# GDP and beyond
# Lesson 3. From Individual Well-being to Social Welfare: the Role of Inequalities

International Monetary Economics, GMEP Module 2 2016-17
Part III. GDP and beyond

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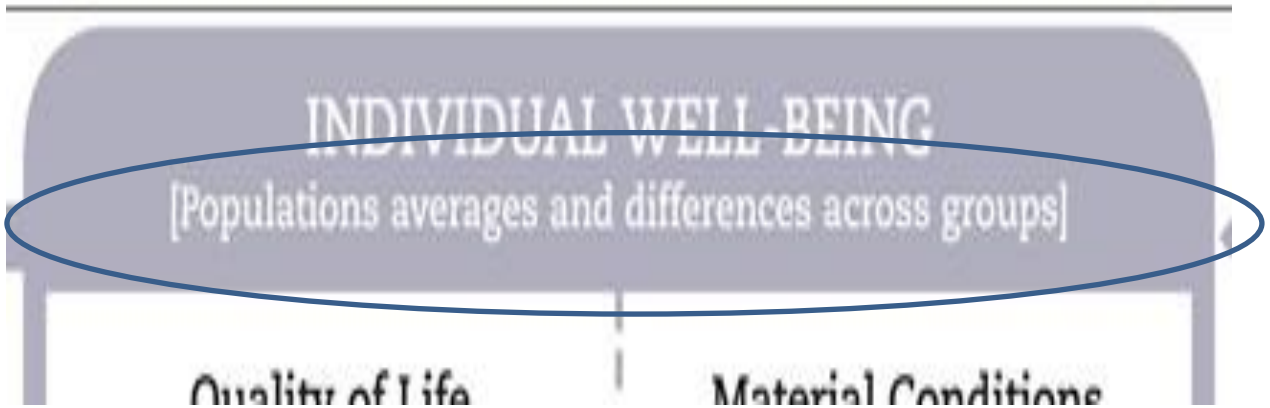
# Inequalities in the OECD well-being framework

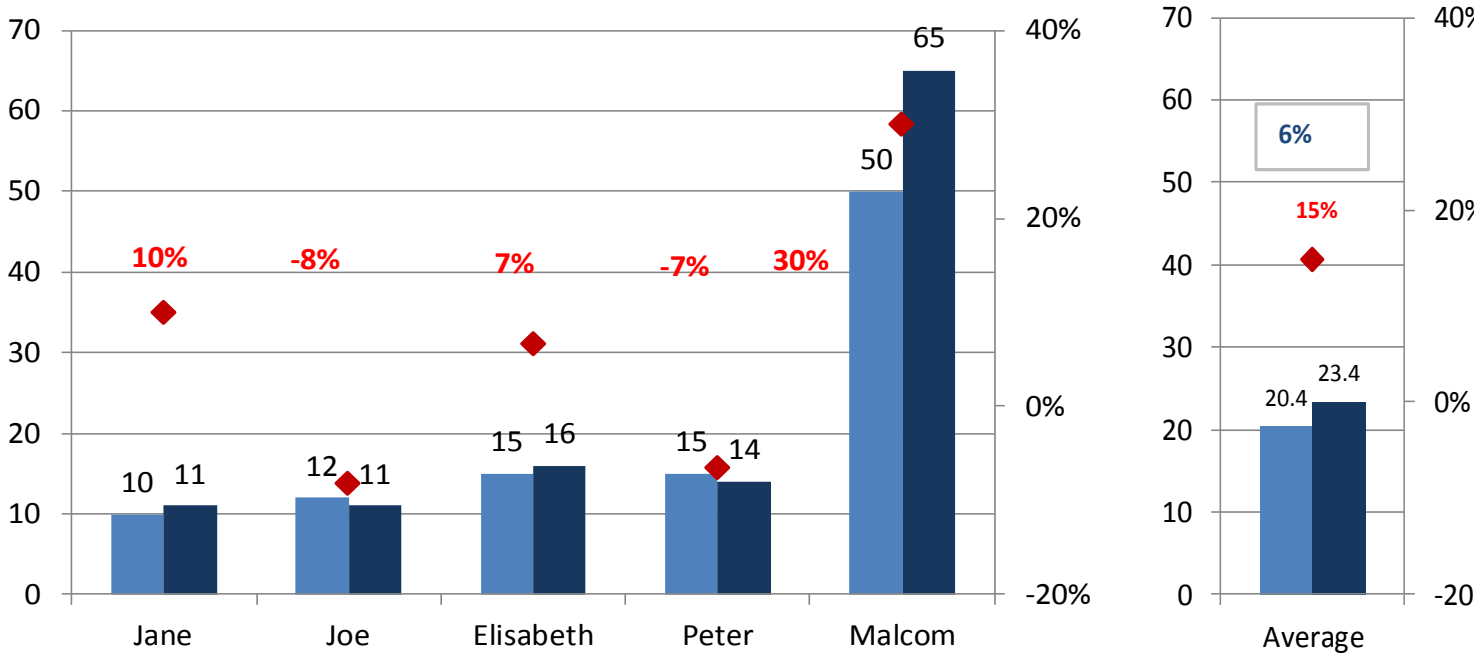


# Structure of this lesson

A. Social welfare and inequality
B. Inequalities in income
   - Concepts and measures
   - Within- and across-countries
   - Realities and perceptions
C. Other types of inequalities
   - Wealth, health, skills
   - Outcomes and opportunities
D. The low-end of the distribution
E. Drivers of income (and other) inequalities
F. Inequalities and policy making

# A. Social welfare and inequality (1)

Levels & distribution (of all well-being variables) shape <u>any</u> welfare evaluation




- "average" income gives higher weight to richer people. *Traditional view that distribution belong to 'normative sphere' does not hold*

# A. Social welfare and inequality (1)

## ➢ Economists and inequality

- 'classical' economists (Ricardo, Marx): focus on distribution between factors of production (labour, capital, land) and social classes (workers, capitalists, rentiers). Inverse relation between wage & profit rate

## ➢ Marginal role in mainstream economics

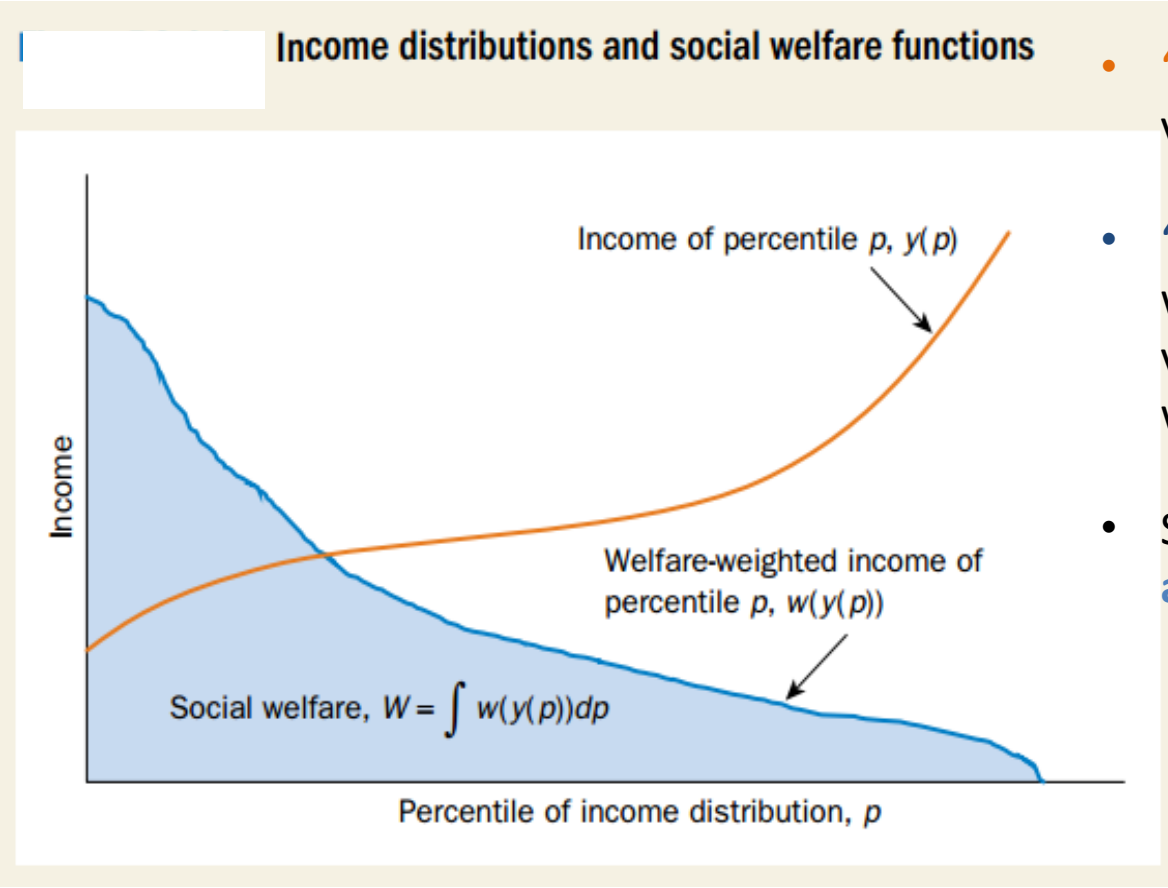
- "*Of the tendencies that are harmful to sound economics, the seductive, and in my view the most poisonous is to focus on questions of distribution. The potential for improving the lives of poor people by finding different ways of distributing current production is nothing compared to the apparently limitless potential of increasing production*" (Robert Lucas, 2003)

## ➢ In 1997, "Bringing distribution in from the cold" (Tony Atkinson)

- .. and now in the spotlight

# A. Social welfare and inequality (2)

➢ Welfare functions combine into a single metric information on distribution of a well-being variable across population with a set of weights (i.e. the importance that society assigns to people at different points of the distribution)




- 'orange' line shows income shares of various percentiles
- 'blue' line shows one possible set of weights attached to the welfare values of each percentile ('welfare-weighted income' of each percentile)
- Social welfare function is the **shaded area** below blue line

# A. Social welfare and inequality (3)

- 'Social welfare functions'
  - Most social welfare functions imply a 'penalty' for higher inequality (e.g. focus on poverty implies zero weight in Sw to all people above poverty threshold)
  - Different formulations:
    - Sw = GDP * (1 – GINI) (Sen)
    - Sw = $\left(\frac{1}{N}\sum_{n=1}^{N} {y_n^*}^{1-\tau}\right)^{\frac{1}{1-\tau}}$ (Kolm-Atkinson, generalised mean)

where $1/(1-\tau)$ implies that $Sw(\lambda yi)= \lambda Sw(yi)$; and when

- $(1-\tau) \sim 1.5 \rightarrow$ median income
- $(1-\tau) \sim 50 \rightarrow$ bottom 10%
- $(1-\tau) = 0 \rightarrow$ simple mean

# B. Inequalities in income (1)

## ➢ Concepts

- Basic concept: household disposable income as proxy for people's ability to consume
- Income or consumption data? Long standing debate
  - Income metric more common in rich countries, measured through tools explicitly developed to support distributive analysis
  - Consumption metric more common in poor countries. Conceptual link to 'permanent income' hypothesis, but practical problems:
    - Measured through *household budget surveys,* whose goal is to provide (aggregate) weights for price indexes rather than measuring welfare
    - Difference between 'consumption' and 'consumption expenditure' (e.g. consumer durables)
    - Measured through diaries with short reference period, may not be representative for full year (Beegle et al., 2012)
  - While household income and expenditure are close to each other in in poor countries, this is not the case in rich countries (different measures can provide contrasting messages, e.g. US pre-crisis)

# B. Inequalities in income (2)

- Unit of account (households)
- Unit of analysis: people versus households (with equal sharing within household)
- Adjustments for economies of scale: $DI_{ij} = Y_i / S_i^{\varepsilon}$

  (arbitrary, not necessarily the same across countries)

*Changes in household needs with increases in household members, according to different ε*

| Household size | Equivalence scale | | | | |
|---|---|---|---|---|---|
| | per-capita income | "Oxford" scale ("Old OECD scale") | "OECD-modified" scale | Square root scale | Household income |
| 1 adult | 1 | 1 | 1 | 1 | 1 |
| 2 adults | 2 | 1.7 | 1.5 | 1.4 | 1 |
| 2 adults, 1 child | 3 | 2.2 | 1.8 | 1.7 | 1 |
| 2 adults, 2 children | 4 | 2.7 | 2.1 | 2.0 | 1 |
| 2 adults, 3 children | 5 | 3.2 | 2.4 | 2.2 | 1 |
| *Elasticity*[1] | 1 | 0.73 | 0.53 | 0.50 | 0 |

# B. Inequalities in income (3)

Different concepts of household income

| | |
|---|---|
| Primary income | Wages, and salaries, property income private transfers |
| Market income | *plus* income from occupational pension plans |
| Gross income | *plus* public cash transers |
| Disposable income | *less* income and wealth taxes, and social security contributions paid by workers |
| Adjusted disposable income | *plus* in-kind cash public transfers |
| Consumable income | *less* consumption taxes |

- Some items (e.g. unpaid domestic services) 'conceptually important' but excluded from operational definitions
- Other items (e.g. imputed rents) difficult to measure, and excluded from definitions used for international) comparisons
- Other items yet (e.g. capital gains) not part of 'income' (capital transfers)

# B. Inequalities in income (4)

## ➢ Measures

### 1) Statistical sources

- Household surveys (LIS, OECD)
  - Specifically designed to measure distribution
  - Non-institutional population (and other scope exclusion)
  - Individual and household questionnaires
  - Each adult reports the amount received for each income source
  - Available since 1960s-70s, but costly to implement
  - Miss significant fraction of people at top and bottom of distribution
  - Measurement errors: sampling and non-sampling (unit, item, partial non-response)
- Tax records (Tinbergen, Kuznets, Piketty)
  - Information collected for non-statistical purposes
  - Individual tax filers (assumptions on income of non-tax filers)
  - Restricted income concept (pre-tax income, excluding public transfers)
  - Available over historical times

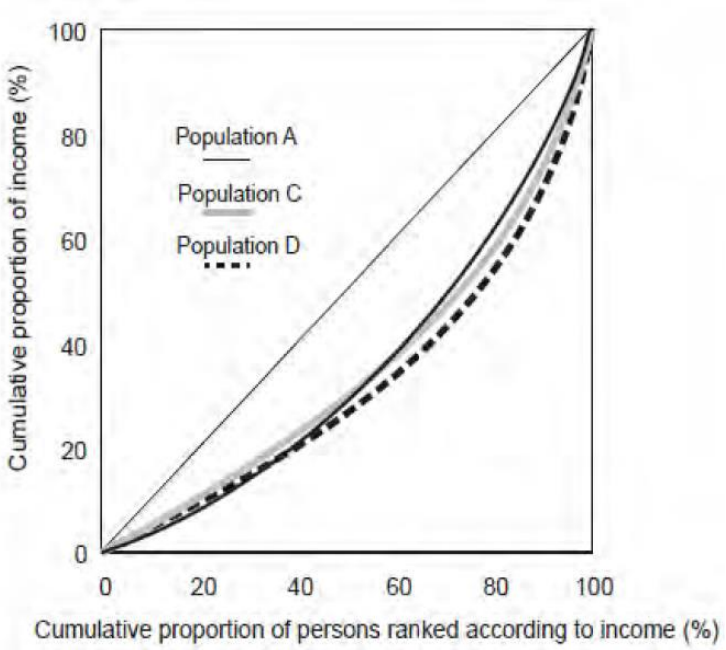
➢ Both sources have *pros* and *cons* (T. Atkinson *"guessing from outside what is happening inside a house by looking through different windows")* and comparability is never 100%

# B. Inequalities in income (5)

2) Summary indexes
   - Means/medians
   - Quantiles measures (P90/P10, S80/S20, S90/S40 -- ~1)
   - Lorentz curve (cum. distr. function)
   - Summary indicators (Gini, Atkinson)

- Different summary indicators
  - have different sensitivities to changes in different parts of the distribution
  - rely on different assumptions on weights (Okun's 'leaky bucket'; e.g. an income transfer from top to bottom deciles where only 1/3 reaches recipient lowers Gini )

Lorenz curve



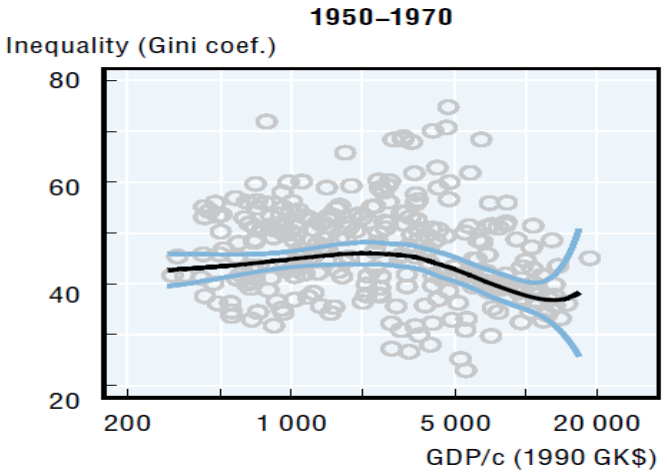

Whenever Lorenz-curves 'cross' each other (no 'dominance'), assessments depend on measure used

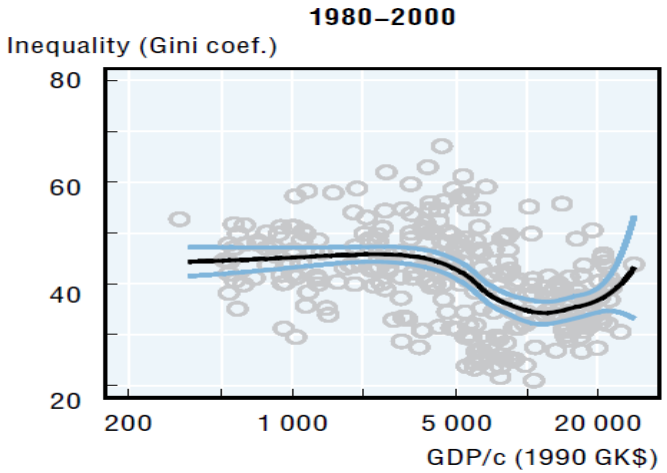
# B. Inequalities in income (6)

**Evidence:**

## a) within-country inequalities

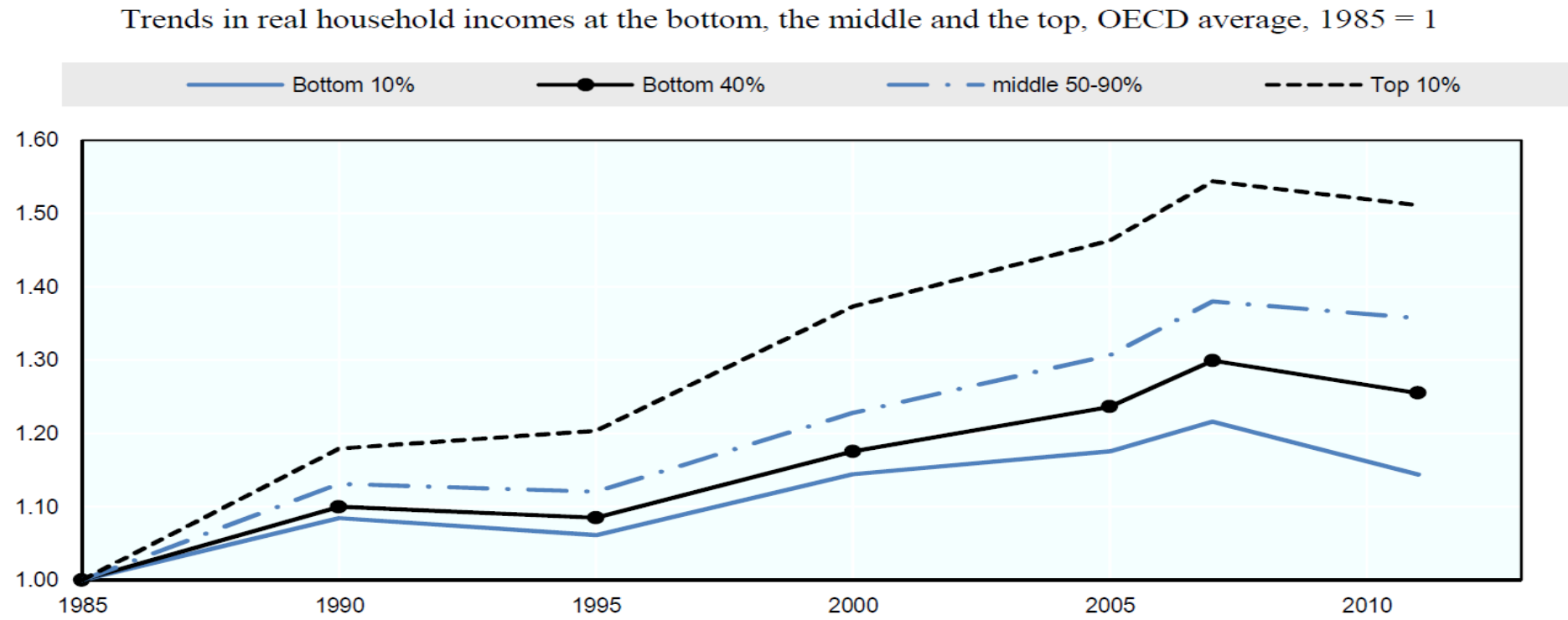

- Universal 'Kuznets curves'?
  - Different patterns in rich countries over time (pre-80s, post-80s), i.e. not always down
  - Different patterns across world-regions (declines in many LA countries in 2000s, increases in China)
- No 'universal' law, changes in over time



# B. Inequalities in income (7)

- Higher inequalities in OECD countries since mid-1980s

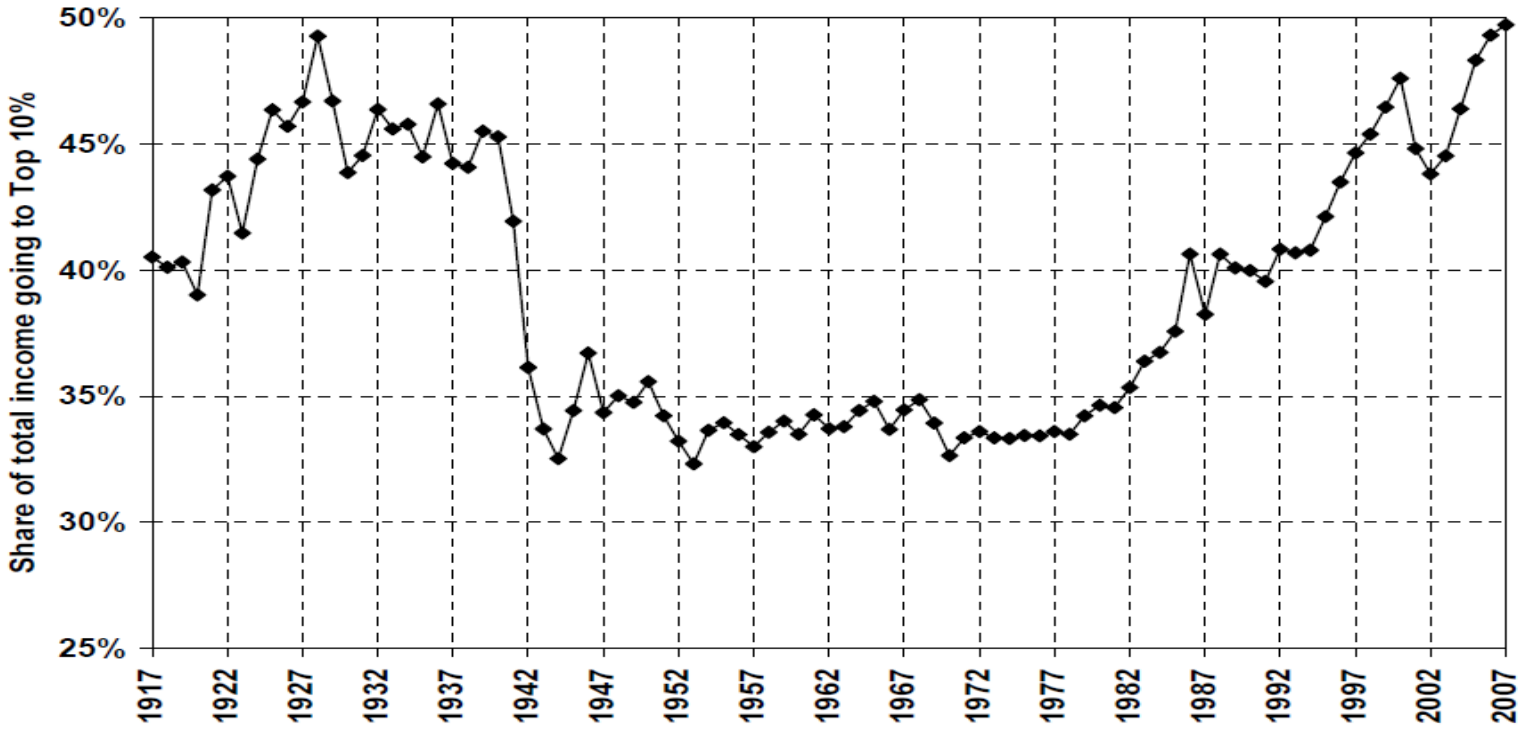



- In mid-1980s, people in top 10% of distribution in OECD countries earned ~ 7 times the income of bottom 10%; by 2013, the ratio has increased to ~ 10 times.
- Gini coefficient in the OECD area as a whole up by 10%, from 0.29 to 0.32

# B. Inequalities in income (8)

- .. driven by developments at top-end income-scale since late 1970s, back to levels of the 'gilded age'

Income share of the top 10% in the United States, 1917-2007




Source: Atkinson, Piketty, Saez (2009)

# B. Inequalities in income (9)

## b) Global income inequalities

Global inequality = Inequality *among* nations +
Inequality *within* nations =
(sum of) differences in mean incomes among nations +
(sum of) inequalities of personal incomes within nations =
"location" component + "class" component

- National states and global responsibilities

# B. Inequalities in income (10)

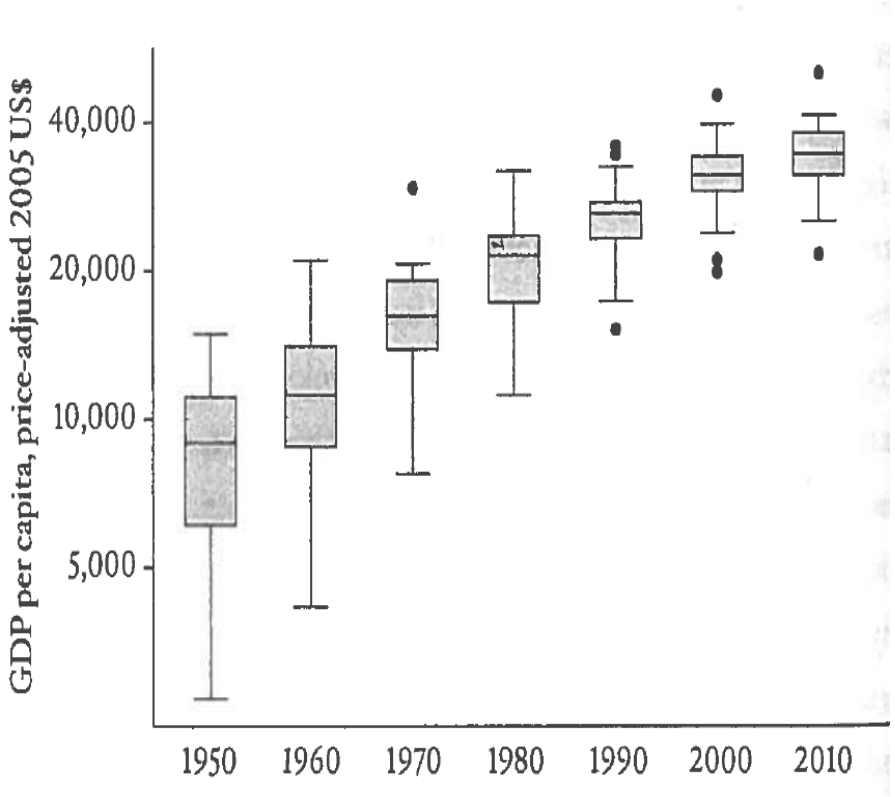
b) World-income inequalities

- Measurement challenges daunting, e.g. no single survey exists at world-level
  - Estimates either based on survey-data alone or combine macro/micro statistics
  - PPPs versus market exchange rates (ICP)
- Several factors at play when interpreting results:
  - Cross-countries inequalities in average income (i.e. GDP per capita at PPP rates)
  - Different population across countries
  - Different trends in within-countries inequalities

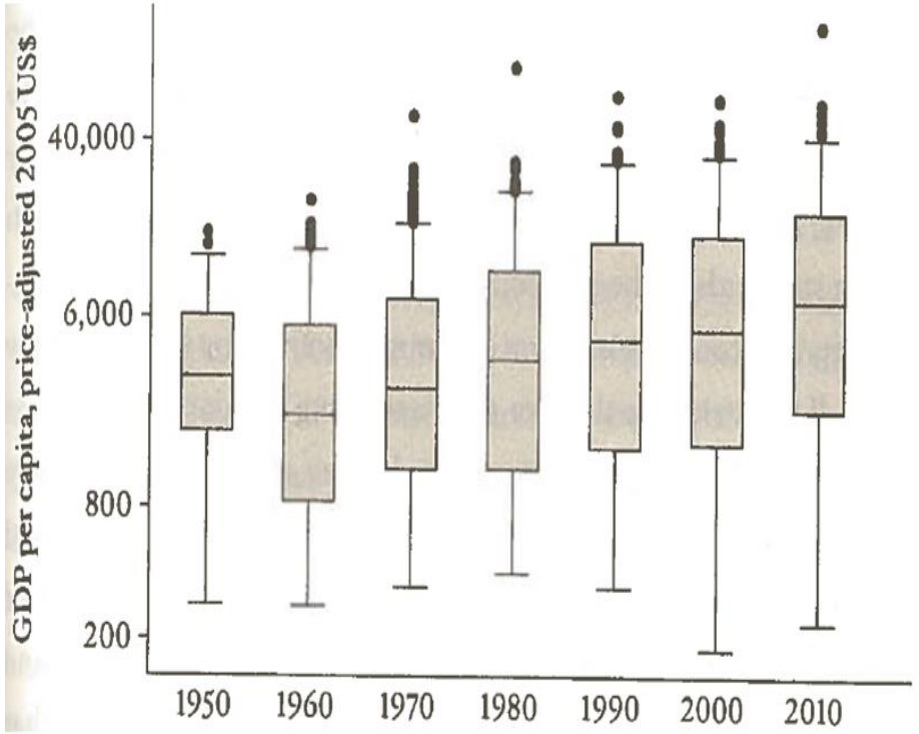
# B. Inequalities in income (11)

## Cross-countries inequalities in average income

Disparities across OECD countries




Disparities across all countries



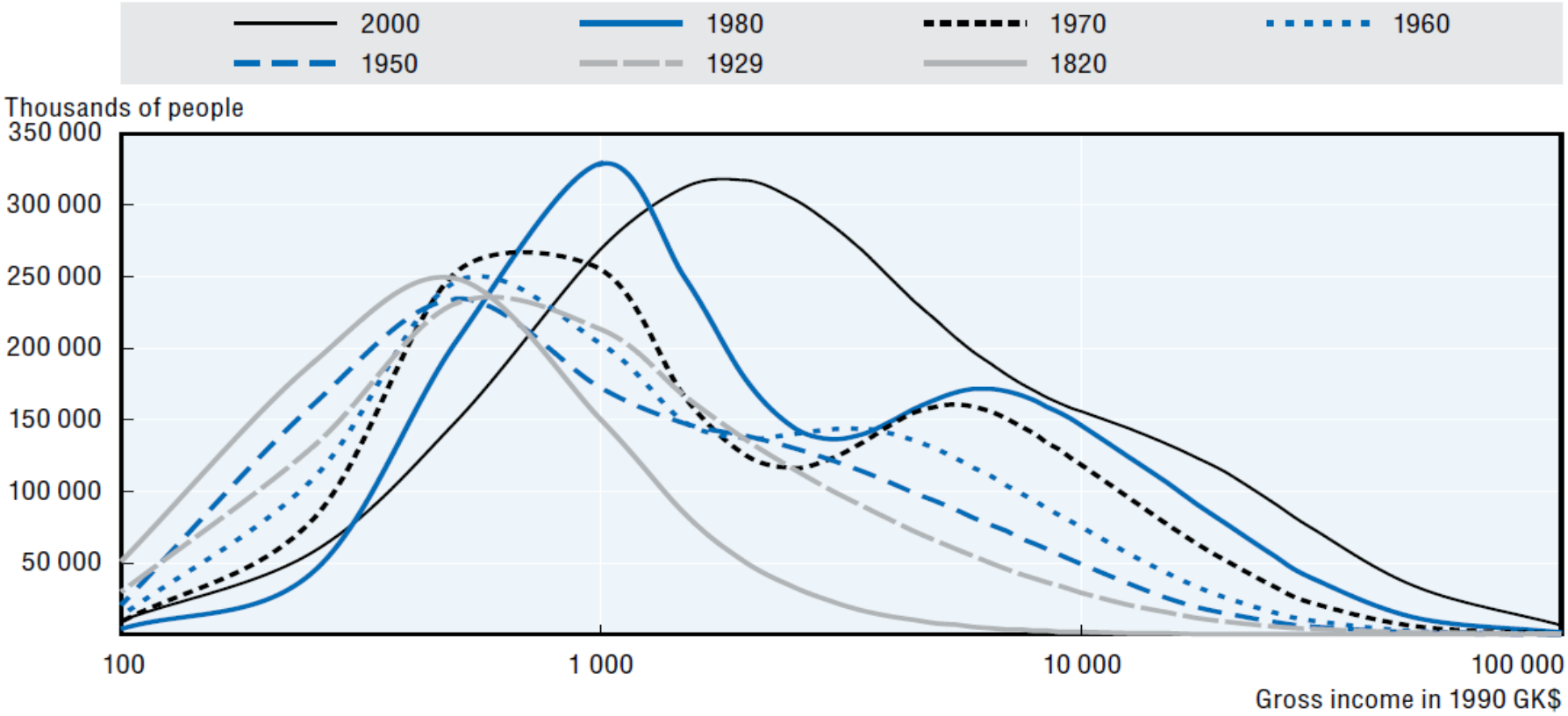

- **How to read each panel?** Shaded box contains half of countries, line in middle shows median country; top/bottom whiskers capture all countries except those with extremes values. Source. A. Deaton (2013)
- **Evidence?** Strong convergence across rich countries, very little across all countries (institutions?)

# B. Inequalities in income (12)

## World income inequalities

**Global income distributions in selected years, 1820-2000**

Thousands of people at given level of income in US dollars at 1990 PPP

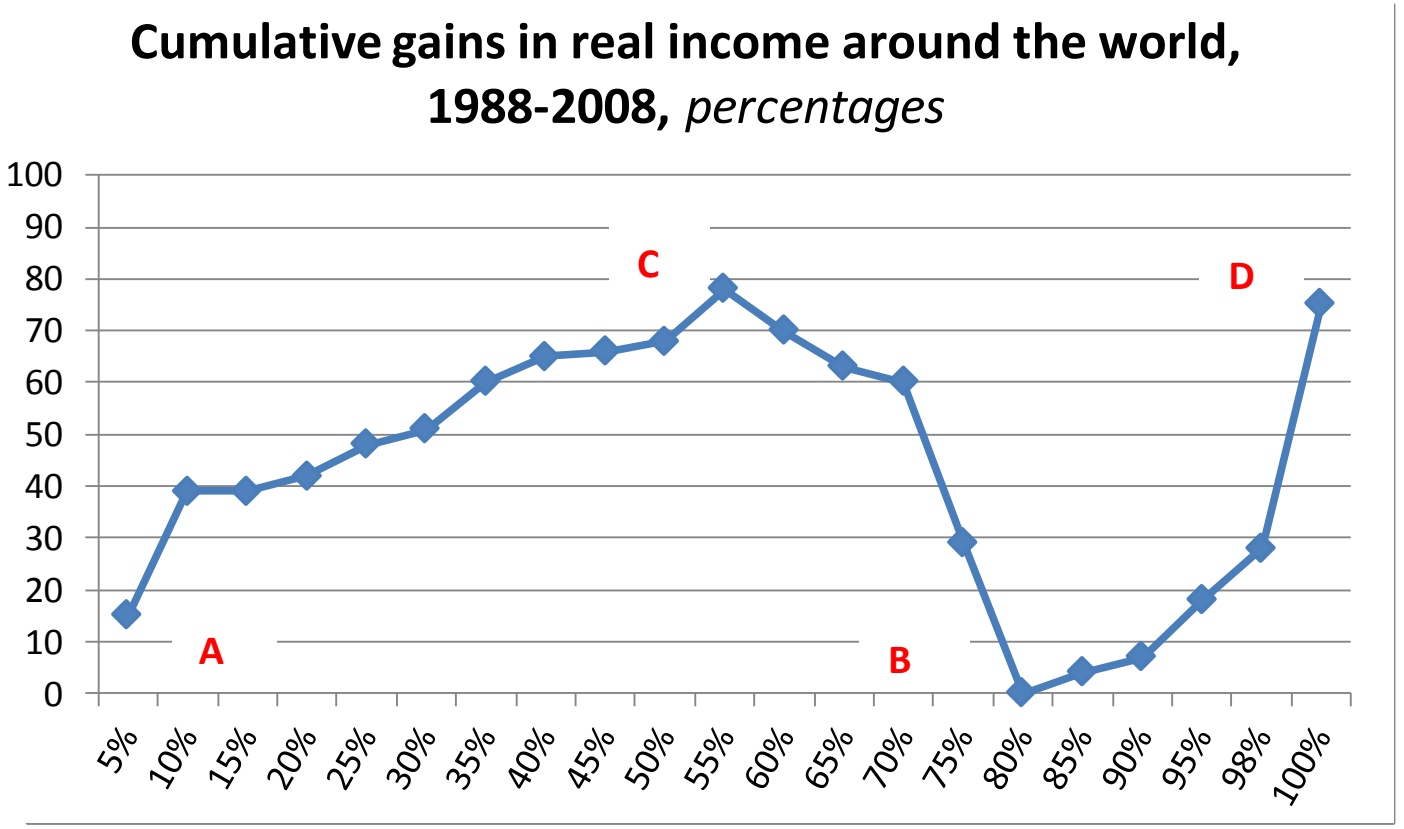



*Note:* For an assessment of data quality, see Table 11.2.

*Source:* Clio-Infra, *www.clio-infra.eu*.

# B. Inequalities in income (13)

## World income inequalities: who has gained most?

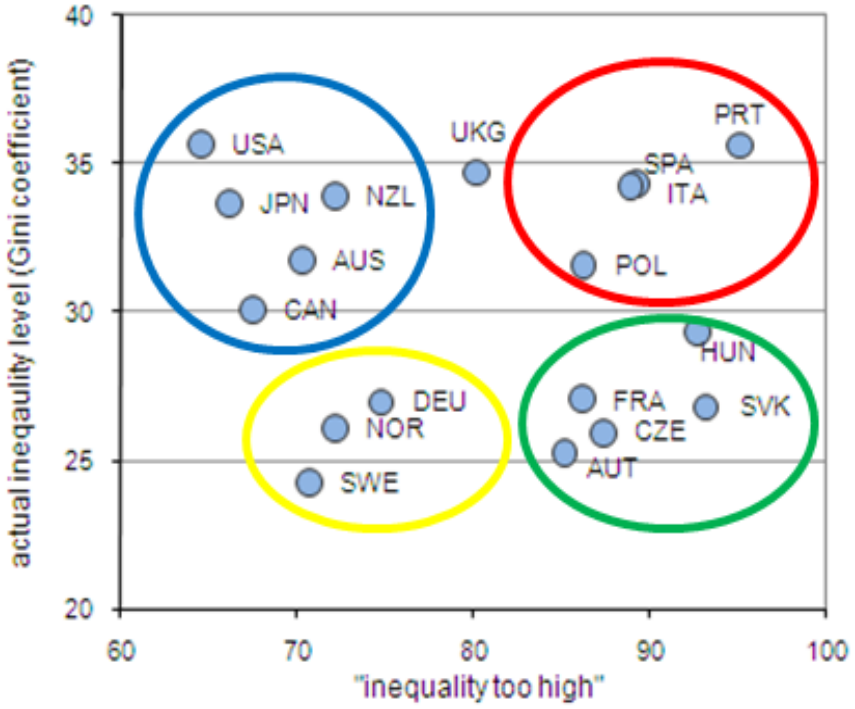



Source: B. Milanovic (2016), *Global Inequality*, Belknap Press

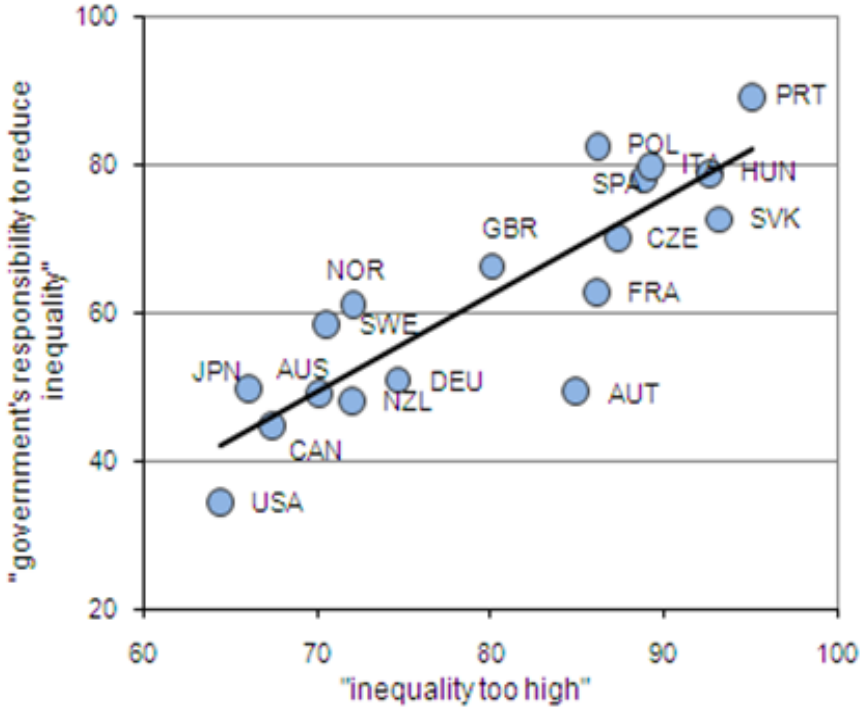
# B. Inequalities in income (14)

- Realities and perceptions: both matter

Actual and perceived levels of income inequalities




Perceived income inequalities and views on government responsibilities in reducing them




Source: Chapple, Förster and Martin (2009)

# B. Inequalities in income (15)

- Realities and perceptions

- What accounts for the differences? Optical illusion? Wrong statistics? Other possible factors at work:
  - Alternative concepts of material resources
  - Different comparisons across groups (e.g. very rich)
  - Different communities (e.g. national, local)

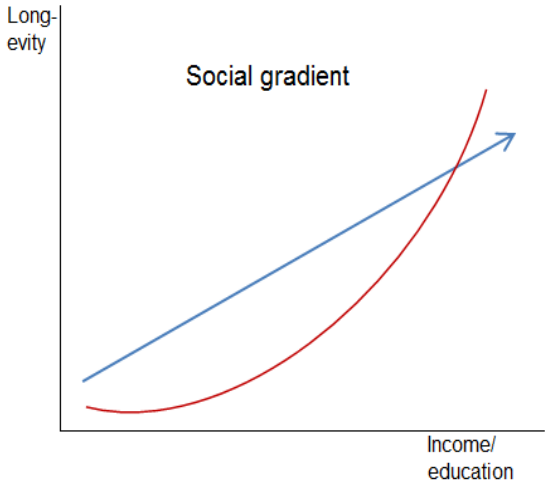
- What are your own perceptions on income inequalities? *OECD Compare Your Income*
  - http://www.oecd.org/statistics/compare-your-income.htm

# C. Other inequalities (1)

- All life-dimensions characterised by inequality: hence always ask 'inequalities in what?'/ for whom?'

- Different types of inequalities are related to each other
  - *How do we know?* Within countries, all types display 'social gradient', i.e. people with lower income (SES) have lower wealth, shorter lives, lower skills
  - *Implication?* Ideally, you would look at the joint distribution of outcomes and multi-dimensional disadvantage (but comprehensive data seldom available)

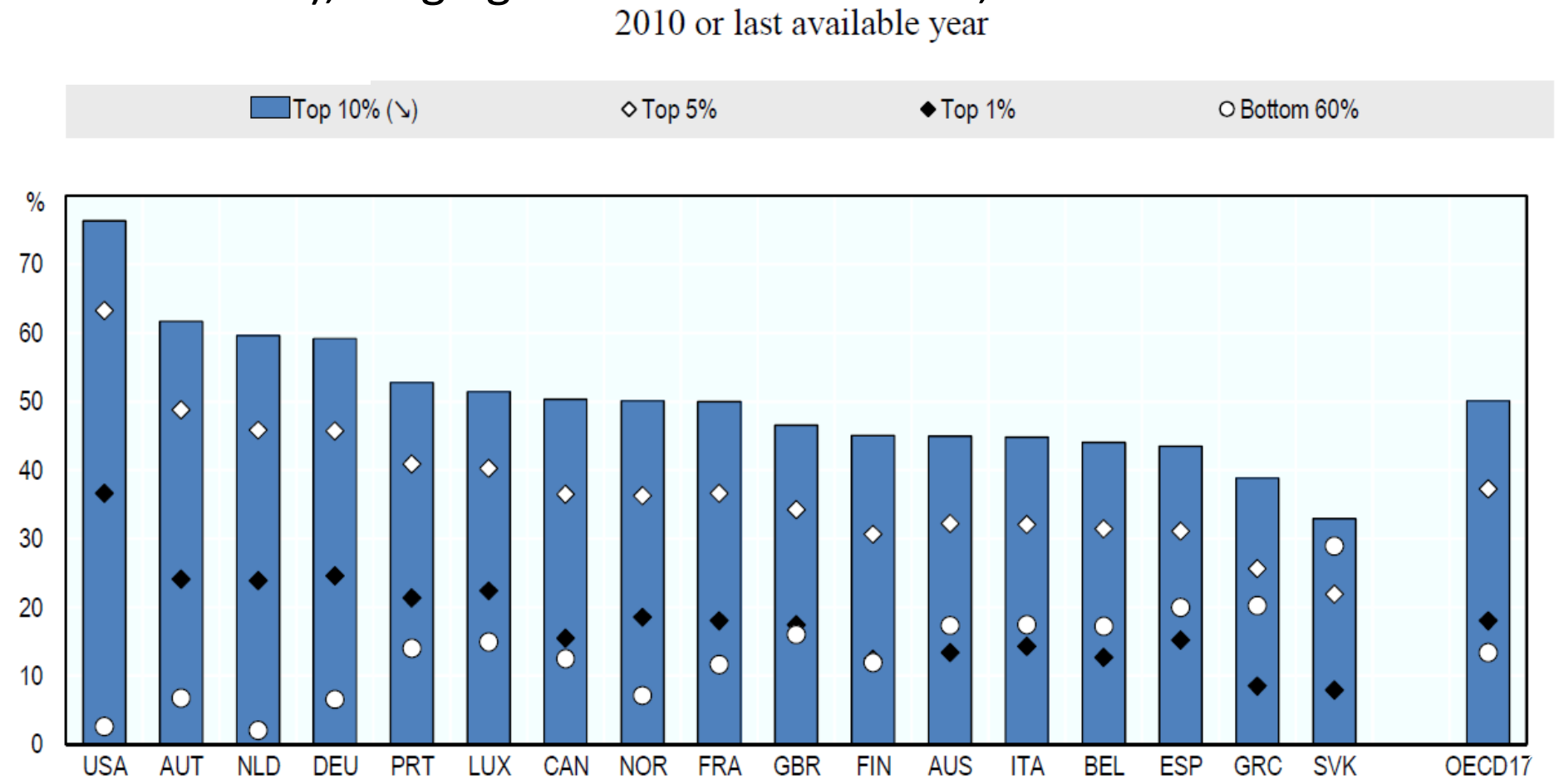
➢ Size of the 'gradient' differs across countries and aspect considered; correlation of poor/ good well-being outcomes for the same individual is never perfect and depends on how society is organised



# C. Other inequalities (2)

## ➢Wealth

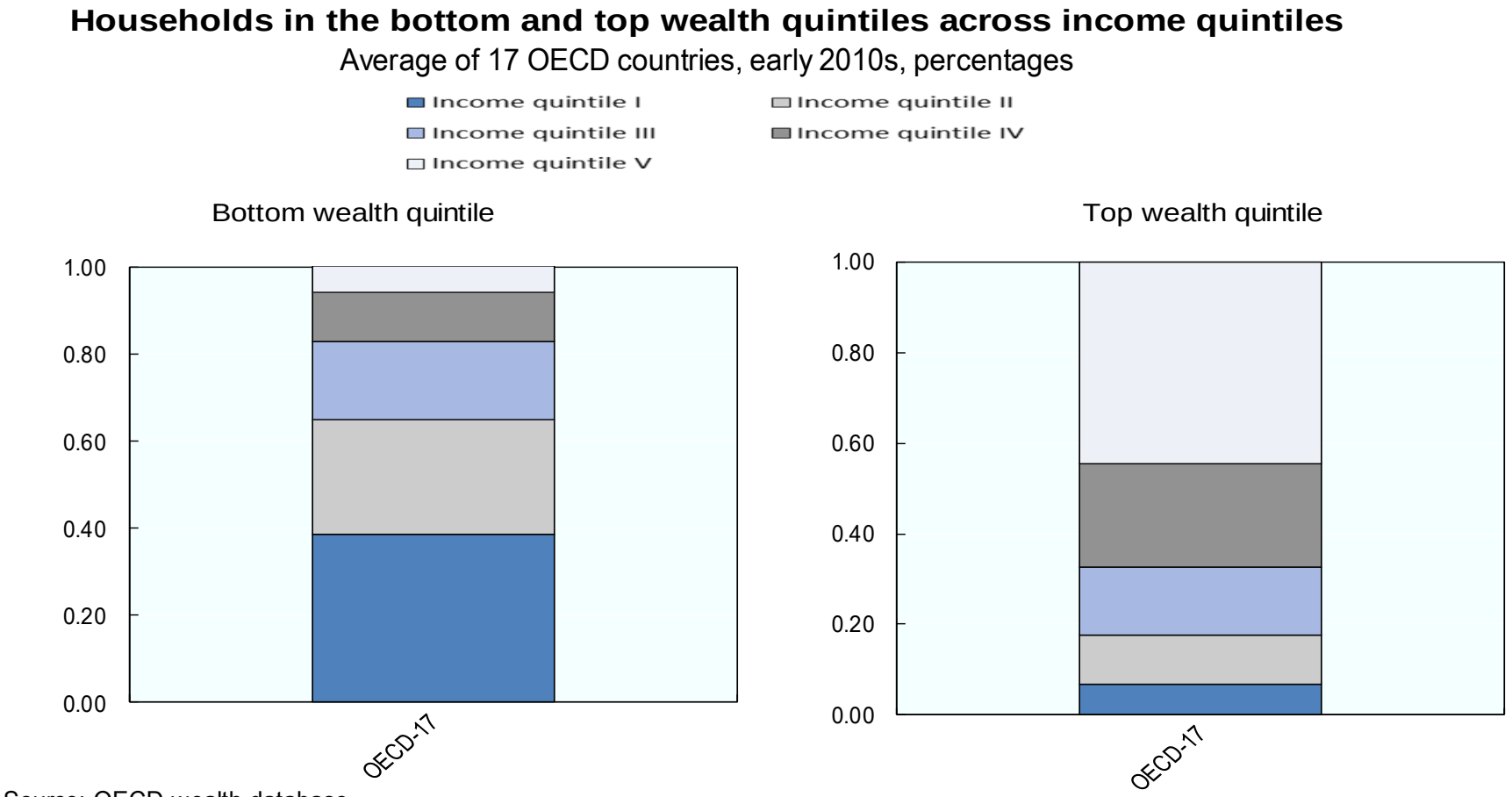
- Wealth share of top 10% above 50% on avg. (compared to ~ 25% for income), ranging between > 70% in US, ~ 40% in GRC and SVK



# C. Other inequalities: wealth (3)

- Wealth

~2/3 of households in bottom 20% of wealth are in bottom 40% of income (but ~20% are in two top income quintiles)




Source: OECD wealth database

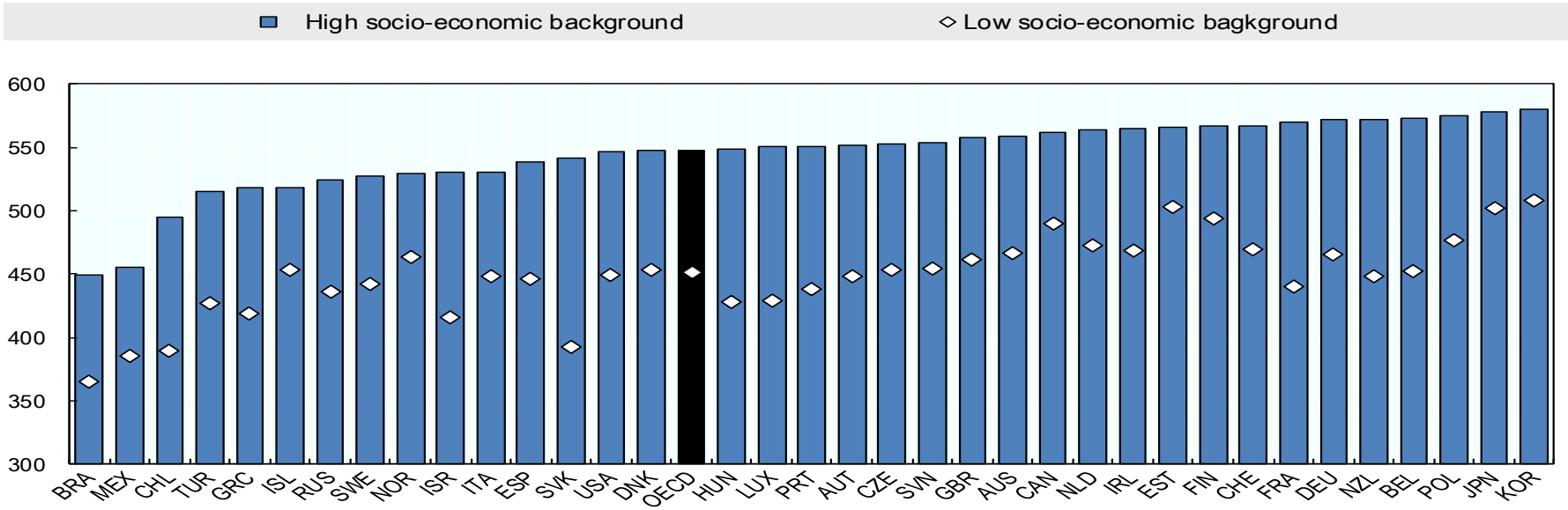
# C. Other inequalities (4)

## ➢ Skills

Students from poorer households have lower skills than others (equivalent to ~2 ½ years, over the 10 they spent in school)

**Cognitive skills of 15 years old students by socio-economic background**

*PISA mean scores in reading, mathematics and science*

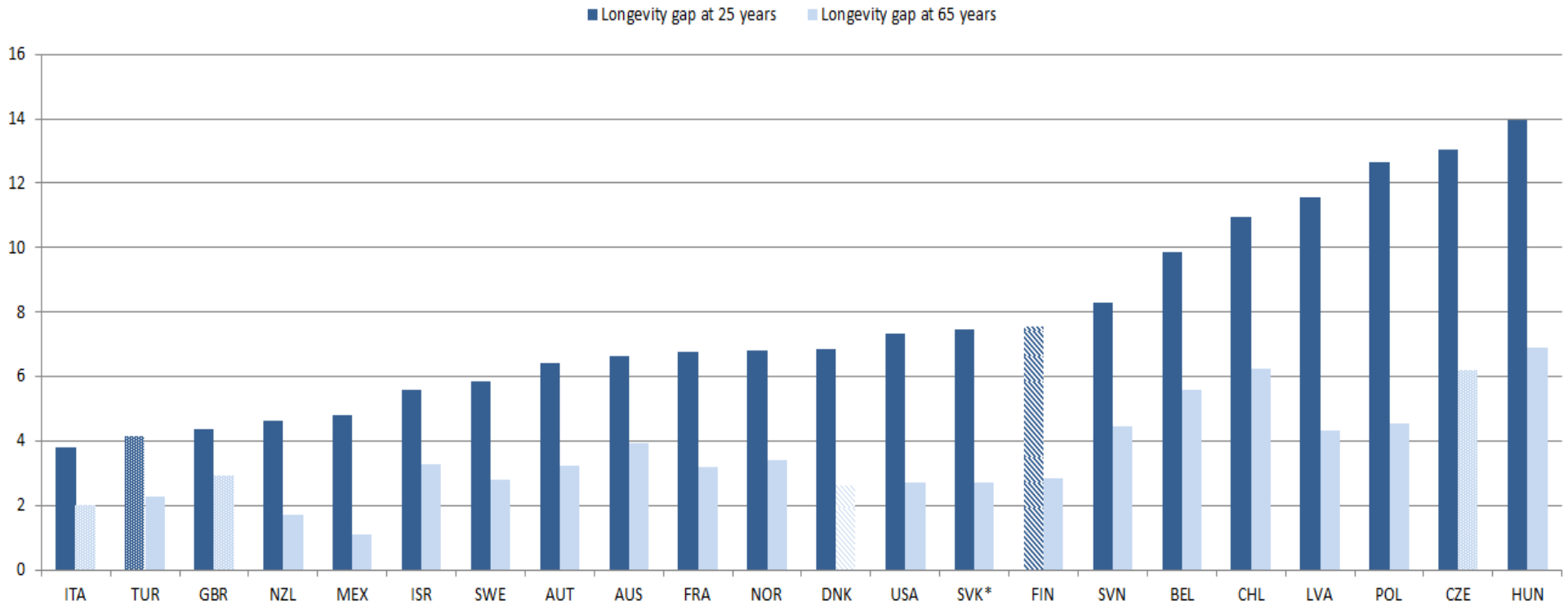



Note: The chart shows average PISA scores in reading, mathematics and science for students with high socio-economic background (defined as the first quintile of the PISA index of economic, social and cultural status) and low socio-economic background (defined as the last quintile of the the PISA index of economic, social and

Source: OECD calculations based on OECD (2014), SET: PISA 2012 Results, OECD, Paris.

# C. Other inequalities (5)

- Mortality : Life expectancy at age 25 and 65 by education level




Source: Murtin et al. (2016), forthcoming, OECD, Paris

- Men with higher education ate age 25 live 8 years longer, on average, than those with lower education (5 years for women), with huge differences across countries
- Would you prefer to live with your grandparents' income and today's life expectancy, or with your grandparents life-expectancy and todays' todays' income?

# C. Other inequalities (6)

➢ Opportunities

Inequalities reflect both circumstances and efforts: **inequality of opportunities**

- One way of capturing opportunities is through measures of intergenerational mobility

$$ln\ Y_{i,t} = \alpha + \beta\ lnY_{i,t-1} + \varepsilon_{i,t-1}$$

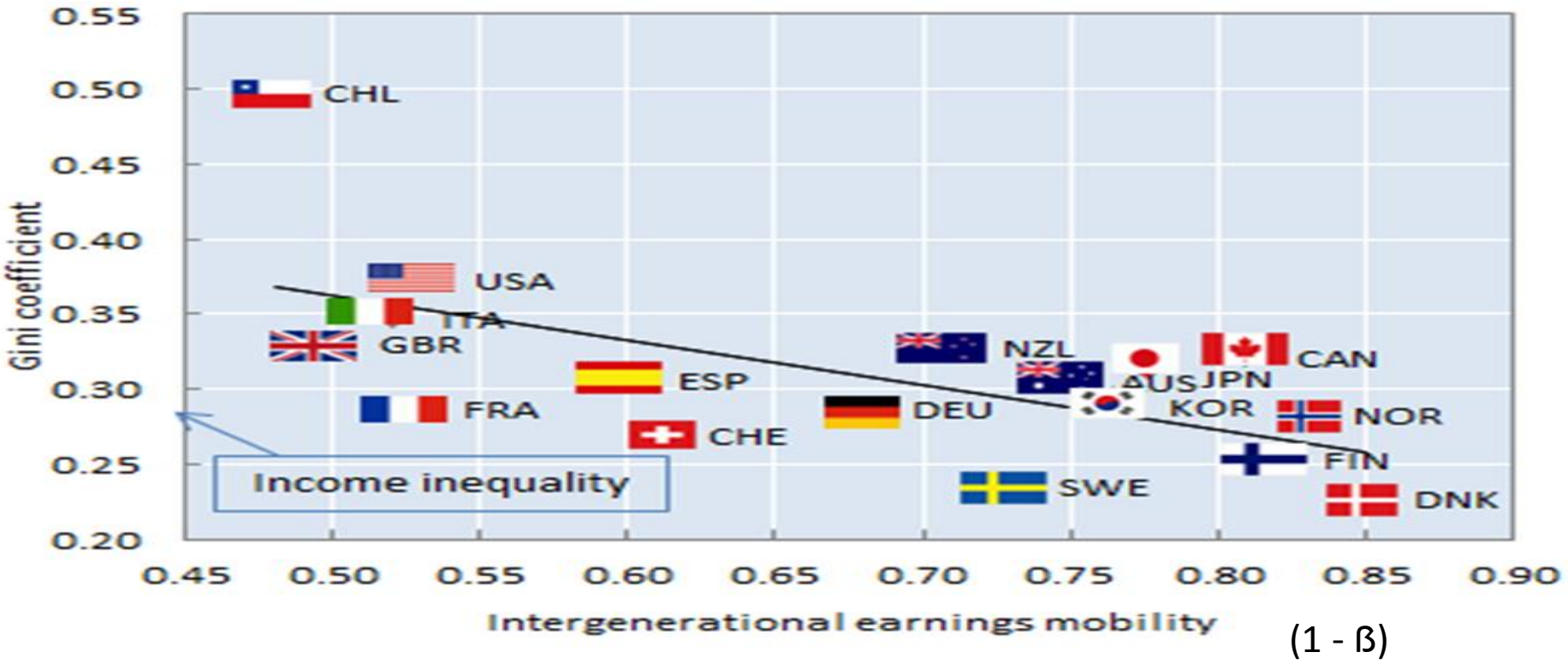
*Where Y* is outcome of interest, i for families, t generations.

- Best guess of child's earnings upon reaching adulthood is average income of cohort (*α)* plus two deviations:
  - some fraction of the earnings of his or her parent or parents, by *β*
  - residual influences not correlated with parental income
- ß is measure of persistence, (1 - ß) measures 'mobility'

# C. Other inequalities (7)

- Evidence on inter-generational income mobility
  - Earnings of fathers affect opportunities of sons (earnings when adult)
  - Also, high income inequality is associated with low intergenerational mobility

**The 'Great Gatsby' curve**



# C. Other inequalities (8)

- Opportunity

Intergenerational mobility differs from **inequality of opportunity**

- Becker and Tomes (1986) model (recursive, i.e. start from bottom)

$$ln\ Y_{i,t} = \alpha + \dot{\omega}\ lnY_{i,t-1} + \lambda\ H_t + \rho\ E_t + \varepsilon_{i,t-1}$$

- **3rd**, children earnings when adults depend on their human capital, their endowment of personal characteristics, and parents' social economic status

$$H_t = \gamma\ ln\ Y_{i,t-1} + \delta\ E_t$$

- **2nd,** E -- and parents' socio-economic status -- influence children human capital

$$E_t = \phi + \delta\ E_{t-1} + u_t$$

- **1st,** children inherit from parents a stock of personality traits, competences and culture

- *β in eq. 1 is function of large set of coefficients (δ, γ, ώ), not all amenable to policy interventions*

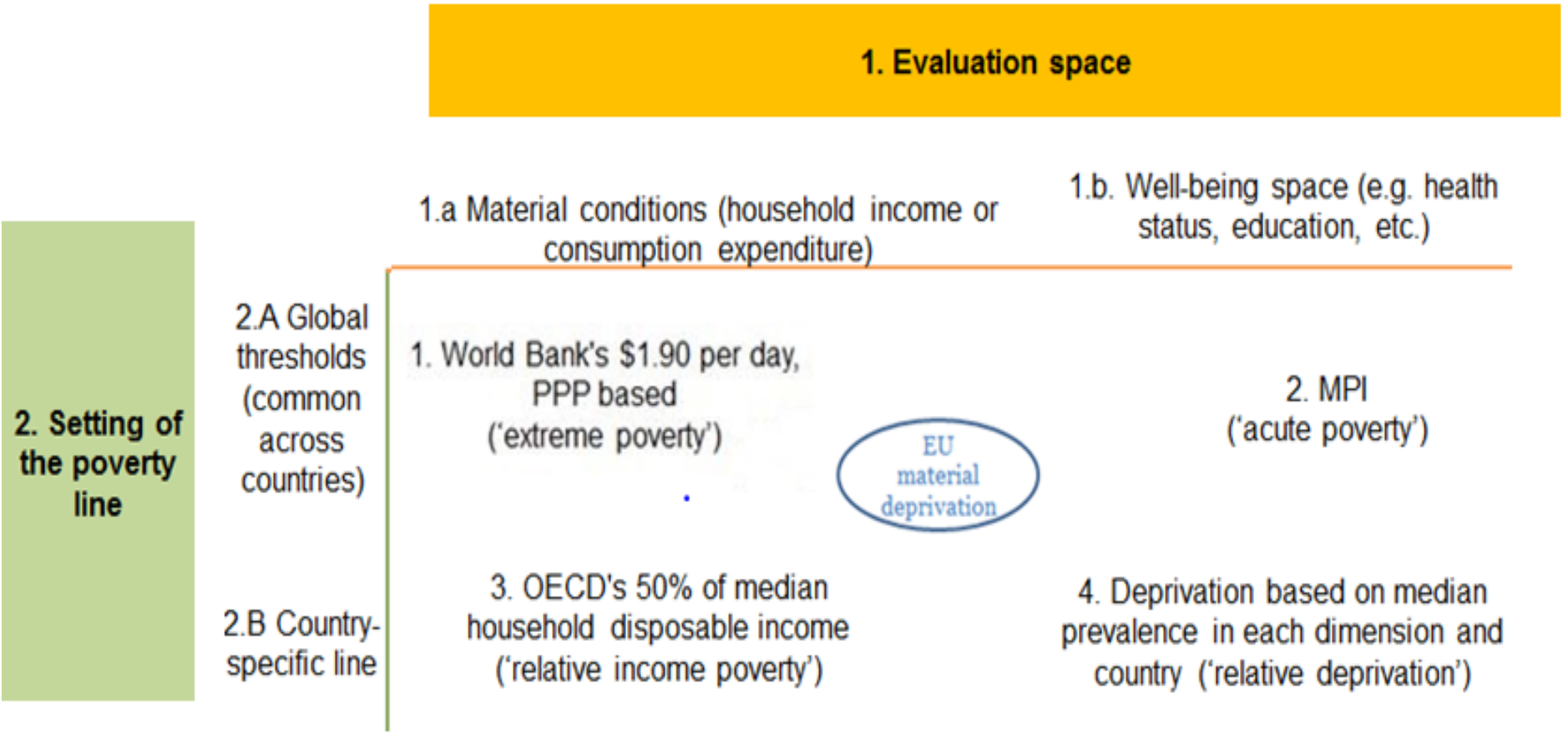
# D. The low-end of the distribution (1)

**Special focus on the low-end of the distribution** of well-being in a variety of philosophical perspectives (Rawl's maximin)

- In some views, we should not be concerned about inequality but only on low-end of distribution (**"***Labour Party is intensely relaxed about people getting filthy rich*", Peter Mandelson)
- Anti-poverty goals in domestic/international policies (MDGs: "*reducing by half the proportion of people living in extreme poverty* "; EU2020: "*lifting at least 20 million people out of risk of poverty and social exclusion' by 2020* ")
- How poverty is measured have a large bearing on policies used to reduce it and whether poverty reduction is pursued at all (Reagan Administration)
- Measures typically refer to prevalence (poverty headcounts), intensity (shortfall of the poor from poverty line) or some combination of the two

# D. The low-end of the distribution (2)

All poverty measures can be classified based on two criteria evaluation space; and poverty lines



# D. The low-end of the distribution (3)

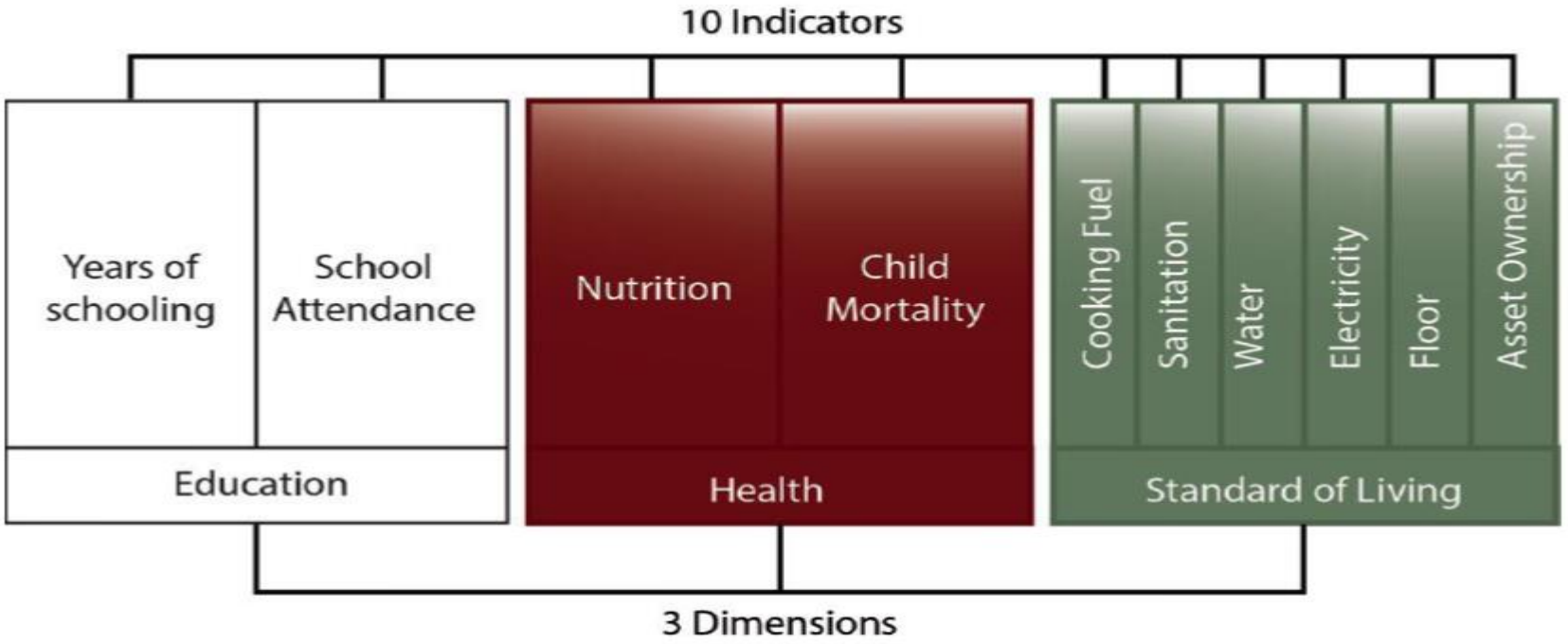
## Thresholds

- Absolute, i.e. does not depend on what others get
  - National threshold, e.g. M. Orshansky measure for US Soc. Sec. Adm. ('economy food plan' by a family of 4, times 3); officially adopted in 1969, adjusted since for inflation but not for average income growth (i.e. fell from > 50% of median when adopted to < 40% now)
  - Global thresholds, e.g. World Bank $1.25 per day in 2008 (average of national poverty lines in 15 poorest countries, converted into USD through 2005 PPPs) becomes $1.90 per day in 2015 (2011 PPPs): 2011 PRATE from 14.2 to 14.5% (Europe Centr. Asia: from 0.5 to 2.7%)
- Relative, i.e. depends on what others get.
  - A. Smith refers to "*inability to afford not only the commodities which are indispensably necessary for the support of life, but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without*"
  - EU 'at risk of poverty measure', threshold set at 60% of median household income (equivalised)
  - OECD measures of poverty rates (headcounts) based on thresholds set at 40%, 50% and 60% of median household income

# D. The low-end of the distribution (4)

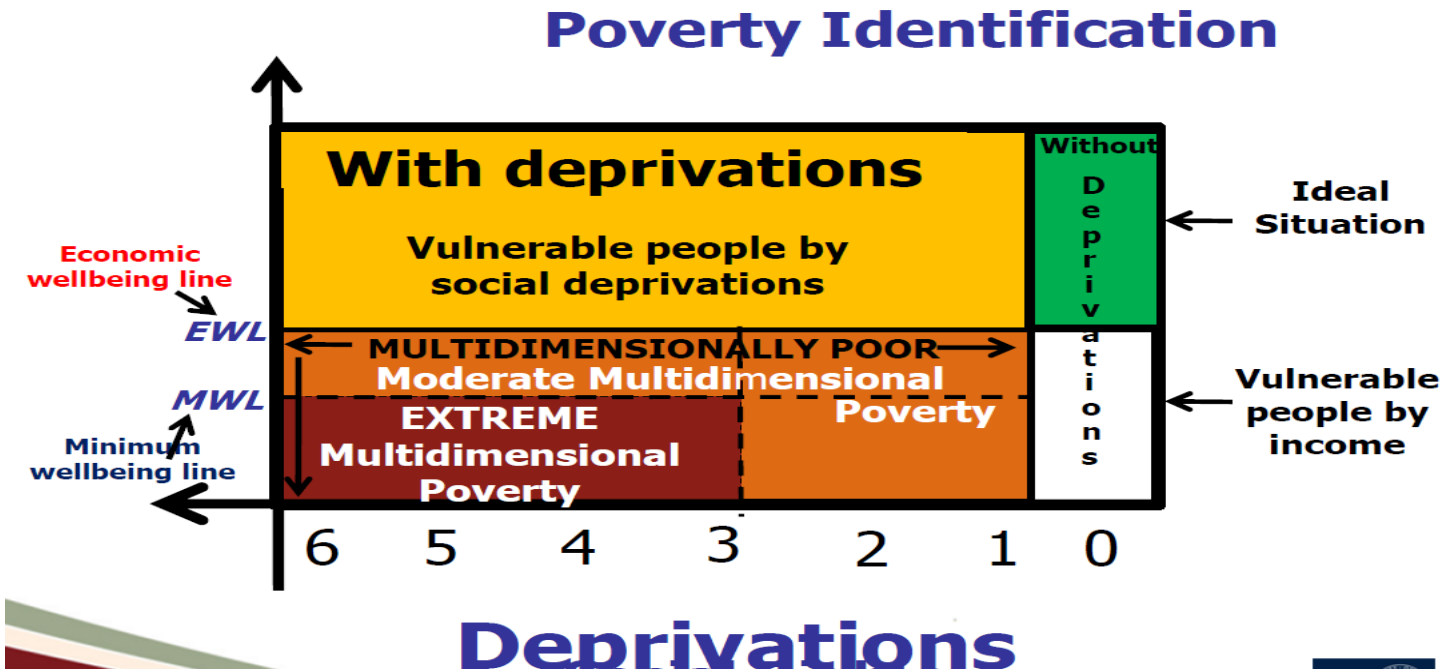
## Space of evaluation

- Are poverty measures based on income alone good enough? No. Can we do better?
- Multidimensional Poverty Index (OPHI, capability-based)
  - Three dimension, ten indicators



# D. The low-end of the distribution (5)

- Multidimensional Poverty Index (cont.)
  - Who is poor? People deprived in more than 1/3 of the weighted indicators
  - MPI as product of poverty incidence (headcount ratio) and intensity (percentage of dimensions in which the poor are deprived)
  - Adopted by several countries (Bhutan, Mexico, Columbia, Philippines, others)




➢ *Based on common threshold across countries!!*

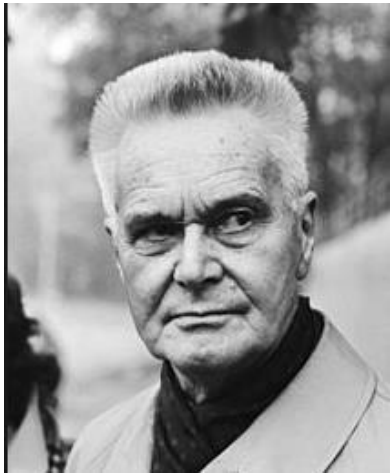
# D. The low-end of the distribution (6)

How ‘poverty’ is measured matters for policy

- Based on absolute (income) threshold:
  - growth in average income (GDP) will lower poverty..
  - with weaker effects when income inequality widens
- Based on relative (income) threshold:
  - income gains benefiting all in the same way do not change poverty
- Based on well-being dimensions (beyond income)
  - non-cash policies will also matter

# E. Drivers of inequalities (1)

**Standard story: demand and supply for skills**
(J. Tinbergen *"race of education against technology")*



- Domestic factors
  - Demand: Skill-biased technological change (ICT) lowers demand for low-skilled workers
  - Supply: School expansion increases supply of skilled workers

- Global factors (in rich countries)
  - Demand: lowers demand for domestic manufactured goods (now imported), increases demand of high-tech services (exported)
  - Supply: migration of low-skilled workers from LDCs, and access by LDCs manufacturing goods to rich markets, expands supply of less-skilled workers

➢ End result: market-clearing wage moves against unskilled workers

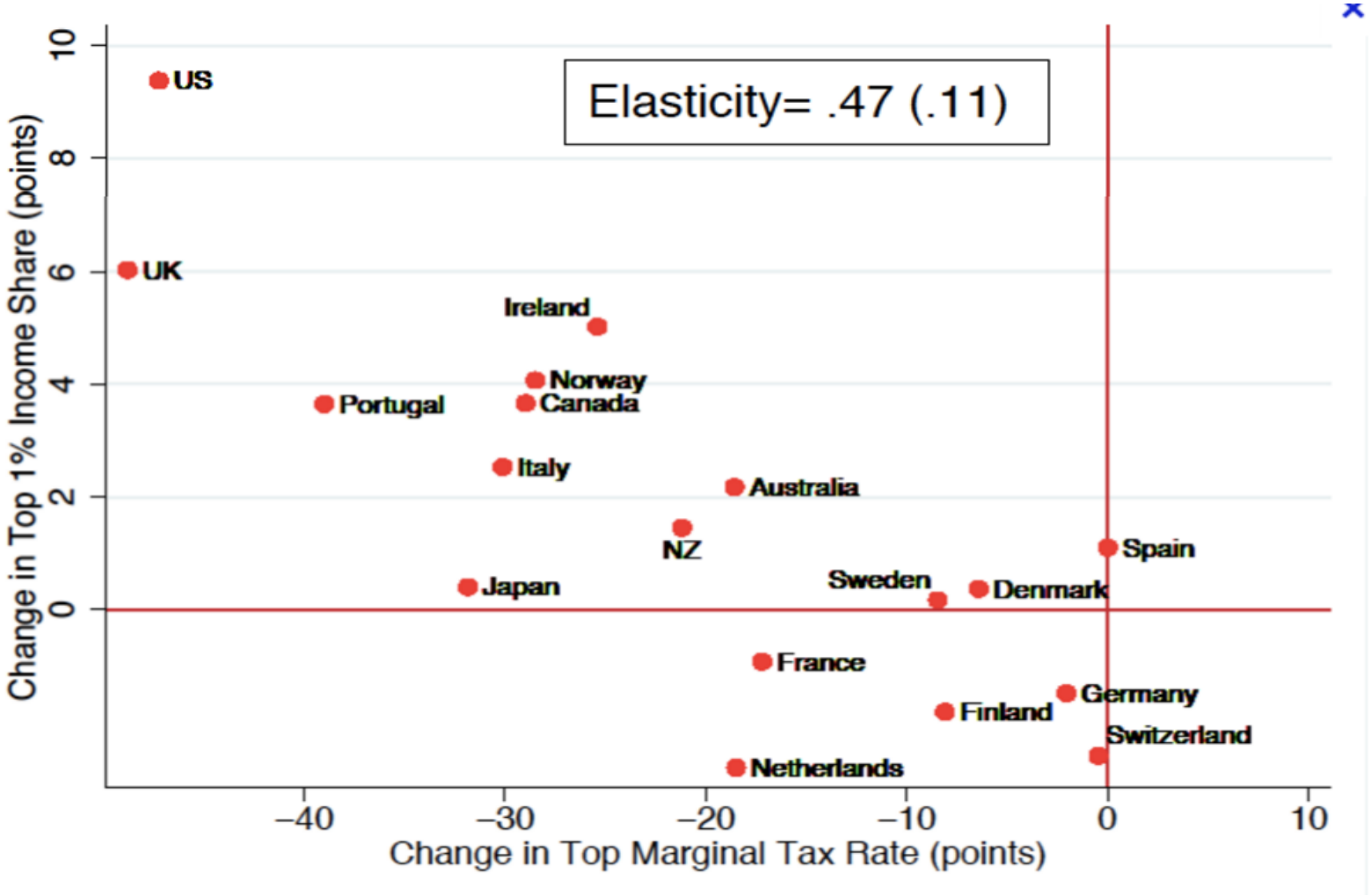
# E. Drivers of inequalities (2)

- **What the standard story misses?**

  - Growth of real wages of workers near the middle of distribution stopped outpacing that of workers near the bottom in 2000s
  - Incomes at very top (1%) soared (no relation with education/skills)
  - Lower wage share in GDP (not obviously related to technology-story)
  - Increase in income inequality at different pace and timing in various countries and world regions: *national policies and institutions matter!!!*

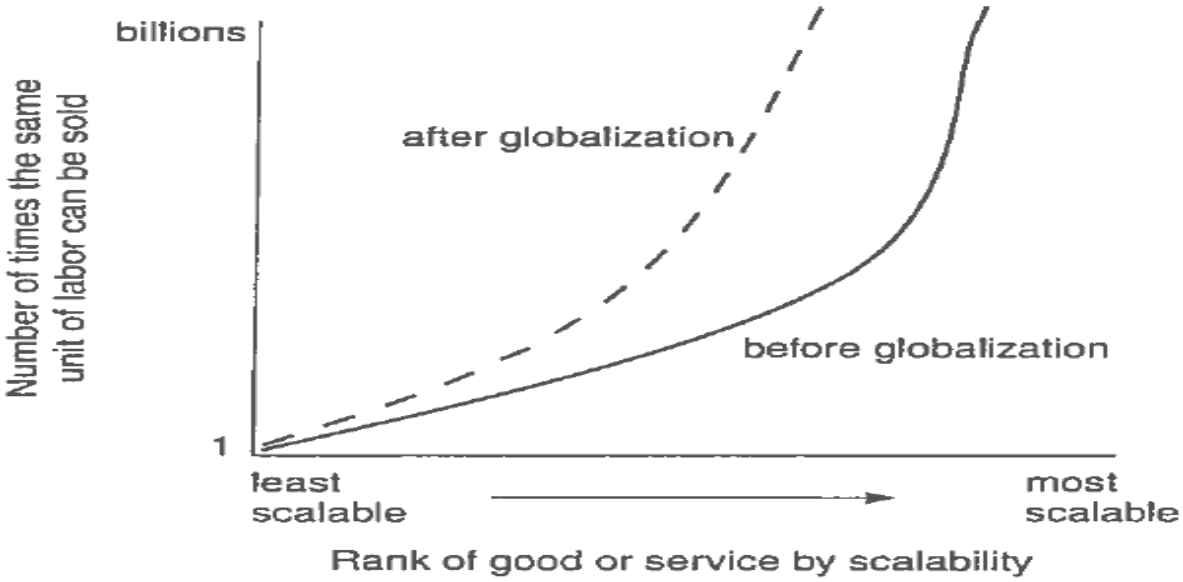
# E. Drivers of inequalities (3)

- **Other explanations: changes in redistribution**



# E. Drivers of inequalities (4)

- **Other explanations: "winner-take-all" markets**
  - Scalable jobs: a person's unit of labour can be sold many times over, i.e. marginal costs fall to zero (top pianist player)
  - Goods that are private, excludable, but non-rival
  - Lower transport costs and IT technology make jobs more scalable
  - Globalisation increases the extent of scalability (shifts curves to the left)



# E. Drivers of inequalities (5)

- **Other explanaitions**
  - Market power, i.e. firms set the prices at which they sell their products (monopoly) or buy their inputs (monopsony); and power relations (i.e. unions as 'countervailing powers)

    ➢ Rent extractions (e.g. patents, monopoly rents, drug pricing)

  - Changes in 'rules of the game' (e.g. enforcement of contracts, relations between buyers/ sellers, creditors/ debtors, corporate governance, regulations of financial markets; changes political process)

# F. Inequalities and policy making

- Traditional view, i.e. equity-efficiency trade-off
  - Okun's 'leaky bucket'
- Alternative views, i.e. no trade-off
  - Inequality and human capital formation
  - Inequality and aggregate demand
- Policy packages to reduce (income) inequalities
  - Re-distribution (through tax and transfer systems)
  - Pre-distribution
    - Investing in skills and education, starting from early age
    - Employment promotion and more quality jobs
    - Increase participation in economic life of women from lower and middle-class families
    - Taming market power

# Additional references for this lesson


- World Bank (2014), *A Measured Approach to Ending Poverty and Boosting Shared Prosperity,* chapter 3, World Bank Group, Washington D.C.
- OECD (2015), *Income Inequality: The Gap between Rich and Poor,* Paris
- A. Atkinson (2015), *Inequality – What can be done?* Harvard U.P.
- A. Deaton (2013), *The Great Escape,* chapters 5 and 6, Princeton U. P.
- B. Milanovic (2016), *Global Inequality, A new Approach for the Age of Globalisation*