Accounting for Wealth Inequality Dynamics: Methods, Estimates and Simulations for France (1800-2014)

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This paper presents the authors’ views and should not be interpreted as reflecting those of their institutions
Motivation

- Large disconnect between the study of inequality and macro
  - Macro: national accounts with no distribution information
  - Inequality: surveys and tax data inconsistent with national aggregates

- Multi-country project: Distributional National Accounts (DINA)
  - Provide long-term series on distribution of income and wealth
    - Homogeneous across countries and over time
    - Consistent with National Income and Wealth Accounts
    - Covering all the distribution from bottom to top

- For France: two papers
  - Wealth
  - Income Inequality
Measuring the wealth distribution

• Concept of wealth:
  • Net marketable wealth:
    Non-financial assets + Financial assets - Liabilities

• Five different sources of wealth data and methods
  1. Capitalization method using income tax data
  2. Estate multiplier method using inheritance tax data (available over longer period of time)
  3. Household wealth surveys based upon self-reported information
  4. Annual wealth tax data (usually not available, many tax exempt assets)
  5. Billionaire lists (very uncertain methodology)

• All sources have advantages and drawbacks: they need to be combined
Literature

- Huge literature on historical evolution of wealth distribution:
  - Mainly based on inheritance tax data to recover wealth inequality (mortality multiplier method)
  - Cover France, US, UK and Sweden since 19th century

- Saez-Zucman (2016) used capitalization method to recover wealth inequality in the US
This paper

Research question:
What are the evolution and the determinants of wealth inequality in France?

Methodological contributions:
1. Reconciliation of the different data sources and methods
   - 1970-2014: Mixture of capitalization method and wealth surveys
   - 1800-1970: Estate multiplier Approach

2. For recent periods (1970-2014):
   - Wealth series broken down by age, gender and asset categories
   - Determinants of wealth inequality dynamics
     - inequality of rates of return, saving rates, rates of capital gains and labor income
This paper: Main findings

1. We confirm previous findings on decline of wealth inequality following WWI and WWII
   - Significant decline in the top 10% wealth share from the 1910s to the 1980s
   - Rise of the middle 40% wealth share from the 1910s to the 1980s

2. We are able to better analyse the moderate rise in wealth concentration since early 1980s
   - Moderate rise of wealth concentration since early 1980s with large fluctuations due to asset price movements

3. Steady-state formula for wealth inequality
   - Key forces: unequal labor incomes, unequal rates of return, unequal saving rates
   - Large multiplicative effects in the long run
   - Long run trend might involve steeply rising top wealth shares in the future
   - No “natural law” to explain inequality: institutional and political factors matter
Outline

Long-run unified series for 1800-2014

Detailed results for 1970-2014

Analysing the determinants of steady-state wealth inequality

International comparisons

Conclusion
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Wealth concentration in France, 1800-2014 (wealth shares, % total wealth)

1914-1984: the Fall of the Upper Class, the Rise of the Middle Class

Average net wealth per adult (2014): 197,000 €

1,075,000 €

189,000 €

25,000 €

Top 10% ("Upper Class")
Middle 40% ("Middle Class")
Bottom 50% ("Lower Class")
Top wealth shares in France, 1800-2014 (% total wealth)

Average net wealth per adult (2014): 197,000 €

683,000 €

4,614,000 €
Interpreting the long-run evolution

- No inequality decline before WWI
- Large decline following WWI, WWII and in post-war period
- Main mechanism: Big fall in top capital incomes due to war shocks
  - destruction, depression, inflation, taxation, regulation: rent control and nationalization
    ⇒ Fall in top saving rates
    ⇒ Long-run multiplicative effect on wealth concentration
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Composition of aggregate personal wealth, France 1970-2014

- Deposits
- Financial assets (excl. deposits)
- Business assets
- Housing (net of debt)
Capitalization method

• Data sources
  • Microfiles of income tax returns since 1970

• Methodology
  • Start from each capital income component reported on individual tax returns
  • Compute aggregate rate of return for each asset class $i$
  • Divide observed individual income $y_j^i$ by $r^i$

• Limit
  • Key assumption: Uniform rate of return within asset class
  • The more detailed the asset categories, the more reliable the results
How we deal with non-taxable capital income

- Need to impute owner-occupied housing, life insurance, deposits

- Data used
  - Housing surveys 1970-2010

- Imputation methodology
  - Define groups by age/taxable capital income/taxable labor income
  - For each group, compute in the wealth surveys:
    - the proportion of individuals holding the considered asset
    - the share of total asset owned by the group

Example

Comparison
Wealth concentration in France, 1970-2014

Top 10% (Upper Class)
Middle 40% (Middle Class)
Bottom 50% (Lower Class)
Age-wealth profiles in France, 1970-2012
Wealth concentration by age group, France 1970-2012

- Top 10% (all ages)
- Middle 40% (all ages)
- Bottom 50% (all ages)
- Top 10% (20-39-yr)
- Middle 40% (20-39-yr)
- Bottom 50% (20-39-yr)
Wealth concentration by age group, France 1970-2012

- Top 10% (all ages)
- Middle 40% (all ages)
- Bottom 50% (all ages)
- Top 10% (20-39-yr)
- Middle 40% (20-39-yr)
- Bottom 50% (20-39-yr)
- Top 10% (40-59-yr)
- Middle 40% (40-59-yr)
- Bottom 50% (40-59-yr)
Wealth concentration by age group, France 1970-2012

- Top 10% (all ages)
- Middle 40% (all ages)
- Bottom 50% (all ages)
- Top 10% (20-39-yr)
- Middle 40% (20-39-yr)
- Bottom 50% (20-39-yr)
- Top 10% (40-59-yr)
- Middle 40% (40-59-yr)
- Bottom 50% (40-59-yr)
- Top 10% (60-yr+)
- Middle 40% (60-yr+)
- Bottom 50% (60-yr+)
Top wealth shares in France, 1970-2014 (wealth shares, % total wealth)

Average net wealth per adult (2014): 197,500 €

170,000 €

4,615,000 €
Decomposition of top 1% wealth share (% aggregate wealth)

Top 1% personal wealth per adult: 4,614,000€ (2014)
Decomposition of middle 40% wealth share (% aggregate wealth)

Middle 40% personal wealth per adult: 189,000 € (2014)
Decomposition of bottom 50% wealth share (% aggregate wealth)

Bottom 50% personal wealth per adult: 25,000 € (2014)
Main results for 1970-2014

Moderate rise of wealth concentration since early 1980s with large fluctuations due to asset price movements:

- Inequality boom around 2000 due to stock market boom
- Equalizing impact of housing boom during 2000s (at least for the middle class vs the rich)
- In the absence of this housing price effect, rising top wealth shares in the future
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Equation of wealth accumulation:

Equation of wealth accumulation at time $t + 1$ for the wealth group $p$ (for instance $p =$ top 10% wealth group):

$$W_{t+1}^p = (1 + q_t^p)[W_t^p + s_t^p(Y_{Lt}^p + r_t^p W_t^p)]$$

- $W^p$ is the aggregate wealth for the wealth group $p$, $Y_L^p$ labor income
- $q^p$ is the real rate of capital gain
- $s^p$ is the saving rate, $r^p$ is the rate of return (for group $p$)
- We infer group-level synthetic saving rates $s_t^p$ from the observation of $W_{t+1}^p$, $W_t^p$, $Y_{Lt}^p$, $r_t^p$, $q_t^p$
Steady-state formulas for top wealth shares

From the equation of wealth accumulation, with the same notations as above:

$$W^p_{t+1} = (1 + q^p_t)[W^p_t + s^p_t(Y^p_{Lt} + r^p_t W^p_t)]$$

and assuming $q_t$ is equal to 0 at steady state, we directly derive:

$$sh^p_W = (1 + \frac{s^p r^p - sr}{g - s^p r^p}) \frac{s^p}{s} sh^p_{Y_L}$$

- If $s^p = s$ and $r^p = r$, then $sh^p_W = sh^p_{Y_L}$: wealth inequality = labor income inequality
- but if $s^p > s$ and $r^p > r$, then this can generate large multiplicative effects, and lead to very high steady-state wealth concentration
Labor income inequality by wealth groups

- **Bottom 50%**
- **Middle 40%**
- **Top 10%**
Flow returns by wealth group (before all taxes)
Steady-state top 10% wealth share, 1800-2150 (% total wealth)

Steady-state with 1984-2014 saving rates: 24.5% for top 10%, 2.5% for bottom 90%

Steady-state with 1970-1984 saving rates: 22% for top 10%, 9.5% for bottom 90%
Determinants of steady-state wealth inequality

- Three key forces:
  - unequal labor incomes, unequal rates of return, unequal saving rates
- Inequality in rates of return is persistently high (approximately stable over time)
- Inequality in saving rates increased over the 1970-2014 period
- Large multiplicative effects, especially with long horizon and inheritance
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Wealth concentration: France, US, UK 1900-2014 (wealth shares, %)

- Top 10% (France)
- Top 1% (France)
- Top 10% (US)
- Top 1% (US)
- Top 10% (UK)
- Top 1% (UK)
International comparisons

• French inequality dynamic is representative of a more general form of European pattern
• France and UK vs US:
  • Wealth inequality larger in France and the U.K. than in the U.S. in the early 20th century
  • Wealth inequality larger in the U.S. in recent decades
  • New world effect: U.S very far from its steady-state level
  • Higher labor income inequality ⇒ higher inequality in saving rates ⇒ higher steady-state wealth inequality
• Need to apply our steady-state formula to several countries using homogenous series on income shares, wealth shares and synthetic saving rates to better understand wealth inequality dynamic
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• Reconciliation of data sources to build consistent wealth inequality series.
  • 100% consistent with National Accounts
  • Covering all the wealth distribution

• Main findings:
  • Decline of wealth inequality after WWI and WWII
  • Moderate rise in wealth concentration since early 1980s
  • Determinants of steady-state wealth inequality
    • Key forces: unequal labor incomes, unequal rates of return, unequal saving rates
    • Large multiplicative effects in the long run
APPENDIX
Top 10% share: income vs wealth

Distribution of total income, labor income, capital income and net wealth among adults. Equal-split-adults series (income and wealth of married couples divided by two).
Estate multiplier vs capitalization method: France 1970-2012 (1)
Estate multiplier vs capitalization method: France 1970-2012 (2)
Imputation

• Groups for imputation of owner-occupied housing asset
  • Age split into 10 categories: < 25; 25-30; 31-39, 40-49; 50-54; 55-60; 61-65; 66-70; 71-80; >80
  • For each age group, decomposition by taxable capital income: P0-50, P50-90, P90-95, P95-99, P99-100
  • For each age*capital income group, decomposition by taxable labor and replacement income: P0-25, P25-50, P50-75, P75-90,
Asset composition by wealth level, France 1970

- Housing (net of debt)
- Business assets
- Financial assets (excl. deposits)
- Deposits
Asset composition by wealth level, France 1984

- Housing (net of debt)
- Business assets
- Financial assets (excl. deposits)
- Deposits
Asset composition by wealth level, France 2000

- **Housing (net of debt)**
- **Business assets**
- **Financial assets (excl. deposits)**

The graph shows the asset composition by wealth level in France in 2000, with segments for deposits, business assets, and financial assets excluding deposits.
Asset composition by wealth level, France 2012

- **Housing (net of debt)**
  - P0-10: 2,450 €
  - P10-20: 23,000 €
  - P20-30: 111,000 €
  - P30-40: 198,000 €
  - P40-50: 497,000 €
  - P50-60: 2,368,000 €
  - P60-70: 15,650,000 €

- **Deposits**
  - P0-10: 2,450 €
  - P10-20: 23,000 €
  - P20-30: 111,000 €
  - P30-40: 198,000 €
  - P40-50: 497,000 €
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  - P60-70: 15,650,000 €

- **Financial assets (excl. deposits)**
  - P0-10: 2,450 €
  - P10-20: 23,000 €
  - P20-30: 111,000 €
  - P30-40: 198,000 €
  - P40-50: 497,000 €
  - P50-60: 2,368,000 €
  - P60-70: 15,650,000 €