

Test March 29 sections IV & V
ch (7), 8, (10) (11) - ALL

Public Goods

Exc.

	Rival	
	Y	N
Y	Private *	
N		Public

Rival - one person's use unavailable for others

Public goods - underprovide by market
 - free ride - use without paying

Production of Public Good

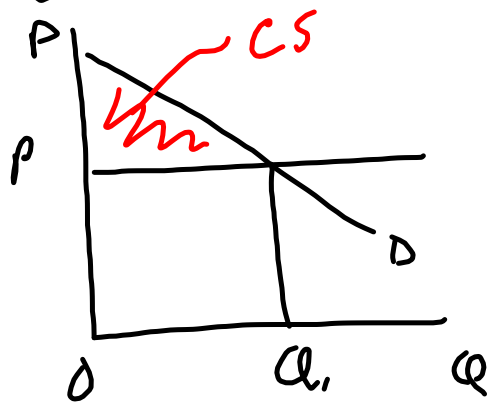
$$G = \alpha \sum_{i=1}^N c_i \quad \text{Linear}$$

α - Cons. Surplus multiplier > 1

eg if $c_i = \$10$ $N = 10$
 Total contribution = \$100

$\alpha = 1.5$

Total value = \$150



$P \times Q$ - spend
 $P \times Q + CS \rightarrow \text{Value}$

↓ Dominant strategy - Free Ride - NC

N = 2

		B	
		C ₃	NC ₀
A	C ₃	6, 6 <u>6</u> , <u>6</u>	1.5, 7.5 <u>1.5</u> , <u>7.5</u>
	NC ₀	7.5, 1.5 <u>7.5</u> , <u>1.5</u>	3, 3 <u>3</u> , <u>3</u>

2 players A & B
2 strategies C, NC

Endowment 3

$$G = \alpha \sum_{i=1}^2 C_i$$

$$\alpha = 1.5$$

net → G - C_i

If A contributes ↓

B does not 3 · 1.5 = 4.5

A gets 4.5 - 3 = 1.5

$$G - C_A = 1.5$$

B gets G - C_B = 4.5 + 3 = 7.5

$$\sum C_i = 6 \quad G = 9$$

$$\text{net} = 6 = \underline{G - 3}$$

social optimum
is C, C →
12
Dominant st.

Free Riding \rightarrow Dominant Strategy
 $G = 0$ - under provision

$$G = \max_i \{c_i\} \quad \text{Best Shot}$$

neighborhood watch
 lighting street

incentive $c_j < c_i$; $c_j = 0$
 person with highest
 value determines good level.
 military alliances

highest
 contribution
 sets public
 good.

$$G = \min_i \{C_i\}$$

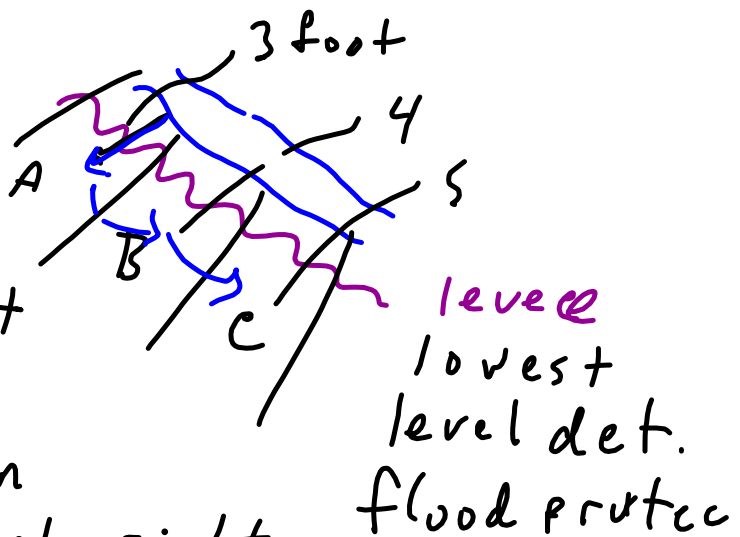
-flood control.

Weak link - lowest contribution.

-disease prevention

- intellectual property rights

lowest contributor → raise to next lowest - until return (payoff) falls to zero (net)



Provision Point / Threshold.

$$G = 0 \text{ - if } \sum c_i < TH$$

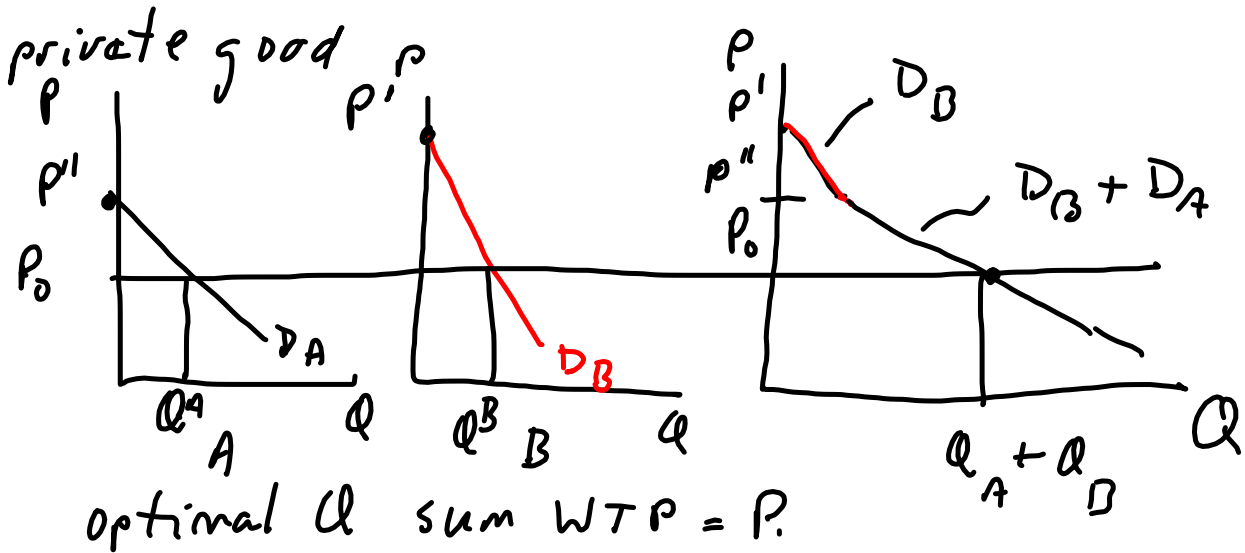
$$G \text{ - if } \sum c_i > TH$$

Money back guarantee
+ Threshold.

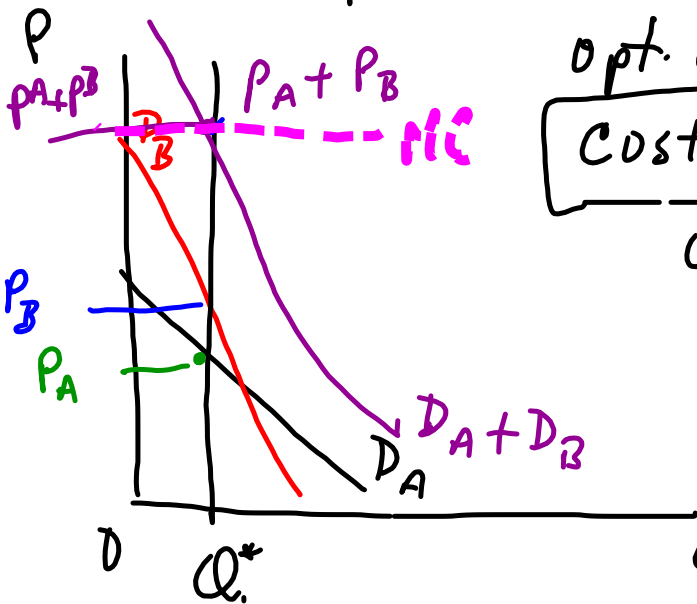
charity
org.
GoFundMe
Kickstarter
refunds

success
rate

How much public good is optimal (efficient)?



Public good \rightarrow add WTP vertically
 hold Q \downarrow add Prices



Opt. quantity

$$\text{Cost} = P_A + P_B$$

Q^* graph

- if we set "tax" for A & B at P_B & P_A

- no one wants to change outcome
 Erik Lindahl.

marginal benefit taxation

to change outcome

Q5. p230

Q	WTP.				D. Total
	Judd	Joel	Gus	Tim	
1	7	5	3	2	\$17
2	6	4	2	1	\$13
3	5	3	1	0	\$9 - WTP > COST.
4	4	2	0	0	\$6
5	3	1	0	0	\$4

Cost is \$8/movie - Rent 3 - total \$24
 - equal split \$6 each

- revealing WTP? - Judd yes

- benefit pricing - Judd \$5/movie \$15
 Joel \$3/movie \$9
 Gus \$1/movie \$3
 Tim \$0/movie \$0

Reveal Demand.