Inequality, income and well-being

Erik Schokkaert

Department of Economics, KU Leuven and CORE, Université catholique de Louvain
This lecture is based on Decancq, K., Fleurbaey, M., Schokkaert, E., Inequality, income and well-being, forthcoming chapter in *Handbook of Income Distribution (eds. A. Atkinson, F. Bourguignon)*, North-Holland.
Introduction

- Normative (not instrumental) reasons to study inequality.
Introduction

- Normative (not instrumental) reasons to study inequality.
- Inequality of what?
Introduction

- Normative (not instrumental) reasons to study inequality.
- Inequality of what?
- What is the appropriate measure of well-being?
Introduction

- Normative (not instrumental) reasons to study inequality.
- Inequality of what?
- What is the appropriate measure of well-being?
- This is a NORMATIVE, not a psychological question: *when do we think that a transfer from someone with a high level of well-being to someone with a low level of well-being is welfare improving?*
Introduction

- Normative (not instrumental) reasons to study inequality.
- Inequality of what?
- What is the appropriate measure of well-being?
- This is a NORMATIVE, not a psychological question: when do we think that a transfer from someone with a high level of well-being to someone with a low level of well-being is welfare improving?
Question

- Is it possible to formulate an *ethically attractive notion of individual well-being* that is richer than standard monetary income,...
Question

- Is it possible to formulate an *ethically attractive notion of individual well-being* that is richer than standard monetary income, ...
- and that is still *sufficiently operational* to be used in applied welfare analysis?
Two criteria

1. To what extent does the measure respect individual preferences (i.e. well-informed, well-considered ideas on the good life)?
Two criteria

1. To what extent does the measure respect individual preferences (i.e. well-informed, well-considered ideas on the good life)?

2. What are the implications for the demarcation of the domain of individual responsibility?
Roadmap of the chapter

1. Introduction.
2. Historical sketch.
3. Inequality of what?
   - Functionings and capabilities
   - Utility and happiness
   - Equivalent income
4. Multidimensional inequality and dominance
5. Applications
   - Household equivalence scales
   - Publicly provided services and benefits
   - International comparisons
Structure of the presentation

1. Introduction.

2. **Historical sketch.**

3. Functionings and capabilities.

4. Utility and happiness.

5. Equivalent income.

6. Respect for preferences and multidimensional inequality measures.

Historical sketch 1

- Utilitarian roots of economics.
Historical sketch 1

- Utilitarian roots of economics.
- Arrow’s impossibility theorem.
Historical sketch 1

- Utilitarian roots of economics.
- Arrow’s impossibility theorem.
  - Independence of irrelevant alternatives: the only information that should be used when ranking $a$ and $b$ are the ordinal (non-comparable) preferences of individuals about $a$ and $b$. 
Historical sketch 1

- Utilitarian roots of economics.
- Arrow’s impossibility theorem.
  - Independence of irrelevant alternatives: the only information that should be used when ranking $a$ and $b$ are the ordinal (non-comparable) preferences of individuals about $a$ and $b$.
- Informational approach to social choice: introduce interpersonal comparability. Leads to subjective welfarism.
Historical sketch 2

- Criticism on subjective welfarism growing. Sen’s formulation:
Historical sketch 2

- Criticism on subjective welfarism growing. Sen’s formulation:
  - "Physical-condition neglect": utility does not sufficiently take into account the real physical conditions of the person (expensive tastes, adaptation). "A person who is ill-fed, undernourished, unsheltered and ill can still be high up in the scale of happiness or desire-fulfillment if he or she has learned to have ‘realistic’ desires and to take pleasure in small mercies".
Historical sketch 2

- Criticism on subjective welfarism growing. Sen’s formulation:

- “Physical-condition neglect”: utility does not sufficiently take into account the real physical conditions of the person (expensive tastes, adaptation). “A person who is ill-fed, undernourished, unsheltered and ill can still be high up in the scale of happiness or desire-fulfillment if he or she has learned to have ‘realistic’ desires and to take pleasure in small mercies”.

- “Valuation neglect”. Valuing a life is a reflective activity in a way that ‘being happy’ need not be.
Historical sketch 2

- Criticism on subjective welfarism growing. Sen’s formulation:
- “Physical-condition neglect”: utility does not sufficiently take into account the real physical conditions of the person (expensive tastes, adaptation). “A person who is ill-fed, undernourished, unsheltered and ill can still be high up in the scale of happiness or desire-fulfillment if he or she has learned to have ‘realistic’ desires and to take pleasure in small mercies”.
- “Valuation neglect”. Valuing a life is a reflective activity in a way that ‘being happy’ need not be.
- Alternative: capabilities and functionings (APPROACH 1).
Historical sketch 2

- Criticism on subjective welfarism growing. Sen’s formulation:
- “Physical-condition neglect”: utility does not sufficiently take into account the real physical conditions of the person (expensive tastes, adaptation). “A person who is ill-fed, undernourished, unsheltered and ill can still be high up in the scale of happiness or desire-fulfillment if he or she has learned to have ‘realistic’ desires and to take pleasure in small mercies”.
- “Valuation neglect”. Valuing a life is a reflective activity in a way that ‘being happy’ need not be.
- Alternative: capabilities and functionings (APPROACH 1).
- Link with multidimensional inequality measurement.
Historical sketch 3

- Arrow’s impossibility theorem.
Historical sketch 3

- Arrow’s impossibility theorem.
  - Independence of irrelevant alternatives: the only information that should be used when ranking $a$ and $b$ are the ordinal (non-comparable) preferences of individuals about $a$ and $b$.  

Equivalent income, money-metric utility - first explored in the 80's but then disappeared. Equivalent income is our APPROACH 3.
Historical sketch 3

- Arrow’s impossibility theorem.
  - Independence of irrelevant alternatives: the only information that should be used when ranking \( a \) and \( b \) are the ordinal (non-comparable) preferences of individuals about \( a \) and \( b \).

- Relax the assumption of binariness: use information about indifference curves through \( a \) and \( b \), while keeping the assumption of ordinal preferences.
Historical sketch 3

- Arrow’s impossibility theorem.
  - Independence of irrelevant alternatives: the only information that should be used when ranking \( a \) and \( b \) are the ordinal (non-comparable) preferences of individuals about \( a \) and \( b \).
- Relax the assumption of binariness: use information about indifference curves through \( a \) and \( b \), while keeping the assumption of ordinal preferences.
- Equivalent income, money-metric utility - first explored in the 80’s but then disappeared.
**Historical sketch 3**

- Arrow’s impossibility theorem.
  - Independence of irrelevant alternatives: the only information that should be used when ranking $a$ and $b$ are the ordinal (non-comparable) preferences of individuals about $a$ and $b$.

- Relax the assumption of binariness: use information about indifference curves through $a$ and $b$, while keeping the assumption of ordinal preferences.

- Equivalent income, money-metric utility - first explored in the 80’s but then disappeared.

- Equivalent income is our APPROACH 3.
Historical sketch 4

- Spectacular growth of the happiness literature. Measurement based on simple survey questions?
Spectacular growth of the happiness literature. Measurement based on simple survey questions?

Back to utilitarianism?
Historical sketch 4

- Spectacular growth of the happiness literature. Measurement based on simple survey questions?
- Back to utilitarianism?
- No reference to the social choice debate.
Historical sketch 4

- Spectacular growth of the happiness literature. Measurement based on simple survey questions?
- Back to utilitarianism?
- No reference to the social choice debate.
- Happiness is our APPROACH 2.
Three definitions of "welfarism"

1. Subjective welfarism: social welfare is defined in terms of interpersonally comparable subjective utilities.
Three definitions of "welfarism"

1. Subjective welfarism: social welfare is defined in terms of interpersonally comparable subjective utilities.
2. Welfarism: social welfare is defined in terms of measures of individual well-being (e.g. index of functionings).
Three definitions of "welfarism"

1. Subjective welfarism: social welfare is defined in terms of interpersonally comparable subjective utilities.
2. Welfarism: social welfare is defined in terms of measures of individual well-being (e.g. index of functionings).
3. Social welfare evaluation takes into account individual preferences.
Structure of the presentation

1. Introduction.
2. Historical sketch.
3. Functionings and capabilities.
4. Utility and happiness.
5. Equivalent income.
6. Respect for preferences and multidimensional inequality measures.
Some notation

- Let $\ell_i$ denote the vector of $m$ aspects of life that may matter to individual $i$ (examples: consumption or income $y_i$, health, longevity, leisure,...).
Some notation

- Let $\ell_i$ denote the vector of $m$ aspects of life that may matter to individual $i$ (examples: consumption or income $y_i$, health, longevity, leisure,...).

- Individuals have a life project, i.e., an informed judgment about what makes a life good or bad. Represented by a preference ordering $R_i$ over the vectors $\ell_i$: $\ell_i R_i \ell_i'$ if $i$ weakly prefers the life described by $\ell_i$ to the life described by $\ell_i'$. 
Some notation

- Let $\ell_i$ denote the vector of $m$ aspects of life that may matter to individual $i$ (examples: consumption or income $y_i$, health, longevity, leisure,...).
- Individuals have a life project, i.e., an informed judgment about what makes a life good or bad. Represented by a preference ordering $R_i$ over the vectors $\ell_i$: $\ell_i R_i \ell'_i$ if $i$ weakly prefers the life described by $\ell_i$ to the life described by $\ell'_i$.
- Subjective individual satisfaction is given by a “satisfaction function” $S_i (\ell_i)$.
Some notation

- Let $\ell_i$ denote the vector of $m$ aspects of life that may matter to individual $i$ (examples: consumption or income $y_i$, health, longevity, leisure, ...).

- Individuals have a life project, i.e., an informed judgment about what makes a life good or bad. Represented by a preference ordering $R_i$ over the vectors $\ell_i$: $\ell_i R_i \ell'_i$ if $i$ weakly prefers the life described by $\ell_i$ to the life described by $\ell'_i$.

- Subjective individual satisfaction is given by a “satisfaction function” $S_i(\ell_i)$.

- A method of interpersonal well-being comparisons must be able to rank such triplets $(\ell_i, R_i, S_i)$. 
Capabilities and functionings

- FUNCTIONINGS: "doings and beings", achievements of individual (being well-nourished, well-clothed, mobile, taking part in life of community...)
Capabilities and functionings

- FUNCTIONINGS: "doings and beings", achievements of individual (being well-nourished, well-clothed, mobile, taking part in life of community...)
- Well-being as valuation of functioning vector:

\[ WB_F(\ell_i, R_i, S_i) = v_i(\ell_i) \]
Capabilities and functionings

- **FUNCTIONINGS**: "doings and beings", achievements of individual (being well-nourished, well-clothed, mobile, taking part in life of community...)
- **Well-being as valuation of functioning vector:**
  \[
  WB^F(\ell_i, R_i, S_i) = v_i(\ell_i)
  \]
- **CAPABILITIES**: the set of feasible functionings:
  \[
  Q_i = \{ \ell_i \mid \ell_i \text{ is feasible for individual } i \}\]
Capabilities 1: how to evaluate sets?

- Difficult to evaluate sets.
Capabilities 1: how to evaluate sets?

- Difficult to evaluate sets.
- Do \( \{a\} \) and \( \{b\} \) offer the same degree of freedom?
Capabilities 1: how to evaluate sets?

- Difficult to evaluate sets.
- Do \( \{a\} \) and \( \{b\} \) offer the same degree of freedom?
  - Leads to cardinality-based evaluation.
Capabilities 1: how to evaluate sets?

- Difficult to evaluate sets.
- Do \{a\} and \{b\} offer the same degree of freedom?
  - Leads to cardinality-based evaluation.
- How to introduce quality considerations? Through preferences? A large and very abstract literature, until now (and as far as I know) no applications.
Capabilities and responsibility

- The capabilities approach is extremely harsh for those who make mistakes and choose the "wrong" elements from their capability set.
Sen’s idea of "refined functionings": can also capture aspects of freedom.
Sen’s idea of "refined functionings": can also capture aspects of freedom.

Most empirical applications work with (kind of) functionings.
Back to functionings

- Sen’s idea of "refined functionings": can also capture aspects of freedom.
- Most empirical applications work with (kind of) functionings.
- Where does the list of functionings come from?
Sen’s idea of "refined functionings": can also capture aspects of freedom.

Most empirical applications work with (kind of) functionings.

Where does the list of functionings come from?

How to aggregate functionings into a measure of individual well-being?
Should we respect preferences?

- Deep mistrust of preferences among many researchers in this school (and even refusal to make trade-offs: Martha Nussbaum). A quest for objective (perfectionist) measures.
Should we respect preferences?

- Deep mistrust of preferences among many researchers in this school (and even refusal to make trade-offs: Martha Nussbaum). A quest for objective (perfectionist) measures.
- If one wants to respect preferences (seems to be in line with freedom-inspiration), "valuation" function can be a representation of preferences:

\[ WB^F(\ell_i, R_i, S_i) = v_i(\ell_i) \]
Should we respect preferences?

- Deep mistrust of preferences among many researchers in this school (and even refusal to make trade-offs: Martha Nussbaum). A quest for objective (perfectionist) measures.
- If one wants to respect preferences (seems to be in line with freedom-inspiration), "valuation" function can be a representation of preferences:

$$WB^F(\ell_i, R_i, S_i) = v_i(\ell_i)$$

- Yet: how to choose the cardinalization? What if preferences differ?
The dominance principle

**Dominance Principle:** $(\ell', R', S')$ is at least as good as $(\ell'', R'', S'')$ if $\ell' R \ell''$ for all $R$, and strictly better if $\ell' P \ell''$ for all $R$.

If preferences are monotonic, this implies that $(\ell', R', S')$ be better than $(\ell'', R'', S'')$ whenever $\ell' \gg \ell''$. 
The dominance principle

Dominance Principle: \((\ell', R', S')\) is at least as good as \((\ell'', R'', S'')\) if \(\ell' R \ell''\) for all \(R\), and strictly better if \(\ell' P \ell''\) for all \(R\).

If preferences are monotonic, this implies that \((\ell', R', S')\) be better than \((\ell'', R'', S'')\) whenever \(\ell' \gg \ell''\).

Personal-Preference Principle: \((\ell, R, S)\) is at least as good as \((\ell', R, S)\) if \(\ell R \ell'\) and strictly better if \(\ell P \ell'\).
A conflict

Structure of the presentation

1. Introduction.
2. Historical sketch.
3. Functionings and capabilities.
4. Utility and happiness.
5. Equivalent income.
6. Respect for preferences and multidimensional inequality measures.
A surprising revival

- Boom in the literature on happiness.
- “All things considered, how satisfied are you with your life as a whole nowadays? Please answer using this card, where 0 means extremely dissatisfied and 10 means extremely satisfied”.
- “Taken all together, how happy would you say you are? Please use this card.”
A surprising revival

- Boom in the literature on happiness.

- “All things considered, how satisfied are you with your life as a whole nowadays? Please answer using this card, where 0 means extremely dissatisfied and 10 means extremely satisfied”.

- “Taken all together, how happy would you say you are? Please use this card.”

- Although the literature is largely positive, there is (almost always) an implicit suggestion that "more happiness" is better (as if this is self-evident).

\[ WB^{SA}(l_i, R_i, S_i) = S_i(l_i) \]
Some robust findings

1. The answers to the subjective well-being questions are empirically robust and show regular patterns that are intuitively reasonable.
Some robust findings

1. The answers to the subjective well-being questions are empirically robust and show regular patterns that are intuitively reasonable.

2. Income is definitely not the only important dimension of well-being.
Some robust findings

1. The answers to the subjective well-being questions are empirically robust and show regular patterns that are intuitively reasonable.

2. Income is definitely not the only important dimension of well-being.

3. Adaptation.
Some robust findings

1. The answers to the subjective well-being questions are empirically robust and show regular patterns that are intuitively reasonable.

2. Income is definitely not the only important dimension of well-being.

3. Adaptation.
   - Deaton (2008) finds that countries with higher rates of HIV prevalence do not systematically report a lower life (or even health) satisfaction, whereas individuals (and countries) care about HIV and would prefer not to suffer from it.
Some robust findings

1. The answers to the subjective well-being questions are empirically robust and show regular patterns that are intuitively reasonable.

2. Income is definitely not the only important dimension of well-being.

3. Adaptation.

   - Deaton (2008) finds that countries with higher rates of HIV prevalence do not systematically report a lower life (or even health) satisfaction, whereas individuals (and countries) care about HIV and would prefer not to suffer from it.
   - Individuals who have lost a limb may, after adaptation, recover a good subjective well-being score—but still express a strong aversion to disability (Loewenstein and Ubel 2008, Oswald and Powdthavee 2008).
Two notions of happiness

- Psychologists make a distinction between “affects” (feelings) and “cognitions”.
Two notions of happiness

- Psychologists make a distinction between “affects” (feelings) and “cognitions”.
- Feelings are (1) more adaptive; (2) more strongly genetically determined.
Two notions of happiness

- Psychologists make a distinction between “affects” (feelings) and “cognitions”.
- Feelings are (1) more adaptive; (2) more strongly genetically determined.
- The fact that the answers to the two questions are highly correlated is not reassuring, but problematic.
Kahneman: experience sampling or day reconstruction
Kahneman: experience sampling or day reconstruction

<table>
<thead>
<tr>
<th>Activities</th>
<th>Mean affect rating</th>
<th>Mean hours/day</th>
<th>Proportion of sample reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
<td>Negative</td>
<td>Competent</td>
</tr>
<tr>
<td>Intimate relations</td>
<td>5.10</td>
<td>0.36</td>
<td>4.57</td>
</tr>
<tr>
<td>Socializing</td>
<td>4.59</td>
<td>0.57</td>
<td>4.32</td>
</tr>
<tr>
<td>Relaxing</td>
<td>4.42</td>
<td>0.51</td>
<td>4.05</td>
</tr>
<tr>
<td>Pray/worship/meditate</td>
<td>4.35</td>
<td>0.59</td>
<td>4.45</td>
</tr>
<tr>
<td>Eating</td>
<td>4.34</td>
<td>0.59</td>
<td>4.12</td>
</tr>
<tr>
<td>Exercising</td>
<td>4.31</td>
<td>0.50</td>
<td>4.26</td>
</tr>
<tr>
<td>Watching TV</td>
<td>4.19</td>
<td>0.58</td>
<td>3.95</td>
</tr>
<tr>
<td>Shopping</td>
<td>3.95</td>
<td>0.74</td>
<td>4.26</td>
</tr>
<tr>
<td>Preparing food</td>
<td>3.93</td>
<td>0.69</td>
<td>4.20</td>
</tr>
<tr>
<td>On the phone</td>
<td>3.92</td>
<td>0.85</td>
<td>4.35</td>
</tr>
<tr>
<td>Napping</td>
<td>3.87</td>
<td>0.60</td>
<td>3.26</td>
</tr>
<tr>
<td>Taking care of my children</td>
<td>3.86</td>
<td>0.91</td>
<td>4.19</td>
</tr>
<tr>
<td>Computer/e-mail/Internet</td>
<td>3.81</td>
<td>0.80</td>
<td>4.57</td>
</tr>
<tr>
<td>Housework</td>
<td>3.73</td>
<td>0.77</td>
<td>4.23</td>
</tr>
<tr>
<td>Working</td>
<td>3.62</td>
<td>0.97</td>
<td>4.45</td>
</tr>
<tr>
<td>Commuting</td>
<td>3.45</td>
<td>0.89</td>
<td>4.09</td>
</tr>
<tr>
<td>Interaction partners</td>
<td>4.36</td>
<td>0.67</td>
<td>4.37</td>
</tr>
<tr>
<td>Friends</td>
<td>4.17</td>
<td>0.80</td>
<td>4.17</td>
</tr>
<tr>
<td>Relatives</td>
<td>4.11</td>
<td>0.79</td>
<td>4.10</td>
</tr>
<tr>
<td>Spouse/SO</td>
<td>4.04</td>
<td>0.75</td>
<td>4.13</td>
</tr>
<tr>
<td>Children</td>
<td>3.79</td>
<td>0.95</td>
<td>4.65</td>
</tr>
<tr>
<td>Clients/customers</td>
<td>3.76</td>
<td>0.92</td>
<td>4.43</td>
</tr>
<tr>
<td>Co-workers</td>
<td>3.52</td>
<td>1.09</td>
<td>4.48</td>
</tr>
<tr>
<td>Boss</td>
<td>3.41</td>
<td>0.69</td>
<td>3.76</td>
</tr>
<tr>
<td>Alone</td>
<td>3.89</td>
<td>0.84</td>
<td>4.31</td>
</tr>
<tr>
<td>% time &gt; 0</td>
<td>97%</td>
<td>66%</td>
<td>90%</td>
</tr>
</tbody>
</table>
Hedonic welfarism: back to Bentham?

- Hedonic welfarism does not respect preferences (do preferences exist?).
Hedonic welfarism: back to Bentham?

- Hedonic welfarism does not respect preferences (do preferences exist?).
- Individuals are not held responsible for whims and expensive tastes.
Hedonic welfarism: back to Bentham?

- Hedonic welfarism does not respect preferences (do preferences exist?).
- Individuals are not held responsible for whims and expensive tastes.
- Strong focus on mental health policies (given large genetic component and strong adaptation).
Hedonic welfarism: back to Bentham?

- Hedonic welfarism does not respect preferences (do preferences exist?).
- Individuals are not held responsible for whims and expensive tastes.
- Strong focus on mental health policies (given large genetic component and strong adaptation).
- Feelings of happiness can perhaps best be seen as one element in the vector $\ell_i$. 
Preference welfarism: consistency assumption

Consistency Assumption \( S_i (\ell_i) \geq S_i (\ell'_i) \) if and only if \( \ell_i R_i \ell'_i \).
Preference welfarism: consistency assumption

Consistency Assumption  \( S_i(\ell_i) \geq S_i(\ell'_i) \) if and only if \( \ell_i R_i \ell'_i \).

- "Experience" versus "decision" utility. Preferences (in our understanding) are not necessarily revealed in behaviour, and therefore closer to experience utility.
Preference welfarism: consistency assumption

Consistency Assumption \( S_i(\ell_i) \geq S_i(\ell'_i) \) if and only if \( \ell_i R_i \ell'_i \).

- "Experience" versus "decision" utility. Preferences (in our understanding) are not necessarily revealed in behaviour, and therefore closer to experience utility.
- Hard to test consistency assumption: we interpret it as a quality requirement to be imposed on happiness measurement.
Preference welfarism: consistency assumption

Consistency Assumption \( S_i (\ell_i) \geq S_i (\ell'_i) \) if and only if \( \ell_i R_i \ell'_i \).

- "Experience" versus "decision" utility. Preferences (in our understanding) are not necessarily revealed in behaviour, and therefore closer to experience utility.
- Hard to test consistency assumption: we interpret it as a quality requirement to be imposed on happiness measurement.
- If consistency holds, life satisfaction does satisfy the personal-preference principle.
Preference welfarism: consistency assumption

Consistency Assumption \( S_i (\ell_i) \geq S_i (\ell_i') \) if and only if \( \ell_i R_i \ell_i' \).

- "Experience" versus "decision" utility. Preferences (in our understanding) are not necessarily revealed in behaviour, and therefore closer to experience utility.
- Hard to test consistency assumption: we interpret it as a quality requirement to be imposed on happiness measurement.
- If consistency holds, life satisfaction does satisfy the personal-preference principle.
- (Layard) "If we accept the Marxist idea of 'false consciousness', we play God and decide what is good for others, even if they will never feel it to be so".
The same-preference principle

- Is this sufficient? What to do in cases of adaptation and changes/differences in aspirations?
  - Deaton - AIDS in Africa.
  - Loewenstein - effects of loss of limb.

**Same-Preference Principle:** \((\ell, R, S)\) is at least as good as \((\ell', R, S')\) if \(\ell R \ell'\), and strictly better if \(\ell P \ell'\).
Illustration
Illustration
Responsibility?

- If we "equalize" satisfaction, individuals with larger aspirations will be compensated.

- Example: job satisfaction and aspirations.
Responsibility?

- If we "equalize" satisfaction, individuals with larger aspirations will be compensated.

- Example: job satisfaction and aspirations.

- People that have adapted their aspirations (the happy poor) should not be compensated.
Structure of the presentation

1. Introduction.
2. Historical sketch.
3. Functionings and capabilities.
4. Utility and happiness.
5. Equivalent income.
6. Respect for preferences and multidimensional inequality measures.
The concept of equivalent income

- Choose reference values $\tilde{x}$ for all the non-income dimensions.
The concept of equivalent income

- Choose reference values $\tilde{x}$ for all the non-income dimensions.
- The equivalent income $y_i^*$ for individual $i$ is then defined as the solution to the equation

$$(y_i, x_i) \rightarrow l_i \ (y_i^*, \tilde{x}) .$$
Introduction

Historical sketch

Functionings and capabilities

Happiness

Equivalent income

Multidimensional inequality

International

---

The diagram illustrates the relationship between health and income. It shows two curves: one for normal health and another for health that is below the normal standard. The points A', B', A, B, B'' are marked on the curves, with corresponding income levels y_A^* and y_B^* on the x-axis. The diagram suggests a comparison between different levels of income and their effects on health.
The concept of equivalent income

- Choose reference values $\tilde{x}$ for all the non-income dimensions.
The concept of equivalent income

- Choose reference values $\tilde{x}$ for all the non-income dimensions.
- The equivalent income $y^*_i$ for individual $i$ is then defined as the solution to the equation

$$ (y_i, x_i) l_i (y^*_i, \tilde{x}) $$
The concept of equivalent income

- Choose reference values $\tilde{x}$ for all the non-income dimensions.
- The equivalent income $y_i^*$ for individual $i$ is then defined as the solution to the equation

$$ (y_i, x_i) I_i (y_i^*, \tilde{x}) . $$

- The equivalent income function $y_i^*(y_i, x_i)$ is a specific cardinalization of the utility function.
The concept of equivalent income

- Choose reference values $\tilde{x}$ for all the non-income dimensions.
- The equivalent income $y_i^*$ for individual $i$ is then defined as the solution to the equation
  $$(y_i, x_i) I_i (y_i^*, \tilde{x}).$$
- The equivalent income function $y_i^*(y_i, x_i)$ is a specific cardinalization of the utility function.
- Another interpretation:
  $$y_i^* = y_i - WTP_i(x_i \rightarrow \tilde{x}; y_i, x_i),$$
  where $WTP_i(x_i \rightarrow \tilde{x}; y_i, x_i)$ denotes the willingness-to-pay of individual $i$ for a move from $x_i$ to $\tilde{x}$. 
Questions and difficulties

- Equivalent income function is not necessarily concave in income (Blackorby and Donaldson, 1988). Is this a problem?
Questions and difficulties

- Equivalent income function is not necessarily concave in income (Blackorby and Donaldson, 1988). Is this a problem?
- Choice of reference values? Not arbitrary, but undeniably normative. Better to make value judgments explicit?
Questions and difficulties

- Equivalent income function is not necessarily concave in income (Blackorby and Donaldson, 1988). Is this a problem?
- Choice of reference values? Not arbitrary, but undeniably normative. Better to make value judgments explicit?
  - Reference values should be set in such a way that we can accept the implication that when all individuals are in the reference situation for the non-income dimensions, differences in preferences do not matter to determine who is worse or better off.
Questions and difficulties

- Equivalent income function is not necessarily concave in income (Blackorby and Donaldson, 1988). Is this a problem?
- Choice of reference values? Not arbitrary, but undeniably normative. Better to make value judgments explicit?
  - Reference values should be set in such a way that we can accept the implication that when all individuals are in the reference situation for the non-income dimensions, differences in preferences do not matter to determine who is worse or better off.
  - Equivalent income measures the welfare loss that results from deviations from a "normal" level (which may be personalized).
How to estimate preferences?

1. "Revealed preferences" - cf. lecture André Decoster.
How to estimate preferences?

1. "Revealed preferences" - cf. lecture André Decoster.
2. Contingent valuation - direct questions about willingness-to-pay. Most relevant for dimensions for which individuals have no or limited choice (health, environment).
How to estimate preferences?

1. "Revealed preferences" - cf. lecture André Decoster.
2. Contingent valuation - direct questions about willingness-to-pay. Most relevant for dimensions for which individuals have no or limited choice (health, environment).
3. Satisfaction equations - derive info about marginal rates of substitution (one exploits only the ordinal information that is in the data).
What if preferences are incomplete?

(Fleurbaey and Schokkaert, AEJ: Micro, 2013)
What if preferences are incomplete?

(Fleurbaey and Schokkaert, AEJ: Micro, 2013)
**Equivalent income and responsibility**

- Individuals are held responsible for their preferences.
Equivalent income and responsibility

- Individuals are held responsible for their preferences.
- These are to be seen as "authentic" ideas about the good life, with which people identify.
Equivalent income and responsibility

- Individuals are held responsible for their preferences.
- These are to be seen as "authentic" ideas about the good life, with which people identify.
- In line with the Rawlsian inspiration.
## Summary

<table>
<thead>
<tr>
<th>Functionings</th>
<th>Happiness Feelings</th>
<th>Life Satisfaction</th>
<th>Equivalent Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominance</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Same Preference Principle</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Informational Requirement</td>
<td>Vector of Functionings</td>
<td>Happiness (e.g. through experience sampling)</td>
<td>Life Satisfaction Measure</td>
</tr>
</tbody>
</table>
Structure of the presentation

1. Introduction.
2. Historical sketch.
3. Functionings and capabilities.
4. Utility and happiness.
5. Equivalent income.
6. Respect for preferences and multidimensional inequality measures.
Limited information

- The only information that is used is information about the distribution matrix.

\[
L = \begin{bmatrix}
\ell_1^1 & \ldots & \ell_1^m \\
\ell_2^1 & \ldots & \ell_2^m \\
\vdots & \ddots & \vdots \\
\ell_n^1 & \ldots & \ell_n^m
\end{bmatrix} \leftarrow \text{Individual 1} \\
\text{etc.} \\
\uparrow \quad \uparrow \\
\text{Dim. 1} \quad \ldots \quad \text{Dim. } m
\]
Limited information

- The only information that is used is information about the distribution matrix.

\[
L = \begin{bmatrix}
\ell_1^1 & \ldots & \ell_1^m \\
\ell_2^1 & \ldots & \ell_2^m \\
\vdots & \ddots & \vdots \\
\ell_n^1 & \ldots & \ell_n^m \\
\end{bmatrix} \quad \text{← Individual 1}
\]

\[
\text{← Individual 2}
\]

\[
\vdots
\]

\[
\text{← Individual } n
\]

\[
\uparrow \quad \uparrow
\]

\text{Dim. 1 \ldots Dim. } m

- Accounting for cumulative deprivation requires that one first constructs an index of well-being at the individual level and then aggregates these well-being indices over individuals.
Pigou-Dalton principle and respect for preferences

- Formulation of transfer principle in the space of functionings:

Pigou-Dalton Transfer Principle \((\ell_i, R_i, S_i)_{i=1}^n\) is strictly better than \((\ell'_i, R_i, S_i)_{i=1}^n\), if for all individuals \(k \neq i, j\), we have that \(\ell'_k = \ell_k\), and for individuals \(i\) and \(j\), we have that for \(\delta \in \mathbb{R}_+^m \setminus \{0\}\) \(\ell'_i = \ell_i + \delta \leq \ell_j - \delta = \ell'_j\).
Pigou-Dalton principle and respect for preferences

- Formulation of transfer principle in the space of functionings:

**Pigou-Dalton Transfer Principle** \((\ell_i, R_i, S_i)_{i=1}^n\) is strictly better than \((\ell'_i, R_i, S_i)_{i=1}^n\), if for all individuals \(k \neq i, j\), we have that \(\ell'_k = \ell_k\), and for individuals \(i\) and \(j\), we have that for \(\delta \in \mathbb{R}_+^m \setminus \{0\}\) \(\ell'_i = \ell_i + \delta \leq \ell_j - \delta = \ell'_j\).

- Respect for preferences?

**Weak Pareto Principle** \((\ell_i, R_i, S_i)_{i=1}^n\) is strictly better than \((\ell'_i, R_i, S_i)_{i=1}^n\) if for all \(i\), \(\ell_i P_i \ell'_i\).
Another conflict

Two approaches

1. Assumption of preference homogeneity.
Two approaches

1. Assumption of preference homogeneity.
2. Dominance approaches.
Two approaches

1. Assumption of preference homogeneity.
2. Dominance approaches.
Two approaches

1. Assumption of preference homogeneity.
2. Dominance approaches.

*Dominance approaches do not respect heterogeneous individual preferences. Allowing for flexibility in the choice of a common utility function, is very different from accepting that utility functions may differ between individuals.*
A basic message

- There is a deep conflict between all multidimensional inequality measures and respect for (heterogeneous) individual preferences.
A basic message

- There is a deep conflict between all multidimensional inequality measures and respect for (heterogeneous) individual preferences.
- These measures fit well in a perfectionist approach (the non-preference interpretation of functionings), but not in liberal (e.g. Rawlsian) setting.
Structure of the presentation

1. Introduction.
2. Historical sketch.
3. Functionings and capabilities.
4. Utility and happiness.
5. Equivalent income.
6. Respect for preferences and multidimensional inequality measures.
An illustration

Based on paper with Koen Decancq. European Social Survey, 2008 and 2010. (SILC does not contain a question on life satisfaction).
18 countries: 15 EU-members, Switzerland, Norway, the Russian Federation. About 52,000 individual observations.

<table>
<thead>
<tr>
<th>Life dimensions</th>
<th>Variable in ESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material living conditions</td>
<td>Total household income per capita (after uprating)</td>
</tr>
<tr>
<td>Health</td>
<td>1) Self-reported health</td>
</tr>
<tr>
<td></td>
<td>2) Dummy whether being hampered in daily activities by illness/disability/infirmary or mental problem</td>
</tr>
<tr>
<td>Productive and valued activities</td>
<td>Unemployment status</td>
</tr>
<tr>
<td>Leisure and social interactions</td>
<td>Indicator of how often the respondent meets socially with friends, relatives or colleagues.</td>
</tr>
<tr>
<td>Economic and physical security</td>
<td>Indicator of whether the respondent feels safe when walking alone in local area after dark</td>
</tr>
</tbody>
</table>
## Average well-being

<table>
<thead>
<tr>
<th>Income</th>
<th>Equivalent income</th>
<th>Happiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>(NO, CH)</td>
<td>(NO, CH)</td>
<td>(DK, CH)</td>
</tr>
<tr>
<td>DE</td>
<td>28986 (6)</td>
<td>3188 (10)</td>
</tr>
<tr>
<td>DK</td>
<td>28162 (7)</td>
<td>6938 (4)</td>
</tr>
<tr>
<td>FR</td>
<td>25779 (10)</td>
<td>3529 (9)</td>
</tr>
<tr>
<td>ES</td>
<td>22282 (11)</td>
<td>3182 (11)</td>
</tr>
<tr>
<td>GR</td>
<td>19388 (13)</td>
<td>2564 (13)</td>
</tr>
<tr>
<td>(RU, EE)</td>
<td>(RU, HU)</td>
<td>(GR, RU)</td>
</tr>
</tbody>
</table>

International
### Within-country inequality

<table>
<thead>
<tr>
<th>Country</th>
<th>Gini coefficient (income)</th>
<th>Gini coefficient (equivalent income)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CZ</td>
<td>0.27 (1)</td>
<td>0.73 (10)</td>
</tr>
<tr>
<td>DK</td>
<td>0.28 (3)</td>
<td>0.65 (2)</td>
</tr>
<tr>
<td>HU</td>
<td>0.30 (6)</td>
<td>0.77 (17)</td>
</tr>
<tr>
<td>SI</td>
<td>0.32 (9)</td>
<td>0.75 (14)</td>
</tr>
<tr>
<td>CH</td>
<td>0.34 (14)</td>
<td>0.66 (3)</td>
</tr>
<tr>
<td>GB</td>
<td>0.36 (16)</td>
<td>0.72 (9)</td>
</tr>
<tr>
<td>GR</td>
<td>0.36 (17)</td>
<td>0.75 (13)</td>
</tr>
<tr>
<td>ES</td>
<td>0.38 (18)</td>
<td>0.74 (12)</td>
</tr>
<tr>
<td>(GR, ES)</td>
<td></td>
<td>(HU, EE)</td>
</tr>
</tbody>
</table>
### Growth rates 2008-2010

<table>
<thead>
<tr>
<th></th>
<th>income growth</th>
<th>welfare growth (p=5)</th>
<th>happiness growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>(CH, PL)</td>
<td>+ 7.35%</td>
<td>(1)</td>
<td>(1)</td>
</tr>
<tr>
<td>(CH, RU)</td>
<td>+9.69%</td>
<td></td>
<td>+2.23%</td>
</tr>
<tr>
<td>(HU, EE)</td>
<td></td>
<td></td>
<td>(6)</td>
</tr>
<tr>
<td>CH</td>
<td>+ 0.09%</td>
<td>(3)</td>
<td>+4.46%</td>
</tr>
<tr>
<td>(9)</td>
<td>- 4.51%</td>
<td></td>
<td>(3)</td>
</tr>
<tr>
<td>BE</td>
<td>- 0.55%</td>
<td>(4)</td>
<td>+3.33%</td>
</tr>
<tr>
<td>(4)</td>
<td>+ 4.54%</td>
<td></td>
<td>(5)</td>
</tr>
<tr>
<td>DK</td>
<td>- 1.73%</td>
<td>(8)</td>
<td>-2.00%</td>
</tr>
<tr>
<td>(10)</td>
<td>-4.53%</td>
<td></td>
<td>(16)</td>
</tr>
<tr>
<td>ES</td>
<td>- 2.24%</td>
<td>(11)</td>
<td>-0.01%</td>
</tr>
<tr>
<td>(17)</td>
<td>-12.04%</td>
<td></td>
<td>(15)</td>
</tr>
<tr>
<td>GR</td>
<td>- 5.81%</td>
<td>(17)</td>
<td>-5.78%</td>
</tr>
<tr>
<td>(18)</td>
<td>-22.92%</td>
<td></td>
<td>(18)</td>
</tr>
<tr>
<td>EE</td>
<td>- 8.60%</td>
<td>(18)</td>
<td>+5.16%</td>
</tr>
<tr>
<td>(14)</td>
<td>-7.24%</td>
<td></td>
<td>(2)</td>
</tr>
<tr>
<td>(GR, EE)</td>
<td></td>
<td></td>
<td>(CZ, GR)</td>
</tr>
<tr>
<td>(ES, GR)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>