

Distributive Justice and Economic Inequality

P. G. Piacquadio

UiO, January 17th, 2017

Outline of the course

Paolo: Introductory lecture [Today!]

Rolf: Theory of income (and wealth) inequality

Geir: Distributive justice: intergenerational aspects

Paolo: Welfare measurement beyond income (and wealth)

Jo Thori: Inequality in the data

Frikk: Seminars

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Math: Integration (i.e. by parts); derivation; (basic) properties of functions;

Statistics: Probability distributions and properties;

Econometrics: Basic knowledge of statistical inference.

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Goals of the course

- The evolution of inequality has recently captured the media attention (Piketty, 2012).

*What is inequality? why are economists interested in it?
how do we measure it? how should we measure it?
Should society do something to avoid/reduce inequality?*

- Due to climate change, future generations might live in a resource-poor and overpopulated world.

Should we take action to avoid it? What do we owe to future generations? What are their rights? How to share costs and benefits across generations?

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“Economics:” what we do, what we are

“Economics is what economists do” [attributed to Jacob Viner]

“Political Economy or Economics is a study of mankind in the ordinary business of life; it examines that part of individual and social action which is most closely connected with the attainment and with the use of the material requisites of wellbeing.” [Marshall, 1890]

“Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses.” [Robbins, 1932]

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“Robbins is undoubtedly correct. . . . ethical conclusions cannot be derived in the same way that scientific hypotheses are inferred or verified. But it is not valid to conclude from this that there is no room [for] ‘welfare economics’. It is a legitimate exercise of economic analysis to examine the consequences of various value judgements.” [Samuelson, 1947]

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“Economics is a branch of ethics. Well, that’s an exaggeration, because parts of economics are pure science; they aim to account for the behaviour of people and institutions in the economic arena. But more than most scientists, economists have their eye on practical applications.” [Broome, 2000]

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Taking a stand

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In this first lecture:

- 1 I discuss the methodology of normative economics;
- 2 I provide a brief overview of “value judgements;” and
- 3 I present the “utility information gap” that normative economics faces.

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Value judgements

- Value judgements are assessments of something as good or bad based upon a specific (set of) values.
- In economics, we express value judgements through **axioms**: mathematical statements that are taken to be true.
- **Example**: It is good to make people happy.
- **Example**: *If x increases the happiness of the most unhappy individual at x' , it is better.*

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Consequences and commodities

- Value judgements can be concerned with:
 - procedures and/or **consequences**;
 - happiness, satisfaction, rights, capabilities, resources, and/or opportunities.
- **Example**: If x makes all individuals happier than x' , it is better.
- **Example**: *If each individual prefers their assignment at x to their assignment at x' , it is better.*

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Objects of the analysis

- The object of the analysis can be:
 - choosing or **ranking**;
 - **inequality**; **social welfare**; diversity; concentration; polarization; etc...
- **Example**: If the equal split of resources is efficient, it should be chosen.
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Utilitarianism

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A step back: consumer theory

- When we study consumer theory, we generally assume that individuals have complete, transitive, and continuous preferences defined over the L -dimensional Euclidean commodity space \mathbb{R}_+^L .
- Under these assumption, there exists a utility function $u : \mathbb{R}_+^L \rightarrow \mathbb{R}$ representing these preferences.
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Consumer theory and utility functions

- A utility function u represents preferences \succsim if and only if for each pair $x, x' \in \mathbb{R}_+^L$,

$$u(x) \geq u(x') \iff x \succsim x'.$$

- Now, instead of u take a function $v = f(u)$, such that f is a strictly increasing real function.
- Then, for each pair $x, x' \in \mathbb{R}_+^L$,

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Consumer theory: ordinalism

- The demand functions obtained from the utility function u or the utility function v are identical.
- What matters is the preferences \succsim and not the function chosen to represent such preferences.
- In other words, the only information needed from utilities is ordinal: when comparing a pair of bundles $x, x' \in \mathbb{R}_+^L$, we only need to know the order of the alternatives, i.e. if $u(x) \geq u(x')$ or $u(x) \leq u(x')$ or $u(x) = u(x')$.

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Back to utilitarianism

- What happens to the utilitarian optimum if we use different utility functions?
- Let $L = 1$ (i.e. income) and assume there are only two individuals, i and j . Then utilitarianism measures social welfare by:

$$W(x_i, x_j) = u_i(x_i) + u_j(x_j).$$

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Back to utilitarianism: cardinality and comparability

- Let $v_i = f_i(u_i)$ and $v_j = f_j(u_j)$. Assume that society has 100 dollars to divide, i.e. $x_i + x_j \leq 100$, and show that maximizing $W(x_i, x_j)$ leads to a different optimum than maximizing:

$$\bar{W}(x_i, x_j) = v_i(x_i) + v_j(x_j).$$

Exercise: Show that this holds true even if $f_i = f_j$.

- $\bar{W}(x_i, x_j)$ gives the same recommendation as $W(x_i, x_j)$ if and only if $f_i = a_i + bu_i$ and $f_j = a_j + bu_j$. **Exercise:** Prove this result.

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The utility information gap

- Consumer theory builds on ordinal information about utilities. u_i is equivalent to $v_i = f_i(u_i)$ if f_i is a strictly increasing real function, i.e. u_i is invariant to any individual increasing transformation or **ORDINAL**.
- Utilitarianism builds on interpersonally comparable and cardinal information about utilities. u_i is equivalent to $v_i = f_i(u_i)$ only if $f_i(u_i) = a_i + b u_i$, i.e. u_i is invariant to any common positive affine transformation or **CO-CARDINAL**.

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Arrow's impossibility result

- In his PhD thesis, Arrow (1951) showed that a set of compelling value judgements with ordinal information makes it impossible to derive a social welfare function.

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Samuelson's example

- (From Samuelson, 1977, *Economica*) Society has 100 chocolates to distribute: X chocolates to Person 1 and x chocolates to Person 2, where $X + x = 100$ and $X, x \geq 0$.
- What is an appealing way to distribute chocolates?
- Examples include: $W(X, x) = X + x$; $W(X, x) = \ln X + \ln x$; $W(X, x) = \min\{X, x\}$. What about $W(X, x) = X^2 + x^2$? And $W(X, x) = \ln X + 2 \ln x$?

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Utility information

Of two people having unequal fortunes, he who has most wealth must by a legislator be regarded as having most happiness. But the quantity of happiness will not go on increasing in anything near the same proportion as the quantity of wealth: ten thousand times the quantity of wealth will not bring with it ten thousand times the quantity of happiness. It will even be matter of doubt, whether ten thousand times the wealth will in general bring with it twice the happiness. The effect of wealth in the production of happiness goes on diminishing, as the quantity by which the wealth of one man exceeds that of another goes on increasing: In other words, the quantity of happiness produced by a particle of wealth (each particle being of the same magnitude) will be less at every particle; the second will produce less than the first, the