Economics of the Public Sector

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Recap

Economic efficiency

Three conditions must hold simultaneously.

1. **Productive efficiency**
   Activity should be organised to obtain the maximum output from given inputs. *Productive efficiency* means that production is at point on the transformation curve (production possibility).

2. **Efficiency in product mix**
   The optimal combination of goods should be produced, given existing production technology and consumer tastes.

3. **Efficiency in consumption**
   A person's consumption choices should maximise personal utility, given the utility of others—in formal terms, the MRS must be equal for all individuals.

Intervention for reasons of efficiency (static efficiency)

1. **The fundamental theorem of welfare economics in a *first-best* economy**
   (a) Characteristics of a first-best economy: (i) perfect competition; (ii) no problem such as externalities, public goods, or increasing returns to scale; (iii) perfect information on the part of buyers and sellers; (iv) maximising behaviour in the context of well-behaved utility and production functions; (v) complete markets; (vi) no distortionary taxation.
   (b) Two fundamental theorems of welfare economics:
      (i) The First Fundamental Theorem ('Invisible Hand' theorem): in a first-best economy, the operation of perfect competition will lead to a Pareto-efficient allocation of resources.
      (ii) The Second Fundamental Theorem: In a first-best economy, it is possible to reach any desired point on the contract curve by establishing a suitable set of initial endowments.

Intervention for reasons of efficiency (static efficiency)

2. **Imperfect competition, public goods, externalities, and increasing returns to scale**
3. **Imperfect information**
4. **Non-rational behaviour**
   (a) Bounded rationality can arise where complexity leads to an inability to know what to do. Forms of deviations from rationality: (i) rules of thumb; (ii) framing; (iii) big number of choices; (iv) irrational choices. A suitable policy is for instance simplifying choices.
   (b) Bounded will-power refers to people who know what behaviour is in their best interests, but do not act on that knowledge. Well-known problems: losing weight, taking regular exercise, etc.
5. **Incomplete markets and incomplete contracts**
6. **Distortionary taxation**

Insurance

1. **The demand for insurance**

   Expected income: $\mathbb{E}(y) = \bar{y} = p_1 y_1 + p_2 y_2$

   Expected utility: $\mathbb{E}(U) = \bar{U} = p_1 U(y_1) + p_2 U(y_2)$

   Value of certainty: $V = \bar{y} - y^*$, where y^* is a lower income with certainty

   Individual's expected loss: $\mathbb{E}(L) = pL$, with L the size of loss and p the probability it will occur

   Net price of insurance: $\phi = \pi - pL$

   60% → the prob. that Brian will lose.

2. **The supply side**

   (a) Incomplete markets: The supply of insurance

   (b) Asymmetric information

Private and social insurance

1. The existence of private insurance markets requires three conditions to hold.
   (i) There must be positive demand, i.e. $V = \bar{y} - y^* > 0$. This condition holds if some individuals are risk-averse.
   (ii) It must be technically possible to supply insurance, ruling out the problems of incomplete markets and asymmetric information.
   (iii) It must be possible for insurance to be supplied at a price that the individual is prepared to pay—the demand price must exceed or equal the net supply price. This means $V \geq \phi$, where $\phi = \alpha p L$, with α the loading/margin to cover admin costs.
   Thus, a market for insurance exists only if $V = \bar{y} - y^* \geq \alpha p L$.
2. Two sources of social insurance existence.
   (i) On the demand side, in industrialised countries employment is largely a binary phenomenon (employed or unemployed), and retirement is frequently a discrete event.
   (ii) On the supply side, market failures provide a theoretical justification for and explanation of a welfare state that is much more than a safety net.

Select Exercises

Select exercises

1. Answer the following questions about the reasons for state intervention:

   (a) What are the criteria about information on quality that make the markets more efficient?

   (b) What are the economic arguments for distribution in kind?

(a) i) Both parties (consumers and producers) know the quality of the products
ii) Fair price → the availability of product prices elsewhere.
iii) Less speculative in the market dynamics
iv) product improvement

(b) i) The money is well-traced what goods are bought; transparency.

ii) That could potentially lead to positive externality.

iii) It makes people, particularly at lower quantile, be less prone to food inflation.

Select exercises

2. For each program listed below, discuss what market failures might be (or are) used as a partial rationale: [Qn 1, ch. 4, from Stiglitz and Rosengard, 2015]
   (a) Automobile safety belt requirements.
   (b) Unemployment compensation.
   (c) Urban renewal.

(a) → If the belts don't function properly, the social costs might be even higher.
→ Information failure (knowledge) about the connection between safety belt and accidents. (possibly and the driver behaviour)

(b) → It is a safety net for the society should there be a shock to their employment status.
→ The gov't sees a gap in that there is a Market failure caused by an incomplete market.

(c) → Increasing safety and attractiveness could reduce the social cost from negative externality.

Select exercises

3. Brian is a risk-averse individual with the following utility function $U(y) = 10y^{0.25}$, where U is utility and y represents his annual income in thousands of euros. However, Brian's income is not certain: there is a probability $P_G = 0.4$ that the year will be good and his income is going to be 81 thousand euros ($y_G = 81$), and probability $P_B = 0.6$ that the year will be bad and his income is going to be only 16 thousand euros ($y_B = 16$).
   (a) Calculate Brian's expected income ($\bar{y}$) and his expected utility ($\bar{U}$)!
   (b) Calculate Brian's certainty equivalent (y^*). Hint: this is the certain income that Brian would need to receive to have the same utility as his expected utility. Based on that, calculate Brian's value of certainty (V). You can round the certainty equivalent to three decimals!
   (c) Sketch the graph of his utility function and show y_B, y_G, $\bar{y}$, y^*, $U(y_B)$, $U(y_G)$, $\bar{U}$ on the graph.
   (d) If Brian would be offered a job that gives him a certain annual income of 30 thousand euros, will he accept it? Explain why (not)!

3. a) $\bar{y} = 0.4 * 81 + 0.6 * 16$

$= 9.6 + 32.4$

$= 42$ //

$\bar{y} = p_G y_G + p_B y_B$

weighted average

$\bar{U} = p_G \cdot U(y_G) + p_B \cdot U(y_B)$

$= 0.4 * 10(81)^{0.25} + 0.6 * 10(16)^{0.25}$

$81^{0.25} = 3$

$16^{0.25} = 2$

$= 0.4 * 30 + 0.6 * 20$

$= 12 + 12 = 24$ //

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b) $\bar{U} = 24 = 10 y^{*0.25}$

$\bar{U} = U(y^*)$

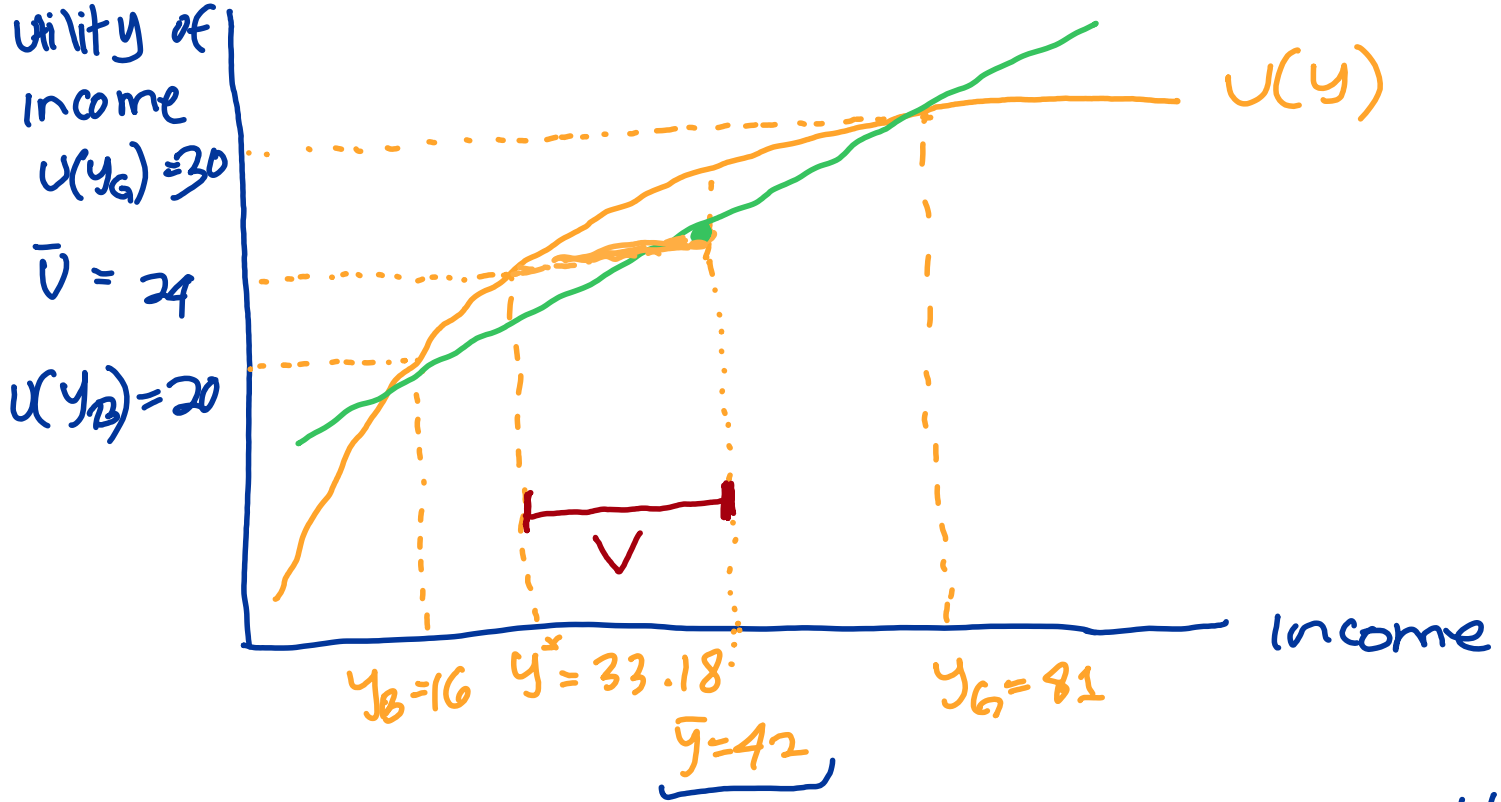
$24 = 10 y^{*0.25}$

$2.4 = y^{*0.25}$

$y^* = 33.18.$

$V = \bar{y} - y^* = 42 - 33.18 = 8.82$

(c)



(d) We know that $y^* = 33.18$. Any offers below this limit will be rejected as they would give lower utility, while it is already clear that $U(y^*)$ already gives certainty. Hence, the offer of €30K will be turned down.

Questions for discussion

Discussion topics

1. In most countries, there is a large involvement of the government in the healthcare sector. Discuss the market failures that can be present in that sector. Note that we will discuss this in detail in week 7, but is useful to already think about it.
2. Would you prefer to have more or less distribution in the world?

Thank you for your participation!