The Distribution of US Wealth, Capital Income and Returns since 1913

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Is rising inequality purely a labor income phenomenon?

Income inequality has increased sharply since the 1980s yet surveys show modest increase in wealth concentration

One possible explanation: rising inequality is a pure labor income phenomenon

- Rise in top incomes due to top wage earners/entrepreneurs only
- The working rich may not have had enough time to accumulate
- Or they may have low saving rates, face very high tax rates, give a lot to charities, have low returns on their assets ... preventing them from accumulating large fortunes

⇒ Is this view well-founded? Our answer is “No”
We find that capital inequality is also rising, albeit only at the very top so far.

Based on new estimates of wealth and capital income distributions, we find:

- Large increase in top 0.1% wealth share since 1980s (top 0.1% = wealth above $20 million today)

- Even larger proportional increase for top 0.01% (top 0.01% = wealth above $100 million today)

- Rising top capital income shares

- No increase below the top 0.1%

At very top, US back to early 20th century wealth concentration levels.
Back to the roaring 1920s

Top 0.1% wealth share in the U.S., 1913-2012
No increase in wealth inequalities below top 0.1% so far

Top wealth shares: decomposing the top 1%

- Top 0.01%
- Top 0.1%-0.01%
- Top 0.5%-0.1%
- Top 1%-0.5%
We develop a new technique to estimate the distribution of wealth

We capitalize income tax returns
   Use IRS data on individual dividends, interest, rents...
   Compute rates of return by asset class (Flow of Funds / NIPA)
   Combine income and rates of return to obtain wealth

The capitalization method works for foundations
   For which we observe both income and wealth

We are not the first but we have better data:
   King (1927), Stewart (1939), Atkinson & Harrison (1978), Greenwood (1983)
   They did not have micro data, or no breakdown by category of income, or only provided estimates for some years in isolation
Other methods obtain conflicting results and face data limitations.

**Forbes rankings**: large increase in wealth concentration, but methodological issues.

**Surveys**: SCF shows increase in top 10%, less in top 1%. Every 3 years, starts in 1980s, difficult to capture very top accurately (2007 SCF: 4,422 itw, of which top 0.01% ≈ 100 with response rate of ≈ 10% ⇒ large s.e.),

**Estate tax**: No increase in top 1% share since 1980s. But only 1/1,000 decedents pays tax today, val. discounts, uncertainty on mortality multipliers (pb. for young wealth).

⇒ Capitalization method only way to have long run, yearly series covering the full distribution including the very top.
A consistent study of income and wealth

Capitalization method forces us to jointly study distrib. of:

1. Total net household wealth at market value $W$
2. Total capital income in the economy $Y_K$
   (memo: national income $Y = Y_K +$ labor income $Y_L$)

The rate of return on wealth

- Pure yield (with retained earnings) on wealth $r = Y_K/W$
- Total return on wealth $r + q = $ pure yield $+$ real price effects
  ($q =$ net realized plus unrealized capital gains)

\[\Downarrow\]

Well-defined, comprehensive, and coherent income and wealth concepts $+$ micro/macro consistency
Outline of the talk

1) Aggregate wealth, capital income, and rates of returns
2) The capitalization method
3) The distribution of wealth
4) Decomposing wealth accumulation: the distribution of saving rates and rates of return
5) Conclusion
I- Aggregate wealth, capital income, and rates of returns in the U.S. over the last century
Aggregate income and wealth: concepts and data

Wealth

\[ W = \text{Total assets minus liabilities of households at market value} \]

Excludes durables, unfunded DB pensions, non-profits

Flow of Funds since 1945


Income

NIPA since 1929

Kuznets (1941) for 1919-1929 and King (1930) before
Capital is back in the U.S.

Key facts about U.S. capital:

Long-run U-shape pattern in wealth-to-income ratio $\beta = W/Y$
(450% early 20c, ↓ 300% mid-20c, ↑ 450% today and rising fast)

Long-run U-shape pattern in the capital share $\alpha = Y_K/Y$
(30% early 20c, ↓ 25% mid-20c, ↑ 30% today and rising fast)

With $\beta = 450\%$ and $\alpha = 30\%$ then yield $r = \alpha/\beta = 6.66\%$
(pre-tax; with tax rate $\tau \approx 33\%$, after tax yield $r(1 - \tau) \approx 4.5\%$)

Total return $r + q \approx r$ in the long run
(but huge short run volatility of $q$ and large diff. across assets)
The composition of household wealth in the U.S., 1913-2013

- Housing (net of mortgages)
- Sole proprietorships & partnerships
- Currency, deposits and bonds
- Equities
- Pensions

A U-shaped wealth-income ratio
A U-shaped capital income share

The composition of capital income in the U.S., 1913-2013

- Housing rents (net of mortgages)
- Noncorporate business profits
- Net interest
- Corporate profits
- Profits & interest paid to pensions
Returns volatility is back

Yield and total return on U.S. private wealth 1913-2013

Total return = pure yield + asset price effect

Pure yield = capital income (including retained earnings) / wealth
In the long run pure price effects tend to wash out

Yield and total return on U.S. private wealth 1913-2013
(decennial averages)

Total return = pure yield + asset price effect
II- The capitalization method
To obtain wealth, we multiply reported capital income by inverse of rate of return.

**How the capitalization technique works:**

Start from capital income reported on individual tax returns.

Compute aggregate capitalization factor for each asset class (Flow of Funds).

Multiply each individual income component by aggregate capitalization factor of corresponding asset class.

Simple idea, but lot of care needed in reconciling tax with Flow of Funds data.

**Key assumption:** constant return within asset class

Need detailed income categories to obtain reliable results.
Key data source: income tax returns

Consistent, annual, high quality data since 1913:
Composition tabulations by size of income 1913-
IRS micro-files with oversampling of the top 1962-
Various additional IRS published stats (estates, IRAs, trusts, foundations)

Detailed income categories:
Dividends, interest (+ tax exempt since 1987), rents, unincorporated business profits (S corporations, partnerships, sole prop.), royalties, realized capital gains, etc.

A lot of income “flows to” individual income tax returns
Mutual funds, S corporations, partnerships, holding companies...
How we deal with non-taxable income

Pensions

Published IRS data on market-value of IRAs ($\approx 30\%$ of pension wealth)

Imputations for other forms of pension wealth (based on wages & pension distributions)

Owner-occupied housing

Property tax paid

Mortgage interest paid

Only matters for top 10% but irrelevant for top 1% and above, because pensions and housing very small there
How we deal with avoidance and evasion

**Tax avoidance:**

Systematic reconciliation exercise with national accounts to identify potential gaps in tax data

E.g., trust income → imputations on the basis of distributions (Retained trust inc. ≈ 2% of household capital income)

**Tax evasion:**

Third-party reporting means all dividends and interest earned through domestic banks well declared

Problem with offshore wealth

If anything increases the trend in rising wealth inequalities

Attempt at quantifying this issue by using time series estimates of offshore wealth in Switzerland [in progress]
Is the return constant within asset class?

Two potential issues:

Maybe the very rich have higher equity/bond returns (e.g., better at spotting good investment opportunities) → level bias

Maybe this differential has increased since the 1970s (e.g., due to financial globalization/innovation) → trend bias

⇓

Two checks show that return within asset class is flat and has remained flat
Check 1: No evidence that the wealthy have higher returns within asset class.
The very rich did collect a lot of dividends in the 1970s

Dividend yield by wealth class in 1976
(matched micro estate and income tax data)

Fractiles of the distribution of net wealth at death:
- P90-95
- P95-99
- P99-99.5
- P99.5-99.9
- P99.9-99.99
- P99.99-100
Check 2: The capitalization method works for foundations

How we check the validity of the capitalization method with foundations data:

Use publicly available, quasi-exhaustive IRS micro-data

Micro-files include information on wealth at market value and income

Apply same rates of returns & capitalization technique as for individuals

(Memo: foundation wealth = 0.8% of household wealth mid-1980s, ↑ 1.2% today)

By capitalizing foundation income we are able to reproduce the correct foundation wealth distribution
The capitalization method works for foundations

Top foundations wealth shares: observed (from balance sheet data) vs. estimated (by capitalizing income)

% of foundation net wealth

Top 1% (observed)
Top 1% (estimated by capitalizing income)
Top 0.1% (observed)
Top 0.1% (estimated by capitalizing income)
III- The US Wealth Distribution, 1913-2012
Wealth inequality is making a comeback

Main long-run trends in the distribution of wealth:

Long run U-shaped evolution for the very rich
(top 0.1%: >$20 million today)

Long run L-shaped evolution for the rich
(top 1% to 0.1%: btw $4 million and 20 million today)

Long-run ∩ for the middle-class
(top 50% to 90%: less than $500K today)

(Memo: Bottom 50% always owns ≈ 0 net wealth)
Wealth has always been very concentrated

Top 10% wealth share vs. bottom 90% in the U.S., 1917-2012
The top 10% is climbing back
Top 1% has gained more than top 10%

Top 1% wealth share in the U.S., 1913-2012
The middle rich are losing ground

Top 10-1% wealth share in the U.S., 1917-2012
Top 1% surge is due to the top 0.1%
Almost no recovery for the merely rich

Top 1-0.1% wealth share in the U.S., 1913-2012
Top 0.01% share: × 4 in last 35 years

Composition of the top 0.01% wealth share, 1913-2012

- Other
- Equities
- Fixed income claims

% of net household wealth
The rise and fall of middle-class wealth

Composition of the bottom 90% wealth share

- Pensions
- Business assets
- Housing (net of mortgages)
- Equities & fixed claims (net of non-mortgage debt)
Findings are robust to different methodological choices

Robustness checks:

Different treatment of capital gains
  Capitalizing dividends only (Bill Gates world)
  Capitalizing dividends plus capital gains (Warren Buffet world)
  Capitalizing dividends plus capital gains for shares but not ranking (the best of both worlds)

Allowing for bond yield rising with wealth

Different imputations for pension wealth

⇓

All show wealth inequalities rising fast at the very top, but not below the top 0.1%
IV- Decomposing Wealth Accumulation: The Distribution of Rates of Returns and Saving Rates
What is driving the dynamics of the wealth distribution?

Wealth accumulation can always be written:

\[ W_{t+1} = W_t \cdot [1 + r \cdot (1 - \tau_K) + q] + Y_L \cdot (1 - \tau_L) - C \]

Forces potentially pushing toward more wealth concentration:

- Pre-tax rate of return \( r + q \) rising with wealth
- Tax rates on capital \( \tau_K \) and labor \( \tau_L \) going down
- Saving rates rising with wealth

\[ \downarrow \]

In what follows, estimates of saving and rates of returns by wealth group
We construct new estimates of saving rates and returns by wealth group

Returns:
Yields and price effects by asset class from national accounts
Combined with wealth composition of different groups
For pre-tax $r$: needs incidence assumptions

Saving rates:
Compute synthetic saving rates by wealth group
Using changes in the market value of wealth and capital gains/losses by wealth group: $W_{t+1} = (Q_{t+1}/Q_t) \cdot (W_t + S_t)$

We have income, wealth, saving & returns by wealth group
The role of saving and returns differentials has changed over time

1913-1929: Saving rates and returns $r + q$ both sharply rising with wealth $\rightarrow$ explosive inequality dynamics

1929-1986: Major shocks on asset prices $q$ affecting the rich disproportionately and highly progressive capital taxes $\rightarrow$ compression

1986-2013: 0 saving at the bottom and high $S$ at the top $\rightarrow$ rising wealth concentration

Higher pre-tax returns for rich today, but differential lower than 1 century ago bc. democratization of equities through pensions

$\downarrow$

Three distinct periods
### Decomposition of wealth growth rate

<table>
<thead>
<tr>
<th>Real growth rate of wealth</th>
<th>Savings-induced wealth growth rate</th>
<th>Real rate of capital gains</th>
<th>Growth rate of number of families</th>
<th>Real growth rate of wealth per family</th>
<th>Private saving rate (personal + retained earnings)</th>
<th>Total pre-tax rate of return</th>
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<tbody>
<tr>
<td></td>
<td>$g_w$</td>
<td>$g_{ws} = S/W$</td>
<td>$q = (1 + g_w) / (1 + g_{ws}) - 1$</td>
<td>$n$</td>
<td>$g_{wf}$</td>
<td>$s = S/Y$</td>
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<td><strong>1917-1929</strong></td>
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<td>All</td>
<td>3.8%</td>
<td>2.7%</td>
<td>1.0%</td>
<td>2.0%</td>
<td>1.8%</td>
<td>10%</td>
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<tr>
<td>Bottom 90%</td>
<td>1.3%</td>
<td>0.1%</td>
<td>1.2%</td>
<td>-0.6%</td>
<td>0%</td>
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<tr>
<td>Top 10%</td>
<td>4.4%</td>
<td>3.5%</td>
<td>0.9%</td>
<td>2.4%</td>
<td>24%</td>
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<tr>
<td>Top 1%</td>
<td>5.1%</td>
<td>4.1%</td>
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<td><strong>1929-1986</strong></td>
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<td>Bottom 90%</td>
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<td><strong>1986-2012</strong></td>
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<td>Bottom 90%</td>
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<td>Top 10%</td>
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<td>16%</td>
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<td>Top 1%</td>
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<td>3.5%</td>
<td>1.4%</td>
<td>3.4%</td>
<td>26%</td>
<td>26%</td>
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The bottom 90% massively dis-saved in the decade preceding the crisis.
The rich save more as a fraction of their income, except in the 1930s when there was large dis-saving through corporations. NB: The average private saving rate has been 9.8% over 1913-2013.
Pre-tax rates of returns rise with wealth

Pre-tax return on wealth by wealth group
1986-2012 average

- Real price effects
- Pure yield
Post-tax rates of returns are the same across wealth groups today

Note: the average post-tax total return on wealth has been 5.5% over 1990-2012
Post-tax rates of returns used to decline with wealth

Note: the average post-tax total return on wealth has been 3.5% over 1960-1980
Rates of returns rise with wealth: the case of foundations

Return on foundation wealth, 1985-2010 average
Return includes realized + net unrealized capital gains
V- Conclusion
A first step toward DINA

We are constructing new, consistent series on the distribution of wealth $W$ and capital income $Y_K$

$Y_K$ is about 1/3 of national income $Y$

Next step: distribution of $Y_L$ so as to obtain the full distribution of national income $Y = Y_K + Y_L$

Will make it possible to break GDP growth by fractile, before and after-tax, based on a representative microfile with individual-level income and wealth consistent with macro aggregates

$\equiv$ distributional national accounts (DINA), reconciling macro and inequality studies
There is a need for more data

Using additional data would enable us to refine our estimates:

E.g., matched property and individual income tax data

Limited additional administrative data collection effort could have high value:

401k sending account balances (and not only IRAs)

Mortgages outstanding

Market value of portfolio securities on forms 1099

Purchases and sales of securities (→ saving)

⇓

All of this necessary to obtain fully accurate distributional national accounts
Supplementary Slides
Wealth categories definition

**Equities:** corporate equities, including S corporation equities, and money market fund shares (treated as dividend-paying for income tax purposes)

**Fixed claims:** currency, deposits, bonds, and other interest-paying assets, net of non-mortgage debts

**Business assets:** sole proprietorships, farms (land and equipment), partnerships, intellectual property products

**Housing:** owner- and tenant-occupied housing, net of mortgage debt

**Pensions:** funded pension entitlements, life insurance reserves, IRAs. Excludes social security and unfunded defined benefit pensions
What tax data miss

From reported to total capital income, 1920-2010

- Dividends, interest, rents & profits reported on tax returns
- Imputed rents
- Retained earnings
- Income paid to pensions & insurance
- Non-filers & evasion
- Corporate income tax
- Didivends, interest, rents & profits reported on tax returns
Most trusts generate income taxable at the individual level.
Results robust to alternative treatment of pensions, capital gains, bond returns

Top 0.1% wealth share, robustness checks

- Top 0.1% Baseline
- Top 0.1% KG capitalized
- Top 0.1% KG not capitalized
- Top 0.1% pensions proportional to pension distributions
- Top 0.1% higher bond return for the rich

Our top 10% wealth share is consistent with SCF
Estate tax returns fail to capture rising top wealth shares

Top 1% Wealth Shares: Comparing Estimates

- Capitalized Incomes (Saez-Zucman)
- Estates (Kopczuk-Saez and IRS)
- SCF (Kennickell)
Our estimate for top 0.01% is consistent with Forbes rankings.
The concentration of declared capital income is rising fast.
Internal IRS data could be used to refine our estimates:

Value of all IRAs available at individual micro level (30% of all pensions)

Value of DB and 401(k) pensions could be estimated from employer and past contributions

Value of homes could be estimated using geo-code and Zillow

Value of businesses (partnerships and S-corps) could be estimated by matching with business returns balance sheets

Date of birth data to compute wealth distributions by age

Date of death data to compute mortality rates by wealth and improve estate multiplier estimates
401k reporting of account balances (and not only IRAs)
Market/assessed value of real estate on property tax bills
Mortgages outstanding on form 1098
Market value of accounts and portfolio securities on forms 1099
Purchases and sales of securities (→ saving)

This would allow to obtain consistent income, wealth, and savings information at the micro-level

Foundations or charitable organizations already report all this information