Public Goods and Friends

Economists spend most of their time studying where markets don't work because not all goods are like a cup of coffee.

- Rival – only one person at a time can enjoy the good.
- Non-rival – many people can enjoy the good at the same time.
- Excludable – I can stop you from enjoying the good.
- Non-excludable – I can't stop you.

The Usual Taxonomy

	Rival	Non-Rival
Excludable	Private Goods	Artificially Scarce
Non-excludable	Common Resource	Public Goods

Private Goods

What we have been looking at all term

Common Resource

Non-excludable and Rival: I can't keep you out but when you enjoy the good, I enjoy it less.

- Roads: Can't keep you off and you cause traffic.
- The air: Can't keep you from using the atmosphere as a trash dump.

We look at this in Resource Economics (EC 430), Urban Economics (EC 431) and Public Economics(EC 435)

Artificially Scarce

Excludable but non-rival: I can keep you out but your enjoyment has no effect on me.

- Movies/Pay Per View
- Things that require memberships (But there are limits)

We look at this in Public Utility Economics (EC 437) and Industrial Organization (EC 425) and Regulation (EC 426)

Public Goods

Non-excludable and Non-Rival: I can't keep you out but your enjoyment has no effect on me.

- Over air TV
- Fireworks
- National Defense

We study this in Public Economics (EC 435) and Labor Economics (EC 465)

Details?

For each problem:

- Give a diagrammatic description using supply and demand or cost curve style reasoning.
- One kind of solution to the problem.
    - It tends to be the low cost solution but not always.
    - Every solutions comes with limitations.
    - Some will never get political traction.

Common Resource

- Use supply, marginal private cost and marginal social cost, and demand, marginal private benefit, reasoning.
- There is a socially optimal amount, but we overuse.
- Classic solutions
    - Convert to individual property rights
    - Publically manage the commons
    - Tax the use of the commons
    - Make it excludable in some way.

Marginal Benefits and Costs

- The cost of producing one more unit of the good.
    - MC and Supply are both Marginal Cost functions.
    - The marginal cost to you may not be the marginal cost to society. It could be free to you.
- The benefit of consuming one more unit of the good.
    - Demand is a marginal benefit function.

Finding Socially Optimal

When marginal benefit is equal marginal cost, net benefits are maximized.

- This is the first-order condition from calc 1.
- Note, I did not say private or social.
- Yes, it does make sense to pollute a little if we share costs and benefits.

There is no cost to you. Using the resource as zero marginal private cost.

Socially Optimal vs Private Optimal

Summary

When you have free access, you overuse the resource.

How do We Fix?

- Create individual property rights

These are variations on a theme:

- Manage for Public Benefit
- Tax use of the commons
- Make excludable in some way

Create Individual Property Rights

Individuals buy all existing rights or government declares it.

- The Enclosure Movement in UK between 15th and 19th Centuries.
- Tradeable Fishing Rights.
- Cap and Trade generally

Manage For Public Benefit

Examples:

- Bureau of Land Management: Grazing mining, recreation, timber
- Oregon Common School Fund

But:

- We fight over how this is done.
- Government charges a price to use, called a royalty.

Tax or Charge Royalty Diagram

Tricky to get the right price.

- $10 for a truckload of wood.
- $1.35 per animal unit month (AUM)

- Fishing seasons
- HOV lanes

Artificially Scarce

- Think of something like a movie.
    - Large up-front cost
    - Cost per view is just some electricity.
    - You can keep people from seeing it.
- Costs are different
    - Fixed cost
    - Constant $MC = AVC$

They are a Monopolist

- They do monopolist things, raise price, lower quantity.
- Transfer surplus from consumers to producers.
- Produce less than the socially optimal amount.

Problem

- If they produce the socially optimal amount, they earn negative economic profits.
- Firms don't want to do it.

Diagram

We Regulate This

Many ways to do this but most try to get prices such that profits are zero.

This is what public utility commissions do with natural gas and electricity.

Public Goods

- With private, rival, goods, add quantities at known prices to get market demand.

- With public, non-rival, goods, add willingness to pay at known quantities.

$$MB_{Alice} = 20 - \frac{20}{80}q$$

$$MB_{Bob} = 40 - \frac{40}{80}q$$

With $MC = 15$

Private Goods

- Solve MB, which is willingness to pay, in terms of quantity and then add.
- This gives market demand.
- Set equal to MC and solve for equilibrium.

$$15 = MB_{Alice} = 20 - \frac{20}{80}q_{Alice}$$
$$15 = MB_{Bob} = 40 - \frac{40}{80}q_{Bob}$$

You should get 70. This is also socially optimal.

$$15 = SMC = SMB = 20 - \frac{20}{80}q + 40 - \frac{40}{80}q$$

You should get 60. We need less because we can enjoy at the same time.

How much would people voluntarily Contribute?

- Look at the Private Demands
- At a price of 15
    - Alice would contribute enough for 50
    - Bob would contribute enough for 20.
- Bob knows Alice contributes enough for 50.
- Bob does not contribute.
    - There is already more than he wants.
    - Why is the gubmit wasting money?

Voluntary Contribution Under provisions

Unless people take into account the benefits that go to others.

- They will only contribute so that it maximizes personal benefit.
- This is what Forrest Williams studies

We vote on things like this.

- We do a cost benefit analysis
- Pick a number and let people vote
- Cost benefit analysis of things like this is what Bluffstone studies.

Theoretical Trick

Lyndahl Tax:

- Find the socially optimal quantity of the good.
    - Know everyone's MB function
    - Everyone tells you the truth
- Find for each person the marginal benefit and charge them for it.

Socially optimal was 60 so:

$$MB_{Alice} = 20 - \frac{20}{80}60 = 5$$
$$MB_{Bob} = 40 - \frac{40}{80}60 = 10$$

Note it adds to the marginal cost.