Health policy

- **Public intervention in the health sector**
  - Health system design, Regulation, Tax and subsidies …
- **Why?**
  - Market failures
- **Which criteria?**
  - Efficiency best use of available resources
  - Equity distribution of resources/welfare

Welfare Economics

- Benevolent «social planner» (policy-maker)
  - Maximises social welfare
- Individualism
  - each individual is the best judge of himself
  - collective well-being derives from the aggregation of individual preferences
- Choice of the aggregation rule
  - Voting
  - SWF
  - Pareto Criterion

Let's vote →

	U1	U2
A	3	3
B	2	9
C	4	5
D	7	2

Paradox of Voting Marquis de Condorcet 18° century

Tizio	A	B	C
Caio	B	C	A
Sempronio	C	A	B

- A vs B →A
- A vs C →C
- C vs B → B

Majority voting

- **If preferences are single-peaked** then the solution to majority voting is the outcome preferred by th median voter

Ada	Bice	Carla	Dora	Elena
500	800	1000	1200	2500

• The median voter is Carla, the electoral outcome is **1000.**

• Note, the average is 1200

Individual preferences and Social Ordering

- Paradox of vote is an example of Arrow's impossibility Theorem.
- Is it possible to aggregate individual preferences in order to obtain a complete social ordering? Can we find a Rule that allows us to choose a point on the Pareto frontier (set of efficient outcomes)?
- **Arrow's impossibility Theorem**: *in a democracy there is no general rule to consistently aggregate individual's preferences into a policy choice that satisfies reasonable two axioms (desirable properties)*: **Monotonicity**, Unrestricted domain, Independence of irrelevant alternatives, Non dictatorship

Monotonicity and the Pareto Criterion

- Pareto Criterion: A situation A is preferable to B if in A someone is better off and no one is worse off.
- Pareto Efficiency is a situation where no individual can be made better off without making at least one individual worse off

Pareto Efficiency →

	U1	U2
A	3	3
B	2	9
C	4	5
D	7	2

Limits of Pareto criterion

- It is an efficiency criterion and **does not take equity into account**.
  - *"A society can be Pareto optimal and still perfectly disgusting."* (Sen)
- It is static.
- **Does not allow a complete ordering**
- It is biased towards the *status quo*

Limits: equity

	U1	U2
A	**100**	**1000**
B	**101**	**2000**

	U1	U2
A	**100**	**1000**
B	**900**	**999**

I theorem of Welfare economics

- *Under complete markets, any competitive equilibrium leads to a Pareto efficient allocation of resources.*

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Market failures

- If markets are not perfectly competitive

  MR=MC→ P>MC

- Externalities: private benefits or costs are different from social benefits of costs
  - Over-production of negative externalities
  - Under-production of positive externalities
- Asymmetric information → market incompleteness
- Public goods
- Merit goods

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Externalities in health

- **Externality**: any positive or negative effect that a market transaction imposes on a third party (*i.e.* someone other than the buyer or seller).
- Many externalities in the world of health:
  - second-hand smoke
  - catching infectious disease from your neighbors
  - the motivational benefits of living among active people

Externalities can justify government intervention

- Without externalities, economic theory says that markets reach an efficient outcome (First Theorem)
- With externalities, government responses may help the market reach a socially desirable state
  - **Ex**: Public health efforts, like flu vaccination campaigns or quarantines to combat deadly diseases like Ebola virus

Private welfare vs. social welfare

- Important distinction between private and social welfare
- **Private welfare** is the utility level isolated to one individual within a society
  - Actions that increase or decrease this quantity are said to have private benefits or private costs.
- **Social welfare** is the summed utility levels of all individuals within a society
  - Actions that increase or decrease this quantity are said to have social benefits or social costs.

Herd immunity

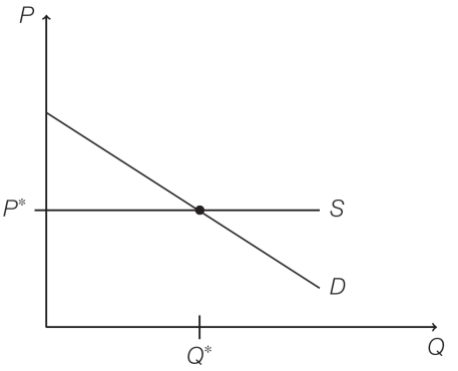
- Each vaccination protects not only the vaccine-recipient but also neighbors as well
  - Even unvaccinated people benefit when their neighbors, friends, coworkers, and family become immune through vaccination
  - Known as **herd immunity**
- Herd immunity is a classic positive externality: the social gain from each vaccination is greater than the private gain from that vaccination.

Herd immunity

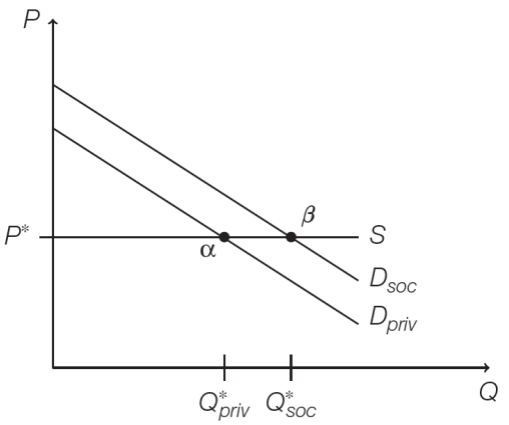
- When deciding whether to get vaccinated, people balance the private gains from vaccination – immunity from the disease – against the private costs
- But a person considering vaccination ignores the social benefits of herd immunity
- Since social benefits > private benefits, a private market produces fewer vaccinations than socially optimal

The market for flu vaccinations

- **Private demand curve *D*** reflects the private decisions of people in the market about whether they want to vaccinate at price *P*
  - These decisions reflect only private costs and benefits and not social costs and benefits
  - Herd immunity benefits are ignored

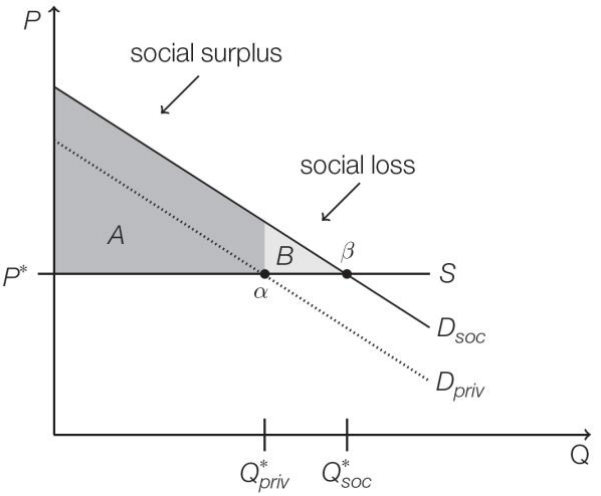


The market for flu vaccinations



- **Social demand curve D_{soc}** is greater than the private demand curve D_{priv}
  - Captures positive externality of herd immunity
- Socially efficient equilibrium higher than private equilibrium

The market for flu vaccinations



Note: Size of the social loss (the area of *B)* depends on the price elasticity of the demand curve.

Antibiotic resistance

- Widespread use of penicillin responsible for increases in antibiotic resistance
  - Every dose of antibiotics breeds more resistant bacteria
  - Use of antibiotic drugs imposes a negative externality
- Despite this negative externality, the use of some antibiotic drugs may still be socially efficient.

Pigouvian subsidies and taxes

- If externalities cause social harm, how might government policy restore the social optimum?
- **Pigouvian subsidy or tax**: a subsidy or tax designed to "internalize" an externality by altering private costs and benefits
  - Pigouvian subsidies encourage more consumption of goods with *positive* externalities
  - Pigouvian taxes reduce consumption of goods with *negative* externalities

Going beyond Pareto

- Assuming uni-modal preferences, it is possible to obtain a complete order through **majority voting**
- Assuming cardinal measurability and comparability of individual utilities, it is possible to construct a **Social Welfare Function**

Social Welfare Function

- Aggregate individual preferences to "social preferences"
- **Welfarist approach:** construct a SWF aggregating individual utility functions:

  $$W(u_1, u_2 \ldots u_N)$$

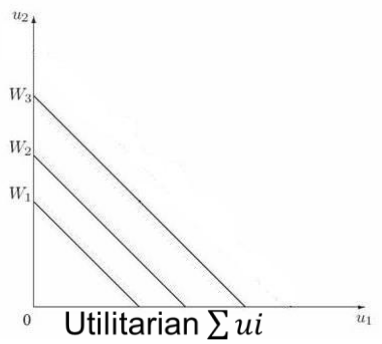
  - Utilitarian: $W = \sum u_i$
  - Rawls: $W = \min u_i$
- Max W under possibility set –> tangency condition

Social Welfare Function

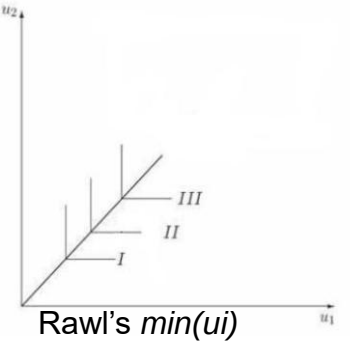
- If it is possible to measure and thus compare individual utilities (e.g. income or life expecstncy or QALY)

$$W(y_1, y_2 \ldots y)$$

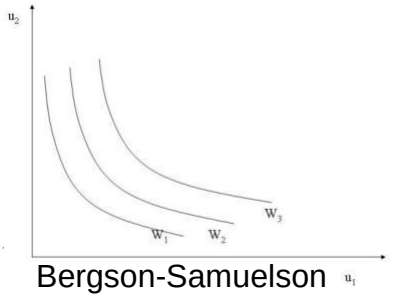
  - Utilitarian: $W = \sum y_i$
  - Rawls: $W = \min y_i$



Utilitarian $\sum ui$



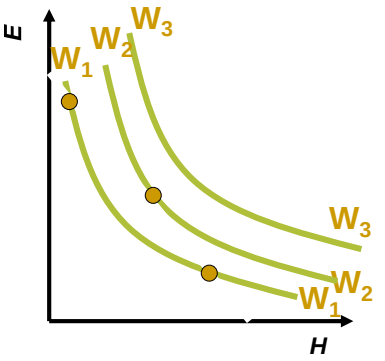
Rawl's *min(ui)*



Bergson-Samuelson

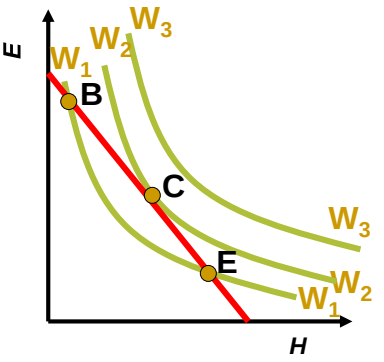
They differ in the relative weight of *equity and efficiency.*

Social welfare function (on goods)



Society's optimal choice

Given the constraint, the tangency condition gives society's optimal choice (**point C**)



Social Welfare Function

- Single Valued Welfare Function
  - Utilitarianism
    - Cost Benefit Analysis
    - Human Development Index
- Multivalued Function
  - Commission on the Measurement of Economic Performance and Social Progress – Dashboard
  - Millennium Development Goals
  - Sustainable Development Goals

Cost Benefit Analysis as Applied Utilitarianism

- We can measure utility changes in a money metric – money equivalent of proposed change
- Take social welfare change to be sum of money metric utility changes
- If positive we have Potential Pareto Improvement with compensation
- Without compensation we assume social value of money is equal across people – bizarre

Social Welfare: other approaches

- Ethics
  - Theory of Justice
    - veil of ignorance – resolves efficiency versus distribution tradeoff
    - Liberty/Freedom
  - Maximin principle
    - capabilities
- Human Rights
  - Natural rights
  - Legal Rights

Sen's freedom and capabilities approach

- Critics of welfare economics
  - A society can be Pareto optimal and still perfectly disgusting
  - The impossibility of a paretian liberal
- Ethics and Economics
  - Why equality?
  - Equality of what? (income, opportunities, rights)
- **Functionings** (being healthy, having a good job ..)
- **Capabilities** are the alternative combinations of functionings that are feasible for a person to achieve

Sen

- Health equity versus equality in health
- Health is key for human capabilities
- Fairness in health is critical
- Distinguish health achievement from health capability (personal responsibility issue?)
- Many factors affect health – genetics, choices, health care

Sen: Development as Freedom and Capabilities

- Choice sets
- Larger choice set better
- Two people equally well off if they have the same choice set
- Does not depend on utility or happiness
- Difficult to measure choice sets
- Capabilities – fundamental goods that affect the choice set – ability to lead a full life
- Life span, health, education, earnings potential

Ethics

- Does health have a special moral significance?
  - Health as fundamental – right
- Difference between *equality and equity* – when are health inequalities unjust?
- Fair process, procedural justice
  - Moral constraints on process outcome
- Meeting health needs fairly with resource constraints → *priority setting*.

Responsibility for Health

- Health depends on individual behaviors
- Redress –"luck" but not "choice"? Economics of insurance
- Social responsibility even for people with well informed bad choices?
- Taste for wine – no claim- taste for risky health behavior – social claim?
- Health promotion – behavioral economics