Wealth and Inheritance (in the Long Run)

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• This chapter: how do wealth-income and inheritance-income ratios evolve in the long run, and why?

• **There are two ways to become rich:** either through one’s own work, or through inheritance

• In Ancien Regime societies, as well as in 19C and early 20C, it was obvious to everybody that the inheritance channel was important
• Inheritance and successors were everywhere in the 19C literature: Balzac, Jane Austen, etc.
• Inheritance flows were huge not only in novels; but also in 19C tax data: major economic, social and political issue
• **Question:** Does inheritance belong to the past? Did modern growth kill the inheritance channel? E.g. due to the natural rise of human capital and meritocracy?

• This chapter answers « **NO** » to this question: I find that inherited wealth will probably play as big a role in 21\(^{\text{C}}\) capitalism as it did in 19\(^{\text{C}}\) capitalism

• Key mechanism if low growth \( g \) and \( r > g \)
- **Chapter based upon**: - literature survey (Kotlikoff-Summers-Modigliani controversy during 1980s-1990s, etc.)

- **new work:**
  - « Capital is back: wealth-income ratios in rich countries 1700-2010 » (with Zucman, 2013)
  - On-going work on other countries:
    - « Wealth & inheritance in Britain from 1896 to the present » (Atkinson, 2012)
    - Sweden (Roine-Waldenstrom); US (Alvaredo); etc.
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)
Figure 2: Annual inheritance flow as a fraction of disposable 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)
• An annual inheritance flow around 20%-25% of disposable income is a very large flow

• E.g. it is much larger than the annual flow of new savings (typically around 10%-15% of disposable income), which itself comes in part from the return to inheritance (it’s easier to save if you have inherited your house & have no rent to pay)

• An annual inheritance flow around 20%-25% of disposable income means that total, cumulated inherited wealth represents the vast majority of aggregate wealth (typically above 80%-90% of aggregate wealth), and vastly dominates self-made wealth
Main lesson: with g low & r>g, inheritance is bound to dominate new wealth; the past eats up the future

\[ g = \text{growth rate of national income and output} \]
\[ r = \text{rate of return to wealth} = \frac{\text{interest} + \text{dividend} + \text{rent} + \text{profits} + \text{capital gains etc.}}{\text{net financial} + \text{real estate wealth}} \]

Intuition: with r>g & g low (say r=4%-5% vs g=1%-2%) (=19C & 21C), 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

It is only in countries and time periods with g exceptionally high that self-made wealth dominates inherited wealth (Europe in 1950s-70s or China today)
This chapter: two issues

(1) The return of wealth
(Be careful with « human capital » illusion: human k did not replace old-style financial & real estate wealth)

(2) The return of inherited wealth
(Be careful with « war of ages » illusion: the war of ages did not replace class war; inter-generational inequality did not replace intra-generational inequality)
1. The return of wealth

- The « human capital » illusion: « in today’s modern economies, what matters is human capital and education, not old-style financial or real estate wealth »
- Technocractic model: Parsons, Galbraith, Becker
  (unidimensional class structure based upon human K)
- But the share of old-style capital income (rent, interest, dividend, etc.) in national income is the same in 2010 as in 1910 (about 30%), and the aggregate wealth-income ratio is also the same in 2010 as in 1910 (about 600%)
- Today in France, Italy, UK: $\beta = \frac{W}{Y} \approx 600\%$

  Per adult national income $Y \approx 35,000\€$

  Per adult private wealth $W \approx 200,000\€$

  (wealth = financial assets + real estate assets – financial liabilities)

  (on average, households own wealth equal to about 6 years of income)
Wealth-income ratio in France 1820-2010

Aggregate private wealth as a fraction of national income
The changing nature of national wealth, UK 1700-2010

National wealth = agricultural land + housing + other domestic capital goods + net foreign assets
The changing nature of national wealth, France 1700-2010

National wealth = agricultural land + housing + other domestic capital goods + net foreign assets
National Wealth / National Income Ratios in Europe, 1870-2010

Authors' computations using country national accounts. National wealth = private wealth (household & non-profit sectors) + government wealth.
National Wealth / National Income Ratios, 1870-2010: Europe vs. US

Authors' computations using country national accounts. National wealth = private wealth (household & non-profit sectors) + government wealth.
The changing nature of national wealth, US 1770-2010

National wealth = agricultural land + housing + other domestic capital goods + net foreign assets

Legend:
- Net foreign assets
- Other domestic capital
- Housing
- Agricultural land
National wealth = agricultural land + housing + other domestic capital goods + net foreign assets
National wealth in 1770-1810: Old vs New world

Other domestic capital
Housing
Slaves
Agricultural Land

UK
France
US South
US North

Authors' computations using country national accounts. Private wealth = non-financial assets + financial assets - financial liabilities (household & non-profit sectors)
National vs. Foreign Wealth, 1970-2010
(% National Income)

Authors' computations using country national accounts. Net foreign wealth = net foreign assets owned by country residents in rest of the world (all sectors).
How Can We Explain the 1970-2010 Evolution?

1. **An asset price effect**: long run asset price recovery driven by changes in capital policies since world wars.

1. **A real economic effect**: slowdown of productivity and pop growth:

   - Harrod-Domar-Solow: wealth-income ratio $\beta = \frac{s}{g}$
   - If saving rate $s = 10\%$ and growth rate $g = 3\%$, then $\beta \approx 300\%$
   - But if $s = 10\%$ and $g = 1.5\%$, then $\beta \approx 600\%$

Countries with low $g$ are bound to have high $\beta$. Strong effect in Europe, ultimately everywhere.
How Can We Explain Return to 19c Levels?

In very long run, limited role of asset price divergence

- In short/medium run, war destructions & valuation effects paramount
- But in the very long run, no significant divergence between price of consumption and capital goods
- Key long-run force is $\beta = s/g$

One sector model accounts reasonably well for long run dynamics & level differences Europe vs. US
Three models delivering the same result

**BU: Bequest-in-utility-function model**
Max $U(c, b) = c^{1-s} b^s$ (or $\Delta b^s$)
$c =$ lifetime consumption, $b =$ end-of-life wealth (bequest)
$s =$ bequest taste = saving rate $\rightarrow \beta = \frac{s}{g}$

**DM: Dynastic model:** Max $\sum U(c_t)/(1+\delta)^t$
$\rightarrow r = \delta + \rho g , s = g\alpha/r, \beta = \frac{\alpha}{r} = \frac{s}{g}$ ($\beta \uparrow$ as $g \downarrow$)
($U(c) = c^{1-\rho}/(1-\rho) , F(K,L) = K^\alpha L^{1-\alpha}$)

**OLG model:** low growth implies higher life-cycle savings
$\rightarrow$ in all three models, $\beta = \frac{s}{g}$ rises as $g$ declines
Lesson 1a: Capital is Back

- Low $\beta$ in mid-20c were an anomaly
  - Anti-capital policies depressed asset prices
  - Unlikely to happen again with free markets
  - Who owns wealth will become again very important

- $\beta$ can vary a lot between countries
  - $s$ and $g$ determined by different forces
  - With perfect markets: scope for very large net foreign asset positions
  - With imperfect markets: domestic asset price bubbles

↓

High $\beta$ raise new issues about capital regulation & taxation
Lesson 1b: The Changing Nature of Wealth and Technology

- **In 21st century:** $\sigma > 1$
  - Rising $\beta$ come with decline in average return to wealth $r$
  - But decline in $r$ smaller than increase in $\beta$ $\rightarrow$ capital shares $\alpha = r\beta$ increase
  $\rightarrow$ Consistent with K/L elasticity of substitution $\sigma > 1$

- **In 18th century:** $\sigma < 1$
  - In 18c, $K = \text{mostly land}$
  - In land-scarce Old World, $\alpha \approx 30%$
  - In land-rich New World, $\alpha \approx 15%$
  $\rightarrow$ Consistent with $\sigma < 1$: when low substitutability, $\alpha$ large when $K$ relatively scarce
2. The return of inherited wealth

• In principle, one could very well observe a return of wealth without a return of inherited wealth

• I.e. it could be that the rise of aggregate wealth-income ratio is due mostly to the rise of life-cycle wealth (pension funds)

• Modigliani life-cycle theory: people save for their old days and die with zero wealth, so that inheritance flows are small
• However the Modigliani story happens to be partly wrong (except in the 1950s-60s, when there’s not much left to inherit…): pension wealth is a limited part of wealth (<5% in France… but 20% in the UK)

• Bequest flow-national income ratio $B/Y = \mu m W/Y$
  (with $m$ = mortality rate, $\mu$ = relative wealth of decedents)

• $B/Y$ has almost returned to 1910 level, both because of $W/Y$ and of $\mu$
• Dynastic model: $\mu = (D-A)/H$, $m=1/(D-A)$, so that $\mu m = 1/H$
  and $B/Y = \beta/H$
  (A = adulthood = 20, H = parenthood = 30, D =death = 60-80)
• General saving model: with $g$ low & $r>g$, $B/Y \to \beta/H$
  $\to$ with $\beta=600\%$ & $H=generation$ length=30 years, then
  $B/Y\approx 20\%$, i.e. annual inheritance flow $\approx 20\%$ national income
Figure 10: Steady-state cross-sectional age-wealth profile in the dynastic model with demographic noise

(average wealth of age group)/(average wealth of adults)
Figure 8: The ratio between average wealth of decedents and average wealth of the living in France 1820-2008

- Excluding inter-vivos gifts
- Including inter-vivos gifts into decedents' wealth
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%)
The share of inherited wealth in total wealth

- Modigliani AER 1986, JEP 1988: inheritance = 20% of total U.S. wealth
- Kotlikoff-Summers JPE 1981, JEP 1988: inheritance = 80% of total U.S. wealth
- Three problems with this controversy:
  - Bad data
  - We do not live in a stationary world: life-cycle wealth was much more important in the 1950s-1970s than it is today
  - We do not live in a representative-agent world → new definition of inherited share: partially capitalized inheritance (inheritance capitalized in the limit of today’s inheritor wealth)

→ our findings show that the share of inherited wealth has changed a lot over time, but that it is generally much closer to Kotlikoff-Summers (80%) than Modigliani (20%)
Figure S11.1. The share of inherited wealth in aggregate wealth, Paris 1872-1937

- Capitalized inherited wealth (KS1) (Kotlikoff-Summers, r=3%, 30yrs)
- Partially capitalized inherited wealth (PPVR definition)
- Non-capitalized inherited wealth (Modigliani)
Figure S11.2. The share of inherited wealth in aggregate wealth, Paris 1872-1937
Figure S11.3. The share of inherited wealth in aggregate wealth, France 1850-2100 (2010-2100: g=1.7%, r=3.0%)
Figure S11.4. The share of inherited wealth in aggregate wealth, France 1850-2100 (2010-2100: g=1.7%, r=3.0%)

- Capitalized inheritance (KS1) (Kotlikoff-Summers, r=3%, 30yrs)
- Partially capitalized inheritance (PPVR definition)
- Non-capitalized inheritance (Modigliani)
Figure 11.12. The inheritance flow in Europe 1900-2010

- France
- United Kingdom (Atkinson)
- Germany (Schinke)
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 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} class structure will be intermediate between 19\textsuperscript{C} rentier society than to 20\textsuperscript{C} meritocratic society – and possibly closer to the former (more unequal in some dimens., less in others)
• The rise of human capital & meritocracy was an illusion .. especially with a labor-based tax system
<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>Top 10% &quot;Upper Class&quot;</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>Middle 40% &quot;Middle Class&quot;</td>
<td>40%</td>
<td>5%</td>
</tr>
<tr>
<td>Bottom 50% &quot;Poor&quot;</td>
<td>30%</td>
<td>5%</td>
</tr>
</tbody>
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Table 3: Intra-cohort distributions of labor income and inheritance, France, 1910 vs 2010
Figure 15: Cohort fraction inheriting more than bottom 50% lifetime labor resources (cohorts born in 1820-2020)

- □ benchmark scenario
- ▲ low-growth, high-return scenario
Figure 14: Top 1% successors vs top 1% labor income earners (cohorts born in 1820-2020)

- ■ top 1% inheritance resources as a fraction of bottom 50% labor resources
- □ top 1% labor resources as a fraction of bottom 50% labor resources
- △ low-growth, high-return scenario
What have we learned?

- A world with $g$ low & $r > g$ is gloomy for workers with zero initial wealth... especially if global tax competition drives capital taxes to 0%... especially if top labor incomes take a rising share of aggregate labor income

  $\rightarrow$ A world with $g = 1-2\%$ (=long-run world technological frontier?) is not very different from a world with $g = 0\%$ (Marx-Ricardo)

- From a $r$-vs-$g$ viewpoint, $21^{c}$ maybe not too different from $19^{c}$ – but still better than Ancien Regime... except that nobody tried to depict AR as meritocratic...