

Public Goods:

Pizza vs. National Defense

Pizza: Consumption rival

--> "If I eat it, you cannot eat it"

Pizza: Consumption Excludable

--> "Pizza Parlors can prevent consumers who don't pay for Pizzas from consuming them"

Pizza: Excludable & Rival --> Pure Private good

National Defense: Non-Excludable & Non-Rival

--->Public good

	High Excludability	Low Excludability
Weak Rivalry	Non-crowded library	Sunset, Defense Pure Public Goods
High Rivalry	Food, Health Care Pure Private goods	Local Roads (non-toll) during rush hour

Technology and innovations can be important for excludability or rivalry:

TV Broadcast (Pure public good) --->
scrambled tv broadcast (non-rival excludable good)

Or more complicated example:

DRM Protected CD (rival, excludable) --> DRM protected
MP3 file (non-rival excludable) --> non DRM protected
MP3 file (non-rival non-excludable)

Who produces goods immaterial -->

Consumption properties important!

Public goods produced by private sector:

e.g. Basic research in private universities
Research funded by private foundations
Search engines, Public web content,
commercial broadcast, open source software

Private goods provided (at least partially) by public sector:

e.g. K12-education, health care, trash services,
higher education....

...albeit some of these have externality/public goods aspects
in them

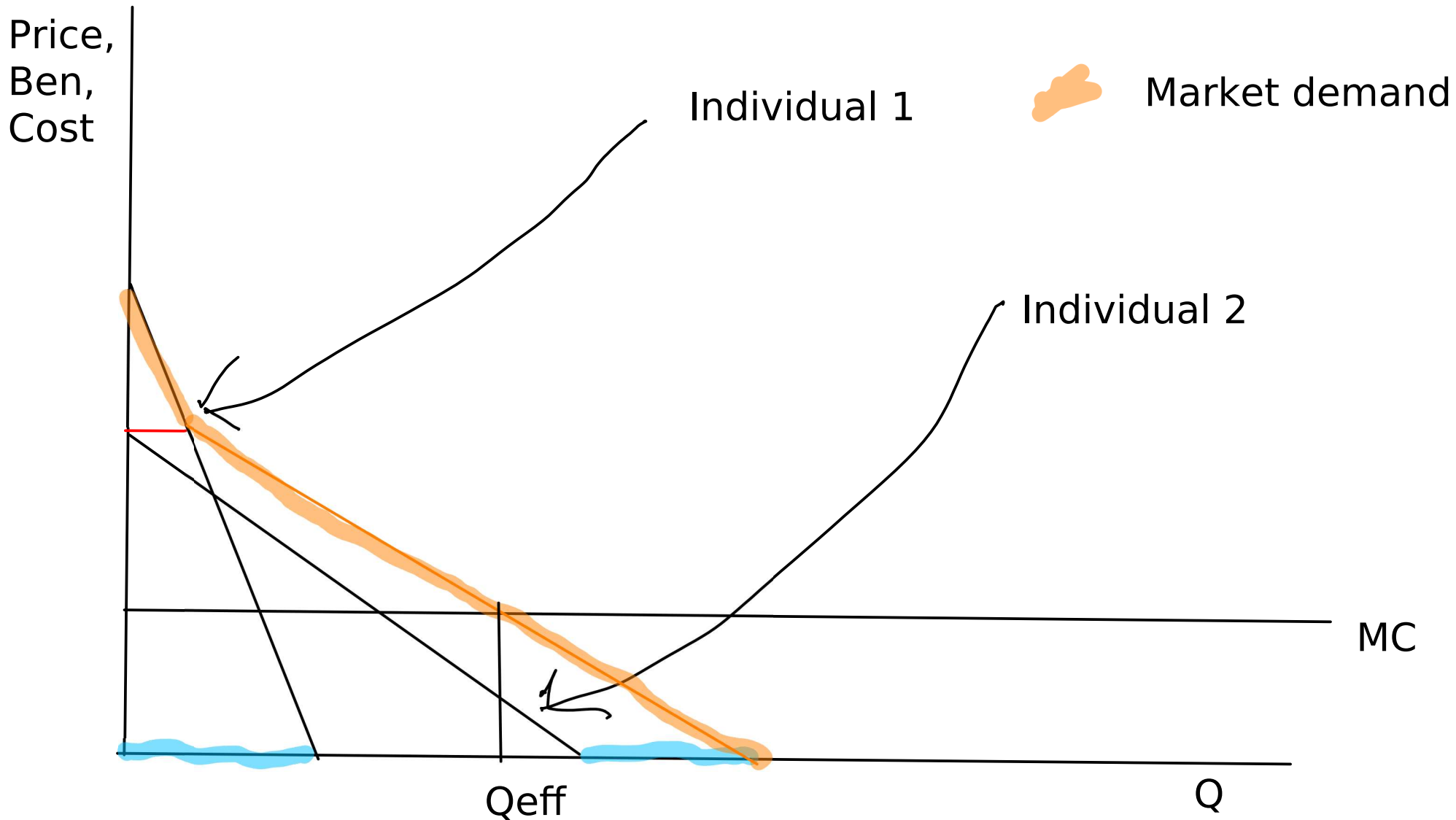
Excludability key for for-profit provision of the good:

w/o excludability--> no profits

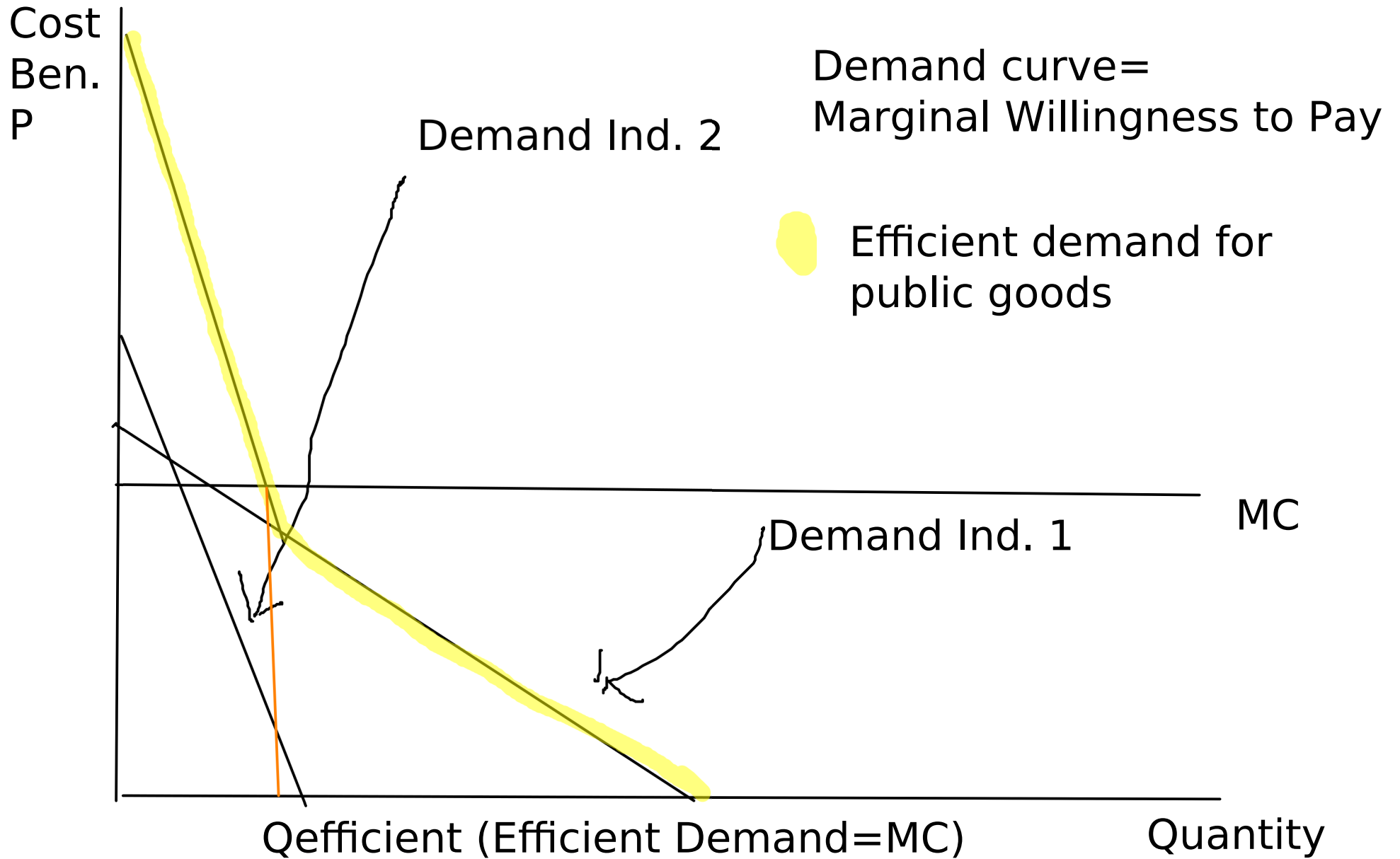
Market solutions to this: tie public good (web content, broadcast) to an excludable good (advertising) --> for-profit provision of public good

Efficiency with private goods: Two individuals, constant MC

Horizontal summation (efficiency=market equilibrium)



Public Goods: Vertical summation



Intuition:

- Only one "unit" of marginal cost is used to produce marginal "unit" of public goods
- This unit is available for everyone --> Sum of willingness to pay relevant

Symmetry:

1. Private goods:

Price the same --> MRS the same for all individuals
quantity different

2. Public goods:

Quantity the same for all
MRS ("price") different (Lindahl-Prices)

Private Provision of Public Goods:

- Free rider problem
- In laboratory experiments and in real life:
 behavior more altruistic than simple model predicts
- In general: Free markets lead to underprovision compared to optimum

Crowd-out from government expenditures?

- In theory it is possible to have 100% crowdout
- Empirically seems to be much smaller
- Distortive tax financing provision also problematic

Extra example:

- Diversifying your charitable giving and rationality

- Original source Steven E. Landsburg

- <http://www.slate.com/id/2034/>

Assume I have to divide \$30,000/year between private consumption (C), donations to cancer research (R) and donations to food aid in developing world (A).

Reasonable assumptions here:

-I care about the state variables associated with cancer research and food aid --->

knowledge about cancer=function(total resources
to research) (stochastic function)

food insecurity around globe=function(total donations to
food aid)

-This excludes so called "warm-glow of giving" models

-Now assume first I set $C = \$30,000$ and give nothing to charities

-My utility is now

$U(\$30,000; \text{current cancer knowledge; global food insecurity})$

-"Generically" I would have an opinion now how much good a marginal dollar to either good cause would do

-In the reasonable range of giving (say less than \$10,000 in our example) the marginal "value" out of giving to both good causes should stay constant

----> Because "state-variables" are unaffected by my giving (\$10,000 does not buy much of cancer research)

--->If I have a strict preference on how to invest my first charitable dollar I should have the same preference for all my giving

--->It is naive to think that "Now I solved cancer with my \$100 donation, so I can move to solve the hunger in Africa with my remaining \$100"

Algebraic/Graphical Example:

Marginal cost of public goods

$MC=Q$ (quantity)

2 Individuals: both with willingness to pay $Q=10-2P$
(regular demands)

Solve graphically and algebraically!

Marginal Willingness to pay for a given quantity-->
inverse demand curves

$Q=10-2*P$ ---> $P=5-1/2*Q$ (Individual Willingness to pay)

Total Willingness to pay= $2*(5-1/2*Q)=10-Q$

Algebraically: $10 - Q = Q$

Efficient demand = Inverse Marginal Cost

$Q = 5$ (efficient public good provision)

