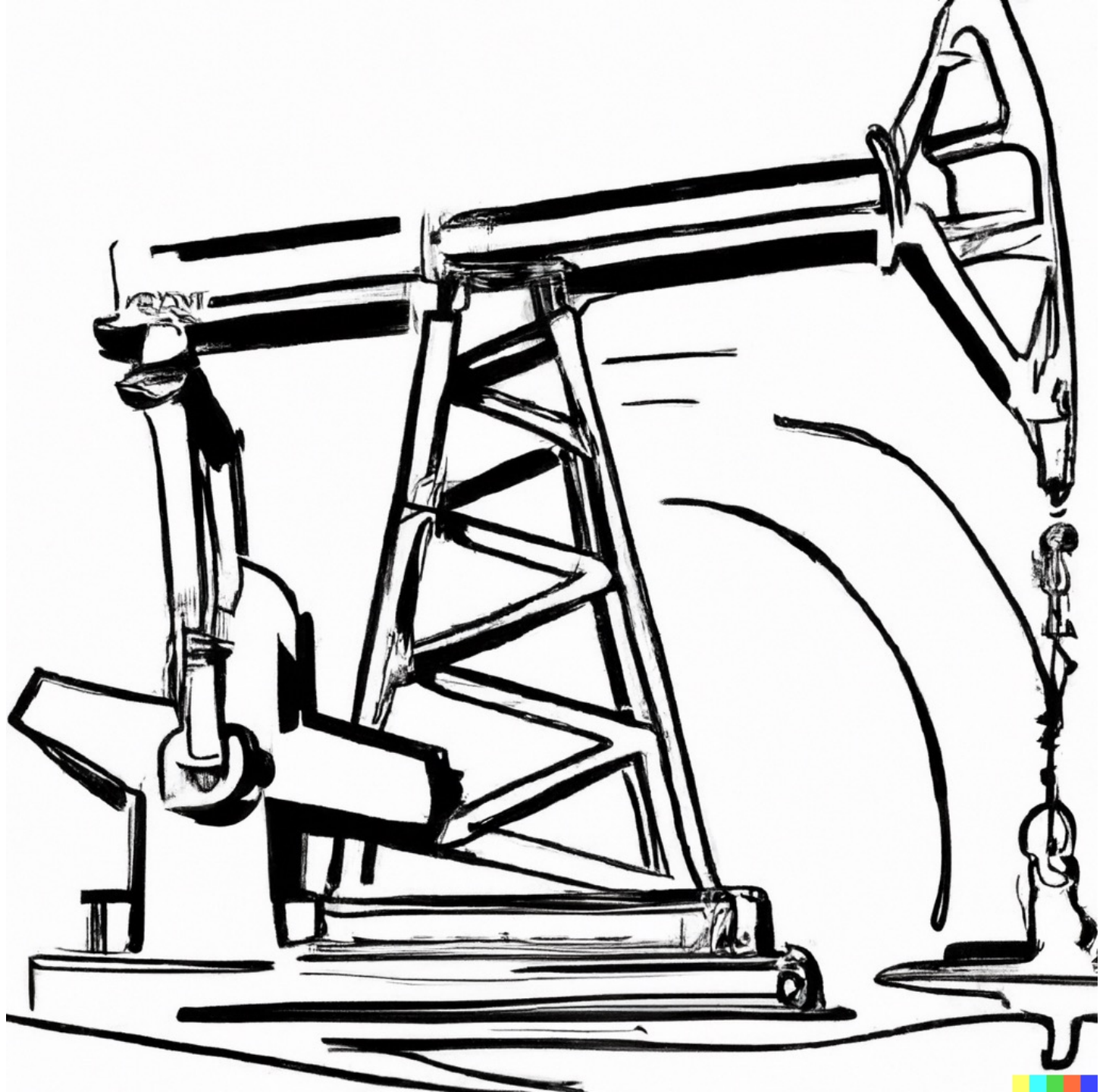
$$\mu = q \geq \frac{1}{3} \rightarrow 10000 \leq p^* \leq 7500 + 7500\mu$$

If $q < \frac{1}{3}$

$$\mu = 0 \rightarrow 5000 \leq p^* \leq 7500$$

The winner’s curse

Common value auctions



Company 1: $v_1 \sim U(0,100)$

Company 2: $v_2 \sim U(0,100)$

$$\mathrm{V} = \frac{v_1 + v_2}{2}$$

Company 1: $v_1 = \$50$

Company 2: v_2

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Company 2: v_2

$$v_1 = \$50 > v_2 \Leftrightarrow \bar{v}_2 = \$25$$

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$$v_1 = \$50 > v_2 \Leftrightarrow \bar{v}_2 = \$25$$

$$\bar{V} = \frac{50 + 25}{2} = \$37.50$$

Company 1: $v_1 = \$50$

Company 2: v_2

$$v_1 = \$50 > v_2 \Leftrightarrow \bar{v}_2 = \$25$$

$$\bar{V} = \frac{50 + 25}{2} = \$37.50$$

$$\pi = 37.50 - 50 = -\$12.50$$

Company 1: $v_1 = \$50$, bid=$37.50

Company 2: v_2

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Company 2: v_2

$$\$37.50 > v_2 \Leftrightarrow \bar{v}_2 = \$18.75$$

Company 1: $v_1 = \$50$, bid=$37.50

Company 2: v_2

$$\$37.50 > v_2 \Leftrightarrow \bar{v}_2 = \$18.75$$

$$\bar{V} = \frac{50 + 18.75}{2} = \$34.37$$

Company 1: $v_1 = \$50$, bid=$37.50

Company 2: v_2

$$\$37.50 > v_2 \Leftrightarrow \bar{v}_2 = \$18.75$$

$$\bar{V} = \frac{50 + 18.75}{2} = \$34.37$$

$$\pi = 34.37 - 37.50 = -\$3.13$$

Company 1: $v_1 = \$50$, bid=$25

Company 2: v_2

Company 1: $v_1 = \$50$, bid=$25

Company 2: v_2

$$\$25 > v_2 \Leftrightarrow \bar{v}_2 = \$12.50$$

Company 1: $v_1 = \$50$, bid=$25

Company 2: v_2

$$\$25 > v_2 \Leftrightarrow \bar{v}_2 = \$12.50$$

$$\bar{V} = \frac{50 + 12.50}{2} = \$31.25$$

Company 1: $v_1 = \$50$, bid=$25

Company 2: v_2

$$\$25 > v_2 \Leftrightarrow \bar{v}_2 = \$12.50$$

$$\bar{V} = \frac{50 + 12.50}{2} = \$31.25$$

$$\pi = 31.25 - 25 = \$6.25$$

Company 1: v_1, bid $= \delta v_1$

Company 2: v_2

Company 1: v_1, bid $= \delta v_1$

Company 2: v_2

$$\delta v_1 > v_2 \Leftrightarrow \bar{v}_2 = 0.5\delta v_1$$

Company 1: v_1, bid $= \delta v_1$

Company 2: v_2

$$\delta v_1 > v_2 \Leftrightarrow \bar{v}_2 = 0.5\delta v_1$$

$$\bar{V} = \frac{v_1 + 0.5\delta v_1}{2} = (0.5 + 0.25\delta)v_1$$

Company 1: v_1, bid $= \delta v_1$

Company 2: v_2

$$\delta v_1 > v_2 \Leftrightarrow \bar{v}_2 = 0.5\delta v_1$$

$$\bar{V} = \frac{v_1 + 0.5\delta v_1}{2} = (0.5 + 0.25\delta)v_1$$

$$\pi = (0.5 + 0.25\delta)v_1 - \delta v_1 = (0.5 - 0.75\delta)v_1$$

Company 1: v_1, bid $= \delta v_1$

Company 2: v_2 , bid $= \delta v_2$

Company 1: v_1, bid $= \delta v_1$

Company 2: v_2 , bid $= \delta v_2$

$$\delta v_1 > \delta v_2 \Leftrightarrow \bar{v}_2 = 0.5 v_1$$

Company 1: v_1, bid $= \delta v_1$

Company 2: v_2 , bid $= \delta v_2$

$$\delta v_1 > \delta v_2 \Leftrightarrow \bar{v}_2 = 0.5 v_1$$

$$\bar{V} = \frac{v_1 + 0.5 v_1}{2} = 0.75 v_1$$

Company 1: v_1, bid $= \delta v_1$

Company 2: v_2 , bid $= \delta v_2$

$$\delta v_1 > \delta v_2 \Leftrightarrow \bar{v}_2 = 0.5 v_1$$

$$\bar{V} = \frac{v_1 + 0.5 v_1}{2} = 0.75 v_1$$

$$\pi = 0.75 v_1 - \delta v_1 = (0.75 - \delta) v_1$$