OUTLINE — October 14, 2019

- Moral Hazard (skipping this)
  - Read 10/9 slides & reader article; Questions to Piazza
- Externalities *(required: Olney youtube video)*
  - Definitions
  - Taxes & Subsidies (what is "optimal" & graphs in video)
  - Coase Theorem
  - Cap and Trade
- Labor Market (most of this is left to Chap. 9)
- Income Distribution (will continue this on 10/16)

PS3 due Gradescope & bcourses, Thurs 10/24 8 pm

Market Failure: Externalities

- Your activity affects someone else
- Negative externality
  - Cost borne by someone else
- Positive externality
  - Benefit received by someone else

Positive Externality

- Benefits accrue to people who are neither the buyer nor the seller
  - *Education !*
- Private Marginal Benefit
- External Benefit (or, marginal external benefit)
- Social Marginal Benefit (or, marginal social benefit)

Positive Externality

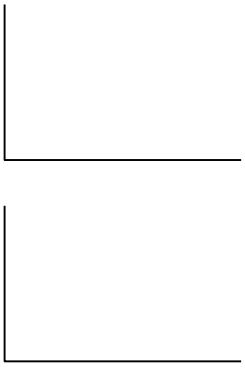
Encourage behavior with subsidy

- Private market produces too little when there are positive externalities
- Encourage with subsidies
- Example: Prof. Olney buys $48 Bart ticket each month, paid through pre-tax payroll deduction
  - $3 paid by Bart
  - $10 paid by UC Berkeley
  - $10 paid by federal government
  - $3 paid by state government
  - Which means just $22 is paid by Prof. Olney

Externalities & Taxes or Subsidies

- The challenge: what is the ***right (or, optimal) size*** of subsidy in the presence of a positive externality?
  - It's positive (not normative) analysis
  - "Right" or "optimal" means generating socially optimal quantity

Positive Externality: Policy Solution is a Subsidy

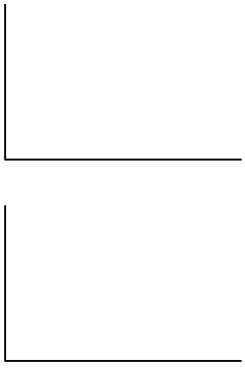


Negative Externality

- Marginal Private Cost (or, private marginal cost)
- Marginal Damage Cost (or, external cost)
- Marginal Social Cost (or, social marginal cost)

Negative Externality

Negative Externality: Policy Solution is a Tax



Negative Externalities & Taxes

- Taxes discourage activity generating negative externalities
  - If Tax > MDC, then Market equilibrium quantity < $Q_{OPTIMAL}$
  - If Tax < MDC, then Market equilibrium quantity > $Q_{OPTIMAL}$
  - Only if tax = MDC, then Market equilibrium quantity = $Q_{OPTIMAL}$
- What should the tax revenue be used for?
  - Offset (or, cover) costs represented by MDC

When q=0 is socially optimal

Coase Theorem

- Solution without government possible
- Requires
  - Well-defined property rights
  - No costs to bargaining
  - Only a few people
- Otherwise: government intervention

Alternative Approach: Cap & Trade

- A market-based solution addressing negative externalities
- Authority determines total allowable emissions – the "cap"
  - Issues permission-to-emit-carbon permits to manufacturers
  - One permit required for each ton of CO_2 emitted
- Permits can be bought & sold – the "trade"
- Key assumption: manufacturers face different costs of reducing carbon emissions
- Key characteristic: the price of permits will vary with S&D
- Key result: as cap is reduced (and price of permits rises), firms have economic incentive to reduce (abate) CO_2 emissions rather than pay for increasingly expensive permits

Cap & Trade: Pollution

- Suppose every refinery is given permits, which they can use or sell. For each ton of CO_2 emitted, a firm needs 1 permit. Permits currently sell for $20 each.
- Firm A: Cost to abate (reduce emissions) = $8 per ton of CO_2
  - What will they do?
  - Effect on profit?
- Firm B: Cost to abate = $35 per ton of CO_2
  - What will they do?
  - Effect on profit?
- In the long run, which refineries are likely to exit industry?

Definitions of Wealth & Income

Wealth (or, Net Worth) = Assets – Liabilities	Income

Focus: Income Distribution

- Distinctions:
  - Household versus Individual
  - Pre-tax versus post-tax
    - Pre-tax distribution reflects only income
    - Post-tax distribution reflects both income & tax policy

Perfect Competition & Income

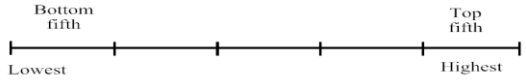
- In perfect competition, worker income depends upon "marginal revenue product" (MRP)
  - MRP = increase in total revenue from hiring 1 more worker
    - Depends upon [1] marginal product (= marginal return) and [2] price of output
  - Assumes perfect competition in market for labor
    - Lots of workers, all exactly the same,
      - So, no discrimination (legal or illegal) by employers
    - Lots of employers, none with large share of market
    - No barriers to entry or exit

Policy Implications

- If assumptions of perfect competition are satisfied. . .
  - Resulting distribution of income reflects
    - Worker skills & talents
    - Output price
  - Policy implication: no market intervention called for
- But are the assumptions of perfect competition applicable to markets for labor?
  - Hardly

Distribution of Income

- Divide population into fifths:



- Gini Coefficient: A measure of evenness of distribution
  Gini = 0 means perfectly **equal** distribution
  Gini = 1 means perfectly **un**equal distribution

Choose a Country to Live In : You don't know what income group you'll be in. You have a 20% chance of being in the richest 20%, a 20% change of being in the poorest 20%, an 0.1% chance of being in the top 0.1%, and so on.

	A	B	C	D	E
Income per person per year					
In top 0.1%	$1,122,000	$404,000	$424,000	$459,000	$379,000
In top 20%	$47,300	$27,900	$28,600	$31,100	$13,400
Mean	$20,400	$16,200	$16,000	$15,800	$4,200
In bottom 20%	$5,300	$7,800	$8,500	$5,900	$500
Life expectancy from birth	77 yrs	75.5 yrs	80.5 yrs	79 yrs	67 yrs
Deaths before age 5 (per 1,000 newborns)	8	6	5	7	40
Gini coefficient of income inequality	0.408	0.247	0.249	0.315	0.600

CEO to worker pay

- http://www.epi.org/publication/ceo-pay-continues-to-rise/ and video which is at
- https://youtu.be/zbH66lGRfiI

U.S. Household Income, 2018

	Lowest 20%	Second 20%	Third 20%	Fourth 20%	Top 20%
If even distribution	20%	20%	20%	20%	20%
Actual share in 2018					
Dollar cut-offs (rounded)					

Source: *https://www.census.gov/library/publications/2019/demo/p60-266.html* , Tables A-3 & A-4

"income" is money income before taxes & transfers