Econ 2230: Public Economics

Lecture 1: Course description and introduction

Econ 2230 Course description

- Survey course of topics in public economics
- Part of two course sequence constituting the public economics field for grad students in the economics department
- Goal:
  - Provide a foundation for original research in the field
  - Focus on a few topics but provide tools that allow for examination of others
- Topics:
  - Mix of old and new: review neoclassical public finance as well as more recent contributions to behavioral public economics
  - Both theory and applied research (lab and field)

Econ 2230 Course requirements

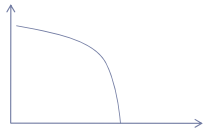
- Active class participation
  - Readings assigned prior to each class
  - Readings posted on class web-site password Econ2230
  - Expected to read assignments before class
- Class assignments
  - Referee reports
  - Problem sets
- Paper
  - Two alternatives
    - Review of research on a particular topic
    - Original research idea
  - Encouraged to work in pairs to write paper
  - Deadlines:
    - March 2: one page description and outline of project
    - April 11 & 13: Class presentations
    - April 20: paper due

Public economics / public finance

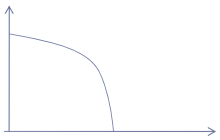
- The field of public finance / economics examines the funding of collective or governmental activities, and the administration and design of those activities.
- Common definition: field examines the role of government in addressing society's tasks
- Emphasis here is not only on government activities but more broadly on collective activities
- Classic division:
  - Government expenditure
  - Government revenue (taxes)
- Analysis
  - Normative analysis: what government should and should not do
  - Positive analysis: effect of what government does

Introduction: Role of government

- Redistribution: Max SWF W= $f(U_A, U_B,.. U_N)$



- Improve Welfare: provide public goods, alleviate externalities, IRS etc



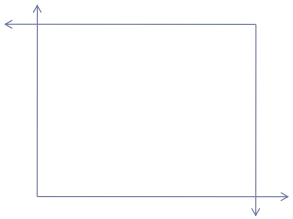
- [Macro economic stabilization]
- [Protection of property rights]

Role of government

- Provided complete markets, perfect competition, complete information: the role of government limited to redistribution
- Why?
- First welfare theorem:
  - If (**x**,**p**) is a competitive equilibrium then **x** is Pareto efficient
- Prove how?

First welfare theorem

- Suppose
  - Preferences monotonic, continuous, convex to the origin
  - Two people A,B
  - Two private goods x_1, x_2



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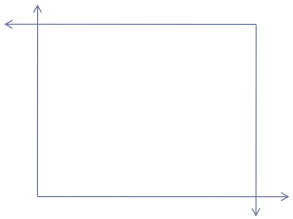

Set of Pareto Efficient outcomes:
A feasible allocation **x** is PE if there is no feasible allocation **x**' such that all agents weakly prefer **x'** to **x** and some agents strictly prefer **x'** to **x**

First welfare theorem

- PE:
  - Max $U_A(x_1^A, x_2^A)$
  - s.t. $U_B(x_1^B, x_2^B) \geq U_B$

    $x_1^A + x_1^B = w_1$

    $x_2^A + x_2^B = w_2$
- CE:
  - Max $U_A(x_1^A, x_2^A)$
  - s.t. $p_1 x_1^A + p_2 x_2^A = p_1 w_1^A + p_2 w_2^A$

Role of government: redistribution

- When markets are complete and competitive and agents have complete information the role of government limited to one of redistribution
- Distributional properties of an efficient private market need not be desirable. It may deliver large rewards to small set of people
- Government can intervene to redistribute income through tax and transfer system
- Redistribution:
  - Postulate a welfare function $W= f(U_A,U_B,.. ,U_N)$
    - Characteristics of f?

Role of government: redistribution

- In the case of complete markets (i.e., no externalities) and complete information the role of government limited to one of redistribution
- Distributional properties of an efficient private market need not be desirable
- Efficient markets may deliver large rewards to small set of people
- Government can intervene to redistribute income through tax and transfer system
- Redistribution:
  - Postulate a welfare function $W= f(U_A,U_B,.. ,U_N)$
    - Characteristics of f?
    - $f' > 0$, $f''<0$
  - Max W treating the utility possibility frontier as a budget constraint

Role of government: redistribution

- Example:
  - Utilitarian
    - SWF: $W = U_A + U_B +.. +U_N$
    - Inequality irrelevant
  - Rawlsian
    - SWF: $W = \min (U_A,U_B,.. ,U_N)$
    - Max welfare for person worst off
- Problem with redistribution approach: assumes cardinal utility, i.e., sensitive to monotonic transformation
- Aside: redistribution may be viewed as a public good. Citizens may collectively have a preference for an alternative distribution of resources than the one that results from the CE

Failure 1: Imperfect competition

- When markets are not competitive, there is role for govt. regulation or provision
- Ex: natural monopolies such as electricity and telephones
- Topic traditionally covered in courses on industrial organization
- Not covered here

Failure 2: Asymmetric Information

- When some agents have more information than others, markets fail
- Ex. 1: Adverse selection in health insurance

  Healthy people drop out of private market unraveling.
  Mandated coverage may make everyone better off
- Not covered here

Failure 3: Externalities (public goods)

- Markets may be incomplete due to lack of prices (e.g., pollution)
- Individuals fail to account for the positive or negative effects their consumption may have on others
- Achieving efficiency requires an organization to coordinate individuals that is a government ("provided no inefficiencies in government provision")
- This welfare loss in connection with private provision of public goods is why govt. funds public goods (highways, education, defense)

Failure 4: "Individual failure"

- Recent addition to the list of potential failures that motivate government intervention: individuals may not be 'rational" as assumed in the neoclassical model
- Preferences may not be stable:
  - E.g. May not be time consistent. May prefer A over B today, but B over A tomorrow
- Individuals may be boundedly rational
  - May fail to translate preferences into actions
- This is an individual 'failure' rather than a traditional market failure
- Influences both normative and positive public finance
- Government intervention may be desirable in the presence of such failures

Failure 4: “Individual failure”

- Behavioral public economics
- E.g. How does government address what appears to be ‘self-destructive’ behavior:
  - substance abuse
  - myopic choices of those who save ‘too little’ for retirement
- Neoclassical welfare criterion respects all consumer choices (conditional on the consumer’s information), thus it rules out the possibility of increasing well-being by correcting ‘poor’ choices (except through the provision of information).
- Behavioral public economics aims to address such issues

Failure 4: “Individual failure”

- Thaler and Sunstein – Nudges:
- Example: default rules
  - According to neoclassical theory should have little effect as transaction costs low
  - Evidence suggest substantial effect on
    - 401(k) plans: employer-sponsored retirement savings accounts in the United States that receive preferential tax treatment
    - Organ donations

Failure 4: “Individual failure”

- Conceptual challenge: how to avoid paternalism critique
- Why does govt. know better what is desirable for you (e.g. wearing a seatbelt, not smoking, saving more)
- BPE may give rise to a welfare relation which prescribes an alternative other than the one the individual would choose for himself, at least under some conditions
- Difficult but central issues to policy design

This course

- Focus on the last two failures:
  - Public goods
  - Individual failures

Course topics

- Role of government (done)
- Public goods
  - Neoclassical welfare framework (Efficient provision)
  - Private provision of public goods
  - Motives for giving
  - Mechanisms for giving
  - Fundraising
  - Social choice
  - Preference revelation
- Behavioral public economics
  - Taxation
  - Nudges
  - Market interventions

Introduction: Public Good

- Definition Pure Public Good
  - Non-excludable: People can not be excluded from consumption
  - Non-rival: One person's consumption does not limit that of other's
- Examples: National defense, Aid to the hungry, Public radio, Police, Streetlight, Lighthouse etc
- Most fall in the grey zone between pure public and private goods

public ⟷ private

Pure public good

- Non-rival and non-exclusive
- The consumption of the public good enters simultaneously as an argument in more than one person's utility function:
- Let
  - G – the provision of a public good
  - x_i – private good consumed by individual i

$$U_A(x_A,G) \text{ and } U_B(x_B,G)$$

Efficient provision of public goods

- Let
  - G – the provision of a public good with price q
  - x_i – private good consumed by individual i with price p
  - $U_i(x_i,G)$ with i = A,B
- PE
  - Max $U_A(x_A, G)$
  - s.t. $U_B(x_B, G) \geq U_B$

    $p(x_A + x_B) + qG = w$

Samuelson Condition (1954 Restat)

- $MRS^A + MRS^B = q/p = MRT$
- $MRS^A + MRS^B$ = the sum of what the two are willing to give up of the private good for one more unit of the public good
- MRT = the marginal cost of producing the public good in terms of the private good (i.e., units of private good it takes to produce one unit of the public good)

Private provision

- Individual decision?
  - $MRS^i = q/p$
  - How do we know inefficient provision?
  - PAS: efficiency $\sum MRS^i = q/p$
  - Private provision : $\sum MRS^i > q/p$
  - Under private provision willingness to pay for public good greater than cost. Inefficiently low provision of the public good
  - $MRS^i = [\partial U/\partial G] / [\partial U/\partial x_i]$

Next: Classic Results

- Efficiency:
  - Samuelson condition: necessary and sufficient for PE
  - Unique PE G* {Bergstrom and Cornes, Econometrica, 83}
  - Lindahl equilibrium + Foley's insight (Econometrica, 1970)
- Private provision of public goods (Bergstrom, Blume, and Varian, JPubE, 1986)