Distributive Justice
A Brief Survey for Economists

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Ethics: The study of good and bad.

Three main divisions:

1. **Meta-ethics ("pure" philosophy):**
   - Linguistic component: To what concepts do words like good and bad correspond?
   - Epistemological component: Which ethical features can be known or learned? Can an *ought* be derived from an *is*?
   - Criticism: Is the study of ethics relevant? Could ethics be a cynical ploy by the fortunate to protect their fortunes?

2. **Descriptive ethics:** What moral values do people hold?
   - Economists like John List and Ernst Fehr elicit these values through preference experiments.
   - Other approaches are taken by neuroscientists, evolutionary biologists, psychologists, and others.

3. **Normative ethics**
Normative ethics: The study of rules for determining what ought to be done in given situations.

Three main approaches:

1. Virtue (or Aristotelian) ethics: An act is good if it is exercised by a person with a virtuous disposition, possessing qualities of character like courage, health, and temperance.
   - Criticism: Offers no precise decision rules. There is no good or bad decision - just a good or bad person making it. Exults those of good character regardless of achievements.

2. Deontological (or duty) ethics: An act is good if it displays duty to the rules
   - Kant’s Categorical Imperative: “act only in accordance with that maxim through which you can at the same time will that it become a universal law”.
   - Criticism: Must tell the truth, even if innocent people die.

3. Consequentialism

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Consequentialism: An act is good if it results in good outcomes.

- Reduces the study of good and bad to the study of good and bad outcomes.
- Long associated with and led by economists:
  - Economic efficiency describes the outcome relative to counterfactual outcomes. One mechanism is not preferred to another if they arrive at the same outcomes. The mechanism itself is morally irrelevant.
  - Some economists who have published on consequentialist ethics: Jeremy Bentham, John Stuart Mills, John Harsanyi, Kenneth Arrow, Milton Friedman, Amartya Sen, John Roemer.
- Criticism: If the mechanism involves very bad 'means', it cannot be justified by good 'ends'.
- Friedman’s rebuke to this criticism: A consequentialist can move the 'means' into the 'ends' by, e.g., adding a penalty to the objective function, so there is no means-ends distinction.
**Distributive Justice:** The branch of normative ethics that is concerned with *inequality* in the distribution of *social advantage*. Mostly contained within consequentialism, but some approach distributive justice from the perspective of virtue or deontological ethics.

Two Challenges:

1. Which is the socially just distribution of social advantage?
2. Which metric of social advantage carries ethical value?

The rest of this presentation surveys separately the candidate solutions to these two challenges.
The study of distributive justice assumes that there is some answer to the question, “how should social advantage be distributed?”. Here, we review the five leading candidate solutions as well as their justifications and criticisms.

Caution: Some of these were not originally written in the optimization representations that I employ here. The interpretations as optimization problems were often performed later by third-party economists.

Furthermore: These are representations only for the simplest case of the resource allocation problem - there is a “fixed pie” to be distributed, so production and labor supply are suppressed. Much of the field has not advanced beyond the simplest case, except as criticism or conjecture.
Model Primitives:

- Let $x_i$ denote advantage in society, where each type of individual $i = 1, 2, \ldots, I$ has population mass $f_i$.
- The distribution of social advantage is $X = \{x_i\}_{i=1}^I$. We leave advantage as an abstract concept in this section and consider its precise nature in the next section.
- The welfare that agents derive from social advantage is $V_i$, which at least depends on $x_i$ (directly or indirectly) and may or may not be the individual utility function.
- We maintain throughout that $\bar{x} \geq \sum_{i=1}^N x_i f_i$, which restricts us to resource allocation problem.
Property Rights by Nozick (1974)

Formal Optimization Statement:

Letting $e_i$ denote endowment for type $i$,

$$x_i^* = e_i, \forall i \quad (1)$$

that is, the initial distribution is inherently just as long as it was not obtained through a violation of some individual’s right to self-ownership.
Property Rights by Nozick (1974)

Author’s Justification:

Each individual is the unique owner of his endowments, efforts, and product. Acts like murder, slave ownership, and theft are violations of individual self-ownership and thus unethical. Government redistribution is a form of theft in which the ownership of one is taken against his will to be given to others. Thus, redistribution is also unethical. The proper role of government is as a guardian against the violation of self-ownership, so paying only for this protection (through taxes) is not a contradiction of self-ownership.
Criticism:

His view of the ideal state has been criticized for failing to provide assistance to those who experience disabilities or bad luck.

For a criticism by utilitarians and, in fact, a self-criticism in Nozick’s later writings, answer this question (left as an exercise): When will his support for a free market with governments enforcing contracts result in aggregate utility maximization? (See the definition of aggregate utility maximization on the next slide.)
Aggregate Utility Maximization by Bentham (1823)

Formal Optimization Statement:

Bentham’s just distribution of social advantage is,

\[
X^* = \arg \max_{\{x_i\}_{i=1}^l} \left\{ \sum_{i=1}^l V_i(x_i) f_i : \sum_{i=1}^l x_i f_i \leq \bar{x} \right\}
\]

where \(V_i\) was originally 'pleasure' but we permit a more general formulation. This is the classical social planner (as in the Welfare Theorems) with equal weighting across individuals. Notice how influential Bentham has been to the study of economics - we all must solve this problem in introductory classes.
Distributive Justice: Candidate Distributions

Aggregate Utility Maximization by Bentham (1823)

Author’s Justification:

“[T]he greatest happiness of all those whose interest is in question, as being the right and proper, and only right and proper and universally desirable, end of human action: of human action in every situation, and in particular in that of a functionary or set of functionaries exercising the powers of Government.”

In Milton Friedman’s (1961) defense of the Pareto social planner’s allocation, he emphasizes that the Pareto social planner does not permit bad luck in initial endowments to have any effect on the just distribution of preference satisfaction across individuals - the social planner is only restricted by aggregate endowments, not the initial endowment distribution - and points out that this is a property that egalitarians ought to like.
Distributive Justice: Candidate Distributions

Aggregate Utility Maximization by Bentham (1823)

Criticism:

Left as an exercise. Hint: think about the implications of the solution (with increasing, concave utility),

\[ V_i' (x_i^*) = V_j' (x_j^*) , \forall i, j \]

when utility functions are and are not identical across individuals. Furthermore, consider a monotonic transformation of only individual j’s utility function (why can we do this?).

See Sen (1979) for a detailed critique.
**Distributive Justice: Candidate Distributions**

*Impartial Observer Utilitarianism* by Harsanyi (1955)

**Formal Optimization Statement:**

Suppose individuals have von Neumann-Morgenstern preferences, 

\[ V_i(x_i) = \sum_{s=1}^{S} \pi_s V^s_i(x_{is}), \]

where \( x_{is} \) is advantage in state \( s \) for individual \( i \). The socially just distribution satisfies,

\[
X^* = \arg \max_{\{x_i\}_{i=1}^{I}} \left\{ \frac{\sum_{i=1}^{I} V_i(x_i) f_i}{\sum_{i=1}^{I} x_{is} f_i} : \frac{\sum_{i=1}^{I} x_{is} f_i}{\bar{x}_s, \forall s} \right\}
\]

This is the extension of the usual social planner’s problem to uncertainty, commonplace in modern economics.\(^2\) Harsanyi provides an ethical interpretation.\(^3\)

\(^2\)Harsanyi (1955) is more restrictive in that the probability mass of type \( i \), \( f_i \), is the same across individuals.

\(^3\)Vickrey (1945) is credited for independently arriving at this formulation.
Impartial Observer Utilitarianism by Harsanyi (1955)

Author’s Justification:

Consider the following “thin” veil of ignorance: There is a lottery over states of the world, with payoffs in each state varying by type of individual. An agent is behind the veil of ignorance if he does not know which state of the world will be realized or which type he will be. Harsanyi claims to prove that, under von Neumann-Morgenstern preferences, this agent will prefer the lottery that maximizes average utility across the probabilities of states and individuals. Thus, the just social planner will also maximize expected utility across both states and types of individuals.
Impartial Observer Utilitarianism by Harsanyi (1955)

Criticism:

The Bentham criticisms still apply, and for the same reasons.

It should be remembered that, even if we think Harsanyi failed to provide a scientific proof that utilitarianism follows from von Neumann-Morgenstern preferences, he made original contributions to game theory under imperfect information and was the first to apply a ‘veil of ignorance’ argument to the problem of distributive justice.⁴

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⁴The notion of an impartial observer determining normative rules dates at least to David Hume (1740, A Treatise of Human Nature) and Adam Smith (1759, The Theory of Moral Sentiments), though they did not consider the problem of distributive justice in particular.
Maximin by Rawls (1971)

Formal Optimization Statement:

Rawls’ just distribution of social advantage is,

\[ X^* = \arg \max \{ \min \{ V_i(x_i) : i = 1, 2, \ldots, I \} : \sum_{i=1}^{I} x_i f_i \leq \bar{x} \} \]

This is maximin - maximizing the minimum.\(^5\)

\(^5\)Rawls (1971) performs maximin over \( x \) without the scalar mapping \( V_i \), yet takes \( x \) to be a vector, rendering the optimization inoperable in its original form.
Maximin by Rawls (1971)

Author’s Justification:

Suppose that you are placed behind a “thick” veil of ignorance defined as follows: you are uncertain about the kind of person you will turn out to be once the veil is removed. You do not know your psychological propensities, abilities, relationships, location, time period in human civilization, wealth, race, gender, or other personal characteristics. However, you know a lot about economics and history so you have some ideas about how the world you will live in might operate. From this position of uncertainty, Rawls asks you to choose the world that you would most like to live in. According to Rawls, you would choose to maximize the worst-case world.
Distributive Justice: Candidate Distributions

Maximin by Rawls (1971)

Criticism:

First, is the thought experiment is even feasible? How much of oneself can be forgotten to complete the experiment?

Second, complete this exercise: Suppose you are choosing between a lottery where you receive $0.99 with probability .0001 and $100 with probability .9999, or receive $1 with certainty. Which does Rawls claim you will take, and what assumption about your risk-aversion is necessary for Rawls to be correct?

Note: Imperfections aside, Rawls is the thinker who brought the concept of distributive justice into mainstream academia. Maximin remains the most common alternative to aggregate maximization considered in the literature.
Equality of Resources by Dworkin

Additional Primitives:

Dworkin provides another type of veil of ignorance mechanism, but his is quite complex and even more vague, involving insurance, labor, production, clam shells, English auctioning of consumption, heterogeneous preferences, general equilibrium, and even an attempt to qualitatively distinguish types of shocks (‘brute luck’ of meteorites, ‘option luck’ of gambling). Here, I provide a simplified sketch as follows:

Suppose there are two states: the good state \((g)\) and bad state \((b)\), and the good state occurs with probability \(\pi\). Suppose that there exists an insurance market such that, if an agent purchases \(K\) units of insurance, then he receives lump-sum payment \(K\) only if the bad state occurs. Denote the price of this insurance by \(\rho\).
Equality of Resources by Dworkin (1981)

Formal Optimization Statement:

Then, consider the equilibrium \( \{(x_{ig}^*, x_{ib}^*, K_i^*)\}_{i=1}^l \), \( \rho^* \) that solves each agent’s utility maximization subject to equal endowments,

\[
\max_{x_{ig}, x_{ib}, K} \pi U_i^g (x_{ig}) + (1 - \pi) U_i^b (x_{ib}) : \]

\[
x_{ig} \leq \left( \frac{\bar{x}_g}{I} \right) - \rho K_i, \quad x_{ib} \leq \left( \frac{\bar{x}_b}{I} \right) + (1 - \rho) K_i, \quad \forall i
\]

as well as market clearing, \( \sum_{i=1}^l x_{is} = \bar{x}_s, \quad s = g, b. \) The resulting distribution, \( X^* = \left\{ \left( x_{ig}^*, x_{ib}^* \right) \right\}_{i=1}^l \), is called the just distribution.
Equality of Resources by Dworkin (1981)

Author’s Justification:

Dworkin (1981) is vacillating and reaches few assertions, but the basic justification can be stated as follows:

The hypothetical insurance market, behind a “thin” (Harsanyian) veil of ignorance, provides individuals an opportunity to insure based on risk-aversion, thus respecting preference heterogeneity and rewarding prudence if the bad state occurs. Efficiency is provided by a well-functioning insurance market, while equality of opportunity is guaranteed by providing each individual the same endowment with which to trade. See Dworkin (1981) and Roemer’s (2012) mostly supportive comments for more details.
Equality of Resources by Dworkin (1981)

Criticism:

*Left as an exercise. Hint: see Roemer (2012) and Roemer’s previous work cited therein.*

Additional Primitives:

Adding on to the initial primitives, let us introduce the additional consideration of effort, denoted $e$, and permit heterogeneity within type $i$ due to differences in effort. Let $j_i = 1, 2, \ldots, J_i$ index individuals of type $i$, with probability mass $f_{ij_i}$ such that $\sum_{j_i=1}^{J_i} f_{ij_i} = f_i$. Suppose that indirect welfare can be written $v_i(x_{ij}, e_{ij})$, which is assumed to be increasing in both arguments.\(^6\)

Let $y_{ij}$ denote the relative rank among type $i$ of effort by individual $j_i$, that is, $y_{ij} = G_i^{-1}(e_{ij})$, where $G_i$ is the distribution of effort within type $i$. The social planner is assumed only to vary allocations within-type as a function of $y_{ij}$, that is, $x_{ij} = x_i(y_{ij})$.\(^7\)

\(^6\)This implies that $V_i$ is not a utility function.

\(^7\)Roemer neglects within-type subscripts $j_i$, forcing the reader to use some imagination in understanding what it is that he is integrating over.
Distributive Justice: Candidate Distributions


Formal Optimization Statement:  

\[ X^* = \max_{\{x_i\}_{i=1}^I} \Gamma_Y \left( \min_i \left\{ v_i (x_i (y_{ij}), e_{ij}) : y_{ij} = G_i^{(-1)} (e_{ij}) \forall i, j, \right\} \right) \]

\[ \sum_i \sum_i f_{ij} x_i (y_{ij}) \leq \bar{x}, \quad x_i (y^1) > x_i (y^0) \text{ if } y^1 > y^0 \forall i \]

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8I replace Roemer’s second constraint,

\[ v_k (x_k (y), e_k) \geq \min_i \{ v_i (x_i (y), e_i) \} : y = G_i (e_i), \]

because it is tautological - of course a member of the set is at least as great as the minimum of the same set. Roemer claims that this constraint ensures that \( x_i \) is increasing in \( y \), which it clearly does not accomplish. Instead, I explicitly assume that \( x_i \) is increasing in \( y \).

Author’s Justification:

Roemer calls this “Equality of Opportunity” because individuals are evaluated for desert of social advantage without penalty for factors beyond their own control (that’s why he conditions on type). Roemer maintains the view that the worst-off type should be compensated, as in Rawls, but he permits that the compensation to the minimum may be better for certain effort levels than others, unlike Rawls. For example, if $\Gamma_Y$ is the average, then Roemer’s $X^*$ maximizes the average minimum welfare across effort. Furthermore, he ensures that greater effort always provides greater advantage, conditioning on type. Thus, individuals must share responsibility for their allocations.
"Suppose, for example, that the list of circumstantial factors society decides upon is: age, ethnicity, gender, occupation.... Society wishes to decide the social compensation a person should receive, in the form of socially financed medical care, if he contracts lung cancer.... That a 60-year-old Black male steelworker is more likely to have smoked for thirty years than a 60-year-old White female college professor is a statistical fact not due to the autonomous choices of individuals, but to group.... Thus the White female college professor who is at the 80th centile of the smoking distribution of her type should also be provided with socially financed medical care to the same extent as the Black male steelworker who is at the 80th centile of the smoking distribution of his type."

Author’s Justification (Continued):

”Suppose, for example, that the list of circumstantial factors society decides upon is: age, ethnicity, gender, occupation.... Society wishes to decide the social compensation a person should receive, in the form of socially financed medical care, if he contracts lung cancer.... That a 60-year-old Black male steelworker is more likely to have smoked for thirty years than a 60-year-old White female college professor is a statistical fact not due to the autonomous choices of individuals, but to group.... Thus the White female college professor who is at the 80th centile of the smoking distribution of her type should also be provided with socially financed medical care to the same extent as the Black male steelworker who is at the 80th centile of the smoking distribution of his type.”
Example: Bjorklund, Jantti, and Roemer (2012): They attempt to quantify the role of effort versus type in determining outcomes in Sweden, using a combination of administrative data sets. They divide the population into 4 parental income groups, 3 parental education groups, 3 groups by number of siblings, 4 groups by IQ score, and so on. Within each of the 1,152 types, the distribution of outcomes is defined as a result of effort. The empirical strategy is to first regress standard deviations of log-income on dummies for type, then estimate variance within each type, then measure inequality of the residuals as a fraction of overall inequality. They determine that 70-80% of log-income variance is attributable to effort. This is interpreted to mean that Sweden has a relatively high equality of opportunity.
Conclusions

- There are few unique candidates for the solution to the problem of distributive justice.
- Roemer (2012) represents the cutting edge of the field, yet he shows limited success in merging economics and philosophy, with the greater weakness in the economics.
- This field would benefit very much from the quality modeling of systems which is commonplace in modern economics.
Introduction

Even if we can agree on the shape (inequality) of the just distribution, discussed in the previous section, we still must determine what is being distributed.

This distinction is attributed to Amartya Sen (1979), whose outline and critique of the various social advantage metrics remains relevant today and led him to the capability approach.
Metrics Commonly Used in Economics

The following metrics are commonly used in economics to represent advantage:

- Utility (either in Bentham’s “pleasure” sense or in the modern “preference satisfaction” sense)
- Income (the most common metric)
- Consumption (which only recently became well-measured by survey data, as we will see in the guest lecture by Bruce Meyer)

I leave the arguments in favor and against the use of each metric as an exercise. (Sen (1979) is particularly helpful on income and utility critiques.)
Rawls’ Primary Goods

Definition:
Rawls defines primary goods as consisting of the following:

- basic rights and liberties,
- freedom of movement,
- free choice among occupations,
- powers associated with offices and positions of responsibility,
- income and wealth,
- the social bases of self-respect: the recognition by social institutions that gives citizens a sense of self-worth and confidence to carry out their plans, and,
- other things that “every rational man is presumed to want”.

Criticism: Left as an exercise. (Again, see Sen (1979).)
Sen’s Capabilities

The Capability Approach: Instead of focusing on what people have, focus on what they can do and be.

Functioning: A human achievement; a doing and being.

Capability: A feasible functioning; the budget set of functionings.

More concepts from Sen (1992):

Resource: The raw material needed to develop capabilities.

Capacity: The production function that converts resources to capabilities. This is left vague by Sen.

This is starting to look like a vague outline for thinking about lifecycle development of capabilities. The first fully-specified lifecycle development model emerges in Cunha and Heckman (2008).
**Capability Operationalization**

How can we possibly account for every capability when measuring capability sets across individuals? This introduces the curse of dimensionality. One approach is to reduce dimensionality scientifically.

**Factor Models:** Originally, exploratory factor models were used to reduce dimensions based on random correlations among factors. More recently, Cunha and Heckman (2008) use structural factor models, incorporating information about functionings, to reduce dimensionality while respecting the capability structure.

**Subjective Reduction:** Nussbaum (2000) uses subjective criteria to reduce the set of all possible capabilities to only ten - or does she? (Topic of next slide)
Nussbaum’s Ten Central Capabilities

1. Life
2. Bodily Health
3. Bodily Integrity
4. Senses, Imagination, Thought
5. Emotions
6. Practical Reason
7. Affiliation
8. Other Species
9. Play
10. Control Over One’s Environment

Has Nussbaum (2000) reduced the dimensionality of capabilities?
Conclusions

I have given a cursory overview of available metrics for social advantage. See Sen (1979) for a comprehensive survey, and see Sen (1992) and Cunha and Heckman (2008) for the work that has been done since Sen’s critique of the various metrics led to the capability approach.

What should be clear is that the choice of metric for social advantage will greatly affect the just distribution chosen by the various candidates from the previous section.
References

References


