Wealth and Income Inequality in America 1949 - 2013

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What we are asking

- We know a lot about income **or** wealth concentration "at the to"
- But much less about:
  - The joint evolution of income and wealth inequality
  - Distributional changes within the "the bottom 90%"
- What drives the wealth distribution: income dynamics? savings? returns?
- Models based on labor income inequality produce too little wealth concentration and slow changes (Benhabib and Bisin 2016)

What we do

- Introduce a newly constructed micro dataset covering U.S. households' financial situation from 1949 to 2016
- Study income and wealth inequality jointly, and identify the drivers of the wealth distribution in the long run

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- **Focus on the role of portfolio heterogeneity and asset price dynamics for the long-run wealth distribution**.

Why we can do that

- Survey of Consumer Finances (SCF) most widely used data for distribution of income and wealth
- "Modern" SCF data exist since 1983
- Historical survey data exists too! Starting in 1948/49
- We linked the historical and modern SCFs, creating the **Historical Survey of Consumer Finances**

What we find

- HSCF confirms sharply rising income inequality since the 1970s; wealth inequality increased too, but less and mainly after 2007
- **Main result: evolution of wealth inequality in the U.S. essentially a race between the housing market and the stock market.**

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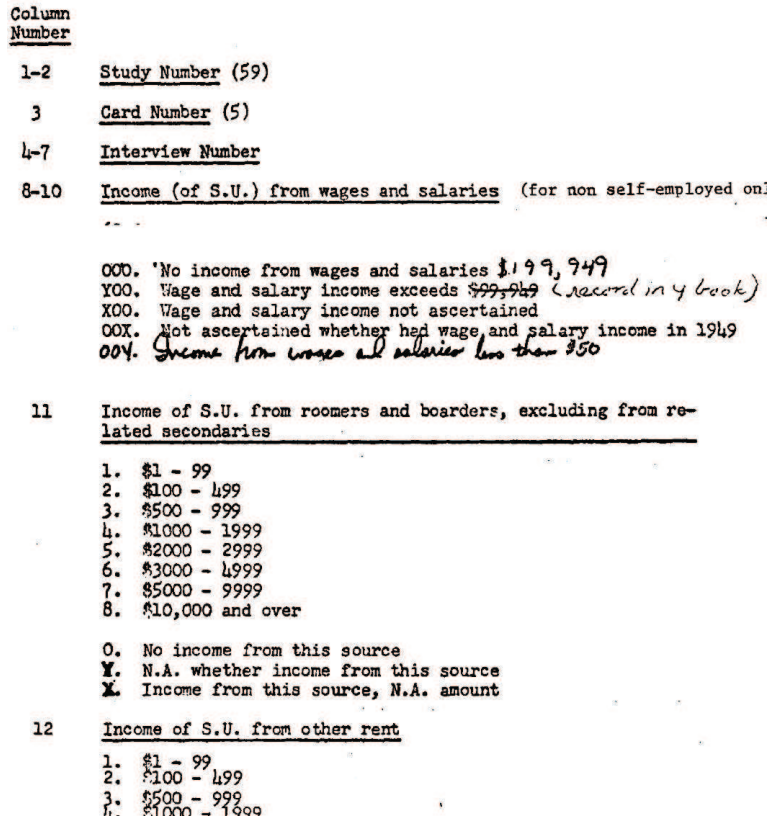
- HSCF confirms sharply rising income inequality since the 1970s; wealth inequality increased too, but less and mainly after 2007
- **Main result: evolution of wealth inequality in the U.S. essentially a race between the housing market and the stock market.**
  1. Systematic differences in the portfolio composition along the wealth distribution: middle-class high concentration (housing) with high leverage; top-10: business equity with low leverage
  2. Rising house prices, all else equal, lower wealth inequality; stock market booms lead to higher inequality
  3. At the time horizon of a generation, this portfolio channel typically trumps the effects of income and savings

The HCSF

- Historical SCF files so far not systematically coded
- Major harmonization exercise: extract detailed data on income, assets, and debt
- Re-weight for representativeness
- Re-weight for non-responses at the top



Column Number

1-2 Study Number (59)

3 Card Number (5)

4-7 Interview Number

8-10 Income (of S.U.) from wages and salaries (for non self-employed on

000. No income from wages and salaries $199,949
Y00. Wage and salary income exceeds ~~$99,949~~ (record in y book)
X00. Wage and salary income not ascertained
00X. Not ascertained whether had wage and salary income in 1949
004. Income from wages and salaries less than $50

11 Income of S.U. from roomers and boarders, excluding from related secondaries

1. $1 - 99
2. $100 - 499
3. $500 - 999
4. $1000 - 1999
5. $2000 - 2999
6. $3000 - 4999
7. $5000 - 9999
8. $10,000 and over

0. No income from this source
Y. N.A. whether income from this source
X. Income from this source, N.A. amount

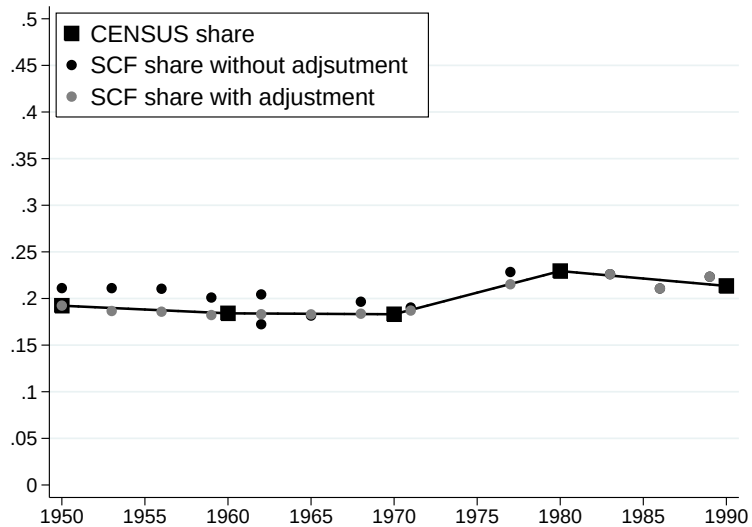
12 Income of S.U. from other rent

1. $1 - 99
2. $100 - 499
3. $500 - 999
4. $1000 - 1999

Details SCF 1983-2013

Representativeness

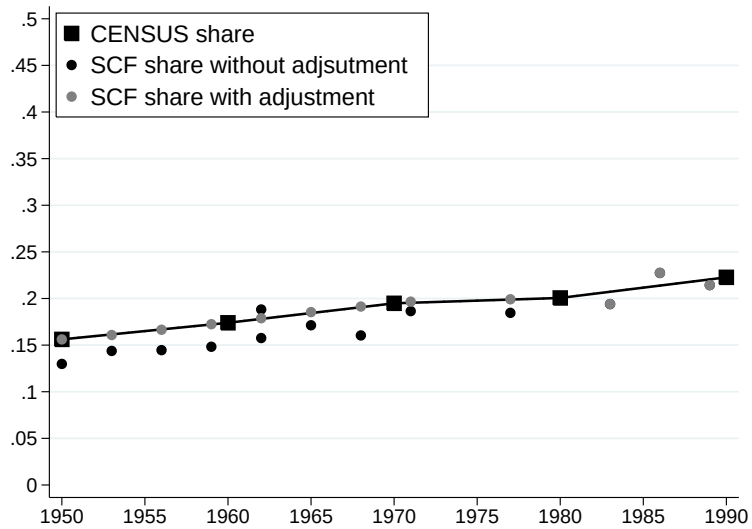
- Consider demographic characteristics of household heads
- Match Census population shares for age, education, and race



- Age group 25 - 34

Representativeness

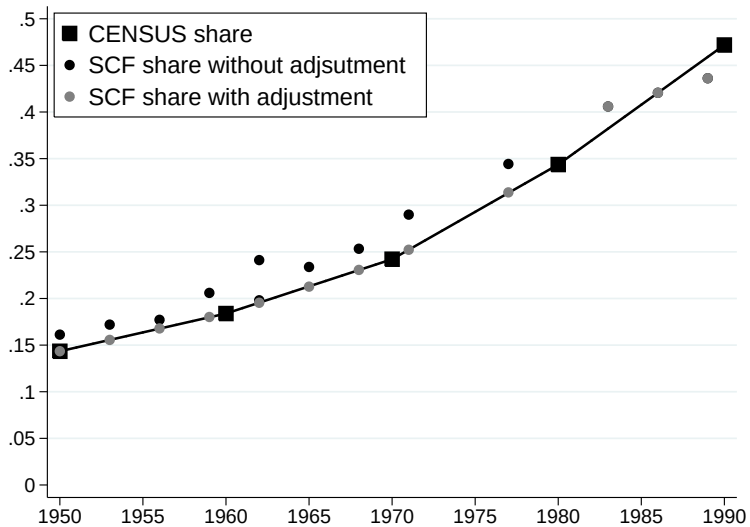
- Consider demographic characteristics of household heads
- Match Census population shares for age, education, and race



- Age group 65 - 99

Representativeness

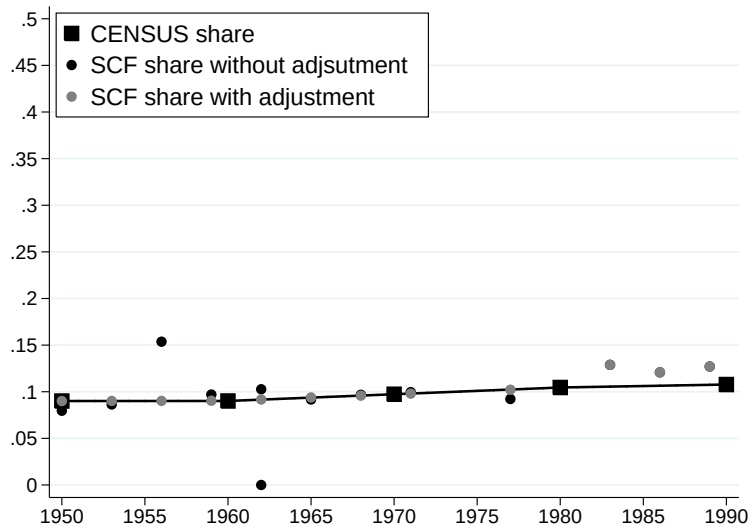
- Consider demographic characteristics of household heads
- Match Census population shares for age, education, and race



- College graduates

Representativeness

- Consider demographic characteristics of household heads
- Match Census population shares for age, education, and race



- Black household heads

Accounting for non-responses

- Non-response of very wealthy household problem in survey data
- "Modern" SCF applies two-frame sampling scheme
- 1983 data indicates the list sample
- Re-weight existing underrepresented household information of "historical" SCF
- Use 1983 information to calibrate re-weighting scheme

Historical Survey of Consumer Finances (HSCF)

- Representative household-level data from 1949 to 2016
- Information on 13 financial and income variables, independent of tax filing status
- Excellent coverage of the balance sheet of "main street America" (houses, mortgages, retirement accounts: analysis focused on bottom 99%
- Compare to capitalization method that has to impute the largest part of middle-class assets as it does not generate taxable flows
  - 91% of wealth for bottom 90%
  - 40% of wealth for top 10%

Variables

1. **Income :** wages and salaries, professional practice and self employment, rental income, interest, dividends, business and farm income, transfer payments
2. **Assets**
3. **Debt**
4. **Wealth**

Variables

1. **Income**
2. **Assets:** liquid assets (CDs, checking, saving, call/money market accounts), housing and other real estate, bonds, stocks, corporate and non-corporate equity, retirement accounts
3. **Debt**
4. **Wealth**

Variables

1. **Income**
2. **Assets**
3. **Debt :** housing debt, car loans, education loans, and loans for consumer durables, credit card debt, and other non-housing debt
4. **Wealth**

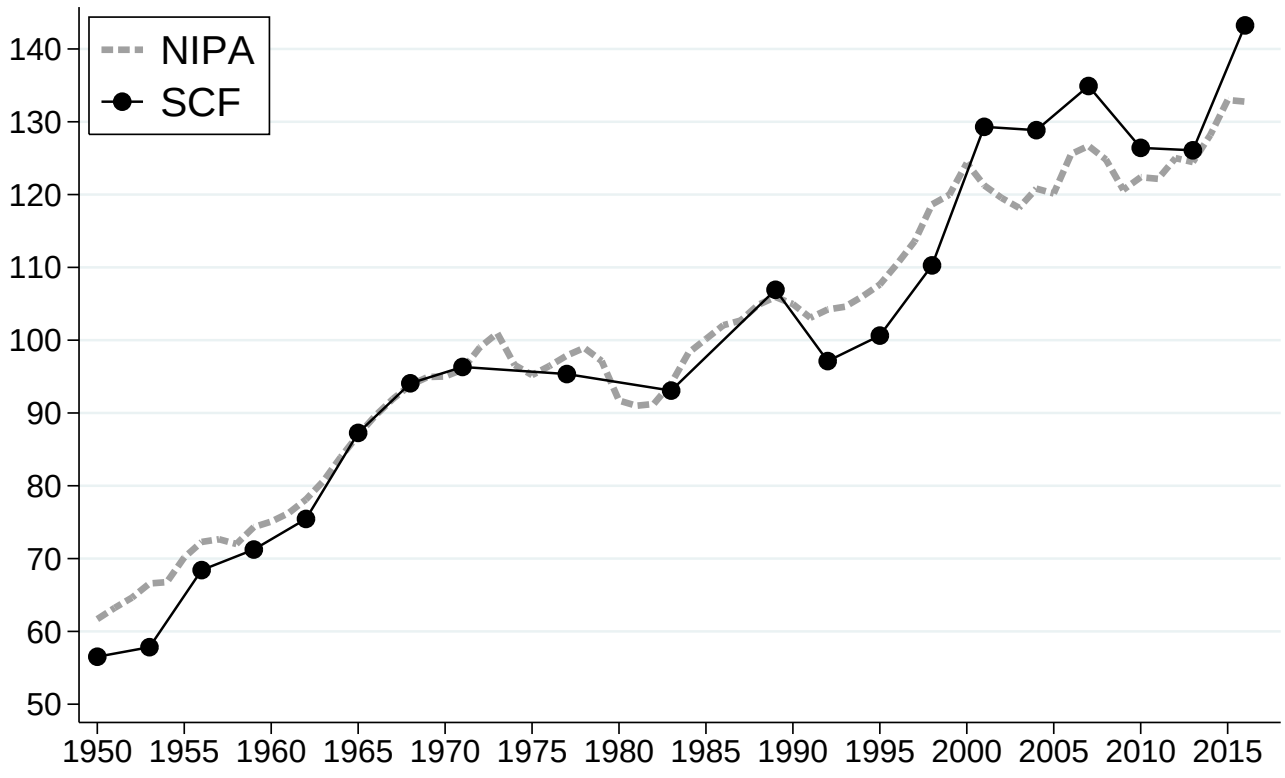
Variables

1. **Income**
2. **Assets**
3. **Debt**
4. **Wealth :** consolidated household balance sheet

Micro data and macro trends

- Micro data matches macro trends
  1. Averages
  2. Distribution
- Level difference due to measurement differences
- Common trend: micro data informative about underlying distributional dynamics of macroeconomic trends

Income


NIPA
SCF
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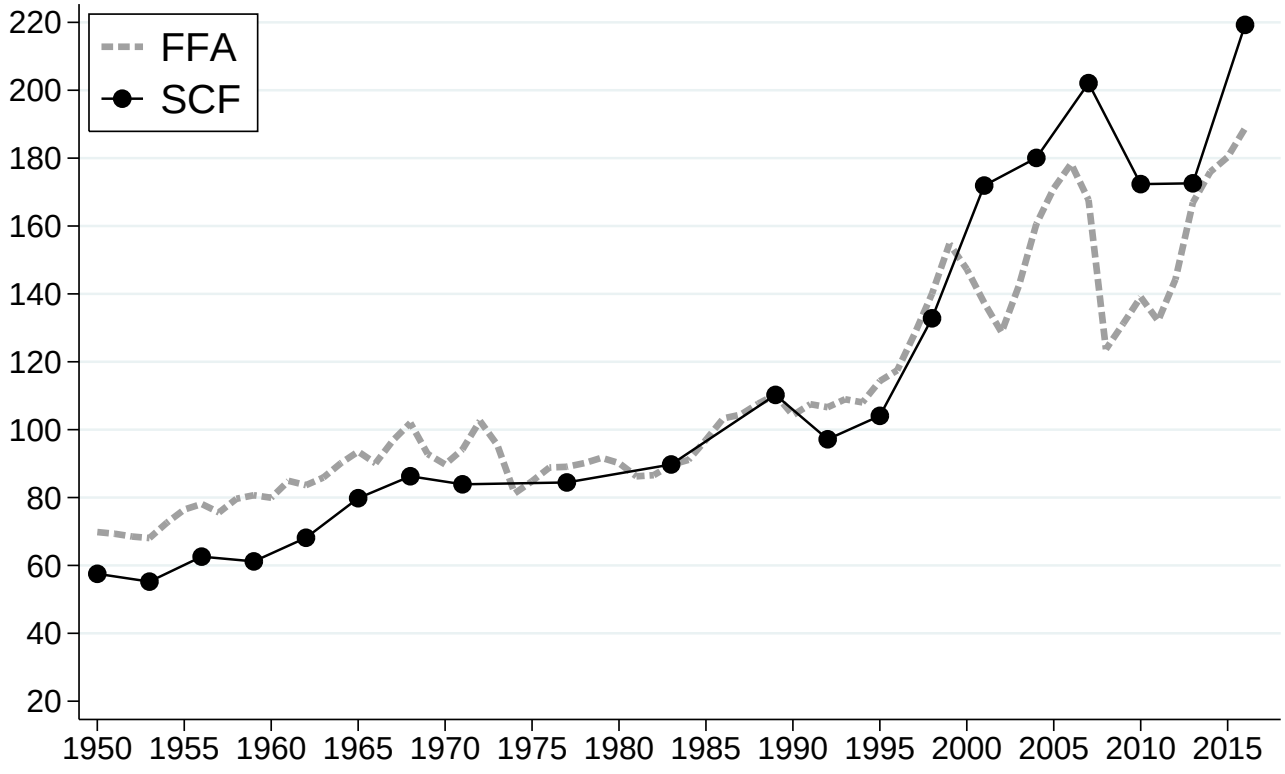
2015

Wealth


FFA
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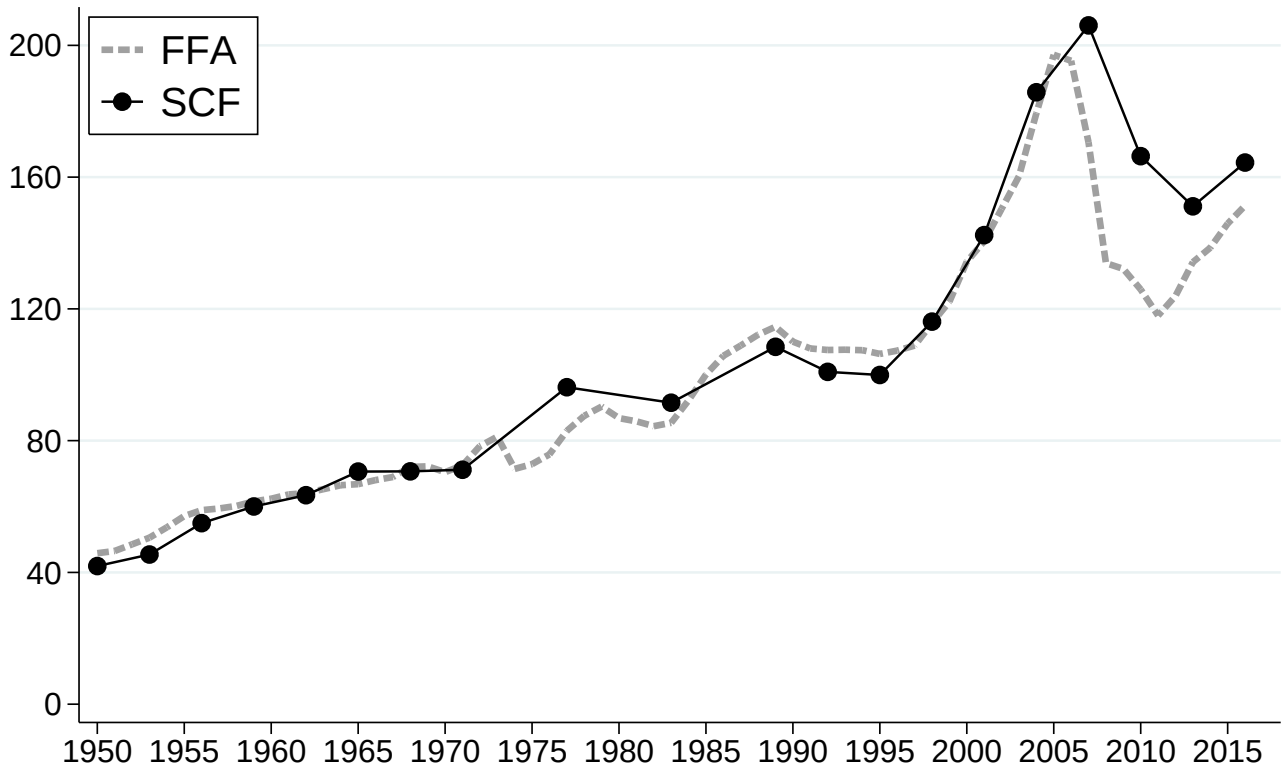
Houses


FFA
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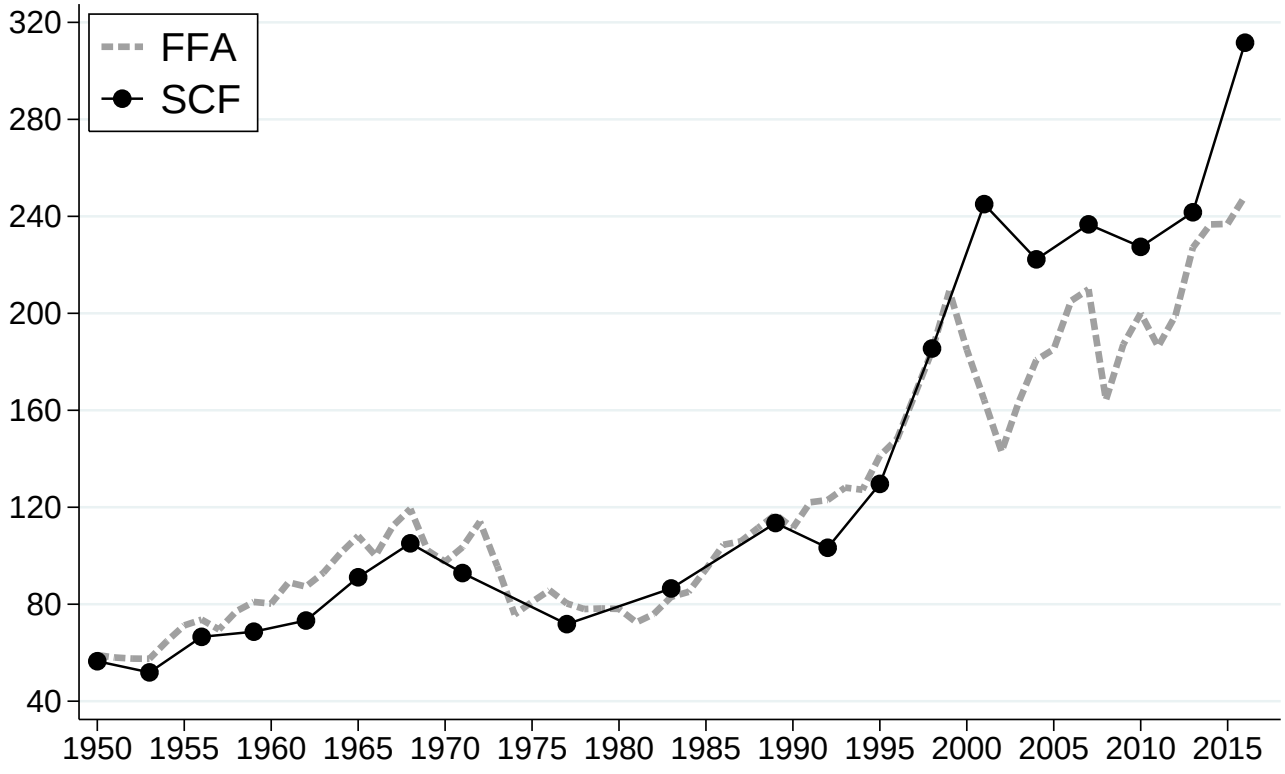
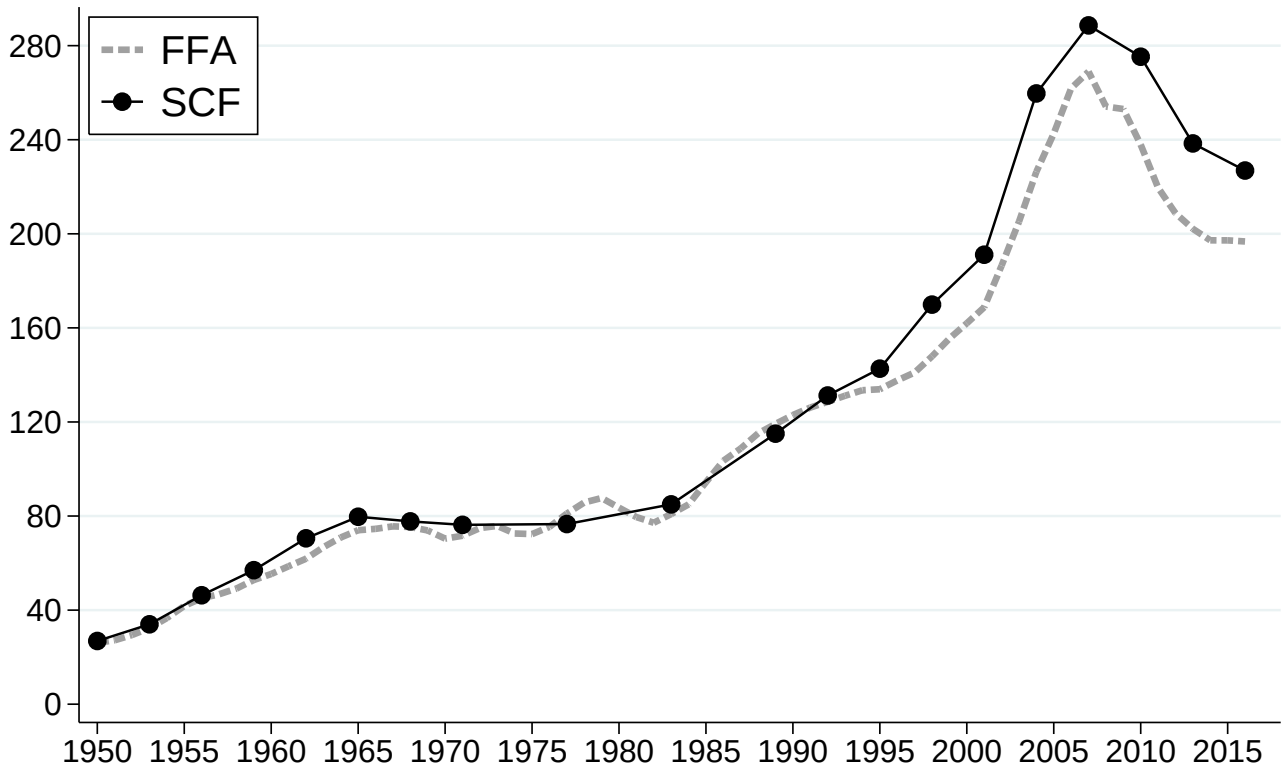
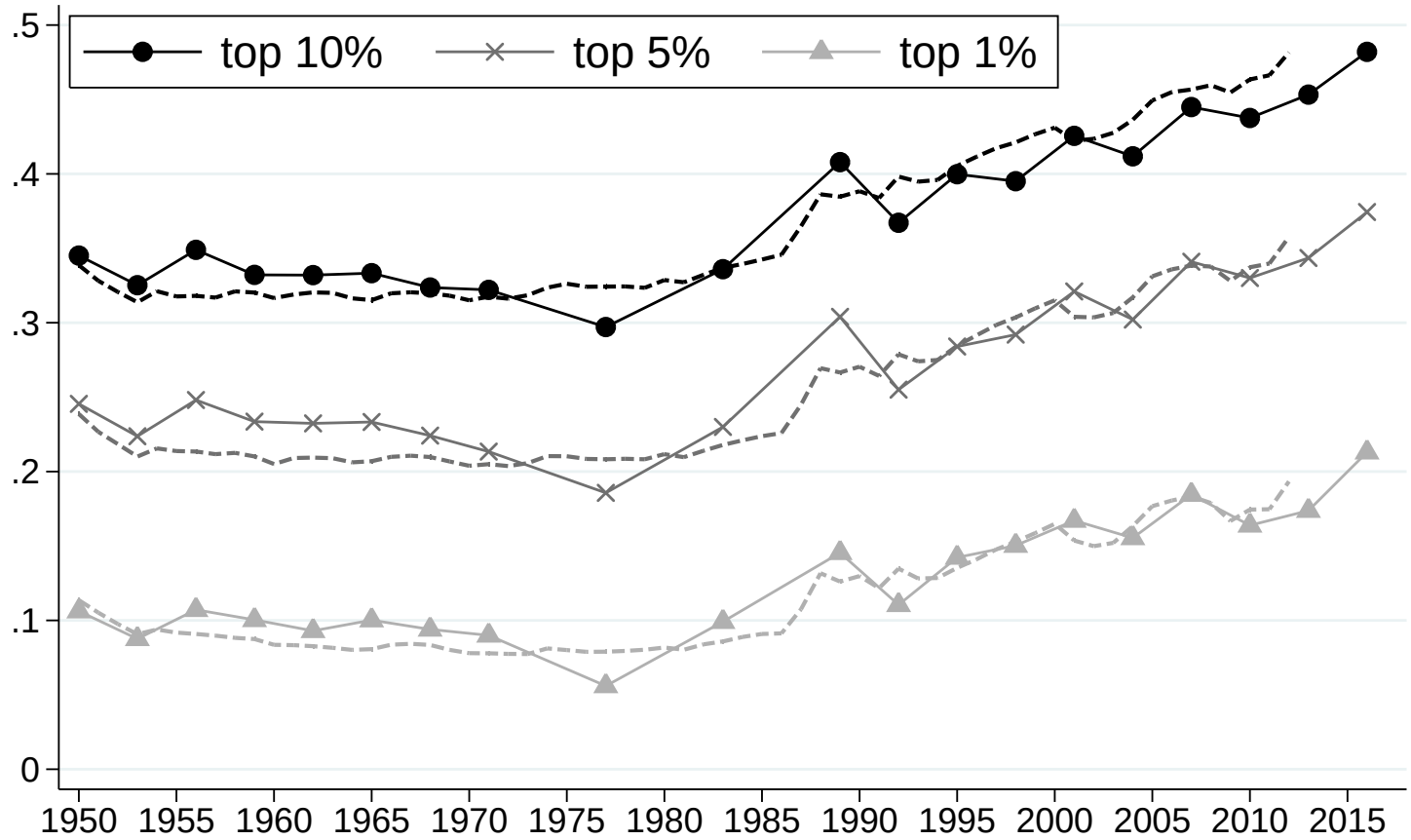
Financial assets



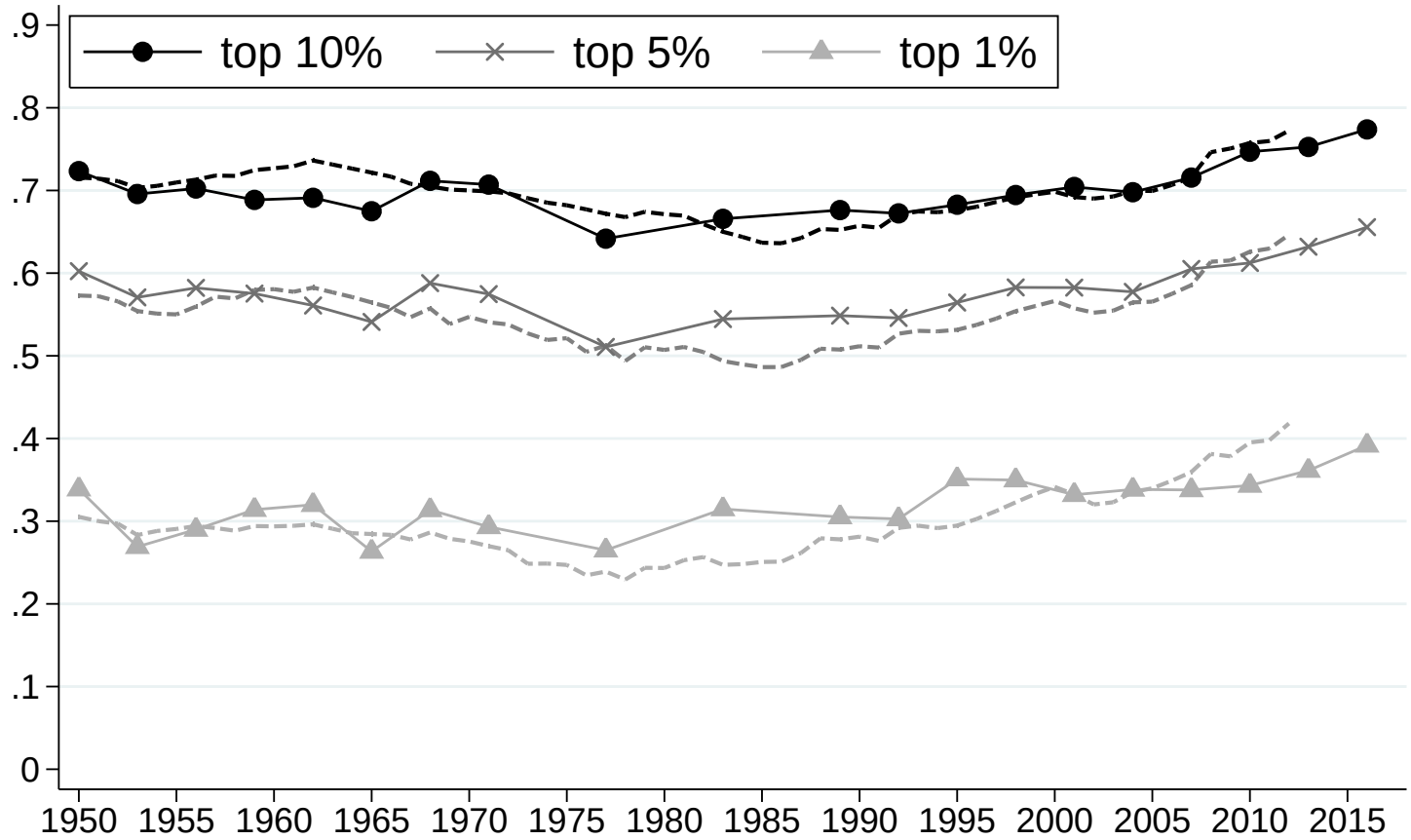
Housing debt



Income inequality



Wealth inequality



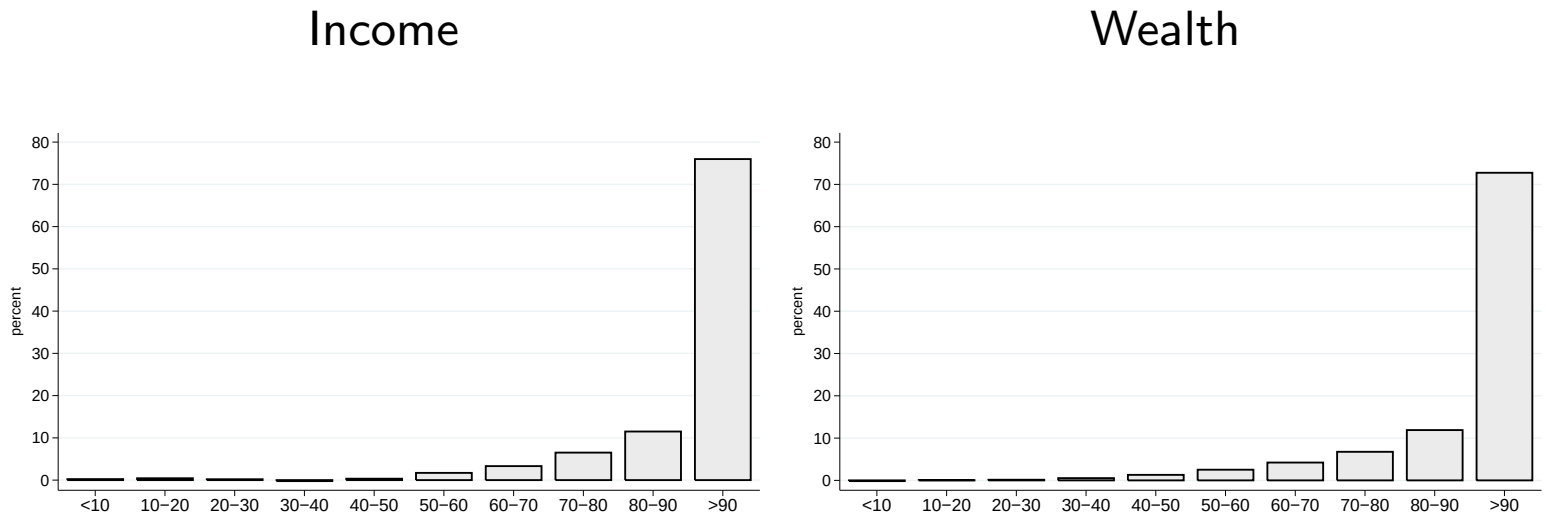
Income shares

	1950	1971	1989	2007	2016
bottom 25%	6.1	6.1	4.5	4.6	4.3
25-50%	15.5	15.2	12.1	11.1	10.3
50-75%	23.4	24.7	21.8	20.1	18.8
75-90%	20.4	21.7	21.5	20.0	19.4
top 10%	34.5	32.2	40.1	44.2	48.2

Wealth shares over time

	1950	1971	1989	2007	2016
bottom 25%	0.2	0.0	0.0	0.0	-0.4
25-50%	3.8	3.7	3.0	2.6	1.6
50-75%	11.2	11.0	11.7	10.2	7.2
75-90%	16.4	15.8	17.8	15.8	14.3
top 10%	68.4	69.6	67.5	71.4	77.4

Distribution of income and wealth growth 1971 - 2007



- Top 10 % received 76 cents of each dollar of income growth
- Top 10 % received 73 cents of each dollar of wealth growth
- Yet income and wealth inequality started from different levels

Inequality gradient

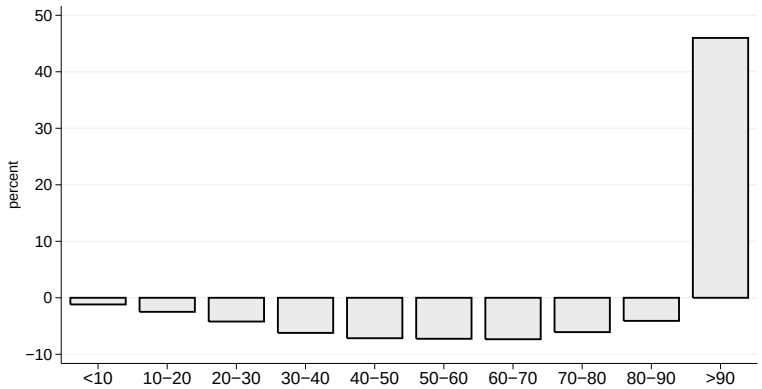
- Difference of additional income over initial share

$$\Delta^{i}_{t,t+1} = \frac{x_{i,t+1}\bar{y}_{t+1} - x_{i,t}\bar{y}_{t}}{\bar{y}_{t+1} - \bar{y}_{t}} - x_{i,t}$$

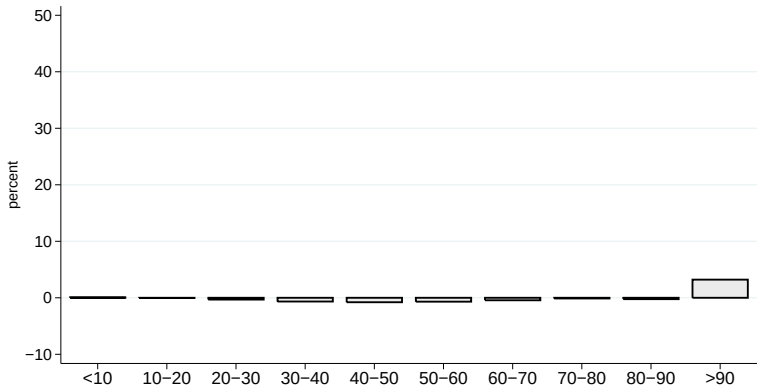
- $x_{i,t}$: income/wealth share of group i in t
- $\bar{y}_{t+1} - \bar{y}_{t}$: aggregate income/wealth increase
- $x_{i,t+1}\bar{y}_{t+1} - x_{i,t}\bar{y}_{t}$: group i's income/wealth increase

Inequality gradient 1971 - 2007

Income



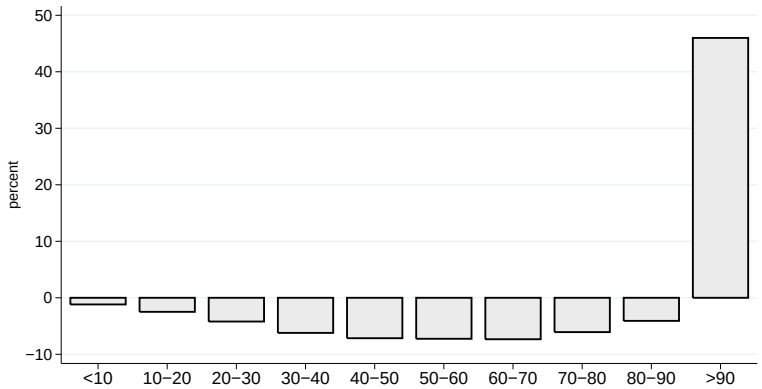
Wealth



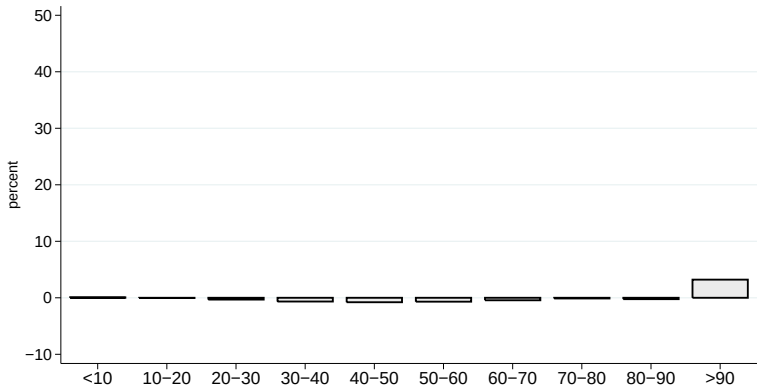
- Income inequality gradient $\Delta^{\text{top 10}}_{1971,2007} \approx 40\%$
- Wealth inequality gradient $\Delta^{\text{top 10}}_{1971,2007} \approx 3\%$

Inequality gradient 1971 - 2007

Income



Wealth



- Income inequality gradient $\Delta^{\text{top 10}}_{1971,2007} \approx 40\%$
- Wealth inequality gradient $\Delta^{\text{top 10}}_{1971,2007} \approx 3\%$

Accounting for wealth dynamics

- Wealth for group i between period t and $t+1$

$$W^i_{t+1} = W^i_t(1 + r^i_t + q^i_t) + Y^i_{L,t} - C^i_t$$

W^i_t: wealth

q^i_t: unrealized capital gains

r^i_t: after-tax capital income

$Y^i_{L,t}$: after tax labor income

C^i_t: consumption

Accounting for wealth dynamics

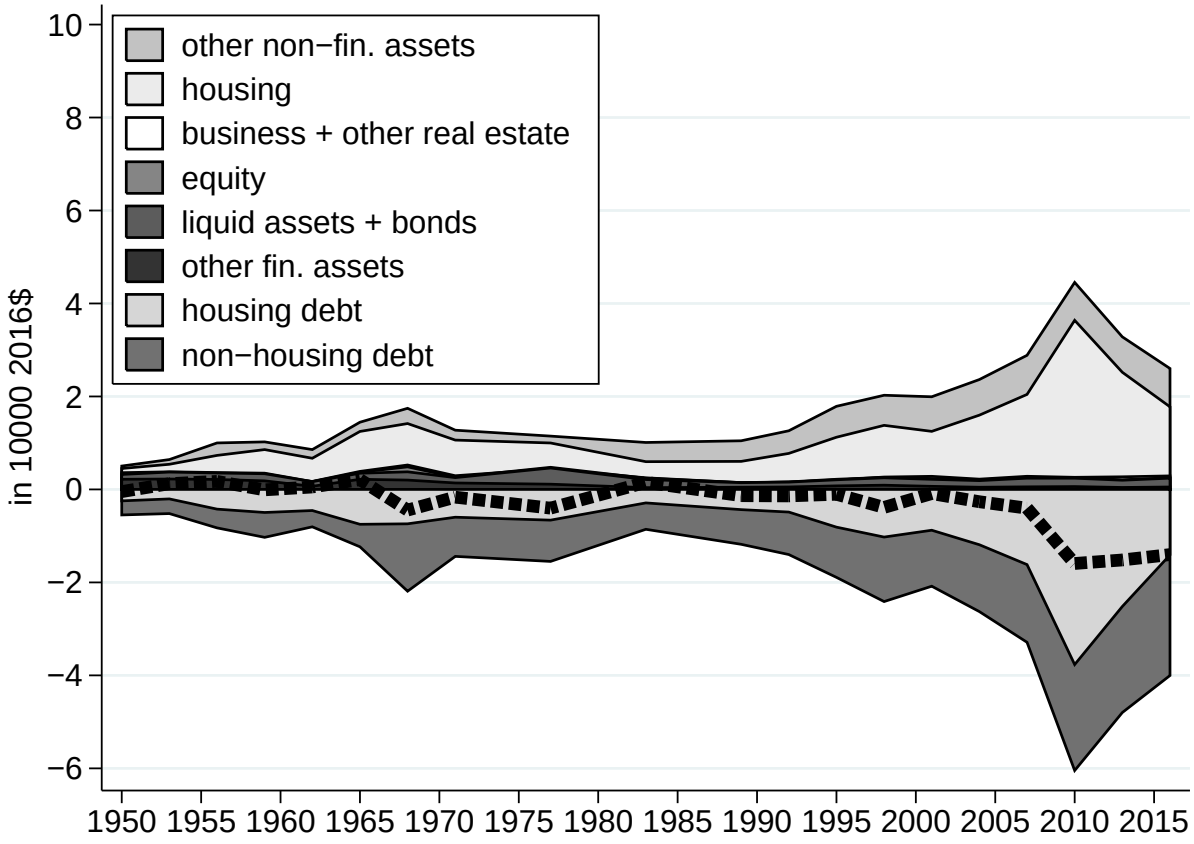
- Steady state wealth share for uniform capital gains ($q^i = q$)

$$\omega^i = \frac{s^i}{s}\theta^i$$

- Higher saving rate of income-rich ($corr(s^i, \theta^i) > 0$) $\Rightarrow$ Wealth concentration exceeds income concentration
- Rising income share leads to rising wealth share ($\frac{\partial \omega^i}{\partial \theta^i} > 0$)
- Steady state with heterogeneity in capital gains ($q^i \neq q$)

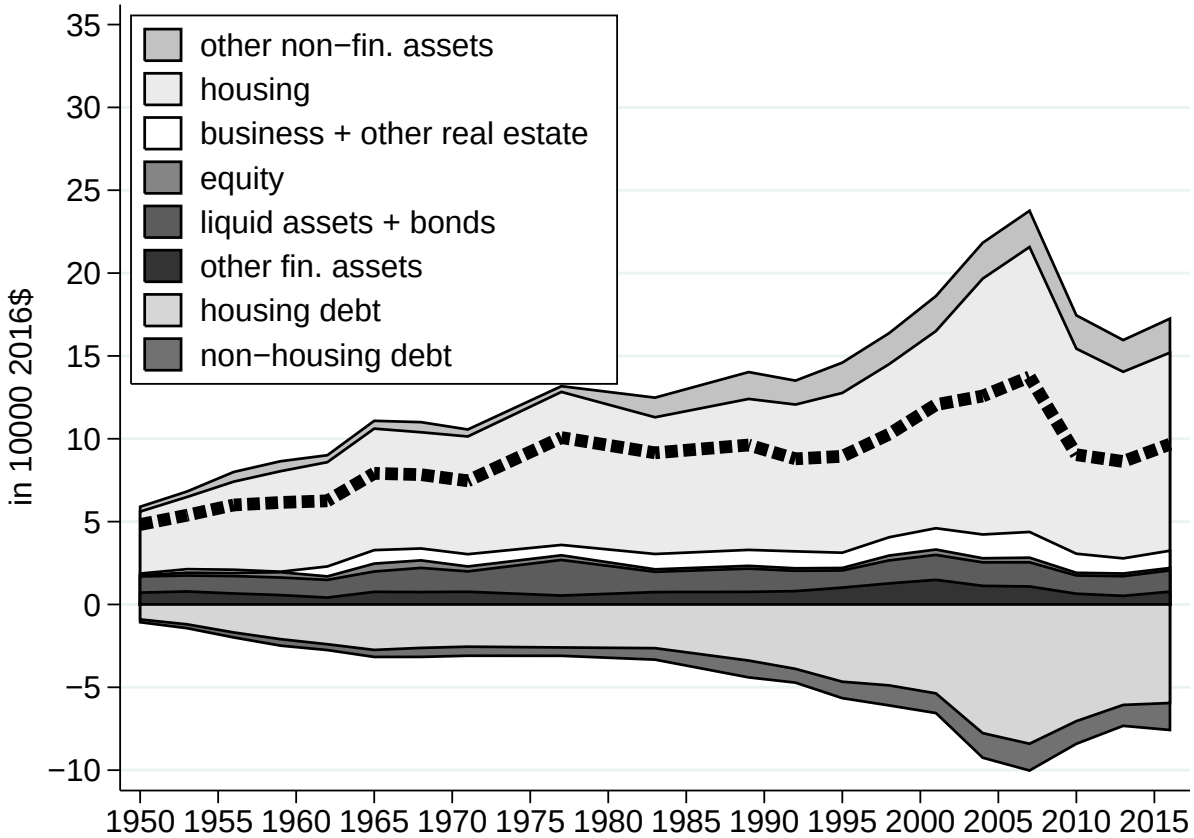
$$\omega^i = \frac{s^i}{s}\theta^i \frac{1-\Omega}{1-\frac{1+q^i}{1+q}\Omega}$$

Heterogeneous portfolios: bottom 25 %



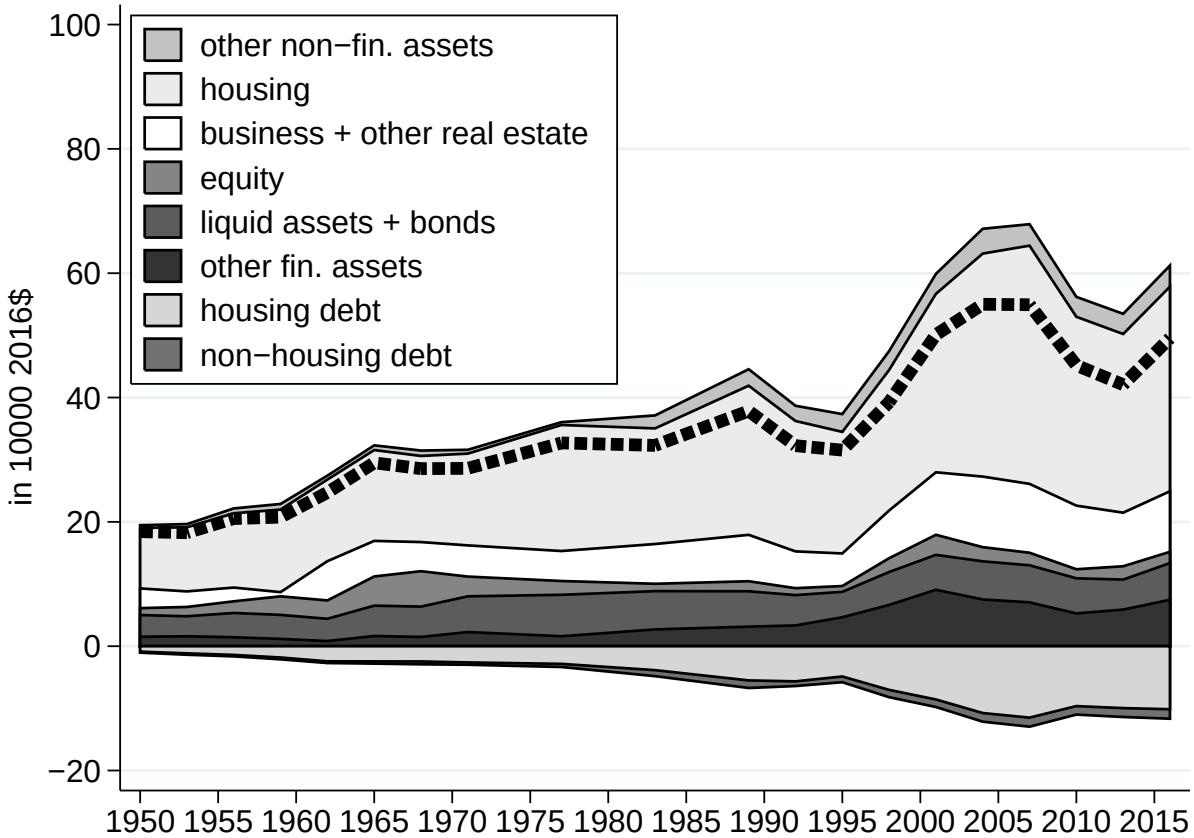
- Little wealth but large gross positions

Household portfolios: 25 % - 75 %



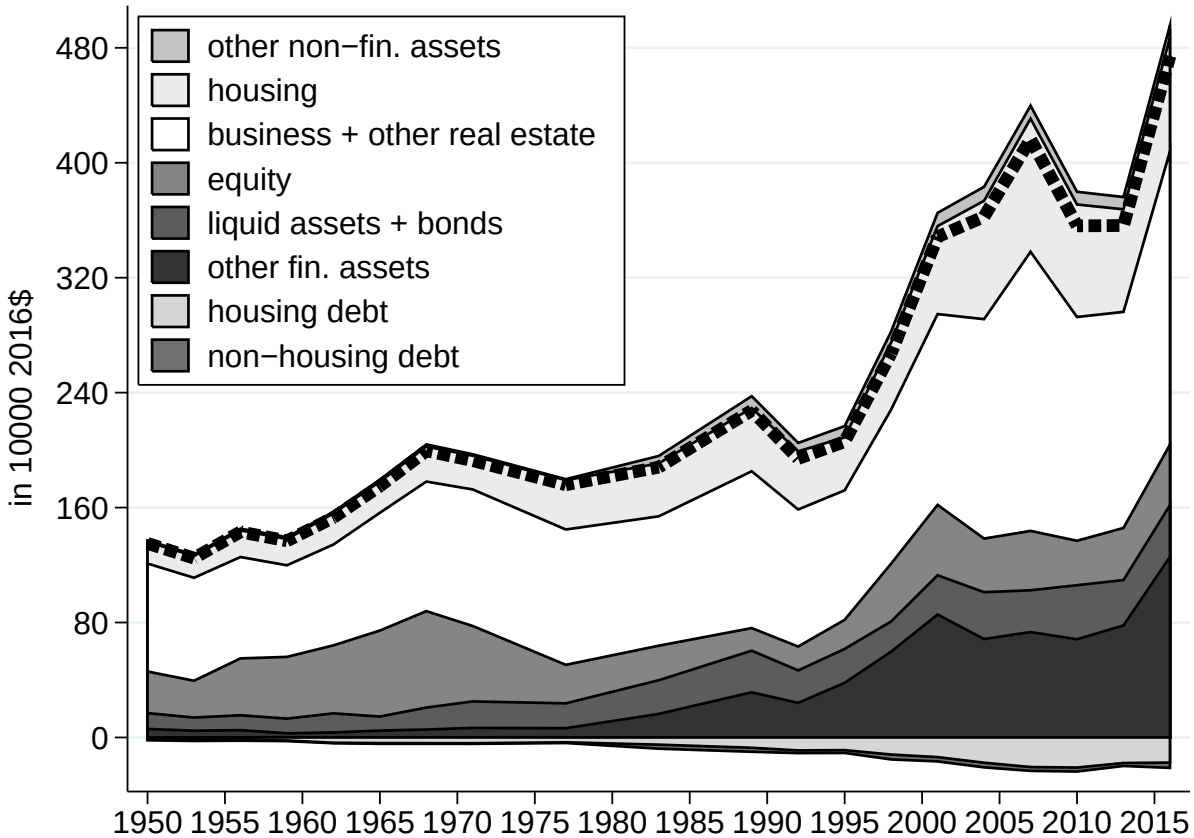
- Largest share in housing with substantial leverage

Household portfolios: 75 % - 90 %



- Largest share in housing with little leverage

Household portfolios: top-10 %



- Small share in housing with almost no leverage

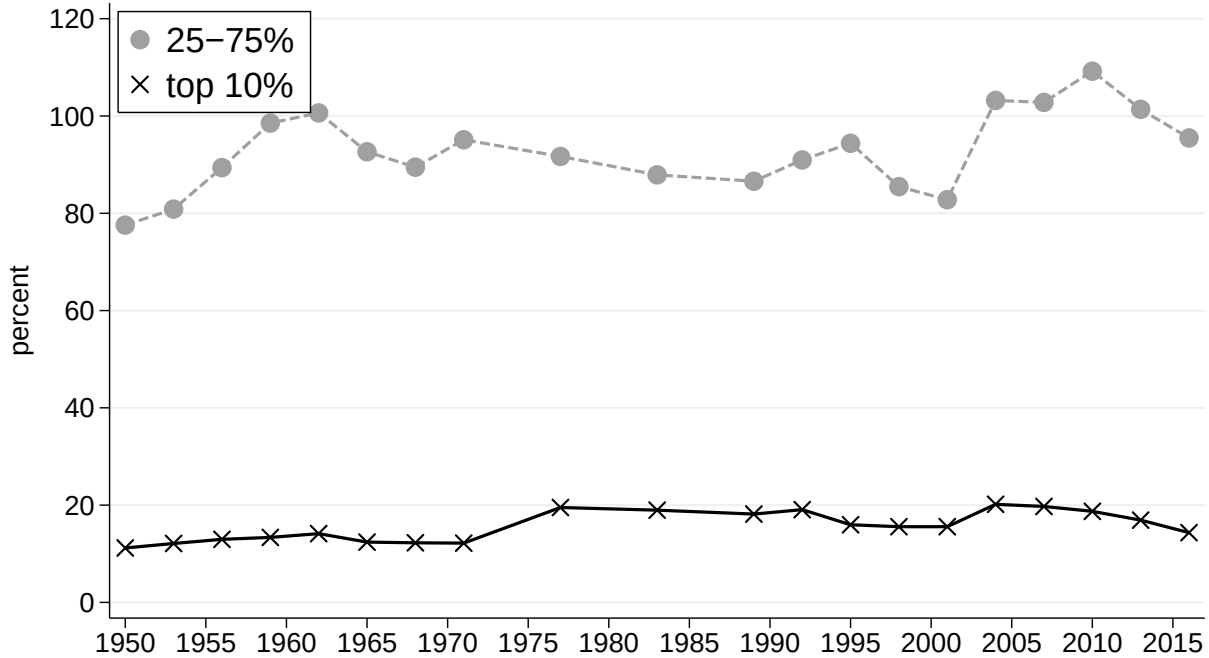
Systematic differences in exposure to asset price changes

- Elasticity of wealth with respect to house price changes

$$\frac{\text{Housing}}{\text{Wealth}} = \underbrace{\frac{\text{Housing}}{\text{Assets}}}_{\text{diversification}} \times \left(1 + \underbrace{\frac{\text{Debt}}{\text{Wealth}}}_{\text{leverage}} \right)$$

- Exposure composed of diversification and leverage component

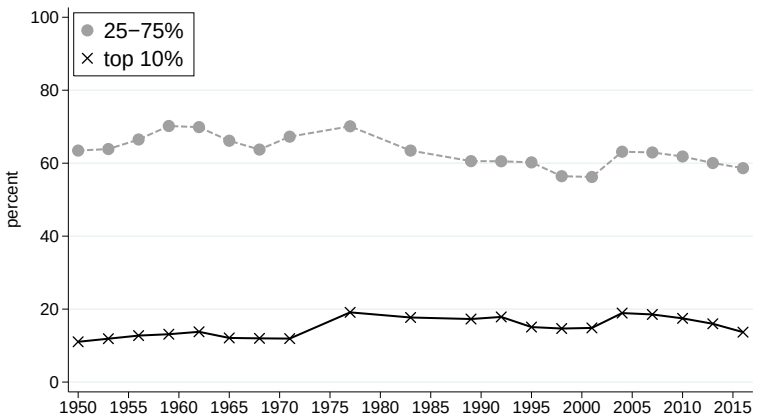
House price exposure of middle class



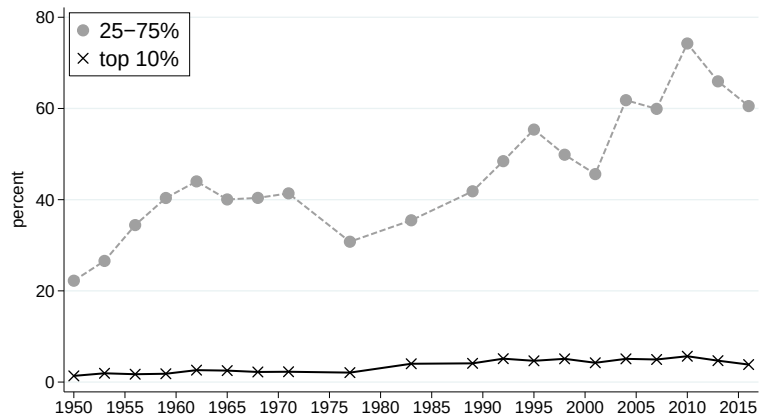
- Middle class much more exposed than top 10%
- House price change leads to almost 1:1 wealth change

Decomposing house price exposure

Diversification $\left(\frac{\text{Housing}}{\text{Assets}} \times 100\right)$



Leverage $\left(\frac{\text{Debt}}{\text{Wealth}} \times 100\right)$



- Little diversification of middle class
- Additional amplification from leverage

Decomposing wealth growth

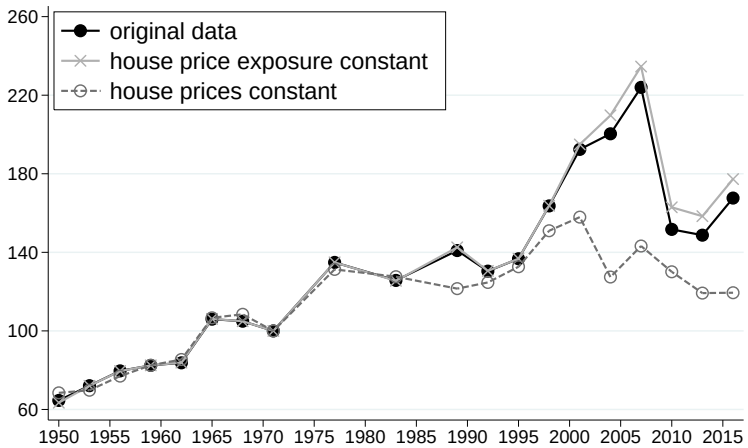
- Wealth growth

$$\frac{\Delta W_{t+1}}{W_t} = \underbrace{\frac{H_t}{W_t}\frac{\Delta p_{t+1}}{p_t}}_{\text{house price component}} + \underbrace{g_t^R}_{\text{residual component}}$$

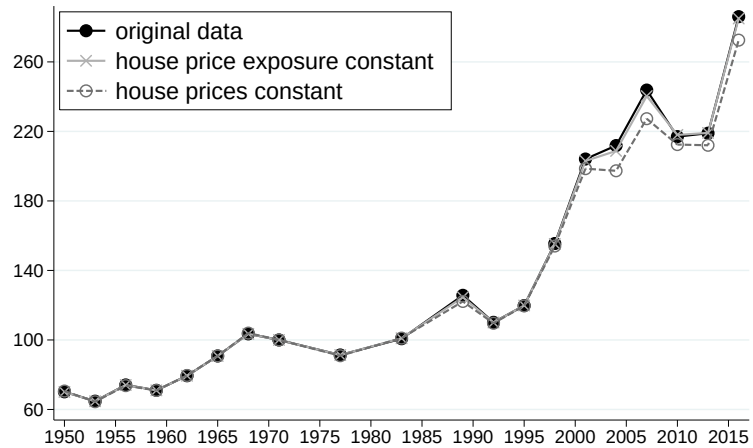
- House price exposure $\frac{H_t}{W_t}$, house price growth $\frac{\Delta p_{t+1}}{p_t}$
- Residual component g_t^R comprises saving rate differences
- Construct residual component using house price series
- Simulate counterfactual wealth growth

Wealth growth without house price changes

25-75%

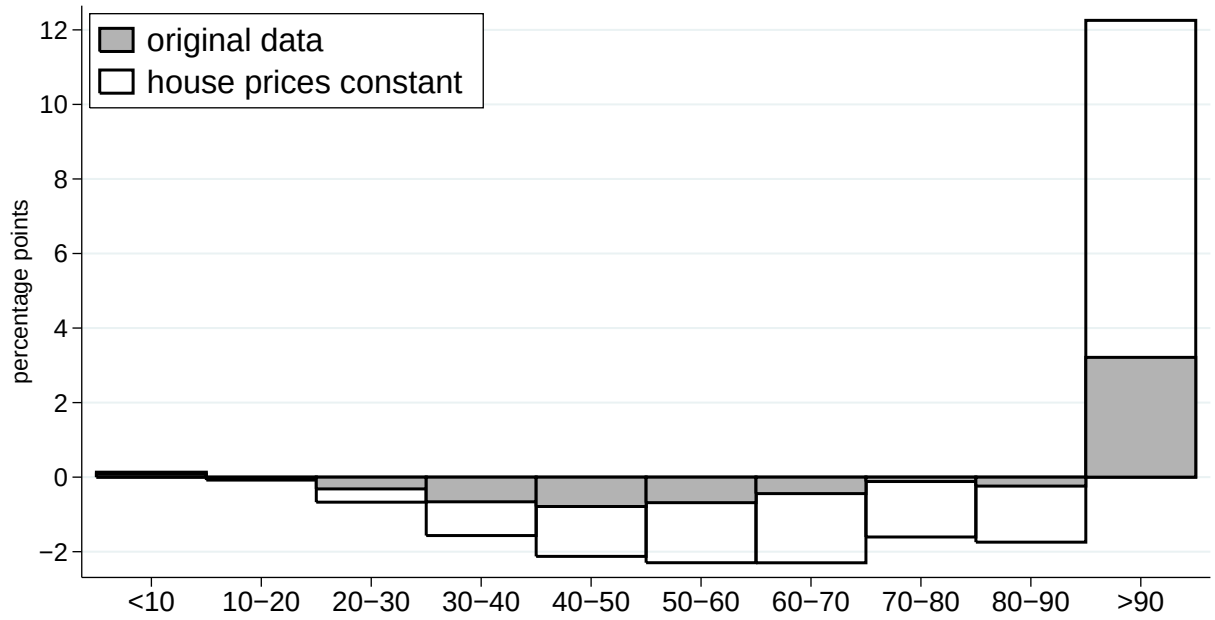


top 10%



- Wealth effect modest for top 10 % (-15% at peak)
- Wealth effect large for middle class (-40% at peak)
- Today middle-class wealth would be 30% lower

House prices and wealth inequality 1971-2007



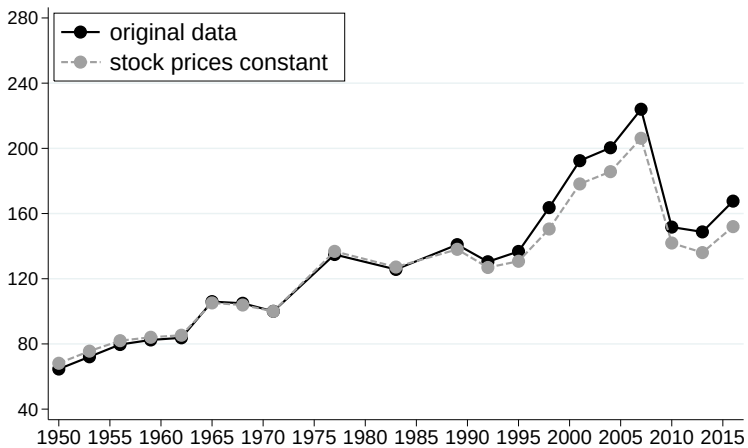
- Top 10% wealth gradient without house price changes 4 times steeper

House price boom and wealth inequality

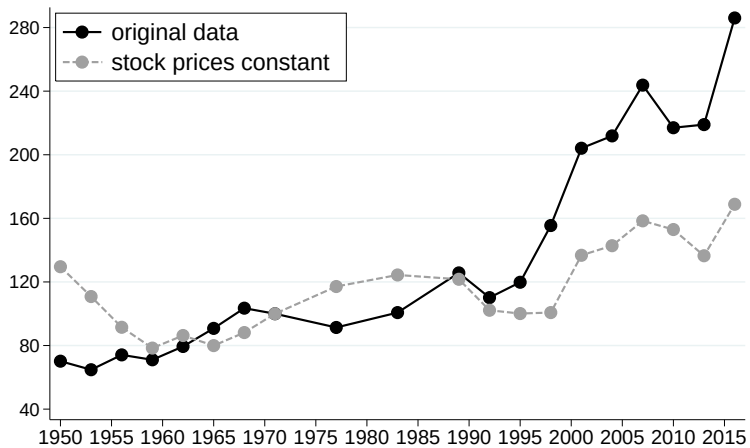
- With constant house prices, the top 10% wealth share +4.8pp in 2007 and +3.6pp in 2016
- Top 10 % wealth share increased 6.7pp from 1970 to 2016, would have been 50% higher without the middle class housing gains

Wealth growth without stock price changes

25-75%

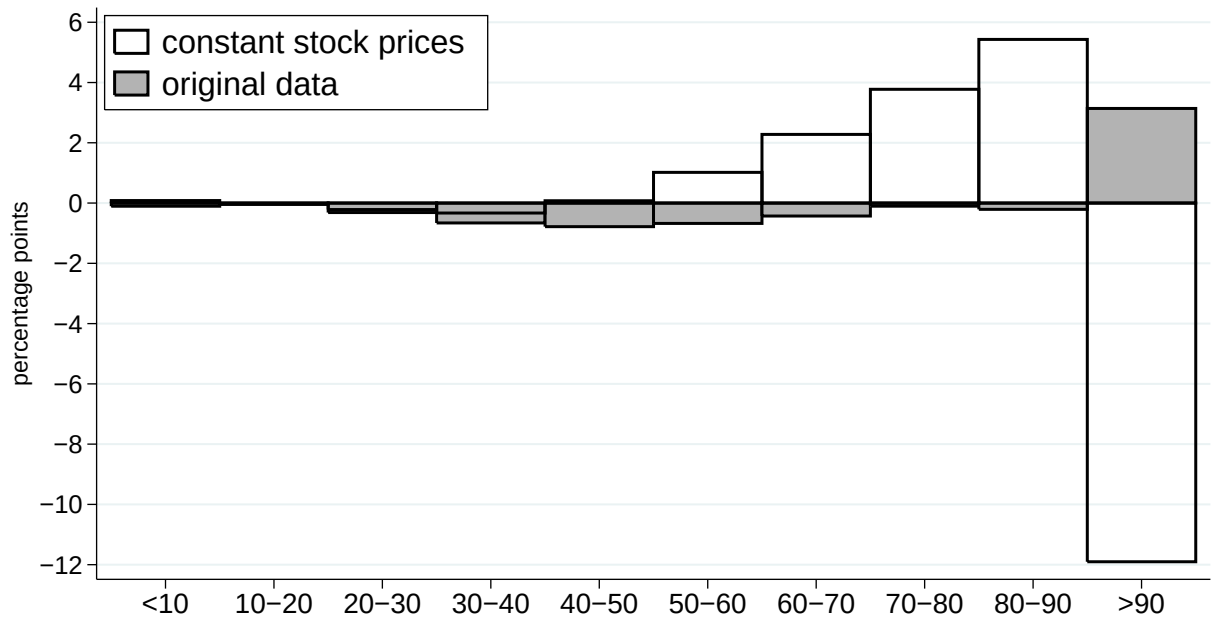


top 10%



- Constant stock prices leave middle class unaffected ($< 10\%$)
- Wealth effect large for top 10% (33%)

Stock prices and inequality 1971-2007



- Top 10% wealth gradient without stock price changes negative

Conclusions

- New micro data source on U.S. income and wealth inequality
- Systematic portfolio differences along the wealth distribution
- Wealth dynamics essentially a race between stock and house prices

Additional slides