Understanding income inequality: 15 years of progress

François Bourguignon
Paris School of Economics

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From a Handbook volume to another

The Handbook of income distribution: volume 1

- Published in 2000
- Far from the mainstream economic debate

15 years later

- *Inequality* is center stage
- Considerable additional knowledge (conceptual, theoretical and empirical) has accumulated
- Justifying ... another handbook

    The Handbook of income distribution: volume 2 (A and B)

Handbook: table of contents, volume 2A

Handbook: table of contents, volume 2B

This presentation

- Based on introductory chapter to the Handbook
  - A flavour of the issues being discussed
  - Personal reflections

- Outline
- The different facets of inequality
- Data on inequality: much care still needed despite progress
- Taking economic theory seriously
- The role of policy and the need to think outside the box

1. The different facets of inequality:
Various perspectives on the US monetary inequality

Figure 1.1 Inequality in the United States 1913-2012
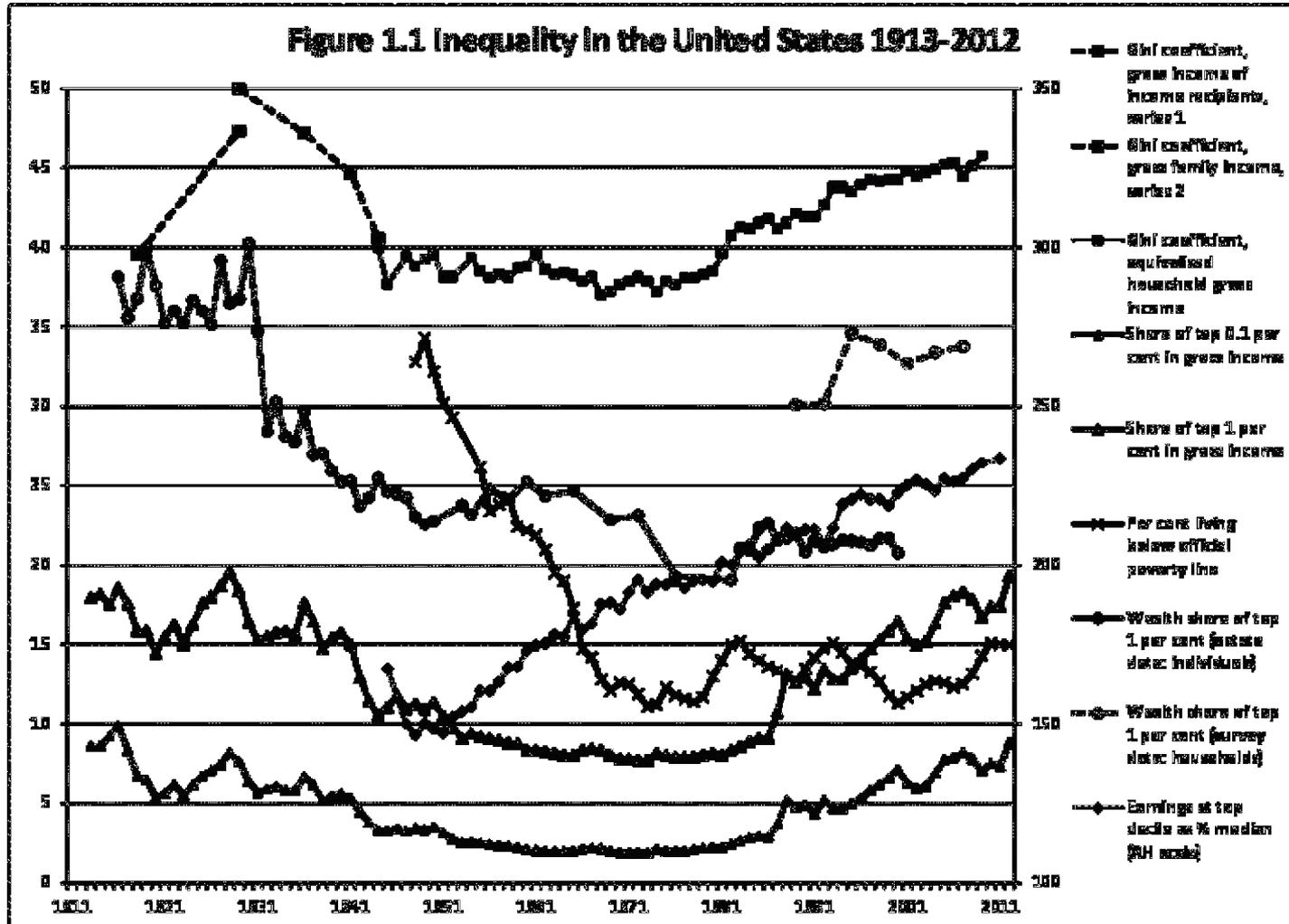
What do these various perspectives add-up to?

1. The different facets of inequality: Measuring 'beyond income' inequality

- The Rawls-Sen impulse to look 'beyond income'
- Many ways of expanding 'income inequality' measurement being explored in a very active research area
- An embedding framework:

Functionings of individual i: $a_i = (y_i , x_i)$ (y = "income")

Individual preferences : $u_i(y_i , x_i)$ (with arbitrary cardin.)

Individual satisfaction: $S[u_i(y_i , x_i), b_i)$ (b_i= individual caract.)

Capability set: $(y_i , x_i) \in Q(z_i)$ (z_i= individual param.)

Preferred (observed) bundle: (y^*_i , x^*_i)

The various approaches to measuring 'beyond income' inequality

- Multidimensional inequality (and poverty):

$Ineq = I1\{A(y_i^*, x_i^*)\}$ $\{\ \}$ = distribution; I1 = unidimensional inequality measure; A = 'common aggregator'

Dominance results with A ( ) in some set of functions

- Individual preferences and the income equivalent approach (Decancq, Fleurbaey, Maniquet)

y_i° *defined by:* $u_i(y_i^\circ, x^\circ) = u_i(y_i^*, x_i^*)$ *for arbitrary* x°

$Ineq = I1\{y_i^\circ(y_i^*, x_i^*; x^\circ)\}$ *But, how to identify $u_i()$?*

- Subjective satisfaction (Veenhoven)

$Ineq = I1\{V_i\}$ $V_i = S[u_i(y_i, x_i), b_i)$ *But what to do with differences in b_i?*

... various approaches to measuring 'beyond income' inequality

- <u>Inequality of capabilities</u>

In theory: *Ineq = I_c{Q (z_i)}* but practically how to measure inequality among *sets*

Practically: *Ineq = I1{ linear combination of the z_i}*

Example: HDI, Anand, …

- <u>Inequality of opportunities</u> (Roemer)

Ineq = I_b{{y_i,z_i $\in$ Z_j}, Z_1, Z_2, Z_3, …} Z_j = 'types'*

An extremely active area of research which has not yet identified a satisfactory simple way to measure these various important 'beyond income' inequality concepts

(Multidimensional poverty measurement through deprivation counting may be an exception)

2. Data on inequality: huge progress but much care still needed

Three avenues of progress:

- Experimental data
- Use of administrative data (e.g. top incomes)
- Historical data

Increasing availability of income/consumption surveys

- But still important problems of comparability across countries and over time
- Inequality data bases   (see JOEI forthcoming issue)

3. Taking economic theory seriously

- Economic theory often used too superficially in explaining some empirical fact
- At the same time practical implications of theoretical models not fully explored
- Three examples:
  - The role of skill biased technical progress (SBTC) in explaining the raise in earnings inequality
  - Automation and the rise in the share of capital
  - The disregard of transitional paths

a) SBTC and earnings inequality

A simple supply demand framework.

- Two types of labor: basic skill, L_b and high skill, L_h. CES production function with elasticity of substitution $\sigma > 1$.

$$Q = B[(\alpha_b L_b)^{1-\frac{1}{\sigma}} + (\alpha_h L_h)^{1-\frac{1}{\sigma}})^{\frac{\sigma}{\sigma-1}}$$

- In a competitive economy, the skill wage ratio is given by: $\omega = w_h / w_b = A [\alpha_h/\alpha_b]^{(1-1/\sigma)} h^{-1/\sigma}$ where $h = L_h / L_b$

- On the supply side, assume:

$$G(h) = \beta\{\omega - F - e^{rT}\}$$

F = fixed cost of acquiring the high skill, e^{rT} = foregone earnings, and β the high skill labor supply elasticity

Relative Demand of skill: $G(\omega) = (1-1/\sigma)g - (1/\sigma)G(h)$
Relative supply of skill: $G(h) = \beta\{\omega - F - e^{rT}\}$

Combining these two equations, it comes:

$G(\omega) = (1-1/\sigma)g - (1/\sigma)\beta\{\omega - F - e^{rT}\}$

And the skill wage ratio converges towards:

$\omega^* = F + e^{rT} + g(\sigma-1)/\beta$

Implications:

a) SBTC generates a shift in the skill wage ratio rather than a rising trend

b) Response of the skill wage ratio depends on β and σ, likely to differ across countries

c) Observed changes in the skill wage ratio may also be due to change in the fixed cost, F and in the cost of capital, r.

Extensions of this simple model

- Imperfect labor market (matching mechanisms)
- Endogenous SBTC (Directed technical change, Acemoglu, 2002)
- Introducing capital: complementarity between capital and skilled labor and susbtitutabiliy between capital and unskilled labor (Krusell et al. 2000)

Exploring the implications of these extensions is necessary before trying to explain the rise in ω by SBTC

b) 'Automation' and the rise in the share of capital ?

- Argument formalizes Summers (2013)
- $Q = F(K_1, AL + BK_2)$ with $K = K_1 + K_2$. K_1 = equipment, K_2 = substitutes to human work.
- Up to some level K^*, $K_2 = 0$ and the model behaves as the Solow model.
- Beyond K^*, w/r is stuck at A/B and all the output gain goes to capital
- Are developed countries caught in such an inequality increasing spiral?
- *A simple change of the conventional NC model is sufficient to modify rather drastically its implications (and open daunting perspectives)*

c) The importance of transitional paths

- Piketty's explanation of the rise in the weath/income ratio (β)

- The dynamics of β is given by: $\beta_{t+1} = (\beta_t + s_t)/(1 + g_t)$

  where s_t and g_t are respectively the saving and the growth rate of the economy.

- Where they are constant, the economy converges towards: $\beta_t = s/g$

- With s= 10% and g = 3%, then β = 3.33. If g falls to 2% then β increases to 5!

- *But it takes 30 years for β to reach 4 and 60 years to reach 4.5*

- *With such long transition phases, relying on steady state properties may be misleading for policy and economic analysis*

4. The role of policy

- Changes in the income distribution policy context
  - Official adoption of distributional objectives (MDGs, IMF's emphasis on inequality, Davos, Obama, ..)
  - Pessimism about the potential for policy reforms in developed countries
  - The decline in inequality in Latin America
- In developing countries

  - Economic analysis confirms the role and the impact of policies

  - Still many policy instruments to be 'imported' from developed countries

- Ned for 'thinking outside the box' in developed countries: new ideas wanted!