Inequality & Capitalism in the Long Run

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AES Conference
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Will 21\textsuperscript{C} Capitalism be as Unequal as 19\textsuperscript{C} Capitalism?

- Long run distributional trends = key question asked by 19\textsuperscript{C} economists
- Many came with apocalyptic answers
- Ricardo-Marx: a small group in society (land owners or capitalists) will capture an ever growing share of income & wealth; no balanced development path can occur
- During 20\textsuperscript{C}, a more optimistic consensus emerged: “growth is a rising tide that lifts all boats” (Kuznets 1953; cold war context)
But inequality ↑ since 1970s destroyed this fragile consensus (US 1976-2007: >50% of total growth was absorbed by top 1%)

→ 19th century economists raised the right questions; we need to address these questions again; we have no strong reason to believe in balanced development path

2007-2010 crisis also raised doubts about balanced devt path… will stock options & bonuses, or oil-rich countries, or China, or tax havens, absorb an ever-growing share of world resources in 21st century capitalism?
This talk: three issues

• 1. The rise of the working rich

• 2. The return of inheritance

• 3. The future of global inequality
• **No built-in stabilizer**: inequalities can diverge during many decades (or for ever…)
  (price system knows no limit: real estate, oil,..)
  (especially if return to capital $r >$ growth rate $g$)
• **No reason to expect inequalities to become more merit-based over time**: modern economic growth and technical progress does not necessarily need to more meritocracy; the « rise of human capital » is to a large extent an illusion
1. The Rise of the Working Rich

• Top income project: 23 countries, annual series over most of 20C. **Two main findings:**
  - **The fall of rentiers:** inequality ↓ during first half of 20C = top capital incomes hit by 1914-1945 capital shocks; never fully recovered, possibly because of progressive taxation → no long run decline of earnings inequality; nothing to do with a Kuznets-type process
  - **The rise of working rich:** inequality ↑ since 1970s; mostly due to top labor incomes → what happened?
TOP INCOMES OVER THE 20TH CENTURY

A Contrast Between Continental European and English-Speaking Countries

Edited by A. B. Atkinson & T. Piketty

TOP INCOMES

A Global Perspective

Edited by A. B. Atkinson & T. Piketty

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FIGURE 1
The Top Decile Income Share in the United States, 1917-2007

Income is defined as market income including realized capital gains (excludes government transfers).
FIGURE 2
Decomposing the Top Decile US Income Share into 3 Groups, 1913-2007
### Table 1. Top Percentile Share and Average Income Growth in the US

<table>
<thead>
<tr>
<th>Period</th>
<th>Average Income Real Annual Growth</th>
<th>Top 1% Incomes Real Annual Growth</th>
<th>Bottom 99% Incomes Real Annual Growth</th>
<th>Fraction of total growth captured by top 1%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976-2007</td>
<td>1.2%</td>
<td>4.4%</td>
<td>0.6%</td>
<td>58%</td>
</tr>
<tr>
<td>Clinton Expansion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993-2000</td>
<td>4.0%</td>
<td>10.3%</td>
<td>2.7%</td>
<td>45%</td>
</tr>
<tr>
<td>Bush Expansion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002-2007</td>
<td>3.0%</td>
<td>10.1%</td>
<td>1.3%</td>
<td>65%</td>
</tr>
</tbody>
</table>

Computations based on family market income including realized capital gains (before individual taxes). Incomes are deflated using the Consumer Price Index (and using the CPI-U-RS before 1992). Column (4) reports the fraction of total real family income growth captured by the top 1%. For example, from 2002 to 2007, average real family incomes grew by 3.0% annually but 65% of that growth accrued to the top 1% while only 35% of that growth accrued to the bottom 99% of US families.

Figure 7A. Top 1% share: English Speaking countries (U-shaped), 1910-2005
Figure 7B. Top 1% Share: Middle Europe and Japan (L-shaped), 1900-2005
Why are US working rich so rich?

• Hard to account for observed variations with a pure technological, marginal-product story

• One popular view: US today = working rich get their marginal product (globalization, superstars); Europe today (& US 1970s) = market prices for high skills are distorted downwards (social norms, etc.)

→ very naïve view of the top labor market…

& very ideological: we have zero evidence on the marginal product of top executives; it could well be that prices are distorted upwards…
Another view: grabbing hand model = marginal products are unobservable; top executives have an obvious incentive to convince shareholders & subordinates that they are worth a lot; no market convergence because constantly changing corporate & job structure (& costs of experimentation) → when pay setters set their own pay, there’s no limit to rent extraction... unless confiscatory tax rates at the very top (memo: US top rate (1m$+) 1932-1980 = 82%) • Not much to do with merit...
2. The return of inheritance

• **Distributional issue:** wealth inequality ↓ during 20\textsuperscript{c}. but not that much: in 2010, top 10% wealth share ≈ 70-75% (US), 60-65% (EU), vs ≈ 80-90% around 1900 & in 19\textsuperscript{c}

• **Macro issue:** aggregate inheritance flow vs aggregate labor income: much larger historical variations → long lasting « human K » illusion

→ this is the issue explored in « On the Long Run Evolution of Inheritance – France 1820-2050 », WP PSE 2010, QJE 2011
Figure 1: Annual inheritance flow as a fraction of national income, France 1820-2008

- Economic flow (computed from national wealth estimates, mortality tables and observed age-wealth profiles)
- Fiscal flow (computed from observed bequest and gift tax data, inc. tax exempt assets)
What this paper does

• Documents this fact; develops a simple theoretical model explaining & reproducing this fact

• **Main lesson:** with $r > g$, inheritance is bound to dominate new wealth; the past eats up the future

• **Intuition:** with $r > g$ & $g$ low (say $r=4\%$-$5\%$ vs $g=1\%$-$2\%$), wealth coming from the past is being capitalized faster than growth; heirs just need to save a fraction $g/r$ of the return to inherited wealth $\rightarrow b_y = \beta/H$

  $\rightarrow$ with $\beta=600\%$ & $H=30$, then $b_y=20\%$

• It is only in countries & time periods with $g$ exceptionally high that self-made wealth dominates inherited wealth (OECD in 1950s-70s or China today)
Figure 9: Observed vs simulated inheritance flow B/Y, France 1820-2100

- Observed series
- Simulated series (2010-2100: g=1.7%, (1-t)r=3.0%)
- Simulated series (2010-2100: g=1.0%, (1-t)r=5.0%)
Back to distributional analysis: macro ratios determine who is the dominant social class

- 19\textsuperscript{C}: top successors dominate top labor earners
  → rentier society (Balzac, Jane Austen, etc.)
- For cohorts born in the 1910s-1950s, inheritance did not matter too much
  → labor-based, meritocratic society
- But for cohorts born in the 1970s-1980s & after, inheritance matters a lot → 21\textsuperscript{c} closer to 19\textsuperscript{c} rentier society than to 20\textsuperscript{c} merit society
- The rise of human capital & meritocracy was an illusion .. especially with a labor-based tax system
Figure 13: The share of inheritance in lifetime resources received by cohorts born in 1820-2020

- average inheritance as a fraction of average lifetime labor income resources
  (all inheritance and labor resources capitalized at age 50)
- ▲ low-growth, high-return scenario
Figure 17: Cohort fraction inheriting more than bottom 50% lifetime labor resources (cohorts born in 1820-2020)

- □ benchmark scenario
- △ low-growth, high-return scenario
3. The future of global inequality

- **Around 1900-1910**: Europe owned the rest of the world; net foreign wealth of UK or France >100% of their national income (>50% of the rest-of-the-world capital stock)

- **Around 2050**: will the same process happen again, but with China instead of Europe?

• Assume global convergence in per capita output $Y$ & in capital intensity $K/Y$
• With large differences in population & fully integrated $K$ markets & high world rate of return $r$ (low $K$ taxes)
Then moderate differences in savings rate (say, $s=20\%$ in China vs $s=10\%$ in Europe+US, due to bigger pay-as-you-go pensions in Old World, traumatized by past financial crashes) can generate v. large net foreign asset positions → under these assumptions, China might own a large part of the world by 2050
• Likely policy response in the West: K controls, public ownership of domestic firms, etc.
• But this is not the most likely scenario: a more plausible scenario is that global billionaires (located in all countries… and particularly in tax havens) will own a rising share of global wealth.
• A lot depends on the net-of-tax global rate of return r on large diversified portfolios.
• If r=5%-6% in 2010-2050 (=what we observe in 1980-2010 for large Forbes fortunes, or Abu Dhabi sovereign fund, or Harvard endowment), then global divergence is very likely.
• Both scenarios can happen
• But the « global billionaires own the world » scenario is more likely than the « China own the world » scenario
• And it is also a lot harder to cope with: we’ll need a lot of international policy coordination; without a global crackdown on tax havens & a coordinated world wealth tax on the global rich, individual countries & regions will keep competing to attract billionaires, thereby exacerbating the trend
• Free, untaxed world K markets can easily lead to major imbalances & global disasters
What have we learned?

• A world with $g$ low & $r > g$ is gloomy for workers with zero inherited wealth
  … especially if global tax competition drives capital taxes to 0%
  … especially if top labor incomes take a rising share of aggregate labor income
  → let’s unite to tax capital & top labor; otherwise the future looks gloom…

• A world with $g=1-2\%$ (=long-run world technological frontier) is not very different from a world with $g=0\%$ (Marx-Ricardo)
• More efficient markets won’t help…
• The more efficient the markets, the sharper the capital vs labor distinction; with highly developed k markets, any dull successor can get a high rate of return
• \( r > g = \text{the true evil law of capitalism} \)
  \( = \text{nothing to do with market imperfections} \)
• Standard model: \( r = \theta + \sigma g > g \) (Golden rule)
• The important point about capitalism is that \( r \) is large (\( r > g \rightarrow \text{tax capital, otherwise society is dominated by rentiers} \)), volatile and unpredictable (crisis)
Supplementary slides
IEA World Congress, Beijing, July 6 2011
Invited Session: « Income & Wealth Inequality in 21C Capitalism »

- J. Davies, « The Level & Distribution of Global Household Wealth, 2000-2010 »
- T. Piketty, « Will 21C Capitalism Be As Unequal as 19C Capitalism? »
  (Chair: T. Piketty, PSE)
<table>
<thead>
<tr>
<th>Shares in aggregate labor income or inherited wealth</th>
<th>Labor income 1910-2010</th>
<th>Inherited wealth</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top 10% &quot;Upper Class&quot;</strong></td>
<td>30%</td>
<td>90%</td>
</tr>
<tr>
<td>incl. Top 1% &quot;Very Rich&quot;</td>
<td>6%</td>
<td>50%</td>
</tr>
<tr>
<td>incl. Other 9% &quot;Rich&quot;</td>
<td>24%</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Middle 40% &quot;Middle Class&quot;</strong></td>
<td>40%</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Bottom 50% &quot;Poor&quot;</strong></td>
<td>30%</td>
<td>5%</td>
</tr>
</tbody>
</table>
Figure 16: Top 1% successors vs top 1% labor income earners (cohorts born in 1820-2020)

- □ top 1% inheritance as a fraction of bottom 50% labor resources
- □ top 1% labor as a fraction of bottom 50% labor resources
- △ low-growth, high-return scenario
Computing inheritance flows: simple macro arithmetic

\[ \frac{B_t}{Y_t} = \mu_t \ m_t \ \frac{W_t}{Y_t} \]

- \( \frac{W_t}{Y_t} = \text{aggregate wealth/income ratio} \)
- \( m_t = \text{aggregate mortality rate} \)
- \( \mu_t = \text{ratio between average wealth of decedents and average wealth of the living} (= \text{age-wealth profile}) \)

→ The U-shaped pattern of inheritance is the product of three U-shaped effects
Figure 2: Wealth-income ratio in France 1820-2008

- Aggregate private wealth as a fraction of national income
<table>
<thead>
<tr>
<th></th>
<th>Real growth rate of national income</th>
<th>Real growth rate of private wealth</th>
<th>Savings-induced wealth growth rate</th>
<th>Capital-gains-induced wealth growth rate</th>
<th>Memo: Consumer price inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820-2009</td>
<td>1.8%</td>
<td>1.8%</td>
<td>2.1%</td>
<td>-0.3%</td>
<td>4.4%</td>
</tr>
<tr>
<td>1820-1913</td>
<td>1.0%</td>
<td>1.3%</td>
<td>1.4%</td>
<td>-0.1%</td>
<td>0.5%</td>
</tr>
<tr>
<td>1913-2009</td>
<td>2.6%</td>
<td>2.4%</td>
<td>2.9%</td>
<td>-0.4%</td>
<td>8.3%</td>
</tr>
<tr>
<td>1913-1949</td>
<td>1.3%</td>
<td>-1.7%</td>
<td>0.9%</td>
<td>-2.6%</td>
<td>13.9%</td>
</tr>
<tr>
<td>1949-1979</td>
<td>5.2%</td>
<td>6.2%</td>
<td>5.4%</td>
<td>0.8%</td>
<td>6.4%</td>
</tr>
<tr>
<td>1979-2009</td>
<td>1.7%</td>
<td>3.8%</td>
<td>2.8%</td>
<td>1.0%</td>
<td>3.6%</td>
</tr>
</tbody>
</table>
Figure 3: Mortality rate in France, 1820-2100

Adult mortality rate (20-yr-old & over)
Figure 4: The ratio between average wealth of decedents and average wealth of the living France 1820-2008

- $\mu$ (excluding inter-vivos gifts)
- $\mu^*$ (including inter-vivos gifts)
Figure 5: Inheritance flow vs mortality rate in France, 1820-2008

- Open squares: Annual inheritance flow as a fraction of aggregate private wealth
- Solid squares: Adult mortality rate (20-yr-old & over)
Steady-state inheritance flows

• Standard models: $r = \theta + \sigma g = \alpha g/s \ (\geq g)$

• Everybody becomes adult at age $A$, has one kid at age $H$, inherits at age $I$, and dies at age $D \rightarrow I = D - H, \ m = 1/(D - A)$

• Dynastic or class saving: $\mu = (D - A)/H$

  $\rightarrow b_y = \mu \ m \ \beta = \beta/H$

• Proposition: As $g \rightarrow 0, \ b_y \rightarrow \beta/H$
Figure 6: Steady-state cross-sectional age-wealth profile in the class savings model ($s_L=0$, $s_K>0$)
Figure 7: Steady-state cross-sectional age-wealth profile in the class savings model with demographic noise
Figure 8: Private savings rate in France 1820-2008

- Private savings (personal savings + net corporate retained earnings) as a fraction of national income
Figure 10: Labor & capital shares in national income, France 1820-2008

- Labor share
- Capital share
Figure 11: Rate of return vs growth rate France 1820-1913

- Rate of return on private wealth \( r = \alpha / \beta \)
- Growth rate of national income \( g \)
Figure 12: Capital share vs savings rate France 1820-1913

- Capital share $\alpha$
- Savings rate $s$
Figure 18: The share of non-capitalized inheritance in aggregate wealth accumulation, France 1850-2100

- □ non-capitalized inherited wealth as a fraction of aggregate private wealth
- △ low-growth, high-return scenario
Figure 19: The share of capitalized inheritance in aggregate wealth accumulation, France 1900-2100

- Capitalized inherited wealth as a fraction of aggregate private wealth
- ▲ low-growth, high-return scenario
<table>
<thead>
<tr>
<th>Period</th>
<th>Growth rate of national income</th>
<th>Rate of return on private wealth</th>
<th>Capital tax rate</th>
<th>After-tax rate of return</th>
<th>Real rate of capital gains</th>
<th>Rate of capital destruct. (wars)</th>
<th>After-tax real rate of return (incl. k gains &amp; losses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820-2009</td>
<td>1.8%</td>
<td>6.8%</td>
<td>19%</td>
<td>5.4%</td>
<td>-0.1%</td>
<td>-0.3%</td>
<td>5.0%</td>
</tr>
<tr>
<td>1820-1913</td>
<td>1.0%</td>
<td>5.9%</td>
<td>8%</td>
<td>5.4%</td>
<td>-0.1%</td>
<td>0.0%</td>
<td>5.3%</td>
</tr>
<tr>
<td>1913-2009</td>
<td>2.6%</td>
<td>7.8%</td>
<td>31%</td>
<td>5.4%</td>
<td>-0.1%</td>
<td>-0.7%</td>
<td>4.6%</td>
</tr>
<tr>
<td>1913-1949</td>
<td>1.3%</td>
<td>7.9%</td>
<td>21%</td>
<td>6.4%</td>
<td>-2.6%</td>
<td>-2.0%</td>
<td>1.8%</td>
</tr>
<tr>
<td>1949-1979</td>
<td>5.2%</td>
<td>9.0%</td>
<td>34%</td>
<td>6.0%</td>
<td>0.8%</td>
<td>0.0%</td>
<td>6.8%</td>
</tr>
<tr>
<td>1979-2009</td>
<td>1.7%</td>
<td>6.9%</td>
<td>39%</td>
<td>4.3%</td>
<td>1.0%</td>
<td>0.0%</td>
<td>5.3%</td>
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