Distributional Challenges of Globalization: Introduction

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Academic year 09-10
Introduction
Introduction

What is *globalization*?

- Imprecise expression describing *increasing internationalization* of economic processes

- Globalization as a continuous evolution throughout human history with accelerations and decelerations. *Present phase of acceleration* taken to have started in the early 90s.

- Globalization often defined in reference to foreign trade but affects many other economic flows: people, capital, information and knowledge.

- Globalization inducing stronger and stronger *linkages* among national economies
Evolution of world trade: (Export+Import)/GDP, 1970-2008

Source: calculations based on WDI
Global Growth of Exports and GDP (1970 = 100), 1960-2008

Source: calculations based on WDI
Inequality and globalization:

• "Despite unprecedented economic growth in recent years, the rich have become richer and the poor even poorer. " (2005 HDR report by the UN)

• Dominant or isolated opinion on globalization (taken to be equivalent to 'recent years'!)?

• Danger that:
  a) such an opinion derails the process and reduces global gains
  b) only a small share of economic actors benefit from it.
The distributional conundrum of globalization:

• Globalization presumably increases aggregate economic efficiency
• But it may generate winners and losers.
• Without compensation devices or some kind of regulation, the whole process can be at risk because of a lack of consensus

Key issues for this course:
- Are there winners and losers in globalization?
- Who are they?
- What kind of compensation schemes or regulations are conceivable for everybody to gain (or nobody to lose)?
International and national perspectives

A world of 'nations'

• Winners and losers in globalization may be nations
  – Issue of 'responsibility'
  – Correction of inequality may require some kind of global governance

• Winners and losers may be specific groups within countries:
  – correction then requires domestic measures
The various dimensions of 'inequality'

- Income or consumption as a particular dimension of well-being
- Other dimensions include: health, education, inclusion, freedom, voice, ...
- Outcomes vs. 'opportunities' (Sen's capabilities)
- 'Equality' vs. 'Equity'
- How to handle these concepts within and across countries
Methodological remarks for this course

• Combining descriptive, normative and inductive analysis:
  – What do we know about the globalization/inequality process?
  – How does it work?
  – How should it work?

• Course covering several economic fields without any ambition to exhaustiveness

• Intends to show how to use various tools of economic analysis
Outline of the course

1. Evolution of inequality and poverty within the world (1.5 lecture)
   – More or less inequality and poverty within the world? Existing evidence and how to interpret it.
   – More inequality within countries?
   – Within country inequality and globalization: functional and personal inequality
   – Non-income poverty and inequality
   – Projections of the global distribution of well-being

Preliminary: Measuring inequality and poverty
2. Trade and distribution (1.5 lecture)

- The Hecksher-Ohlin theorem: naïve application in the 2x2x2 case
  - Skill-differential: “Is your wage set in Beijing?”
  - Towards a substitution of between and within inequality in the world?
- Trying to generalize the Heckscher-Ohlin theorem to the mxpxq case?
- Other models of international trade and inequality
- Trade, growth and poverty
- Technical progress as a global driver of distributional changes:
  - Tinbergen’s race between technology and education
  - Technical progress as a substitute to labor mobility
- Measuring the gains and distributional effects from global trade
3. Migration and global distribution (1 lecture)

– Evolution of international migration flows: a long-run view
– Economic theories of international migrations and their distributional implications
  • Micro-economic behavior
  • Macro-economics models
    – Stolper – Samuelson kind of models
    – Brain drain vs. brain gain
    – Political economy models
    – Role of economies of agglomeration
– Evidence on the effects of migration on host and sending countries: overall gains and losses and distributional effects
– Overall effects of migration in the global economy
– Some considerations on internal migrations
4. Financial flows and global distribution (1 lecture)

– Historical evolution and prospects of global financial flows
– Finance, growth, inequality and poverty
– Ambiguous distributional effects of financial development
– Particular problems raised by the sovereign debt
– Distributional effects of financial crises
5. **Foreign Development Assistance (1 lecture)**

- A short quantitative history of development aid
- Global redistribution through aid: evidence and conceptual issues
- The debate about aid effectiveness
- Theoretical analysis of the aid contract: towards a new model of aid?
- Remaining issues: fragile states, fragmentation, coordination…
6. **Distributional issues linked to Global Public Goods (.5 lecture)**

- Global diffusion and sharing of knowledge: the example of pharmaceuticals
- Regional commons: the case of water
- Global commons: mitigation of and adaptation to global warming
7. The 2008-09 global crisis and the global distribution (1 lecture)

– Inequality effect of the crisis between and within countries
– The nature of economic linkages and spillovers
– Economic vulnerability in a globalized world

Conclusion

• The issue of global governance
Some bibliographical references for introduction

• J. Stiglitz (2006), Making globalization work, Norton, chapter 1
• R. Kaplinsky (2005), Globalization, poverty and inequality, Polity press, chapter 1
• J. Bhagwati (2004), In defense of globalization, OUP, chapters 1-3
End of Introduction
Chapter 1. Evolution of world inequality and poverty

Distributional Challenges of Globalization
François Bourguignon
Academic year 2009-10
Outline

1. The measurement of poverty and inequality: a refresher
2. More or less inequality and poverty in the world?
3. Trends in within-country inequality
1. Measuring (income) inequality and poverty: a brief refresher

a) Main Issues

• Inequality (poverty) of what? among whom? (Sen)
• "Distribution" = list of socio-economic attributes, including dimensions of well-being within a population

\[ Y = \{y_1, y_2, y_3, \ldots, y_n\} \]

• When does a "distribution" exhibit more or less poverty or inequality than another? And how much?
• When is a distribution "socially preferable" to another

*Note. There is a duality between inequality and poverty: discussion here generally based on poverty*
b) "What" and "whom": defining and comparing "well-being"

- Well-being = aggregator function (various dimensions: goods & services being consumed)
- Usual aggregator function: goods → expenditures or income (indirect utility)
- Problems:
  - heterogeneity in preferences
  - the issue of "leisure" (monetary vs full-time income)
  - non-marketed goods
  - market imperfections
  - dynamics: permanent vs transitory, intergenerational issues
  - uncertainty: ex-ante vs ex-post
    (The Sen-Stiglitz-Fitoussi 2009 commission)

- Statistical unit: household, individual (equivalence scale)

**Simple (and usual) case: well-being criterion = "real income" per capita for all individuals, y**
c) Defining and measuring poverty

i) Who is poor

- **Poverty line** \((z)\): Individual \(i\) is poor if \(y_i < z\)

- How to define \(z\)?
  - Absolute definition: income or budget necessary to purchase a 'subsistence' basket of goods: 1$ a day, 2$ a day, minimum income, official poverty threshold, …
  - Relative definition: \(x\)% of the mean/median income per capita (EU)…
  - Combining both definitions (episodic revaluations in US)
ii) How poor one is

- Poverty shortfall: $s = z - y_i$ or $(z-y_i)/z$
- Poverty intensity: $S[s]$ with $S'( ) > 0$ and $S''( ) > 0$
- Example: $p(s) = s^\alpha$ with $\alpha > 0$ (and in effect $\alpha > 1$)
iii) Aggregation into poverty measures

(Sub-group decomposable) poverty measures associated with distribution: $Y = (y_1, y_2, \ldots, y_N)$

$$P_{S^0}^{z}(Y) = \frac{1}{N} \sum_{i=1}^{N} I(y_i < z).S\left(\frac{z - y_i}{z}\right)$$ with $I(y_i < z) = 1$ if $y_i < z$ and 0 otherwise

$$P_{a}^{z}(Y) = \frac{1}{N} \sum_{i=1}^{N} I(y_i < z).\left(\frac{z - y_i}{z}\right)^{\alpha}$$ (Foster, Greer, Thorbecke)

$$P_{0}^{z}(Y) = \frac{1}{N} \sum_{i=1}^{N} I(y_i < z) = \text{Proportion of poor} = \text{Headcount} = H^{z}(Y)$$

$$P_{1}^{z}(Y) = \frac{1}{N} \sum_{i=1}^{N} I(y_i < z) \left[\frac{z - y_i}{z}\right] = \text{Poverty gap} = PG^{z}(Y) = \text{Cost of eradicating poverty}$$
iv) Poverty orderings and dominance

• Problem = two poverty indices may rank two distributions $Y_A$ and $Y_B$ differently.
• Definition of dominance: $Y_A$ dominates $Y_B$, in the sense of $\Phi$, iff

\[
P_{S_0}(Y_A) \leq P_{S_0}(Y_B) \quad \forall S() \in \Phi
\]

• First order dominance theorem
Let $\Phi^+$ be the set $\{S'(())>0\}$. $Y_A$ dominates $Y_B$ in the sense of $\Phi^+$, iff

\[
H^Z(Y_A) \leq H^Z(Y_B) \quad \forall Z \leq z
\]

• Second order dominance theorem
Let $\Phi^{++}$ be the set $\{S'(())>0, S''(())>0\}$. $Y_A$ dominates $Y_B$ in $\Phi^{++}$, iff

\[
PG^Z(Y_A) \leq PG^Z(Y_B) \quad \forall Z \leq z
\]

• Practically, use multiple poverty lines below the 'real' one and use the simplest poverty indices: headcount and poverty gap.
d) Extensions to inequality

- Inequality measures = indices of disparities among individual levels of well-being
- A general class of inequality measures

\[ I_{g0}(Y) = \frac{1}{N} \sum_{i=1}^{N} g(y_i / \bar{y}) \] with \( \bar{y} = \text{mean income and } g() \in G \)

\[ CV(Y) = \frac{1}{N\bar{y}} \left[ \sum_{i=1}^{N} (y_i - \bar{y})^2 \right]^{1/2} = \text{Coefficient of variation} \]

\[ T(Y) = \frac{1}{N} \sum_{i=1}^{N} \frac{y_i}{\bar{y}} \log \left( \frac{\bar{y}_i}{\bar{y}} \right) = \text{Theil Coefficient} \]

\[ L(Y) = \frac{1}{N} \sum_{i=1}^{N} \log \left( \frac{\bar{y}}{y_i} \right) = \text{Logarithmic deviation} \]

- See also generalized entropy measures
First order dominance among distributions

- Distribution $Y_A$ dominates, or is "socially preferable" to distribution $Y_B$ if the poverty headcount is lesser with $Y_A$ for all possible poverty lines.

- Implication: the cumulative density function associated with $Y_A$ must be everywhere below that associated with $Y_B$
Second order dominance among distributions

- Distribution $Y_A$ dominates, or is "socially preferable" to distribution $Y_B$ if the poverty gap is lesser with $Y_A$ for all possible poverty lines.
- Implication: the 'incomplete mean function' associated with $Y_A$ must be everywhere above that associated with $Y_B$. 

![Graph showing second order dominance between distributions A and B](image-url)
Normalizing or assuming scale invariance: second-order dominance $\equiv$ Lorenz Curve dominance

Gini coefficient = 2* area between LC and bisector
e) Extensions of poverty and inequality measurement theory

- Decomposability:
  Inequality = Inequality within + Inequality between
- Anonymity and heterogeneity
- Multi-dimensionality
- Dynamics
Bibliographical references on poverty and inequality measurement

• Markus Jantti and Sheldon Danziger (2000), Income poverty in developed countries, in *idem*
2. More or less poverty and inequality in the world?

a) Definitions of world inequality

Statistical unit:
- Country (inter-country distribution)
- National populations (international distribution)
- All individuals (global distribution)

Well-being concept
- Income or consumption expenditures per capita (from National Accounts or from Household surveys??)
- ppp correction
Definitions of world inequality

\[
\text{Global inequality} = \text{international} + \text{within country distribution}
\]

\[
\text{International} = \text{intercountry with population weights}
\]

\[
\text{Intercountry distribution} = \text{income per capita}
\]

b) Historical evolution of global inequality: 1820-1992

Table 1. Inequality and poverty indices for the world income distribution, 1820-1992: selected years

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</thead>
<tbody>
<tr>
<td><strong>Income shares</strong></td>
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<tr>
<td>Bottom 20 per cent</td>
<td>4.4</td>
<td>3.5</td>
<td>2.9</td>
<td>2.8</td>
<td>2.1</td>
<td>1.8</td>
<td>1.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Bottom 40 per cent</td>
<td>13</td>
<td>10.5</td>
<td>8.5</td>
<td>8.1</td>
<td>6.3</td>
<td>5.4</td>
<td>5.3</td>
<td>5.9</td>
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<tr>
<td>Bottom 60 per cent</td>
<td>25.3</td>
<td>21</td>
<td>17.4</td>
<td>16.5</td>
<td>13.4</td>
<td>11.7</td>
<td>11.8</td>
<td>13</td>
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<tr>
<td>Bottom 80 per cent</td>
<td>43</td>
<td>37.4</td>
<td>32.7</td>
<td>32.2</td>
<td>30</td>
<td>29.4</td>
<td>28.9</td>
<td>27.1</td>
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<tr>
<td>Top 10 per cent</td>
<td>43.5</td>
<td>48.1</td>
<td>50.9</td>
<td>49.8</td>
<td>51.9</td>
<td>51.1</td>
<td>51.6</td>
<td>54</td>
</tr>
<tr>
<td>Top 5 per cent</td>
<td>32.6</td>
<td>33.8</td>
<td>36.2</td>
<td>34.9</td>
<td>35.9</td>
<td>34.6</td>
<td>35</td>
<td>36.1</td>
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<tr>
<td><strong>Inequality measures</strong></td>
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<tr>
<td>Coefficient of Gini</td>
<td>0.508</td>
<td>0.568</td>
<td>0.615</td>
<td>0.619</td>
<td>0.652</td>
<td>0.662</td>
<td>0.664</td>
<td>0.667</td>
</tr>
<tr>
<td>Theil index</td>
<td>0.542</td>
<td>0.676</td>
<td>0.793</td>
<td>0.775</td>
<td>0.83</td>
<td>0.836</td>
<td>0.843</td>
<td>0.875</td>
</tr>
<tr>
<td>Mean Logarithmic Deviation</td>
<td>0.45</td>
<td>0.569</td>
<td>0.688</td>
<td>0.705</td>
<td>0.828</td>
<td>0.894</td>
<td>0.891</td>
<td>0.88</td>
</tr>
</tbody>
</table>

Source: Bourguignon and Morrisson (2002)
### Historical evolution of global inequality: 1820-1992

#### Table 1. Inequality and poverty indices for the world income distribution, 1820-1992: selected years

<table>
<thead>
<tr>
<th>Year</th>
<th>Mean world income ($ 1990)</th>
<th>World population (Billions)</th>
<th>Poverty Headcount (%)</th>
<th>Poverty Headcount (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>652</td>
<td>1.1</td>
<td>89.4</td>
<td>60.1</td>
</tr>
<tr>
<td>1870</td>
<td>890</td>
<td>1.3</td>
<td>79.3</td>
<td>53</td>
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<tr>
<td>1910</td>
<td>1460</td>
<td>1.7</td>
<td>67.8</td>
<td>38.6</td>
</tr>
<tr>
<td>1929</td>
<td>1817</td>
<td>2</td>
<td>61.6</td>
<td>35.7</td>
</tr>
<tr>
<td>1950</td>
<td>2145</td>
<td>2.5</td>
<td>57.6</td>
<td>33.2</td>
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<tr>
<td>1970</td>
<td>3778</td>
<td>3.7</td>
<td>44.5</td>
<td>18.5</td>
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<tr>
<td>1980</td>
<td>4609</td>
<td>4.4</td>
<td>37.5</td>
<td>14.8</td>
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<tr>
<td>1992</td>
<td>4962</td>
<td>5.5</td>
<td>29.8</td>
<td>10.8</td>
</tr>
</tbody>
</table>

Source: Bourguignon and Morrisson (2002)
Historical evolution of global inequality: 1-2003

Courbes de Lorenz de la distribution mondiale (10 régions): 1-2003 (d'après Madison)
Table 2. Decomposition of world inequality into 'within' and 'between' inequality

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<tbody>
<tr>
<td><strong>Theil coefficient</strong></td>
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<td></td>
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<tr>
<td>Inequality within country groups</td>
<td>0.462</td>
<td>0.470</td>
<td>0.484</td>
<td>0.495</td>
<td>0.498</td>
<td>0.412</td>
<td>0.323</td>
<td>0.318</td>
<td>0.315</td>
<td>0.330</td>
<td>0.342</td>
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<tr>
<td>Inequality between country groups</td>
<td>0.061</td>
<td>0.128</td>
<td>0.188</td>
<td>0.250</td>
<td>0.299</td>
<td>0.365</td>
<td>0.482</td>
<td>0.458</td>
<td>0.492</td>
<td>0.499</td>
<td>0.513</td>
</tr>
<tr>
<td>Total inequality</td>
<td>0.522</td>
<td>0.598</td>
<td>0.672</td>
<td>0.745</td>
<td>0.797</td>
<td>0.805</td>
<td>0.776</td>
<td>0.808</td>
<td>0.829</td>
<td>0.855</td>
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<tr>
<td><strong>Mean logarithmic deviation</strong></td>
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<tr>
<td>Inequality within country groups</td>
<td>0.370</td>
<td>0.374</td>
<td>0.382</td>
<td>0.393</td>
<td>0.399</td>
<td>0.356</td>
<td>0.303</td>
<td>0.300</td>
<td>0.304</td>
<td>0.321</td>
<td>0.332</td>
</tr>
<tr>
<td>Inequality between country groups</td>
<td>0.053</td>
<td>0.111</td>
<td>0.162</td>
<td>0.217</td>
<td>0.269</td>
<td>0.334</td>
<td>0.472</td>
<td>0.466</td>
<td>0.518</td>
<td>0.528</td>
<td>0.495</td>
</tr>
<tr>
<td>Total inequality</td>
<td>0.422</td>
<td>0.485</td>
<td>0.544</td>
<td>0.610</td>
<td>0.668</td>
<td>0.690</td>
<td>0.775</td>
<td>0.766</td>
<td>0.823</td>
<td>0.850</td>
<td>0.827</td>
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<tr>
<td><strong>Standard deviation of logarithm</strong></td>
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</tr>
<tr>
<td>Inequality between country groups</td>
<td>0.300</td>
<td>0.432</td>
<td>0.515</td>
<td>0.592</td>
<td>0.668</td>
<td>0.747</td>
<td>0.907</td>
<td>0.920</td>
<td>0.977</td>
<td>0.994</td>
<td>0.926</td>
</tr>
<tr>
<td>Total inequality</td>
<td>0.826</td>
<td>0.873</td>
<td>0.920</td>
<td>0.971</td>
<td>1.027</td>
<td>1.064</td>
<td>1.154</td>
<td>1.161</td>
<td>1.210</td>
<td>1.234</td>
<td>1.184</td>
</tr>
</tbody>
</table>

Between country inequality = 'international' inequality
Evolution of international (between) and global inequality

Theil coefficient

Global inequality

Inequality between countries

Inequality within countries
c) Recent evolution of global inequality: different lenses...

Source: Bourguignon, Levin and Rosenblatt (2004), and Milanovic (2005)
Recent evolution of extreme poverty in developing countries

### Poverty headcount (1.25$, 2005): million people

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</thead>
<tbody>
<tr>
<td>East Asia and Pacific</td>
<td>1071.9</td>
<td>947.3</td>
<td>823.1</td>
<td>873.0</td>
<td>845.8</td>
<td>622.3</td>
<td>634.9</td>
<td>507.0</td>
<td>316.6</td>
</tr>
<tr>
<td>China rural</td>
<td>745.6</td>
<td>654.0</td>
<td>545.6</td>
<td>610.7</td>
<td>582.4</td>
<td>408.1</td>
<td>415.3</td>
<td>348.9</td>
<td>198.3</td>
</tr>
<tr>
<td>China urban</td>
<td>89.7</td>
<td>65.5</td>
<td>40.5</td>
<td>72.8</td>
<td>50.2</td>
<td>35.0</td>
<td>31.1</td>
<td>14.5</td>
<td>9.3</td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>7.2</td>
<td>5.7</td>
<td>4.9</td>
<td>9.3</td>
<td>20.2</td>
<td>21.7</td>
<td>24.1</td>
<td>21.8</td>
<td>17.5</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>47.2</td>
<td>59.7</td>
<td>56.7</td>
<td>49.5</td>
<td>46.6</td>
<td>52.9</td>
<td>55.3</td>
<td>56.6</td>
<td>45.1</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>13.7</td>
<td>11.6</td>
<td>11.8</td>
<td>9.7</td>
<td>9.9</td>
<td>10.6</td>
<td>11.5</td>
<td>10.4</td>
<td>11.0</td>
</tr>
<tr>
<td>South Asia</td>
<td>548.7</td>
<td>548.0</td>
<td>569.6</td>
<td>579.1</td>
<td>559.0</td>
<td>595.1</td>
<td>588.5</td>
<td>615.9</td>
<td>595.0</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>212.4</td>
<td>242.1</td>
<td>258.1</td>
<td>297.6</td>
<td>317.6</td>
<td>355.7</td>
<td>382.9</td>
<td>389.6</td>
<td>388.3</td>
</tr>
<tr>
<td>World</td>
<td>1901.0</td>
<td>1812.1</td>
<td>1723.0</td>
<td>1819.0</td>
<td>1798.9</td>
<td>1655.4</td>
<td>1696.1</td>
<td>1599.3</td>
<td>1374.1</td>
</tr>
</tbody>
</table>

### Poverty headcount (1.25$, 2005): percents

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia and Pacific</td>
<td>77.7</td>
<td>65.5</td>
<td>54.2</td>
<td>54.7</td>
<td>50.8</td>
<td>36</td>
<td>35.5</td>
<td>27.6</td>
<td>16.8</td>
</tr>
<tr>
<td>China rural</td>
<td>94.1</td>
<td>81.2</td>
<td>66.9</td>
<td>74.1</td>
<td>70.4</td>
<td>49.5</td>
<td>50.9</td>
<td>43.7</td>
<td>26.1</td>
</tr>
<tr>
<td>China urban</td>
<td>44.5</td>
<td>28.3</td>
<td>15.1</td>
<td>23.4</td>
<td>14.3</td>
<td>8.9</td>
<td>7.1</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>1.7</td>
<td>1.3</td>
<td>1.1</td>
<td>2</td>
<td>4.3</td>
<td>4.6</td>
<td>5.1</td>
<td>4.6</td>
<td>3.7</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>12.9</td>
<td>15.3</td>
<td>13.7</td>
<td>11.3</td>
<td>10.1</td>
<td>10.9</td>
<td>10.9</td>
<td>10.7</td>
<td>8.2</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>7.9</td>
<td>6.1</td>
<td>5.7</td>
<td>4.3</td>
<td>4.1</td>
<td>4.1</td>
<td>4.2</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>South Asia</td>
<td>59.4</td>
<td>55.6</td>
<td>54.2</td>
<td>51.7</td>
<td>46.9</td>
<td>47.1</td>
<td>44.1</td>
<td>43.8</td>
<td>40.3</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>53.4</td>
<td>55.8</td>
<td>54.5</td>
<td>57.6</td>
<td>56.9</td>
<td>58.8</td>
<td>58.4</td>
<td>55</td>
<td>50.9</td>
</tr>
<tr>
<td>World</td>
<td>51.9</td>
<td>46.7</td>
<td>41.9</td>
<td>41.7</td>
<td>39.2</td>
<td>34.4</td>
<td>33.7</td>
<td>30.5</td>
<td>25.2</td>
</tr>
</tbody>
</table>

Evolution of extreme poverty by region: 1981-2005
(1.25$ 2005, headcount %)
d) Globalization and the evolution of inequality

- Why such heterogeneous 'perceptions' of the evolution of inequality in public opinion?
  - Inequality is increasing (inter-country)
  - Inequality is decreasing (international)

- What has globalization to do with that evolution?
  - Other things equal, the recent wave of globalization would correspond more to an attenuation of inequalities or slowing down in the pace of increase.

- Very recent evolution (since 2001) still more favourable since inter-country likely to decline (for the first time since 1950 – and before.
e) From statics to dynamics and the link with 'convergence'

- Preceding analysis based on successive cross-sections according to a principle of anonymity (and 'comparative statics')
- In 'convergence' literature, equivalent to analyzing $\sigma$-convergence (picture)
- Also possible to look at the dynamics of income as in the $\beta$-convergence or more general dynamic models (movie)

- Does such a perspective modify conclusions about, or perception of the evolution of world inequality?
Types of convergence in inter-country distribution

- **σ-convergence**: \( Var(Ln y_{it}) = \sigma_t^2 \) with \( \sigma_t^2 \) decreasing

- **Unconditional β-convergence**: 
  \[ Ln y_{it} - Ln y_{it-1} = \beta.Ln y_{it-1} + \varepsilon_{it} \]  with \( \beta < 0 \)

- **Conditional β-convergence**: 
  \[ Ln y_{it} - Ln y_{it-1} = \beta.Ln y_{it-1} + X_{it}\gamma + \varepsilon_{it} \]  with \( \beta < 0 \)

\( \sigma \)-convergence \( \rightarrow \) \( \beta \)-convergence

\( \beta \)-divergence \( \rightarrow \) \( \sigma \)-divergence

See Jones (1997)
More general representation of income dynamics

• Transition matrix
  \( P_{tt'}(ij) = \) Probability for a country with income in range \( i \) at \( t \) to be in range \( j \) at \( t' \)

• Infinite dimension of matrix : stochastic Kernel
• Stationarity vs. non-stationarity
• Markov vs. Non-Markov (path dependence)
Application to intercountry distribution of income  
(105 countries, Quah, 1997)

The 'twin peaks': densities of log relative per capita income, selected years

Fig. 3a-d: Densities of log relative (per capita) incomes across 105 countries
Transition: stochastic Kernel (Quah, 1997)

Stochastic Kernel, 15 years horizon, 105 countries

Fig. 5a1. Log Relative Income Dynamics across 105 Countries

15-year Horizon
Transition: contour of the stochastic Kernel (Quah, 1997)

Contours 0.2, 0.35, 0.5; 15 years horizon, 105 countries
Transition matrix 80-02 defined on 120 countries shows winners and losers: no Pareto improvement

International distribution (population weighted)

<table>
<thead>
<tr>
<th>Income in 1980</th>
<th>Income in 2002 &lt;710</th>
<th>711-1100</th>
<th>1101-2890</th>
<th>2890-10000</th>
<th>10001 &gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;710</td>
<td>1.28%</td>
<td>1.64%</td>
<td>0.00%</td>
<td>97.08%</td>
<td>0.00%</td>
</tr>
<tr>
<td>711-1100</td>
<td>8.23%</td>
<td>3.89%</td>
<td>87.88%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>1101-2890</td>
<td>8.09%</td>
<td>0.56%</td>
<td>59.08%</td>
<td>32.28%</td>
<td>0.00%</td>
</tr>
<tr>
<td>2890-10000</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.98%</td>
<td>90.84%</td>
<td>8.17%</td>
</tr>
<tr>
<td>10001 &gt;</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>3.99%</td>
<td>96.01%</td>
</tr>
</tbody>
</table>

Losers

Source: Bourguignon, Levin and Rosenblatt (2005)
Transition matrices are not stationary (global distribution 1910-1950-1992)

<table>
<thead>
<tr>
<th>Income ranges 1910</th>
<th>Less than .25</th>
<th>.25 -.5</th>
<th>.5 - 1</th>
<th>1 - 2</th>
<th>More than 2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than .25</td>
<td>88.3%</td>
<td>7.7%</td>
<td>4.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>24.3%</td>
</tr>
<tr>
<td>.25 -.5</td>
<td>47.6%</td>
<td>40.7%</td>
<td>11.5%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>31.6%</td>
</tr>
<tr>
<td>.5 - 1</td>
<td>0.0%</td>
<td>31.3%</td>
<td>47.5%</td>
<td>21.2%</td>
<td>0.0%</td>
<td>21.4%</td>
</tr>
<tr>
<td>1 - 2</td>
<td>0.0%</td>
<td>0.0%</td>
<td>6.1%</td>
<td>65.8%</td>
<td>28.1%</td>
<td>11.1%</td>
</tr>
<tr>
<td>More than 2</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>19.6%</td>
<td>80.4%</td>
<td>11.7%</td>
</tr>
<tr>
<td>Total</td>
<td>36.5%</td>
<td>21.4%</td>
<td>15.5%</td>
<td>14.2%</td>
<td>12.5%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Immobility ratio 77.4%
Downward mobility 20.9%
Upward mobility 14.5%

<table>
<thead>
<tr>
<th>Income ranges 1950</th>
<th>Less than .25</th>
<th>.25 -.5</th>
<th>.5 - 1</th>
<th>1 - 2</th>
<th>More than 2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than .25</td>
<td>76.0%</td>
<td>22.3%</td>
<td>0.9%</td>
<td>0.8%</td>
<td>0.0%</td>
<td>36.8%</td>
</tr>
<tr>
<td>.25 -.5</td>
<td>13.9%</td>
<td>61.6%</td>
<td>19.2%</td>
<td>3.3%</td>
<td>2.0%</td>
<td>22.3%</td>
</tr>
<tr>
<td>.5 - 1</td>
<td>1.9%</td>
<td>18.6%</td>
<td>49.5%</td>
<td>18.4%</td>
<td>11.6%</td>
<td>15.5%</td>
</tr>
<tr>
<td>1 - 2</td>
<td>0.0%</td>
<td>0.0%</td>
<td>20.2%</td>
<td>45.2%</td>
<td>34.6%</td>
<td>13.0%</td>
</tr>
<tr>
<td>More than 2</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>4.8%</td>
<td>95.2%</td>
<td>12.4%</td>
</tr>
<tr>
<td>Total</td>
<td>31.4%</td>
<td>24.8%</td>
<td>14.9%</td>
<td>10.4%</td>
<td>18.5%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Immobility ratio 65.5%
Downward mobility 11.9%
Upward mobility 22.6%

Source: Bourguignon and Morrisson (2002)
Conclusion on perception of increasing world inequality

- Reduction in international inequality since 1980 (population weighted) and possibly reduction in global inequality after 1990.
- Increase in inter-country inequality until 2000
- No Pareto improvement of world distribution between 1980 and 2002 (although probably not true later)

- This may explain the disparity of views on evolution of world inequality
- Status quo matters
- On top of this, methodological differences lead to slightly divergent conclusions among scholars (Milanovic vs. Sala-i-Martin)
Bibliographical references on evolution of world inequality


Bourguignon, F., V. Levine and D. Rosenblatt (2004), Declining international inequality and economic divergence: Reviewing the evidence through different lenses, *Economie Internationale*, p. 13-26


Sala-i-Martin, X (2002), The Disturbing 'Rise' of World Income Inequality, NBER, Working paper, 8094

Some basic facts:

- Earnings inequality has increased in many countries, including most egalitarian countries, since the mid 80s and in some cases since the mid 70s (US).
- Increase in inequality mostly due to rise in the relative earnings of top 10 per cent.
- Top 10 per cent also gaining over top 25%.
- Income inequality did not always rise, or rose marginally as a consequence of that evolution.
- Less evidence for emerging countries.
3.a Earnings inequality in selected OECD countries

(extreme deciles relative to the median, 1980=100)

Source: Atkinson (2007)
(exreme deciles relative to the median, 1980=100)

Source: Atkinson (2007)
Changes in earnings dispersion: Germany, 1980-2003
(extreme deciles relative to the median, 1980=100)

Source: Atkinson (2007)
Changes in earnings dispersion: Sweden, 1975-2004
(extreme deciles relative to the median, 1980=100)

Source: Atkinson (2007)
(extreme deciles relative to the median, 1980=100)

Source: Atkinson, 2008, DADS
(extreme deciles relative to the median, 1980=100)

Source: Piketty + Landais, données fiscales
Caution: P90/median may hide changes at the very top of the distribution: following chart for France from Landais, 2008
Gini Annual Change (percentage points) in 59 Emerging and Developing Countries: most recent available 10-year period (income inequality)

Source: World Bank (Povcal)
3. b Earnings vs. Disposable 'Household' Income Inequality

Changes in (disposable household) income inequality: US 1967-2000
(1980=100)

Source: Atkinson, 2007 and author
Earnings vs. Disposable Household Income Inequality

Change in earnings and income inequality: UK, 1990-2005
(1980=100)

Source: author
Earnings vs. Disposable Household Income Inequality

Change in earnings and income inequality: Germany, 1990-2005
(1980=100)

Source: author
3.c Changes in Perceived vs. Observed inequality and non-income dimensions

Facts and opinion often at odds

Possible causes

• Better (or different) information (media)
• Different definitions of inequality (e.g. earnings vs. Income, before/after tax, …)
• Different measures
• Dynamic vs. static perspective (statu quo matters; $\Delta y$ matters more than $y$)
• Non-income dimensions: access to employment and/or nature of jobs, opportunities rather than outcomes
3.d Main causes for high (earnings) inequality or increasing trend

Several causes have been suggested for recent trends in increasing earnings inequality:

- Globalization (trade, migration, …)
- Technical Progress
- Social norms
- De-unionization

Vast literature on each topic….

But caution: *simultaneity does not mean causality*
3.e The complexity of income distribution dynamics

Earnings distribution affected by changes in the functioning of the labor market, the distribution of the supply and demand of skills

Income distribution subject to many other forces on top of earnings inequality

- Household composition (including matching)
- Employment
- Redistribution policies
Two case studies from the MIDD project

Brazil (1976-1996): (Ferreira, Paes de Barros)

- Little overall changes in overall income distribution

Yet:

- More unequal distribution of earnings (increasing rate of return to education)
- More equal distribution of education
- Decreasing levels of employment in low-income families
- Larger decrease in fertility in low-income families

- Recent drop in inequality mostly due to Bolsa Familia
Recent fall in inequality in Brazil

Evolução da desigualdade na renda familiar *per capita* no Brasil:

Fonte: Instituto de Pesquisa Econômica Aplicada (IPEA) 2007.
Two case studies …

Taiwan (1980-1995) (Bourguignon-Fournier-Gurgand)

- Little overall changes in overall income distribution
  - More unequal distribution of earnings (increasing rate of return to education) for men and women
  - More equal distribution of education
  - Increasing labor force participation of women in low- and middle income families
Bibliographical references on the evolution of 'within country inequality'


Bourguignon, F. F. Ferreira and N. Lustig (eds) (2004), The microeconomics of income distribution dynamics in East Asia and Latin America, Oxford University Press


Gottschalk, P. And T. Smeeding (2000), Empirical evidence on income inequality in industrialized countries, in Atkinson and Bourguignon (eds), Handbook of income distribution, North-Holland

Forster, M. and M. Pellizari (2000), Trends and driving factors in income distribution and poverty in the OECD area, OECD, Paris
