Biolotical trade

$v. \in [\underline{v}, \bar{c}] \sim F(v) \quad g(v) = F'(v)$

$c. \in [\underline{c}, \bar{c}] \sim G(c) \quad g(c) = G'(c)$

(lowest cost, highest cost)

$\underline{c} = \underline{v} = 0 \quad \bar{c} = \bar{v} = 1$

A direct machinism is a pair of function

$p: [0,1] \times [0,1] \Rightarrow [0,1]$

$t \quad 11 \to R$ $\quad p(c,v)$ = prob that asset given to b

$t(c,v)$ = experted transfer to seller c.

Truthtelling is a dominant strategy equilibrium in machanism $(p(c,v), t(c,v))$

iff

I_{cb}. $\quad vp(c,v) - tp(c,v) \geq v\,p(c,v') - tp(c,v') \quad \forall v', \forall v, \forall c.$ (lied.)

tell the truth and get $\Leftrightarrow$ lie and get.

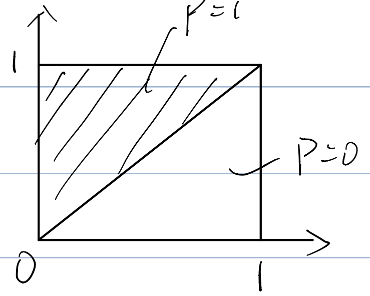
$I_{cs} \quad tp(c,v) - cp(c,v) \geq tp(c',v) - cp(c',v) \quad \forall c', \forall c, \forall v.$

$IR_b \quad vp(c,v) - t(c,v) \geq 0$ (cannot be neg (worth off)). $\forall (c,v)$

$IR_s \quad t(c,v) - cp(c,v) \geq 0. \quad \forall (c,v)$

L1 $\quad p(c,v) = 0 \Rightarrow t(c,v) = 0.$

Restrict attention to $\underbrace{\text{determinantic}}_{p(c,v)=0 \text{ or } p(c,v)=1.}$ mechanism ideally



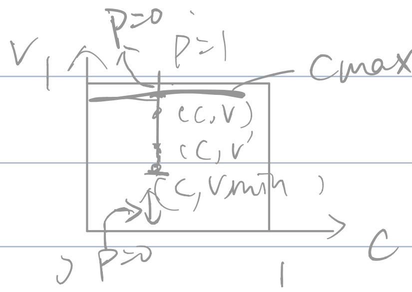
first best.

L2 If $p(c,v)=1$ and $p(c,v')=1$

then $t(c,v)=t(c,v')=1$

$p(c,v)=1$ and $p(c',v)=1$

then $t(c,v)=t(c',v)=1$.



the same (lying + get ↑ price).

s.n. Then trader faces a higher price would want to lie.

$V_{min}(c) = \min\{v : p(c,v)=1\}$

$C_{max}(v) = \max\{c, p(c,v)=1\}$.

highest sellers given v.

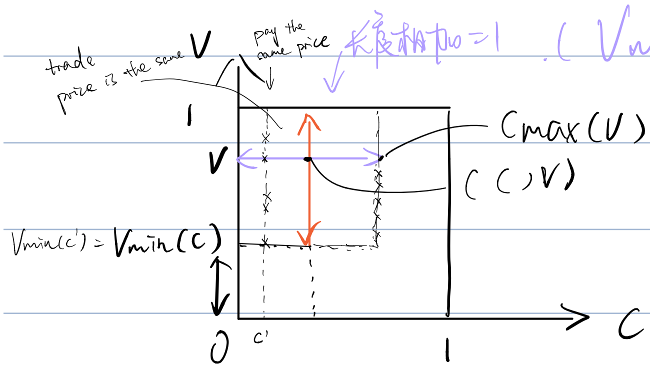
L3: If $p(c,v)=1$, $t(c,v) = V_{min}(c) = C_{max}(V)$.

$L_2 \to t(c,v) = t(c, V_{min}(c)) = V_{min}(C)$ (surplus of $V_{min}(c)=0$)

If $V_{min}(c)$ trade at prob $1 \to V_{min}(c) - t(c, V_{min}(c))$

$0 \to \overset{\shortparallel}{0}$

长度相加=1 ($V_{min}(c) = C_{max}(V)$)



Proposition: If (p, t) is a direct mechanism in which truthtelling is a dominant strategy, and there $\exists\ \hat{\alpha} \in [0,1]$ such that

$$p(c,v) = \begin{cases} 1 \\ 0 \end{cases} \qquad t(c,v) \begin{cases} \hat{\alpha} & \text{if } c \le \hat{\alpha} \text{ and } v \ge \hat{\alpha} \\ 0 & \text{otherwise} \end{cases}$$

trade at price $\hat{\alpha}$

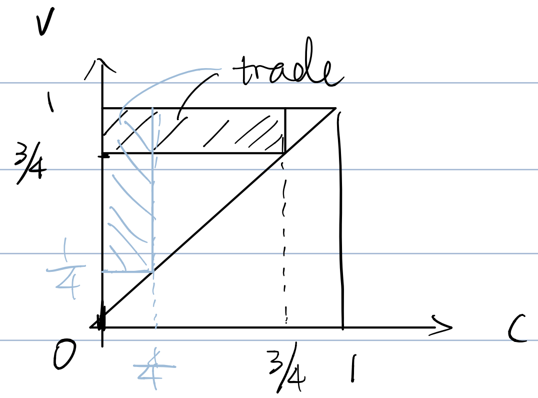
explain

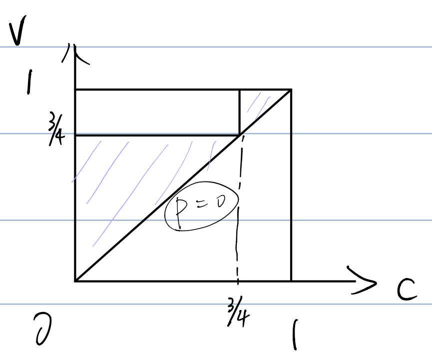
Indirect Mechanism

- a mediater announce a price $\hat{\alpha}$
- traders get to decide Y or N.

  if (Y, Y) → trade occurs at $\hat{\alpha}$

  otherwise → no trade exists.





efficience outcome perfect information.

Con: The first bests outcome is not attainable in a dominant strategy equilibrium of any indirect mechanism.