small market
↳ second best can be bounded.

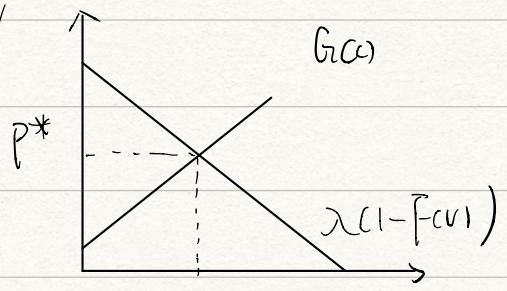
Large Market

$F(v)$ $G(c)$

M N $\frac{M}{N} = \lambda$

keep λ fixed and let $N \to \infty$

In limit, as $N \to \infty$, the actual distribution of valuation ~ $F(v)$ and of cost ~ $G(c)$ machanism designer know $F(v)$, $G(c)$.



demand $= \lambda(1 - F(v))$

supply $= G(v)$

small amount in efficiency.

when $n \to \infty$, no power on the price (no effect on whole economy)

Competitio → solve the problem.

Suppose the machanism designer offers for trade to take place at p^*

away from the limit, due to uncertainty, there may be demand on excern supply at this price

but as $N \to \infty$, the probability of their

double auction

↳ buyer / seller says offer price / demand price

machenier → price

As market → ↑ competitive, what is the consequence.

Private Value

Interdependent Value ↙ many cases only have

Ex. oil expoilation

bidders bid for oil leases (right to expoil oil)

information on deciding bids are private.

↳ Independent signal (do not know what exact is).

↳ like to know opponents' signal

If ✓ signal, opponent ✓ signal → may justify

✓ ✗ → may optimistic

↳ overbid.

winner's curse (optimist bidder).

↳ want to share, or overvalue

Market for lemons (a car that you buy, after buying, found it defeated).

George Akurlof.

uncertainty about quality of used cars.

[buyers do not know
seller knows quality

large market (↑ competition) quality

continuous of sellers $q \in [0,1]$

$C(q)$ = cost of seller q ↑

share the same

homogeneous. → $V(q)$ = value to a buyer of purchasing a car of quality q ↑

$F(q)$ = distribution of quality.

└ buyers know (x distinguish car).

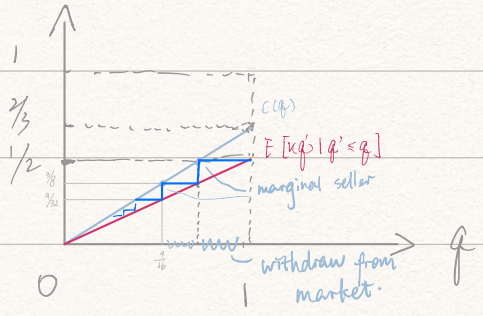
Assumption: for every q, $v(q) > c(q)$ (buyer value more than seller).

First best efficiency: every car is bought by some buyer.

"Sample" $F(q) = q$

$v(q) = q$

$c(q) = \frac{2}{3}q$.



$E[v(q') \mid q' \le q] = \frac{q}{2}$.

Objective to find market clearing price

all cars sell at same price.

Suppose: ① in equilibrium, all cars are sold.

buyers want to buy at most at price $= 1/2$.

$p = 1/2 = E[q]$

$\frac{2}{3}q = 1/2 \quad q = \frac{3}{4}$

seller $c(q) > \frac{1}{2}$, withdraw from market ②

buyers will know that $\exists q \in [0, 3/4]$ are sold.

② $E[v(q) \mid q \in [0, 3/4]] = \frac{3}{8}$

highest quantity for sale at a price $\frac{3}{8}$

$C(q) = \frac{3}{8} = \frac{2}{3}q$

$q = \frac{9}{16}$.

↳ market collapses → the only car sell is the one with $q=0$

$S(q) = E[v(q') \mid q' \le q] - C(q)$

① A CE q must satisfy $S(q) = 0$ (if $q < 1$)

in "Sample" $S(q) = \frac{q}{2} - \frac{2}{3}q = 0$ only when $q = 0$.

② A CE with $q = 1$ exists iff $S(1) \ge 0$.