

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

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Motivation

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

WID Website

[WORLD](#)[BY COUNTRY](#) ▾[DATA](#)

WORLD
WEALTH & INCOME
DATABASE

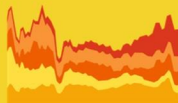
[METHODOLOGY](#) ▾[ABOUT US](#) ▾[NEWS](#)[EN](#) ▾

WORLD VIEW



Compare inequality between countries on an interactive world map

COUNTRY GRAPHS



Follow the evolution of inequality within countries with user-friendly graphs

DATA TABLES

A simple icon of a data table with 4 rows and 3 columns, outlined in yellow.

Download our open-access datasets

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:
 - Lampman (1962), Atkinson and Harrison (1978), Kopczuk and Saez (2004), Piketty, Postel-Vinay and Rosenthal (2006), Bourdieu, Kesztenbaum and Postel-Vinay (2009), Roine and Waldenström (2009)
 - 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
 - Huge difference with Kopczuk-Saez (2004) on recent evolution => Rising debate on validity of capitalization method vs estate multiplier method (Kopczuk (2015), Lundberg and Waldenström (2016))

Literature cont.

- Literature on Calibrated Models of Wealth Distributions
 - Reproduce the level of wealth inequality at a point in time by introducing:
 - Uninsured idiosyncratic shocks to labor earnings and/or asset returns, tastes for savings and bequests, entrepreneurship, preference heterogeneity
 - See among others Castaneda, Diaz-Gimenez and Rios-Rull (2003), De Nardi (2004), Cagetti and De Nardi (2006), Aoki and Nirei (2016), Benhabib, Bisin, and Zhu (2015)
 - Which ingredients matter? Historical evolution and transitional dynamics?

Research question

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

① Methodological issue:

- Reconciliation between different wealth data and national accounts

② Empirical issue:

- Long-term evolution of wealth
- Determinants of wealth inequality dynamic

This paper: 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
- ③ Inheritance data and estate multiplier approach may have become less reliable over time
 - Deterioration of data quality and access
 - Death is increasingly concentrated at high ages (terminal illness spendings, tax planning)
 - ⇒ It becomes more difficult to recover wealth of the living.

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 formulas 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

Outline

Long-run unified series for 1800-2014

Detailed results for 1970-2014

Analysing the determinants of steady-state wealth inequality

Conclusion

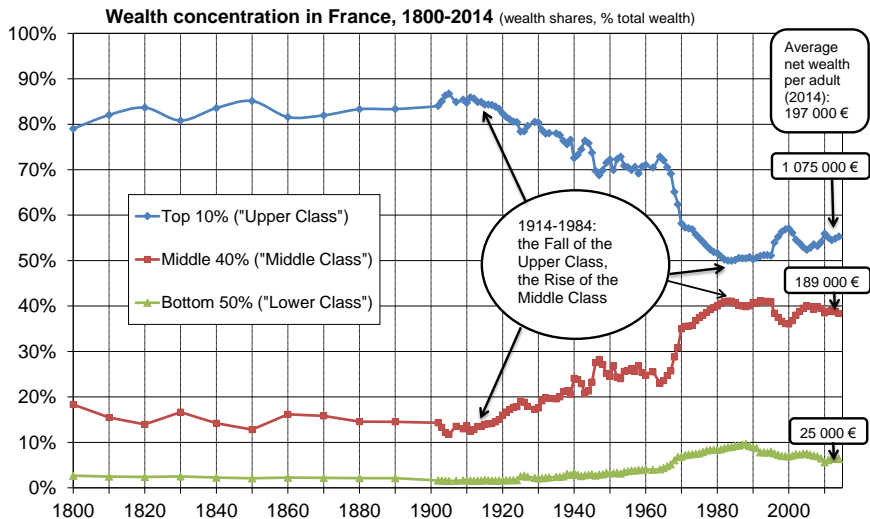
Outline

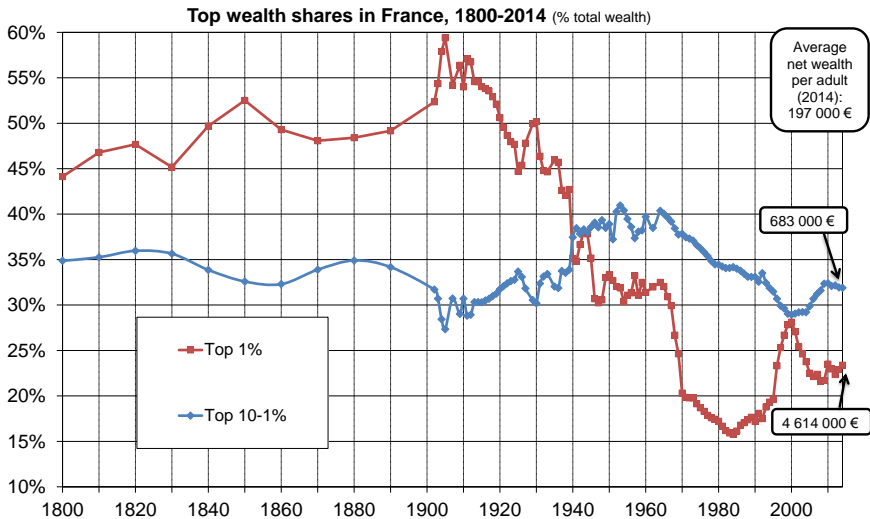
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Interpreting the long-run evolution

- 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

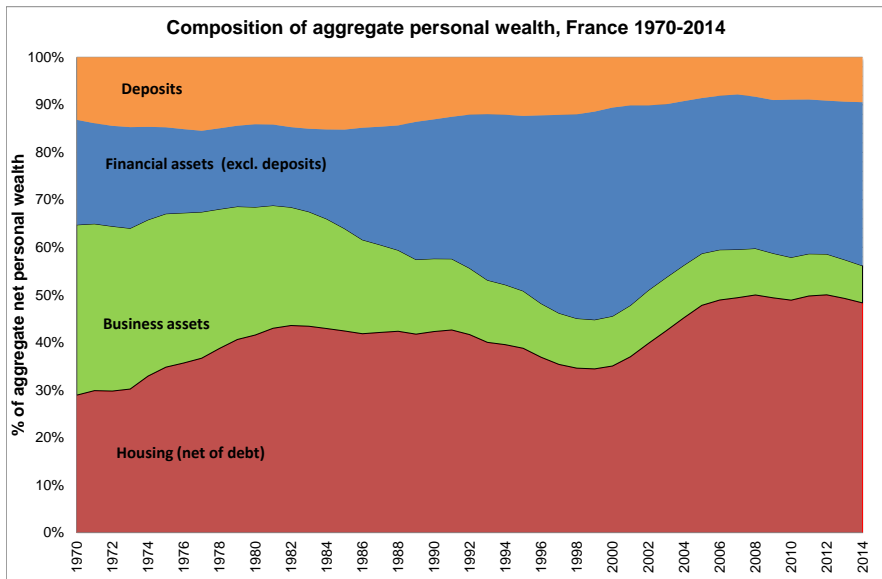
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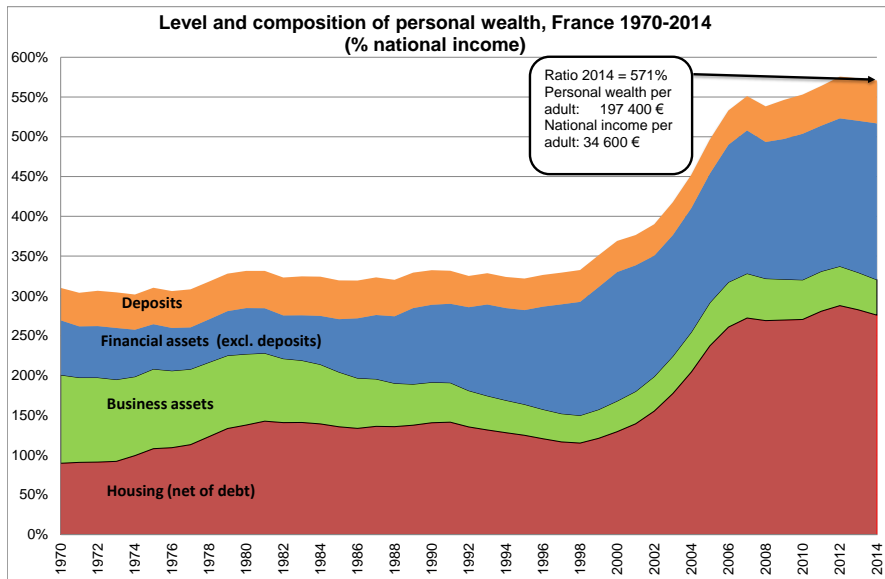
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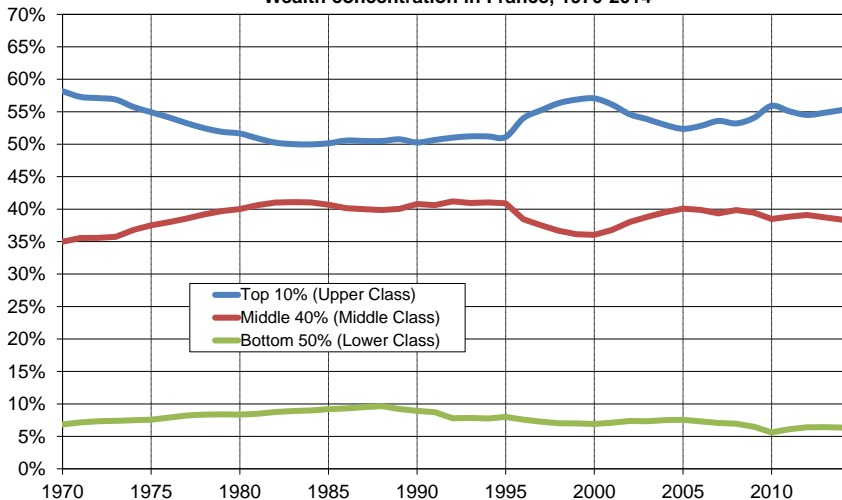
Capitalization method

- 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

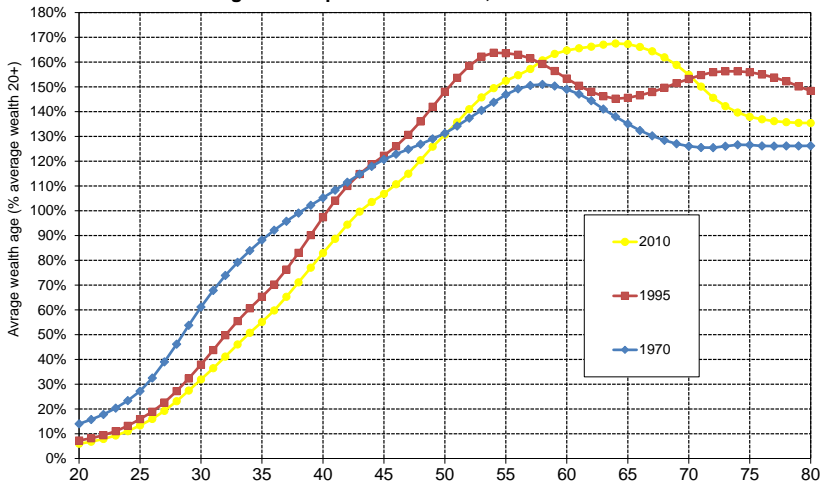
How we deal with non-taxable capital income

- Need to impute owner-occupied housing, life insurance, deposits
- Data used
 - Wealth surveys 1986, 1992, 1998, 2004 and 2010
 - 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

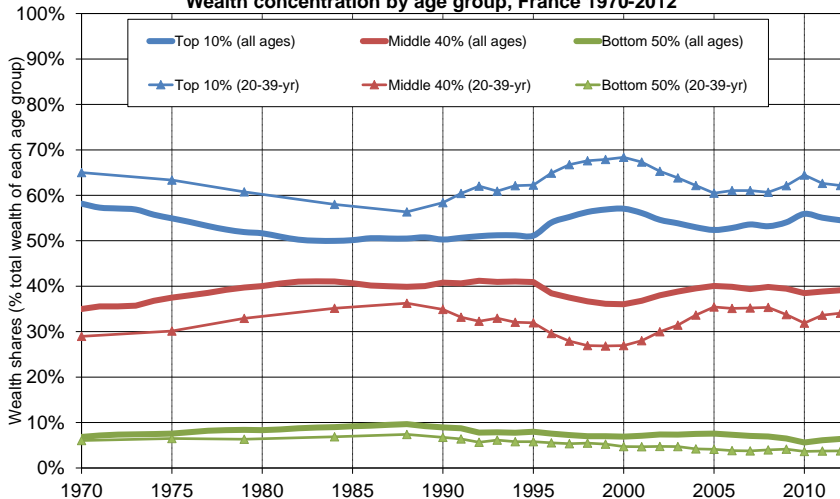
▶ Example

Wealth concentration in France, 1970-2014

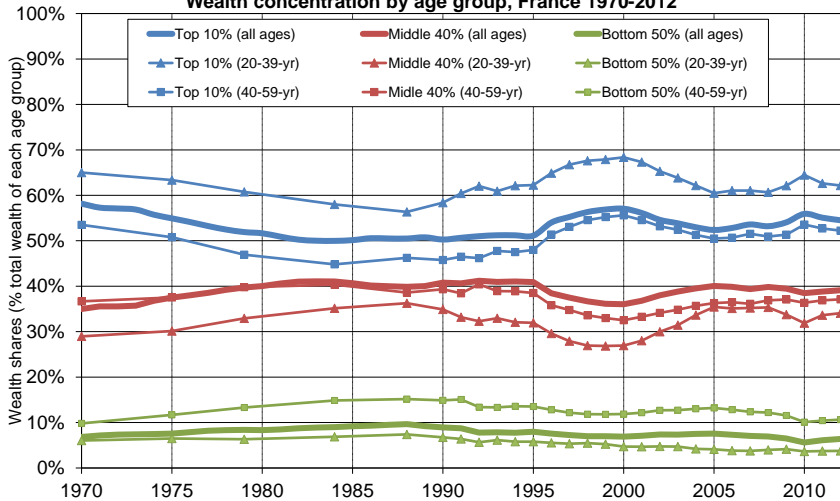
Age-wealth profiles in France, 1970-2012



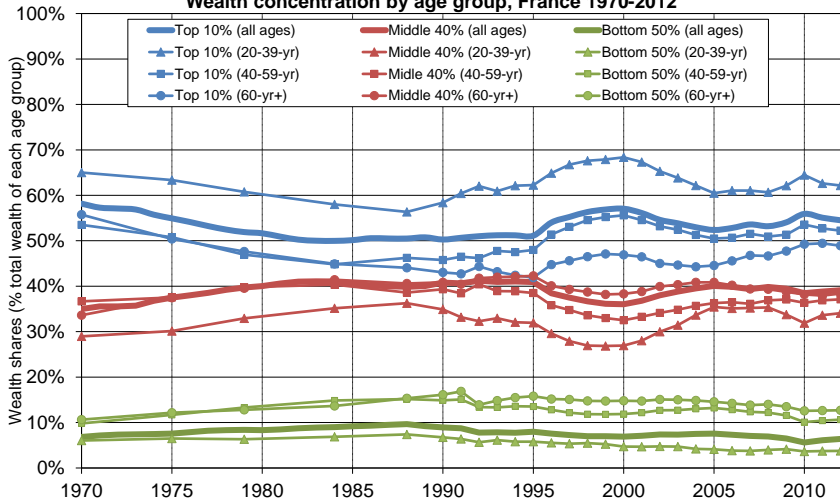
Wealth concentration by age group, France 1970-2012

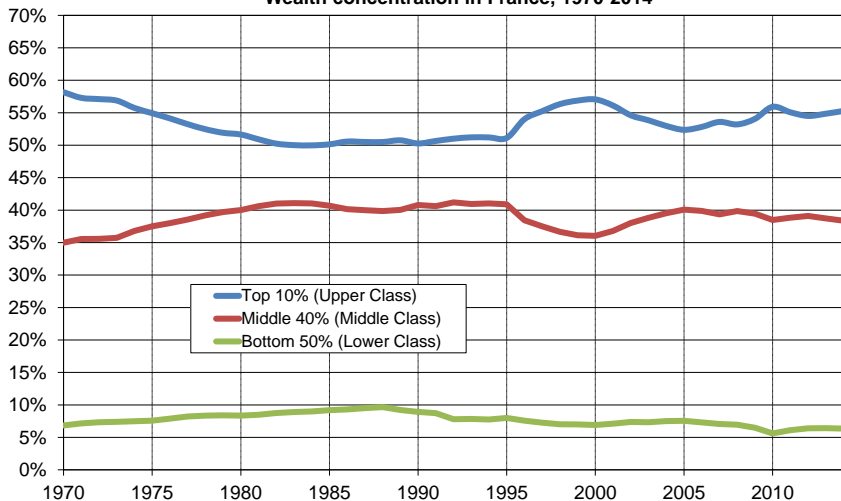


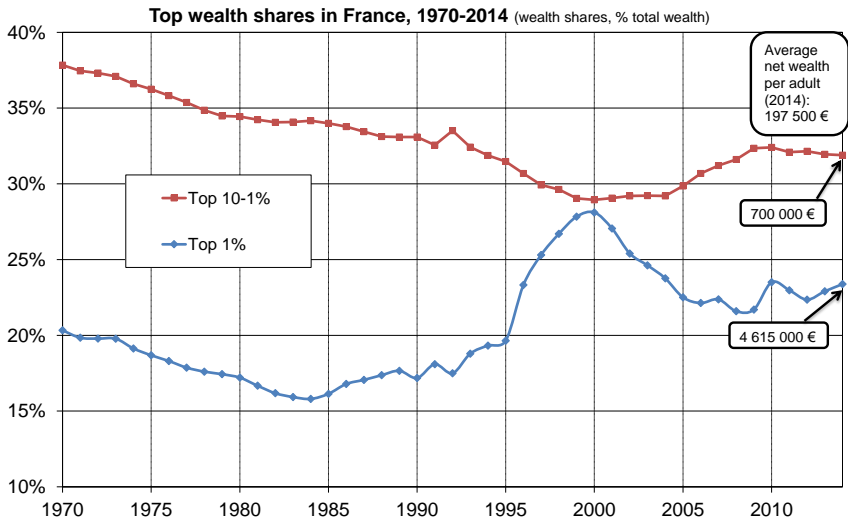
Wealth concentration by age group, France 1970-2012

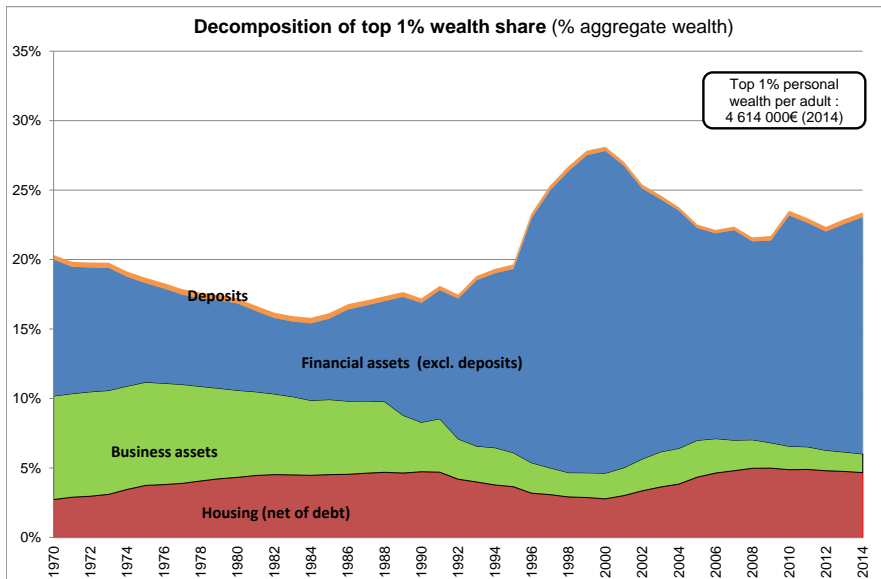


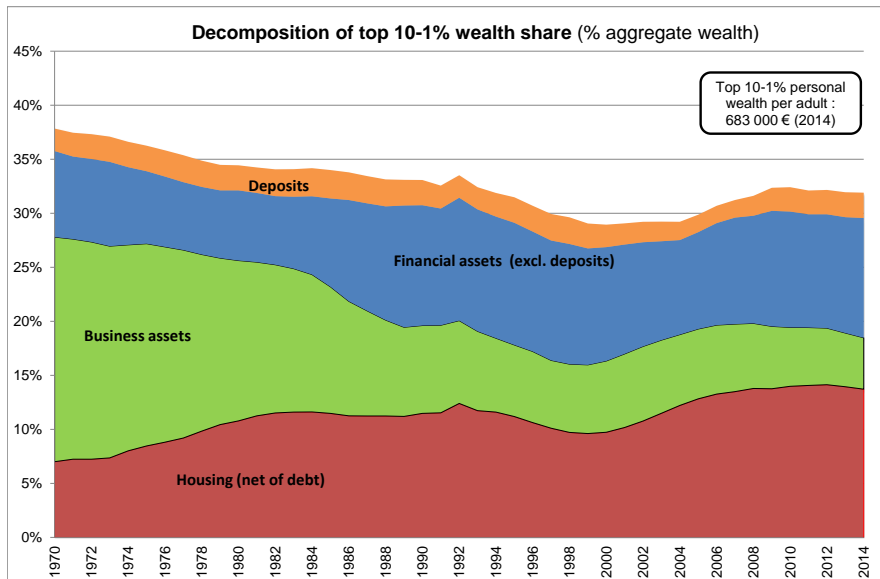
Wealth concentration by age group, France 1970-2012

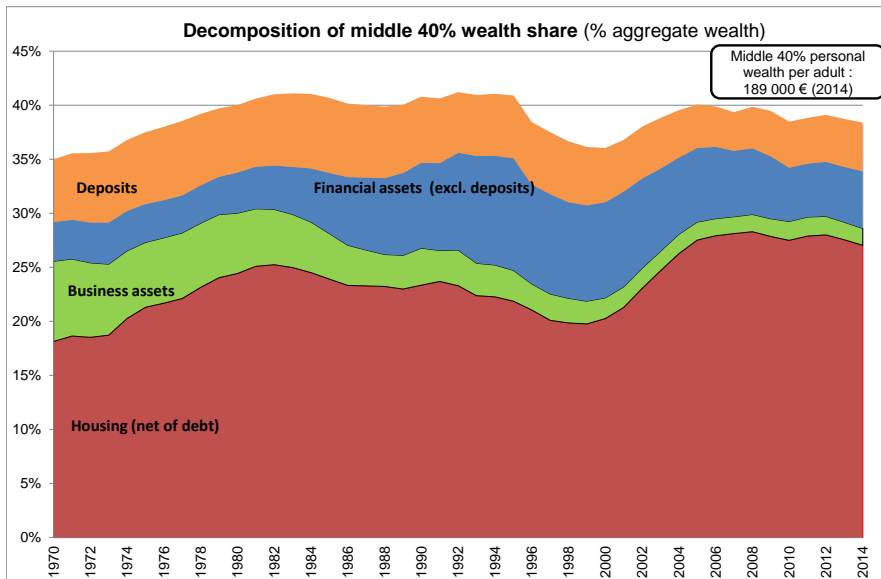


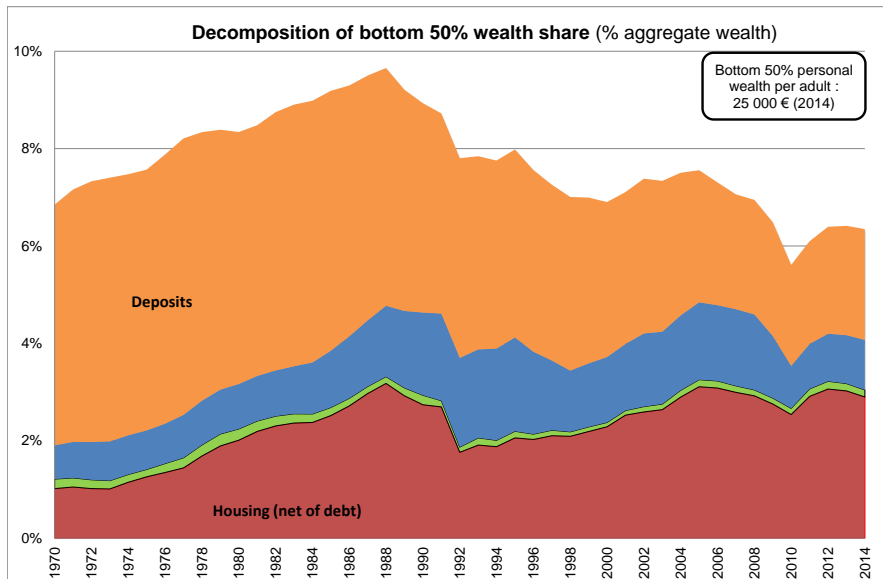
Wealth concentration in France, 1970-2014



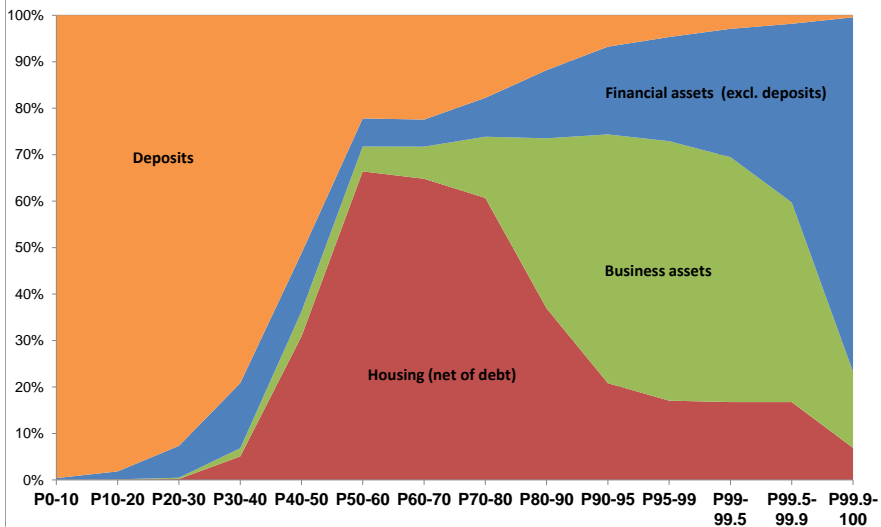


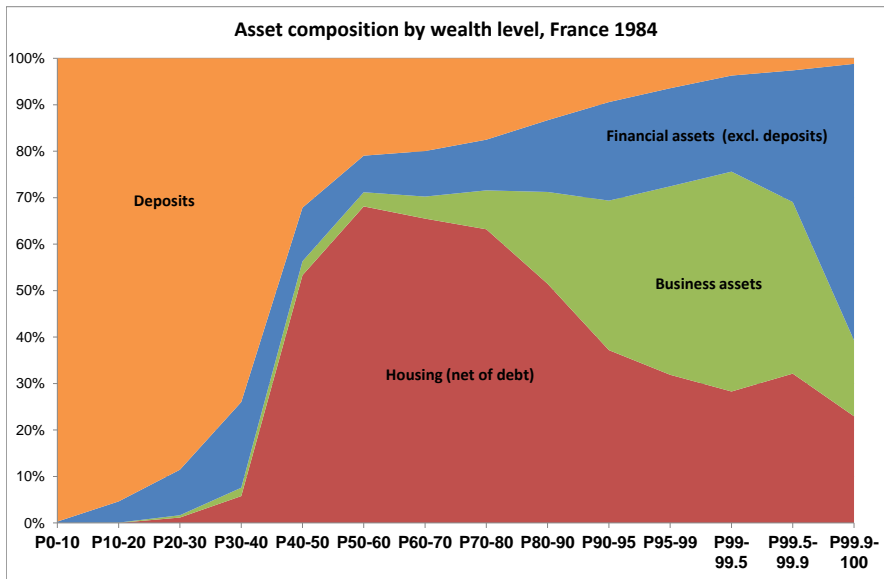


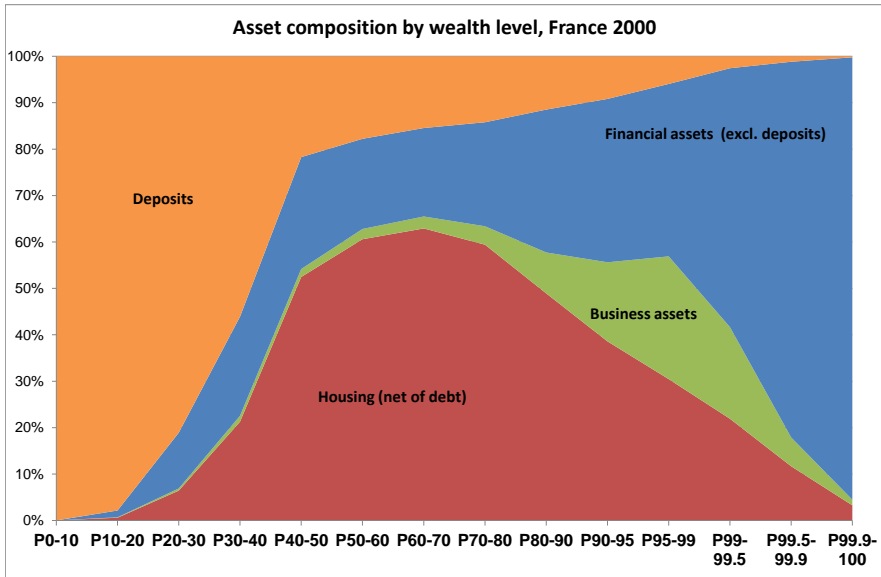




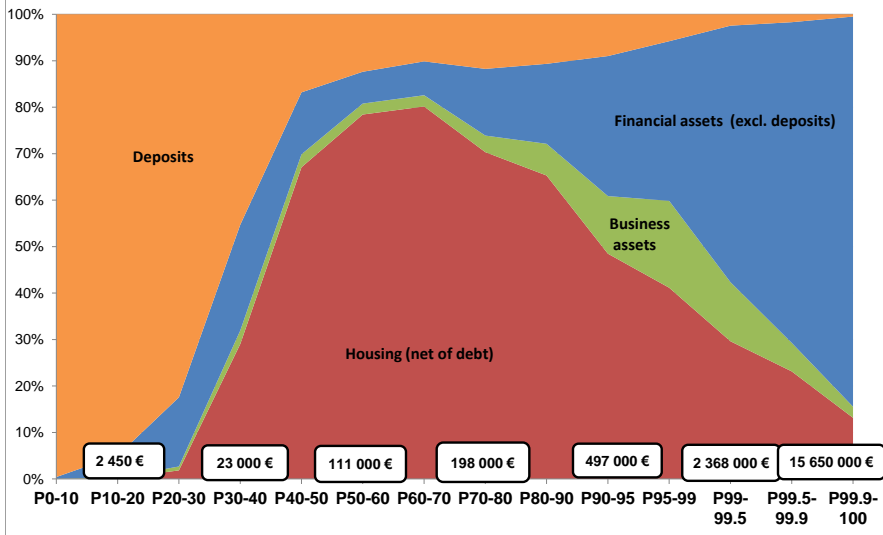
Asset composition by wealth level, France 1970







Asset composition by wealth level, France 2012



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

Simulation of top 1% wealth share

- Question: With constant capital gains over the period, what would have been the evolution of wealth inequality?
- Answer: There would have been a gradual increase of wealth inequality.
 - Rising wealth concentration due to large inequality of saving rates and rates of return

Simulation of top 1% wealth share cont.

- Accumulation equation of asset A from wealth group i at time $t + 1$:
 - s : saving rate (in % of wealth), p : inflation rate, q : real rate of capital gain

$$A_{t+1}^i = (1 + p_t)(1 + q_{t,A})(1 + s_{t,A}^i)A_t^i$$

$$\Rightarrow A_T^i = \prod_{t=t_0+1}^{t=T} (1 + p_t)(1 + q_{t,A})(1 + s_t^i)A_{t_0}^i$$

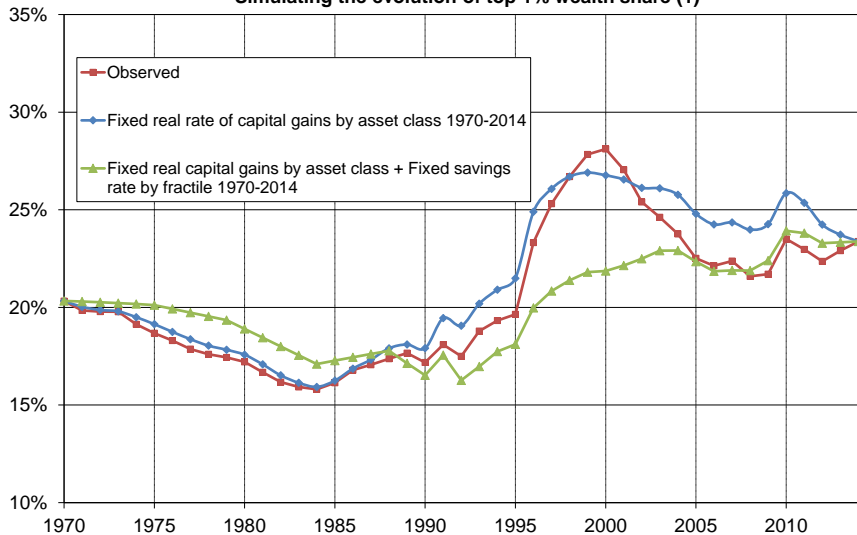
- Fixed real capital gains by asset class:

$$A_T^i = \prod_{t=t_0+1}^{t=T} (1 + p_t)(1 + \bar{q}_A)(1 + s_{t,A}^i)A_{t_0}^i$$

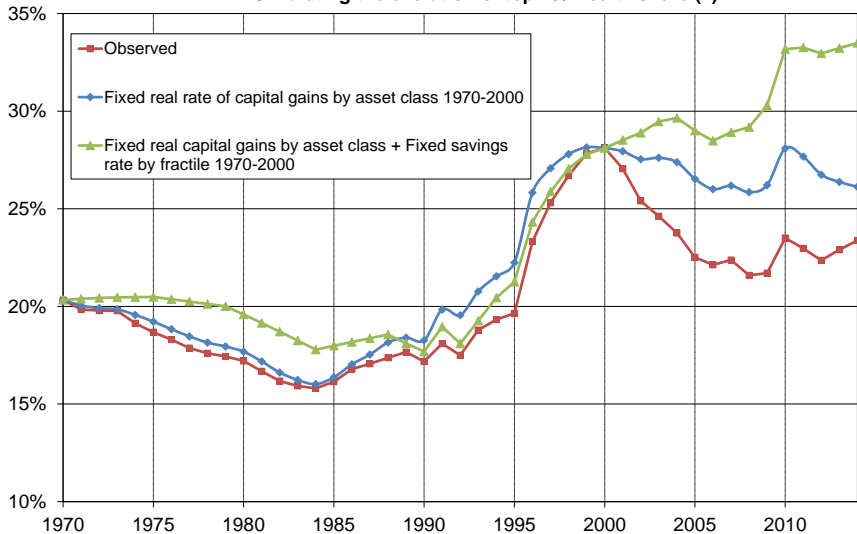
- Fixed real capital gains by asset class + Fixed saving rate by wealth group:

$$A_T^i = \prod_{t=t_0+1}^{t=T} (1 + p_t)(1 + \bar{q}_A)(1 + \bar{s}_A) \frac{(1 + s_{t,A}^i)}{(1 + s_{t,A})} A_{t_0}^i$$

Simulating the evolution of top 1% wealth share (1)



Simulating the evolution of top 1% wealth share (2)



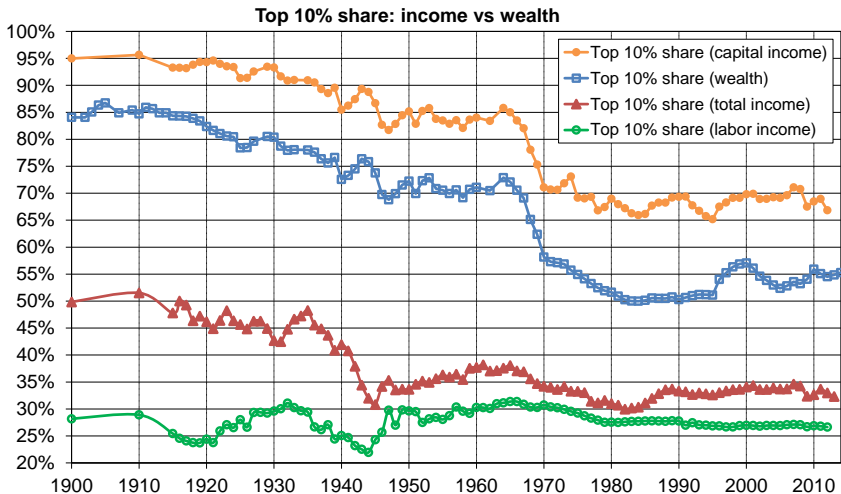
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Distribution of total income, labor income, capital income and net wealth among adults.
 Equal-split-adults series (income and wealth of married couples divided by two).

Equation of wealth accumulation:

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

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

- 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 after-tax rate of return (for group p)
- **We infer group-level synthetic saving rates s_t^p from the observation of W_{t+1}^{p+1} , W_t^p , Y_{Lt}^p , r_t^p , q_t^p**

Steady-state formulas for top wealth shares

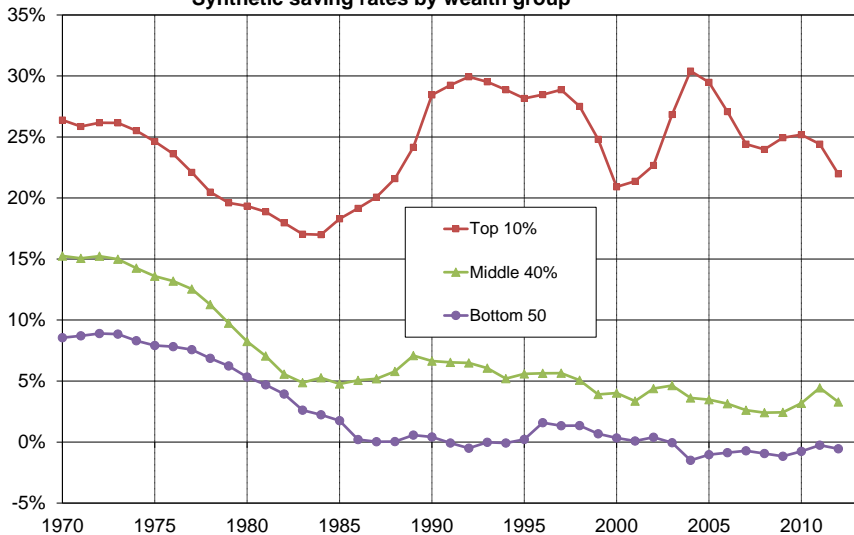
From the equation of wealth accumulation, with the same notations as above:

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

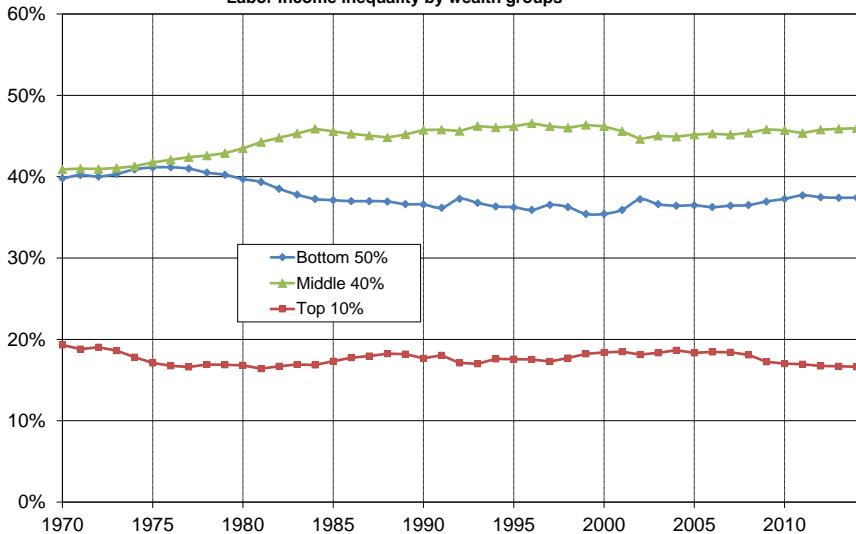
and assuming q_t has to be equal to 0 at steady state, we directly derive:

$$sh_W^p = \left(1 + \frac{s^p r^p - sr}{g - s^p r^p}\right) \frac{s^p}{s} sh_{Y_L}^p$$

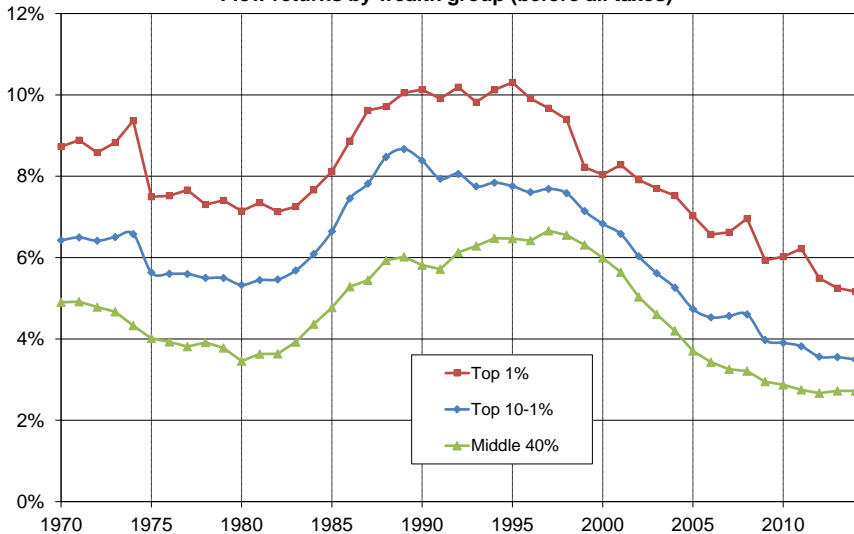
- If $s^p = s$ and $r^p = r$, then $sh_W^p = sh_{Y_L}^p$:
wealth inequality = labor income inequality
- but if $s^p > s$ and $r^p > r$, then this can generate large multiplicative effects, and lead to **very high steady-state wealth concentration**

Synthetic saving rates by wealth group

Labor income inequality by wealth groups

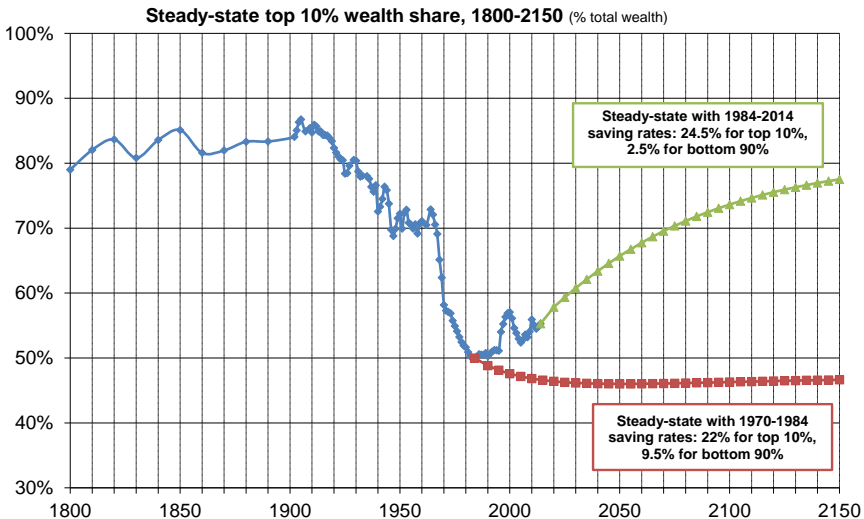


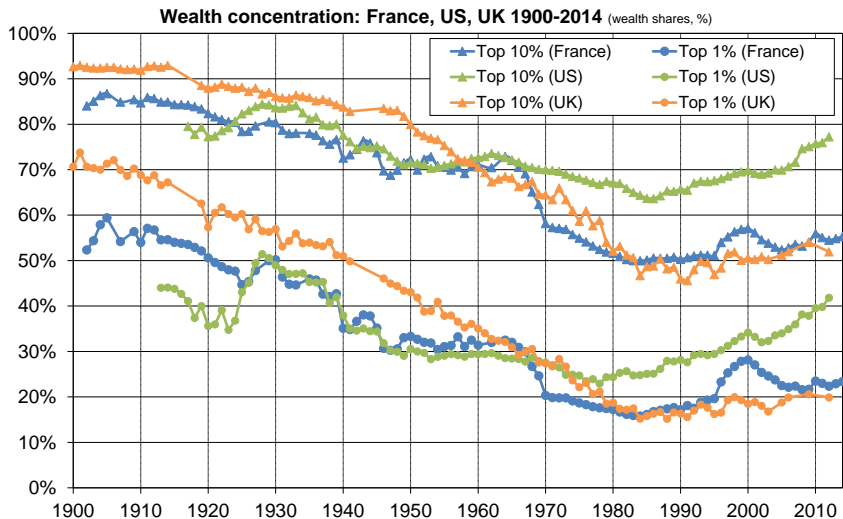
Flow returns by wealth group (before all taxes)



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





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: population was still growing very fast in the U.S. \Rightarrow very far from its steady-state level
 - Higher labor income inequality \Rightarrow higher inequality in saving rates \Rightarrow 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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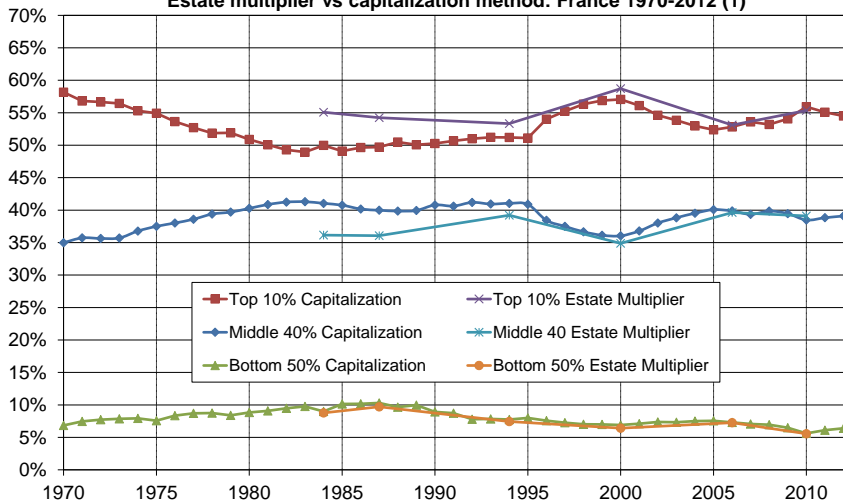
- Reconciliation of data sources to build consistent wealth inequality series.
 - 100% consistent with National Accounts
 - Covering all the wealth distribution
- Main findings:
 - Decline of wealth inequality after WWI and WWII
 - Moderate rise in wealth concentration since early 1980s
 - Determinants of steady-state wealth inequality
 - Key forces: unequal labor incomes, unequal rates of return, unequal saving rates
 - Large multiplicative effects in the long run

Outline

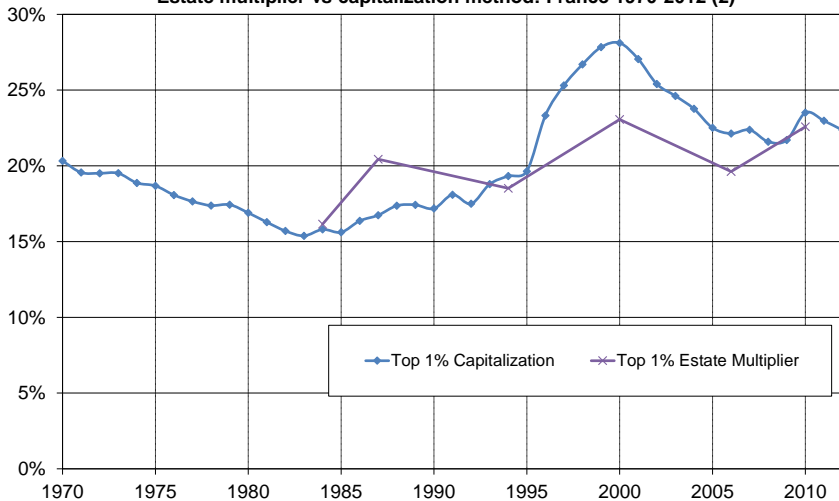
Appendix

BACK UP SLIDES

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,

 Back