

# The Role of Government

## Health Economics Lecture 2



# Outline

- Reasons for the government to intervene
  - Pareto optimality
    - Welfare theorems
    - Limitations
  - Public goods
    - Coase theorem
    - Limitations

# Systems Review

- *Adjustment*
  - Playing smarter
- *Adaptation*
  - Changing the rules
- *Coherence*
  - Players cooperate better
- Households
- Primary health service delivery system
- Financial protection system
- Quality assurance system
- Drugs and supplies distribution system
- Innovation system



## Today's question

- When should government get involved in health systems?

# Skeptical view

- Lay Points of View
  - Government like a “milk cow with 310 million teats”
    - Interest groups form to gather in government largess
  - No objective standard to answer “When should government intervene?”



# Economists' reasons to intervene

- Pareto optimality
  - Making at least one person better off without making anyone worse off
- Public goods
  - Everybody needs these, but individuals need coordination to ensure supply



# Part 1) Pareto Optimality

# Elements of welfare economics

- Definition: “An economy”
  - A list of items owned by every individual in a population
- Definition: “Utility”
  - A mapping from the list of items one person owns to a number describing how satisfied they are with their status
- Definition: “Social welfare”
  - A mapping from an economy to a number describing how satisfied the population is with the economy



# Net Social Welfare

- $W = \sum \lambda_i (U_i)$ 
  - $\lambda_i$  is the weighting factor of person  $i$
- Different weighting schemes for  $\lambda_i$ 
  - Egalitarian:  $\lambda_i = 1$
  - Rawlsian  $\lambda_i = 1$  for the poorest person, 0 otherwise
  - Nietzchian  $\lambda_i = 1$  for Übermensch, 0 otherwise
  - Confederate  $\lambda_i = 1$  for Whites, 0 otherwise
  - American  $\lambda_i = K \times$  (amount donated to candidate)

# Pareto optimal policy change

- Let  $E^j = \{R^j_1 \dots R^j_i \dots R^j_N\}$  be the resource holdings of the  $N$  people in Economy  $j$
- For economies  $E_0$  and  $E_1$  a policy that transforms  $E_0$  to  $E_1$  is Pareto optimal if
  - 1)  $W(E_1) > W(E_0)$  “*welfare is higher*”
  - 2)  $U(R^1_i) \geq U(R^0_i)$  for all “ $i$ ” “*nobody worse off*”

# Pareto Optimality

- What's good about Pareto optimality?
  - Benefit without cost
  - Seems stupid not to enact a PO policy change
- What's bad about Pareto optimality?
  - Not a complete characterization of our goals for society to accomplish



## Setting up an economy

- “Volunteers”
- Listing the economy
- Computing social welfare





# Under Central Planning

- Did anybody improve their status?
- Was it Pareto optimal?
- Was it fair?
- What would make it better?

# Scoreboard: Version 2 *Free market*

Student	Starting Utils	Ending Utils

# Under Free Market Equilibrium

- What adaptations did students contemplate?
- What institutional change allowed them to improve their well-being?
- What threatened the success of that institutional change?



# Defining Free Market Equilibrium

- Free market equilibrium also known as competitive equilibrium
- A free market equilibrium describes the distribution of resources that occurs after a population trades their resources in a market where the following conditions hold:
  - Everyone is able to make rational decisions
  - Everyone know what they want
  - Everyone is able to trade
  - No envy
  - No altruism
  - No asymmetric information
  - No barriers to entry
  - Markets for everything
  - Products non differentiated
- Definition: a “market failure” is when a given market violates one of the above conditions for free market equilibrium



## Q&A

- How many market failures does it take to prevent a free market from reaching Pareto Optimality?
- If there two market failures and you fix one, does that make it better?

## Defining market failure

- Definition: a “market failure” is when a given market violates one of the conditions for free market equilibrium



## First welfare theorem

- The distribution of resources achieved through a free market equilibrium is Pareto optimal

# The most important slide in economics

Many bad policy makers became bad by misunderstanding 1WT

- 1WT implies
  - Going from *almost* PO to PO is worth doing
    - Making people better off without making someone worse off is good to do.
  - Policy makers should focus on the fixable market failures to find opportunities to achieve PO
- 1WT does not imply
  - Most markets will achieve PO
  - Most markets will achieve PO if left free of intervention
  - Markets that fail can always be made better by government intervention
  - PO is summum bonum



## Sidgwick's Dictum

- “It does not follow that whenever laissez-faire falls short government interference is expedient; since the inevitable drawbacks of the latter may, in any particular case, be worse than the shortcomings of private enterprise”

## Second welfare theorem

- Any arbitrary Pareto optimal economy  $E^*$  can be achieved as the outcome of a free market equilibrium after an initial redistribution of resources.

# Market Failures and Health Insurance

- Q: Which of the following market failures is true about health insurance markets?
  - No envy or altruism
  - No asymmetric information
  - No barriers to entry
  - Markets for everything
  - Products non differentiated
- Answer: laissez faire health insurance markets cannot achieve competitive equilibrium and will not yield Pareto optimality on their own.



# What should governments do?

- Options: Regulate or Take over
  - Depends on what kind of market failure
- Examples:
  - Regulation of insurance industry
  - Antitrust laws
- Normative rule:
  - Government should examine each policy option
  - Compute net social welfare for each
  - Selects option with highest “net social welfare”

# Descriptive Political Economy

- Elections are idea markets
  - Politicians sell each voter a vector  $(U_i)$
  - The politician who proposes the highest  $W(U_i)$  wins



# Rice/Unruh

Conditions for government intervention

# Demand for Health Insurance and Services

1. A person is the best judge of his or her own welfare
2. Consumers have sufficient information to make good choices
3. Consumers can accurately predict the results of their consumption decisions
4. Individuals are rational
5. Social welfare is solely the sum of individual utilities



# Externalities of Consumption

6. There are no negative externalities of consumption
7. There are no positive externalities of consumption
8. Consumer tastes are predetermined



## Competitive Supply

9. Supply and demand are independently determined
10. Firms do not have any monopoly power
11. There are no increasing returns to scale



## Profit Motive in Health Care

12. Firms maximize profits

13. Profit maximization results in the most efficient production and the highest consumer welfare



# Equity and Redistribution

14. The distribution of wealth is approved by society



# Summary on Pareto Optimality

- Should government intervene in health system?
  - Market failures interfere with Pareto optimality
  - Potential government role to correct market failures through institutional change
    - Rice/Unruh list 14 market failures
    - All it takes is one market failure to motivate a role for government



## **Part 2: Public goods and Merit goods**

# Merit Goods Defined

- Merit goods are underconsumed by individuals yet judged to be desirable by external parties like governments
- Examples: education, vaccinations, exercise
  - Rationale might be externality like contagion, military manpower
  - Often the rationale is “*paternalistic altruism*”
- Altruism is when person A wants person B to be happy
  - (A gives B cash)
- Paternalistic altruism is when person A wants person B to be happy in the manner defined by person A
  - (A gives B food and medical assistance)

## More Definitions

- *Rival goods*: goods that can only be consumed by one person at a time
- *Non-rival goods*: consumption by A does not effect consumption by B
- *Excludable goods*: goods for which it is possible to exclude people (i.e. non-members, non-payers, non-citizens)
- *Non-excludable goods*: goods where one cannot exclude persons who want to enjoy
- *Pure public goods defined as non-rival and non-excludable*



## Leading examples of public goods from health

- Controlling contagious disease
- Controlling environmental health threats
  - Air, Water, Rats, Mosquitoes
  - Regulating dangerous consumer products
  - Safe roads
- Ensuring the quality of health services in a country
- Protecting vulnerable populations

# Taxonomy

	Excludable	Non-Excludable
Rival	<b><u>Private Goods</u></b> Cheeseburgers <b><u>Merit goods (maybe?)</u></b> Haircuts Personal trainers	<b><u>Common Pool Resources</u></b> Trout streams
Non-Rival	<b><u>Club Goods</u></b> Cable TV HMO quality	<b><u>Pure Public Goods</u></b> National Defense

## Focus on “Excludability”

- Commonly assumed that the unit of analysis is a single country
  - “National defense” of country A is a public good for members of country A but members of country B are excluded
  - From a global perspective national defense is a club good
- What goods are “public” for everybody on the planet?

# Global Public Goods

- Global public goods: the non-excludability applies to everybody on the planet
- Best example is smallpox eradication
- Health examples not necessary all global
  - Environment
    - Many environmental health threats are local
  - Altruistic glow from vulnerable people getting care
    - Altruism tends to be local
  - Supporting institutions that improve quality of care
    - Making these club goods can be worthwhile
  - Lowering prevalence of contagious disease
    - Global good if the disease is potentially pandemic and airborne
    - Some find it difficult to see STDs as a pandemic threat



# Undersupply of Public Goods

- Story of the commons
  - Lake with a circumference of 100 miles
  - 100 houses on lakeshore each with a mile of property
  - Each house produces  $Z_i$  tons of sewage per year
  - Each home owner must decide whether to dump their sewage in the lake or pay cost  $C$  to treat one unit of sewage

# The Undersupply of Pure Public Goods (Oversupply of Public Bads)

- Social Benefit= $W(\sum_i(u_i(Z)))$  where
  - $Z$  is the public bad (pollution)
  - $u_i$  is the utility of person “i” (The more  $Z$  the less  $u_i$ )
  - $W$  is social welfare function
- $Z$  supplied by individual contributions  $Z=\sum_i(Z_i)$ 
  - Let each unit of  $Z$  cost  $C$
- Social optimum represented by
  - Marginal Social Benefit=Marginal Social Cost
  - $dW/dZ=C$
- Individual decision based on  $du_i/dZ_i$  vs  $C$
- Free rider observes that  $du_i/dZ_i$  is close to zero because if they default while others still supply the public good they do not suffer a loss

# The History of Civilization: Solving Public Goods Problems

- Transform Public Good to Club Good
- The “club” is often a nation, state, city
  - Step 1) Form a group
  - Step 2) Take up a collection
  - Step 3) Spend the money providing the public good or taxing the provision of the public bad
  - Step 4) Hire an economist to tell you when marginal social cost=marginal social benefit  $dW/dZ=C$
- Omitting step 4 means the club will over-provide or under-provide the public good



# Markets to Reach Efficient Pollution

- Market solutions (e.g. tradable pollution permits)
  - Assign liability—the right to sue polluters
  - Assign rights—the right to emit pollutants
  - Minimize transaction costs
    - Polluter and Polluted need to locate each other and make a deal

# Pollution control example

- One Country, One Shoe Factory
  - Country has 1 million people
  - Factory produces Shoes and Smoke
    - Shoes are \$10.00 per pair everybody buys 1 pair
    - Smoke is Externality
      - But people would be willing to pay up to \$5.00 per year to avoid smoke
      - (Net social benefit from eliminating smoke is \$5 million)
    - Technology exists that allows installation of a smoke eliminator for \$5 million

# Command and control solution

- A regulator
  - Measures smoke production at the factory
  - Identifies smoke elimination technology
  - *Measures social willingness to pay* to reduce smoke production
  - Uses coercive sanctions to force the polluter to produce the socially efficient amount of smoke
- Weakest point is “measuring social willingness to pay”
  - Default option is expert panels of public health scientists setting emissions standards

# Market Example

- Regulator assigns Rights to Victims
  - Every person issued a document that reads “Bearer has a right to breathe clean air and can sue offenders”
    - →1 million breathers sue the factory go to court and tell judge how much smoke harms them (This averages \$5 per person)
  - Ideal verdict--Damages of \$5 million against factory waived provided factory promises to install a \$5million/year smoke eliminator
  - Shoes now cost \$15.00 per pair
- Regulator assigns to Factory
  - “Bearer has a right to emit lots of smoke”
  - Consumer group collects donations of \$5.00 per citizen/yr
  - Offers \$5 million/yr. to factory to buy the factory’s tradable permit
  - Factory accepts the cash and installs smoke eliminator

# Coase's Remarkable Theorem

- Coase: Optimal pollution equilibrium occurs if:
  - 1. All rights are assigned
  - 2. Transactions costs are zero
- Coase corollary: in a world as full of rights as ours observing pollution implies that there are high transactions costs
- Remarkable Part:
  - *It doesn't matter HOW you assign rights!*
    - *Issuing a tradable "right to pollute" works as well as a tradable "right to breathe clean air"*



# Markets vs. Command and Control

- Market solutions' disadvantages magnified when there are high transactions costs
  - Costly for 1 million individual people to sue a factory or for NGO to collect 1 million donations
- Command and control disadvantages
  - Also costly to inspect and coerce multiple polluters
  - But, set up an agency and the job gets done
- Real disadvantage of command and control is getting a signal to the regulators about how much each victim values pollution reduction
  - Information is known to the victim and best revealed by their actual trading in well functioning markets
  - Regulators are likely to miss the optimal point

## Public provision → New social problems

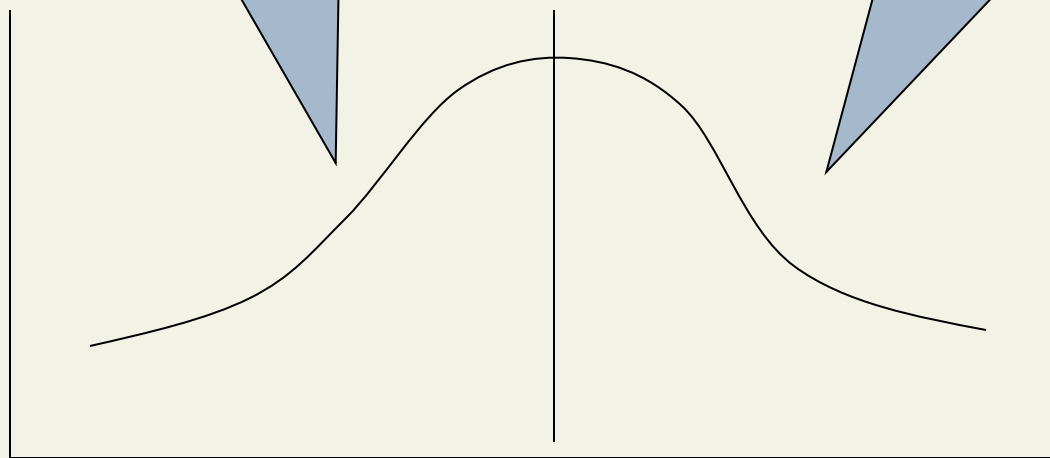
- Problem of low public goods provision solved but induces social conflict about how much public goods to provide
  - Class conflict over which public goods get provided
- Conflict plays out differently in democracies and dictatorships, but there will always be conflict
- **ROOT OF CONFLICT:**
  - Heterogeneous enjoyment of the public good

# The Problem of Heterogeneous Preferences

Mandating public good forces too much of it on these people. They would rather have lower taxes.

Taxing everybody or charging everybody higher premiums to pay for the public good is a windfall. They get public good they value in excess of what they are taxed

% of Population



\$5 million

Marginal Benefit of Public Good  $du_i / dZ$



## Interest group politics

- Those on the left side of the preference distribution compete with those on the right for social spending on the public good they enjoy
- Everybody tries to recast their private goods as merit goods or public goods to get the public to pay for them

# Summary

- Public Goods
  - Public goods in health
    - Protecting the vulnerable
    - Ensuring quality
    - Controlling wasteful practices
  - Always need to choose
    - Government's collective finance and provision
    - Turn public good into club good
    - Lower transaction cost between beneficiary and supplier