Review

Porato optimal allocation

Connection between porato optimal and CE. (competitive equilibrium)

New.

Brokerage (vage) buyer/sellers togeter.

M buyers $v_1 \geq \cdots \geq V_n$ (valuation)

N sellers $s_1 \leq \cdots \leq S_n$

broken is omniocient (know ↑) ← necessary. nobody know else.

中介?

a cost of a transaction to broken $= k. > 0$ (bring buyer/seller together)

revenue.

fixed fee paid per transaction $= \gamma \geq k$ (earn)

broken max profits.

optinal amount of fesible pairing

$P \; \{1, \cdots, M\} \times \{1, \cdots, N\} \Rightarrow \{0, 1\}$ (ranges)

no matching — matching

(i, j)

$1 \leq i \leq m$ buyers

$1 \leq j \leq n$ sellers

eg. $P(1, 3) = 0$ not match.

$P(1, 5) = 1$ match.

domain: pairing

error: buyer can be matched to different sellers.

× possible.

require

$P(i, j) = 1 \Rightarrow P(i, j') = 0 \quad \forall j' \neq j$

$P(i, j) = 1 \Rightarrow P(i', j) = 0 \quad \forall i' \neq i$

$P(i,j)=1 \Rightarrow V_b - V_c \geq k$

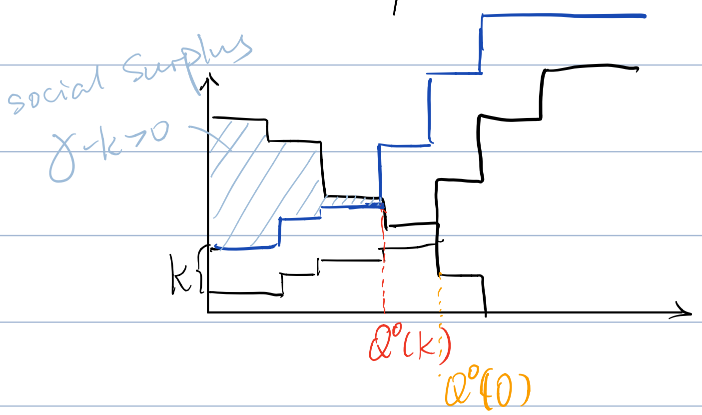
$Q = \sum_{i=1}^{m} \sum_{j=1}^{n} P(i,j)$

(socially optimal volum of trade)

$Q^0(k)$?

$V(Q) = \sum_{i=1}^{Q} v_i$ (earn) $C(Q)\ \sum_{i=1}^{Q} c_i$ (give up)

(TS) Total Surplus : $V(Q) - C(Q) - kQ$



$Q^*(k)$ = monopolist transation volume

eg. $M=N=3$

	1	2	3
buyer	10	6	4
seller	1	3	5

① $\gamma = k = 2$

$Q^0(k) = 2$

$Q^*(k) \geq 2. \Rightarrow (1,3)\ (2,2)\ (3,1)\quad Q^*(k) = 3$

$\uparrow$ monopolist 更大 $\Leftarrow$ broken $\Rightarrow \uparrow Q$.

against.

$Q^* = 10 + 6 + 4 = 20 \Leftarrow$ gain

$1 + 3 + 5 = 9 \Leftarrow$ give up.

$k \times 3 = 6 \Leftarrow$ transaction cost

$\hookrightarrow$ total surplus 为 3

social optimal Q^0 : gain: $10 + 6 = 16$

give up $= 1 + 3 = 4$

transaction cost $= 2 \times k = 4$.

↳ total surplus $\Rightarrow 8$

3

deadweight lost, due to mismatching.