Social Security and Trends in Inequality

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Motivation – Top 1% wealth share
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Is inequality as bad as in 1920?
Motivation – Top 1% wealth share

Is inequality as bad as in 1920?

Social Security, Unemployment Insurance

Expansion of Social Security

Medicare, Medicaid
This Paper

• Compute aggregate Social Security wealth
  – Present value of future benefits, net of future taxes
  – Based on Survey of Consumer Finances (SCF) for retirees
  – Using Monte Carlo simulations for working households
This Paper

- **Compute aggregate Social Security wealth**
  - Present value of future benefits, net of future taxes
  - Based on Survey of Consumer Finances (SCF) for retirees
  - Using Monte Carlo simulations for working households

- **Distribute aggregate Social Security wealth between bottom 90% and top 10%**
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- **Compute aggregate Social Security wealth**
  - Present value of future benefits, net of future taxes
  - Based on Survey of Consumer Finances (SCF) for retirees
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- **Distribute aggregate Social Security wealth between bottom 90% and top 10%**

- **Recompute the evolution of top wealth shares between 1989-2016**
Key finding – Top 1% wealth share

Including Social Security
How Does Social Security Work?
How Does Social Security Work?

- **Taxes**
  - 12.4% payroll tax: 10.6% to old-age program
    (1.8% to disability insurance)
  - Up to cap (2019 $132,900)
How Does Social Security Work?

• Taxes
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• Benefits
  1. Adjust past taxable earnings for inflation and real wage growth
  2. Take average of the best 35 years (AIYE)
  3. Apply benefit formula:
     – 90% of AIYE below first bend point (2019: $11,112)
     – 32% between first and second (2019: $66,996)
     – 15% above the second

Higher replacement rate for low earners
Stylized Facts:
Why does Social Security matter?
Social Security promises are worth more than $30tr

Source: Office of the Chief Actuary
Social Security benefits are fairly evenly distributed.
Stylized Facts:

Why did aggregate Social Security wealth increase?
Social Security wage base increased

A. Benefits Base and Wages

B. Benefits Base–to–Wage Ratios

Earnings exempt from Social Security

Taxable earnings

Benefits Base

Wage Index
Discount rates declined

Market Implied Nominal Yield Curve

Horizon

Annualized Spot Rate

2016  2001  1989
Boomers are reaching retirement age
Methodology
Methodology – Overview

- Net present value of Social Security

\[
\text{Social Security Wealth}_{it} = \sum_{s=c+66}^{T} \left( \prod_{k=t}^{s-1} (1 - m_{itk}) \right) \frac{\mathbb{E} [\text{Benefits}_{it}]}{(1 + r_{ts})^{s-t}} \\
- \sum_{s=t+1}^{c+65} \left( \prod_{k=t}^{s-1} (1 - m_{itk}) \right) \frac{\mathbb{E} [\text{Taxes}_{it}]}{(1 + r_{ts})^{s-t}}
\]

- \( r_{ts} \): market yield curve in year \( t \)
- \( m_{itk} \): mortality rates for year \( t \)
Methodology – Overview

- **Net present value of Social Security**

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\]

- \( r_{ts} \): market yield curve in year \( t \)
- \( m_{itk} \): mortality rates for year \( t \)

- **For retirees**

\[
\text{Social Security Wealth}_{it} = \sum_{s=t}^{T} \left( \prod_{k=t}^{s-1} (1 - m_{itk}) \right) \frac{\text{Benefits}_{it}}{(1 + r_{t,s})^{s-t}} \frac{\mathbb{E}[\text{CPI}_s]}{\text{CPI}_t}
\]

- Benefits are observed in the data
Social Security wealth of workers

- For each SCF survey year, we simulate mean Social Security wealth for each cohort and gender
Social Security wealth of workers

- For each SCF survey year, we simulate mean Social Security wealth for each cohort and gender

- Simulating past and future earnings trajectories:
  - Stochastic component: rich process estimated in Guvenen et al. (2019a), which matches moments from the cross-section and dynamics of earnings
  - Life-cycle component: matches earnings per cohort × gender × year reported in Guvenen et al. (2019b)
  - Goal: emulating Social Security administrative panel data
Social Security wealth of workers

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- For each simulated path, we discount future benefits net of future taxes
Calibration & Aggregation

- Social Security parameters
  - We assume that parameters of Social Security formula scale up with the wage index
    - e.g. Earnings cap, bend points
    - Consistent with the last 40 years

- Macroeconomic assumptions
  - Discount rates: average nominal market yield curves (Fed Board)
  - Inflation projections: historical SSA Annual Report
  - Real growth rate of wages: historical SSA Annual Report

- Aggregation:
  - We merge with the SCF the mean Social Security wealth by age×year×gender group
  - We aggregate using SCF survey weight
Validation – Simulated vs actual full-retirement-age benefits

A. Men

B. Women
Validation – Aggregate Social Security wealth
Validation – Aggregate Social Security wealth

Our valuation using SSA discount rates
Validation – Aggregate Social Security wealth

Our valuation using real yield curve (Treasury Inflation Protected Securities)
Validation – Aggregate Social Security wealth

Our valuation using real yield curve
(Treasury Inflation Protected Securities)

Our valuation using the nominal yield curve and SSA inflation forecasts
Adjusting for stock market beta
Assigning Social Security wealth

   - $555 billion

2. SCF: To be in Top 10% overall, a 45 year-old need to be in the
   - Top 5% of his cohort

3. SCF: for young retirees, share of Social Security wealth of top 5%
   - 6.5%

   - 6.5% x $555 billion = $36 billion for top 10%
   - 93.5% x $555 billion = $519 billion for bottom 90%
Risk-adjusted valuation: Top shares

A. Top 10%

B. Top 1%

Risk–free valuation

Risk–adjusted valuation

No Social Security
Risk-adjusted valuation: Wealth composition over time
**Discussion**

- Funding gap
- Life expectancy inequality
- Decomposing growth in Social Security wealth
- Adjusting previous studies
Funding gap

Projected funding gap in 2016 SSA Annual Report

Share of Scheduled Benefits

Horizon

Alternative Scenario I
Alternative Scenario II
Alternative Scenario III
Funding gap: Top shares (risk-adjusted)
Adjusting for differences in life expectancy
Adjusting for differences in life expectancy

![Graph showing changes in life expectancy adjustment for Top 10% and Top 1% over time. The graph illustrates how adjusting for differences in life expectancy impacts the distribution of income among the top income earners.](image-url)
Adjusting other studies

A. Without Social Security

B. With Social Security (Risk-adjusted)

SCF
Saez & Zucman (2016)
Smith, Zidar & Zwick (2019)
Batty et al. (2019)
Conclusion

• Saez and Zucman (2016): Social Security should not be taken into account because it would call for the inclusion of other programs and would “not be clear where to stop”

• We argue that narrowly defined marketable wealth is not the right place to stop
  – Social Security is 57% of the wealth of the bottom 90%
  – Social programs can make marketable wealth inequality look worse

• Top wealth shares have not increased since 1989 when Social Security wealth in taken into account
Risk-free valuation: top shares

A. Top 10%

B. Top 1%

with Social Security

without Social Security
Risk-free valuation: Wealth composition over time

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Bottom 90%:
- Social Security
- Other

Top 10%:
- Social Security
- Other

Bottom 90%

Age

Top 10%

Social Security
Other