$r > g$

Lessons from the history of wealth

Thomas Piketty
Paris School of Economics
Author of “Capital in the 21st century”
TED talk, Berlin, June 23 2014
• One important lesson from the history of wealth: in the long-run, there is a tendency for the rate of return to capital to exceed the economy’s growth rate ($r > g$), and this tends to lead to high concentration of wealth.

• In this presentation, I focus on this key force: $r > g$

• Warning: there are many other forces that play an important role in the long run dynamics of income and wealth distribution; and there is still a lot of data that needs to be collected; we know more than we used to, but we still know too little.
• Fact n°1: in 1900-1910, income inequality was higher in Europe than in the United States; in 2000-2010, it is a lot higher in the United States

• This is due to a mixture of reasons: changing supply and demand for skills; race between education and technology; globalization; more unequal to access to skills in the US; unprecedented rise of top managerial compensation in the US
The share of total income accruing to top decile income holders was higher in Europe than in the U.S. around 1900-1910; it is a lot higher in the U.S. than in Europe around 2000-2010. Sources and series: see piketty.pse.ens.fr/capital21c
• Fact n°2: wealth inequality is always a lot higher than income inequality

• Fact n°3: wealth inequality is less extreme today than a century ago, although the total quantity of wealth relative to income has now recovered from the 1914-1945 shocks
The share of total net wealth belonging to top decile wealth holders has become higher in the US than in Europe over the course of the 20th century. But it is still smaller than what it was in Europe before World War 1.

Sources and series: see piketty.ps
Total net private wealth was worth about 6-7 years of national income in Europe prior to World War 1, down to 2-3 years in 1950-1960, back up to 5-6 years in 2000-2010. In the US, the U-shaped pattern was much less marked.

Sources and series: see piketty

Figure 3. Wealth-income ratios: Europe and the U.S., 1900-2010
• Best model to explain why wealth is so much more concentrated than income: dynamic model with random multiplicative shocks (n. children, rates of return, etc.)

• In any such model, for a given variance of shocks, the equilibrium level of wealth inequality is a steeply increasing function of \( r - g \)

• Intuition: with high \( r - g \), initial wealth inequalities get amplified at a faster pace

• E.g. with \( r = 5\% \), \( g = 1\% \), wealth holders only need to reinvest \( 1/5^{th} \) of their capital income so as to ensure that their wealth rises as fast as national income; this makes it easier to build and perpetuate large fortunes
• During most of the history of mankind, \( r > g \) was obvious: 
g was close to 0\%, and \( r \) was generally around 5\%

• Typically, annual rental income = 5\% of land values in traditional 
agrarian societies (to get an annual income of 1 000£, one needs a 
capital of 20 000£: obvious to any Jane Austen reader!)

• Modern industrial growth did not change this basic fact as much 
as one might have expected: \( g \) rose from 0\% to 1-2\%; \( r \) rose also

• During the 20\textsuperscript{th} century, very unusual combination of events: low 
\( r \) due to 1914-1945 shocks + unusually high \( g \) during postwar 
period (reconstruction + demographic transition: \( g = 3-4\% \))

• But the long run \( g \) seems to be closer to 1-2\%, especially given 
projected population growth slowdown; and \( r \) might rise due to 
global competition to attract capital
The average rate of return to capital (pre tax) has always been higher than the growth rate, but the gap was reduced during the 20th century, and might widen again in the 21st century.

Sources and series: see piketty.pse.ens.fr/capital21c
The average rate of return to capital (after tax and capital losses) fell below the growth rate during the 20th century. It may again surpass it in the 21st century, as it did throughout human history until the 19th century.

Sources and series: see pikett
• The balance between $r$ and $g$ depends on many factors that are difficult to predict: technology (capital intensive sectors: real estate, energy, robots,..), saving behavior, etc.

• Scale effects in portfolio management, financial complexity: higher rates of return for large portfolios

• $r > g$ seems to particularly strong for billionaires and large capital endowments

• Maybe less true at 10m € than at 1b €

• We know little about current wealth dynamics: cross border assets, tax havens, lack of financial transparency
Between 1987 and 2013, the highest global wealth fractiles have grown at 6%–7% per year, vs. 2.1% for average world wealth and 1.4% for average world income. All growth rates are net of inflation (2.3% per year between 1987 and 2013). Sources: see piketty.pse.ens.fr/capital21c.

Table 1. The growth rate of top global wealth, 1987-2013

<table>
<thead>
<tr>
<th></th>
<th>1987-2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average real growth rate</strong></td>
<td></td>
</tr>
<tr>
<td><strong>per year</strong></td>
<td></td>
</tr>
<tr>
<td><em>(after deduction of inflation)</em></td>
<td></td>
</tr>
<tr>
<td>The top 1/(100 million) highest</td>
<td>6.8%</td>
</tr>
<tr>
<td>wealth holders</td>
<td></td>
</tr>
<tr>
<td><em>(about 30 adults out of 3 billions in 1980s, and 45 adults out of 4.5 billions in 2010s)</em></td>
<td></td>
</tr>
<tr>
<td>The top 1/(20 million) highest</td>
<td>6.4%</td>
</tr>
<tr>
<td>wealth holders</td>
<td></td>
</tr>
<tr>
<td><em>(about 150 adults out of 3 billions in 1980s, and 225 adults out of 4.5 billions in 2010s)</em></td>
<td></td>
</tr>
<tr>
<td>Average world wealth per adult</td>
<td>2.1%</td>
</tr>
<tr>
<td>Average world income per adult</td>
<td>1.4%</td>
</tr>
<tr>
<td>World adult population</td>
<td>1.9%</td>
</tr>
<tr>
<td>World GDP</td>
<td>3.3%</td>
</tr>
</tbody>
</table>
### Table 2. The return on the capital endowments of U.S. universities, 1980-2010

<table>
<thead>
<tr>
<th>Average real annual rate of return (after deduction of inflation and all administrative costs and financial fees)</th>
<th>Période 1980-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>All universities (850)</td>
<td>8.2%</td>
</tr>
<tr>
<td>incl.: Harvard-Yale-Princeton</td>
<td>10.2%</td>
</tr>
<tr>
<td>incl.: Endowments higher than 1 billion $ (60)</td>
<td>8.8%</td>
</tr>
<tr>
<td>incl. Endowments between 500 millions and 1 billion $ (66)</td>
<td>7.8%</td>
</tr>
<tr>
<td>incl. Endowments between 100 and 500 million $ (226)</td>
<td>7.1%</td>
</tr>
<tr>
<td>dont: Endowments less than 100 million $ (498)</td>
<td>6.2%</td>
</tr>
</tbody>
</table>

Between 1980 and 2010, U.S. universities earned an average real return of 8.2% on their capital endowments, and all the more so for higher endowments. All returns reported here are net of inflation (2.4% per year between 1980 and 2010) and of all administrative costs and financial fees. Sources: see piketty.pse.ens.fr/capital21c.
• Ideal solution: financial transparency, international transmission of bank information, global registry of financial assets, global coordination on wealth taxation, so that we can adapt progressive wealth tax rates on the basis of reliable wealth statistics

• Other ways to redistribution wealth: inflation, expropriation (China, Russia), wars, etc.

• Will the progressive wealth tax happen? The history of wealth and taxation is full of surprises
Marginal tax rate applying to the highest incomes

The top marginal tax rate of the income tax (applying to the highest incomes) has been higher historically in Anglo-saxon countries than in Continental Europe. In the U.S. it dropped from 70% in 1980 to 28% in 1988.

Sources and series: see piketty.pse.ens.
The top marginal tax rate of the inheritance tax (applying to the highest inheritances) has been higher historically in Anglo-saxon countries than in Continental Europe. In the U.S. it dropped from 70% in 1980 to 35% in 2013.

Sources and series: see pike