

The College Wealth Divide

Evidence from the Historical Survey of Consumer Finances
1949 - 2016

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Is College Still Worth It?

Symposium at the St. Louis Federal Reserve Bank

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Motivation

- Wealth and income inequality are at historical highs

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- Rising *college wage premium* driver of rising income inequality
- Education turned into a key stratifying dimension in U.S. society
- Data limitations impede studying long-run wealth differences across education groups

Contribution

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- Document trends of income and wealth differences between college and non-college households
- Study distribution of college households along the wealth distribution
- Explore determinants of wealth differences between households

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- Link and harmonize historical and modern SCFs
- Newly compiled HSCF data provide representative household data on income, wealth, and demographics for period from 1949 to 2016

Results

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- Strongly increasing wealth divide between college and non-college households
- Share of college-educated households relatively constant across wealth groups
- Rising stock prices appear as driver of college wealth divide

Historical SCF data

- Historical SCF files so far not systematically coded

<u>Column Number</u>	
1-2	<u>Study Number</u> (59)
3	<u>Card Number</u> (5)
4-7	<u>Interview Number</u>
8-10	<u>Income (of S.U.) from wages and salaries</u> (for non self-employed on: ... OOO. No income from wages and salaries \$199,949 YOO. Wage and salary income exceeds \$99,949 (assumed in y book) XOO. Wage and salary income not ascertained OOX. Not ascertained whether had wage and salary income in 1949 OOY. Income from wages and salaries less than \$50
11	<u>Income of S.U. from roomers and boarders, excluding from re- lated secondaries</u> 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 O. No income from this source Y. N.A. whether income from this source X. Income from this source, N.A. amount
12	<u>Income of S.U. from other rent</u> 1. \$1 - 99 2. \$100 - 499 3. \$500 - 999 4. \$1000 - 1499

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- Re-weight for representativeness
- Re-weight for non-response at the top

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Variables

1. **Income** : wages and salaries, professional practice and self employment, rental income, interest, dividends, business and farm income, transfer payments

Variables

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

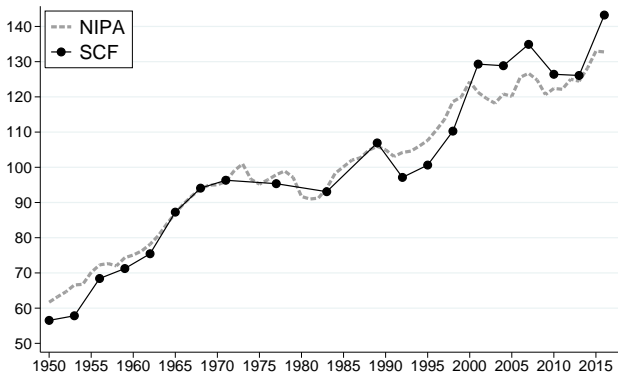
Variables

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

Variables

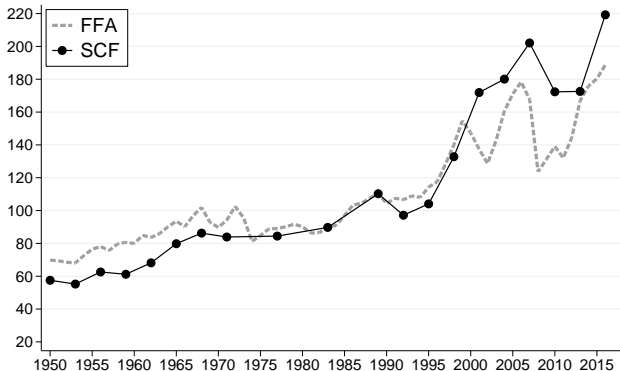
1. *Income*
2. *Assets*
3. *Debt*
4. *Wealth* : consolidated household balance sheet

Micro data and macro trends: Income



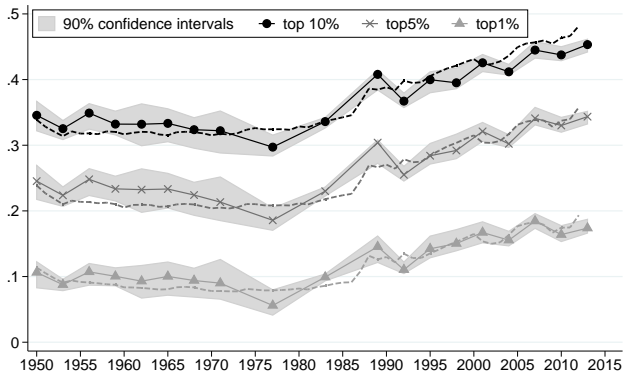
- Micro data match macroeconomic income trends from NIPA

Micro data and macro trends: Wealth



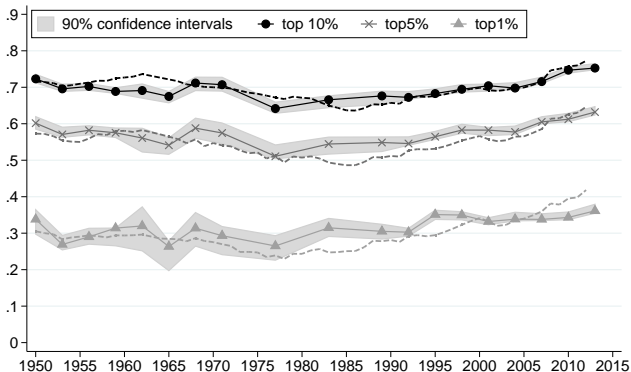
- Micro data match macroeconomic wealth trends from Flow of Funds

Income inequality



- Income concentration at the top matches results from tax data

Wealth inequality



- Wealth concentration at the top matches results from capitalizing income tax data

College and non-college households

- Group households in education groups according to education of household head

College and non-college households

- Group households in education groups according to education of household head
- Household head is male in a married couple

College and non-college households

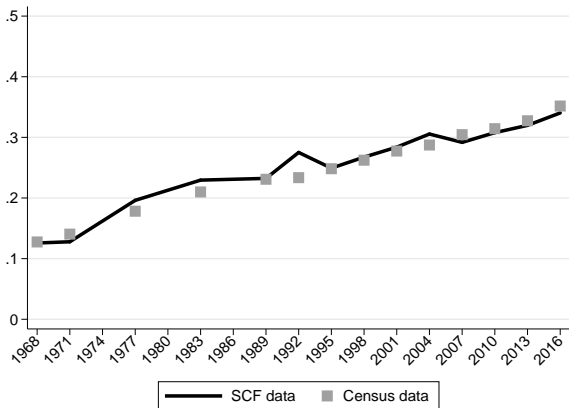
- Group households in education groups according to education of household head
- Household head is male in a married couple
- Distinguish households in college and non-college

College and non-college households

- Group households in education groups according to education of household head
- Household head is male in a married couple
- Distinguish households in college and non-college
- Consider only college graduates (“some college” not included)

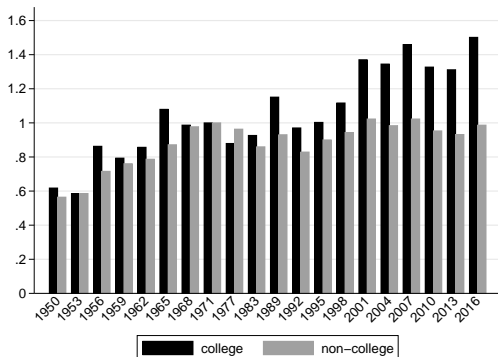
Comparison to Census Data

- Share of college-headed households from HSCF matches Census data



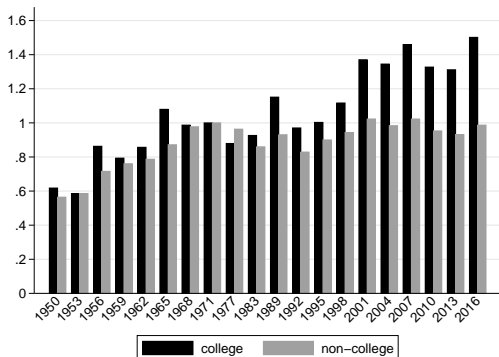
Income divide

- No real income growth for non-college households since 1971



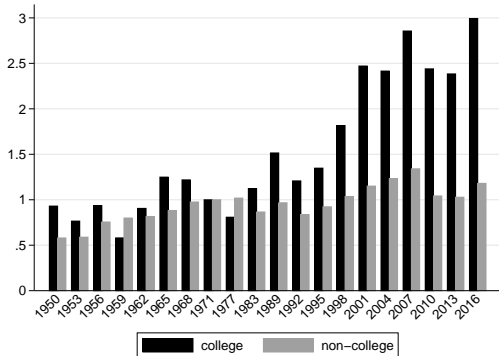
Income divide

- No real income growth for non-college households since 1971
- 50% increase of income divide between college and non-college households



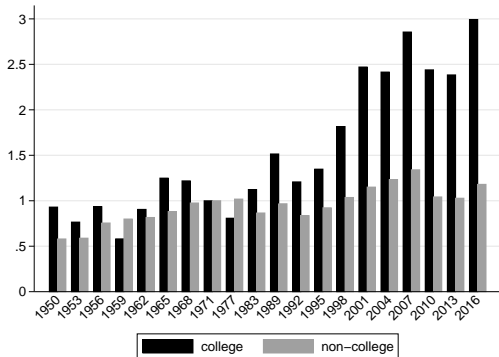
Wealth divide

- Meager wealth growth of non-college households since 1971



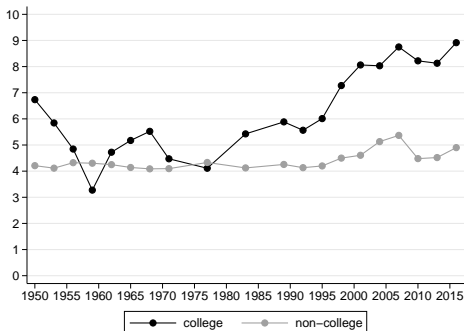
Wealth divide

- Meager wealth growth of non-college households since 1971
- Tripling of wealth for college households



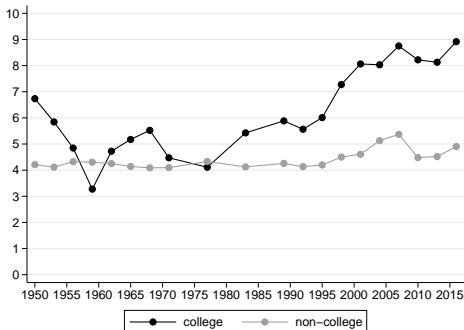
Wealth and income growth

- Small increase of wealth-to-income ratio for non-college households



Wealth and income growth

- Small increase of wealth-to-income ratio for non-college households
- Much stronger wealth than income growth for college households

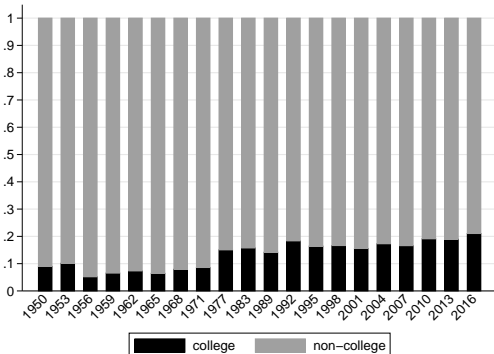


College households in the wealth distribution

- Share of college households increased from 15% to 34%

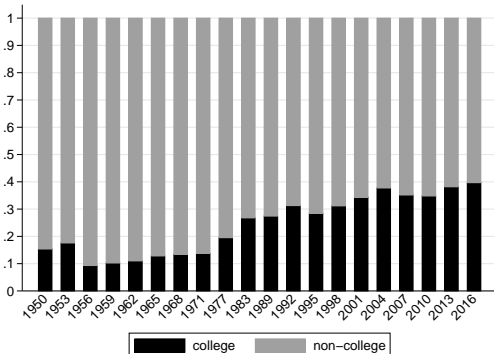
College households in the wealth distribution

- Share of college households increased from 15% to 34%
- Share among bottom 50% of wealth distribution increased from 9% to 21%



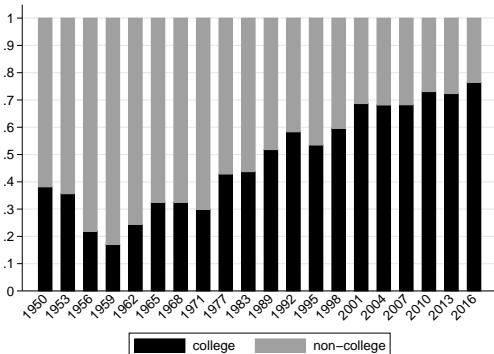
College households in the wealth distribution

- Share of college households increased from 15% to 34%
- Share among 50%-90% of wealth distribution increased from 15% to 40%



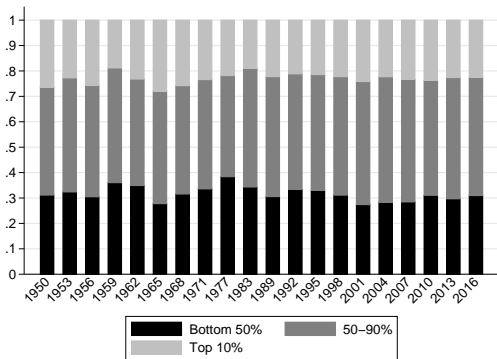
College households in the wealth distribution

- Share of college households increased from 15% to 34%
- Share among top 10% of wealth distribution increased from 38% to 76%



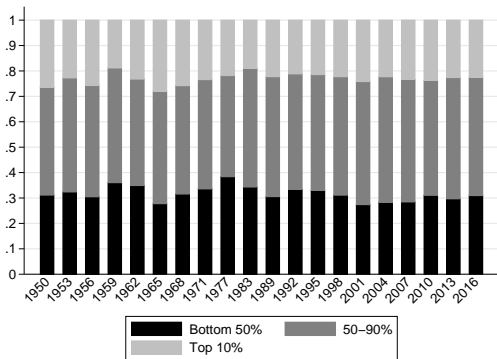
College households in the wealth distribution

- College households across wealth groups



College households in the wealth distribution

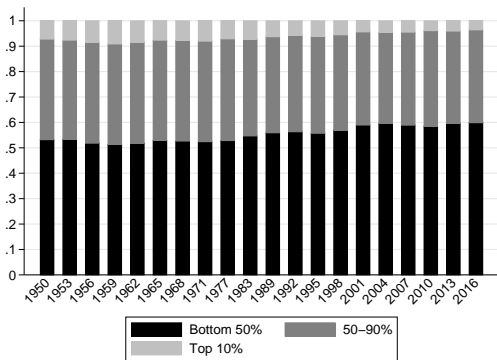
- College households across wealth groups



- Distribution of college and non-college households along the wealth distribution roughly stable

College households in the wealth distribution

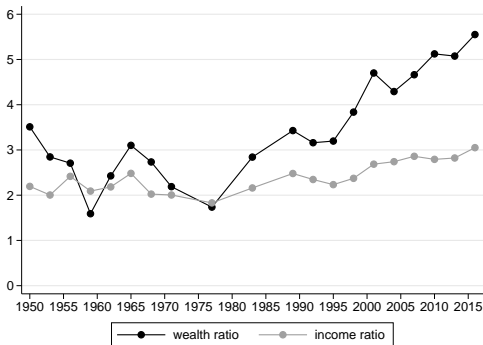
- Non-college households across wealth groups



- Distribution of college and non-college households along the wealth distribution roughly stable

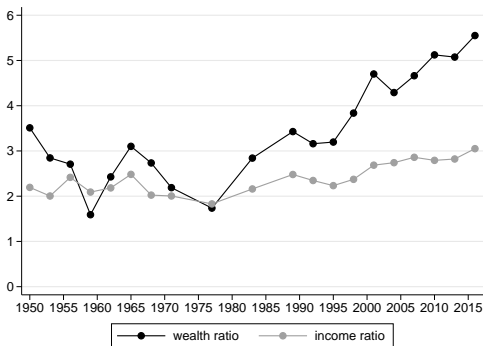
Wealth and income divide

- Ratios of wealth and income between college and non-college roughly constant until 1970



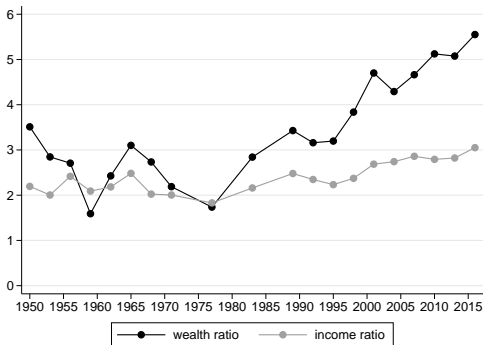
Wealth and income divide

- Ratios of wealth and income between college and non-college roughly constant until 1970
- College income divide +50% since 1970



Wealth and income divide

- Ratios of wealth and income between college and non-college roughly constant until 1970
- College income divide +50% since 1970
- College wealth divide +100% since 1970



Accounting for divergent wealth growth

- Income growth leads to wealth growth
- Simplest case: constant wealth-to-income ratio over time

$$\frac{W_{t+1}}{Y_{t+1}} = \frac{W_t}{Y_t} : Y_{t+1} = 2 \times Y_t \Rightarrow W_{t+1} = 2 \times W_t$$

- College income grew relative to non-college income

$$\frac{Y_{1970}^C}{Y_{1970}^N} \approx 2 \quad \nearrow \quad \frac{Y_{2010}^C}{Y_{2010}^N} \approx 3 \quad \Rightarrow \quad \frac{W_{2010}^C}{W_{2010}^N} \approx 3$$

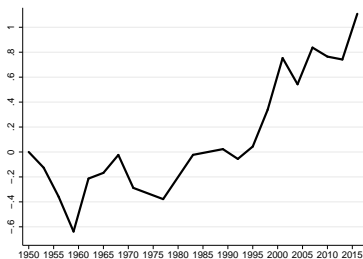
- Simplest case: College wealth grows 50% more than non-college wealth
- Half of wealth growth for college households unexplained

Wealth growth accounting

- Regress income growth on wealth growth

$$\frac{W_t^i}{W_{1971}^j} = \alpha \frac{Y_t^i}{Y_{1971}^j} + \beta \times \text{age}_t^i + \gamma_t (\text{year} \times \text{college}_t^i) + \varepsilon_{i,t}$$

with j for college and non-college

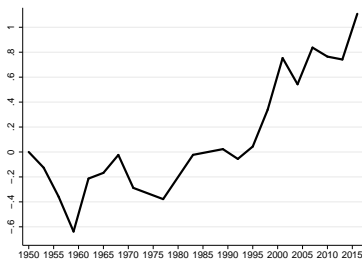


Wealth growth accounting

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with j for college and non-college



- Increasing residual “college effect” γ_t over time

Wealth growth accounting

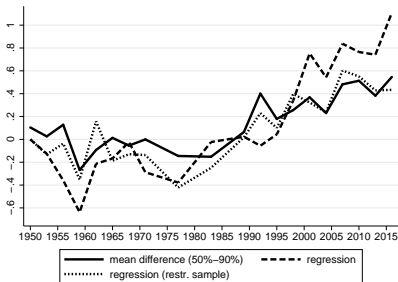
- Control for income growth by conditioning on position in income distribution (50% - 90%)

Wealth growth accounting

- Control for income growth by conditioning on position in income distribution (50% - 90%)
- Restrict sample to age 40 to 60 to control for age

Wealth growth accounting

- Control for income growth by conditioning on position in income distribution (50% - 90%)
- Restrict sample to age 40 to 60 to control for age
- Same residual “college effect” starting to shown up around 1980s

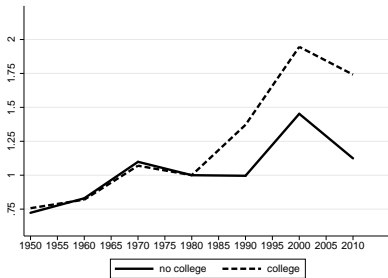


Long-run wealth divide

- Averaging data to decades shows rising college wealth divide since 1980s



Income



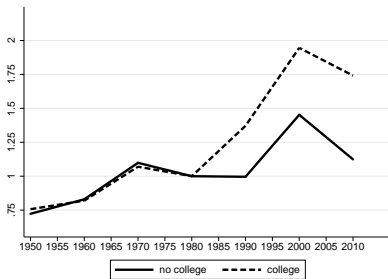
Wealth

Long-run wealth divide

- Averaging data to decades shows rising college wealth divide since 1980s
- Increasing wealth divide not driven by income or age



Income



Wealth

Asset price effects and wealth growth

- Asset prices changes alternative force for wealth growth

Asset price effects and wealth growth

- Asset prices changes alternative force for wealth growth
- Capital gains from asset prices unrelated to income dynamics

Asset price effects and wealth growth

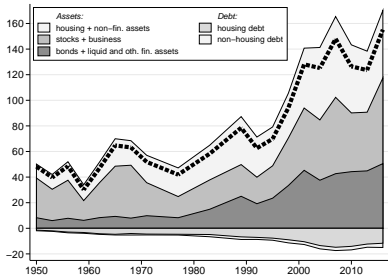
- Asset prices changes alternative force for wealth growth
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- Portfolio heterogeneity and different asset price exposure lead to differences in capital gains

Asset price effects and wealth growth

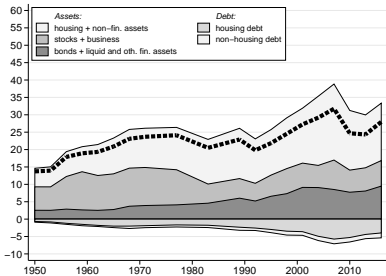
- Asset prices changes alternative force for wealth growth
- Capital gains from asset prices unrelated to income dynamics
- Portfolio heterogeneity and different asset price exposure lead to differences in capital gains
- Large part of wealth divergence during stock market boom of 1990s

Portfolio composition

- Small differences between college and non-college households for housing



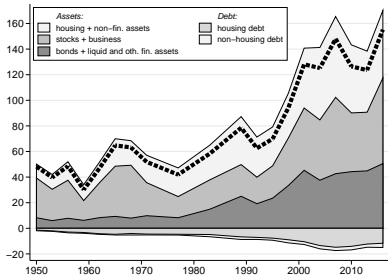
College



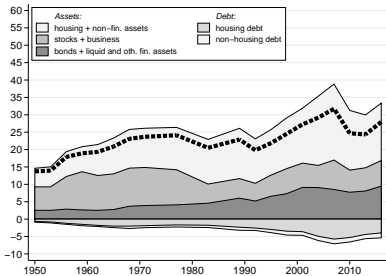
Non-College

Portfolio composition

- Small differences between college and non-college households for housing
- College households increased equity wealth especially during 1990s



College



Non-College

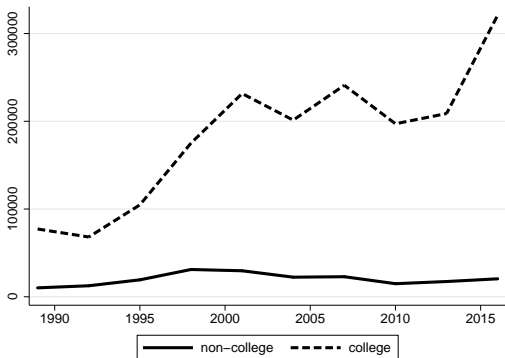
Wealth growth and asset prices

- In 1989 college households own 7.6 times more stock market wealth than non-college households
- Large capital gains for stock owners during stock market boom of the 1990s



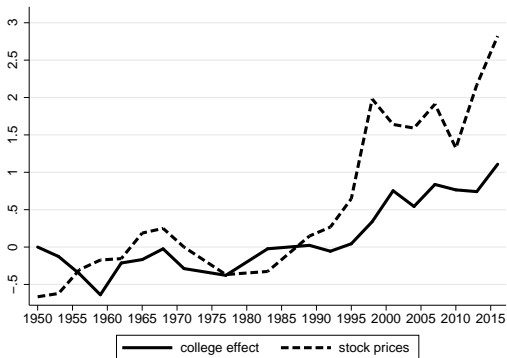
Stock market wealth

- Initial difference in level of stock holdings translates into large difference in capital gains



Stock prices and wealth divide

- Stock market growth strongly correlates with estimated “college effect” γ_t



Stock market and wealth dynamics

- Regress “college effect” on stock price growth P_t

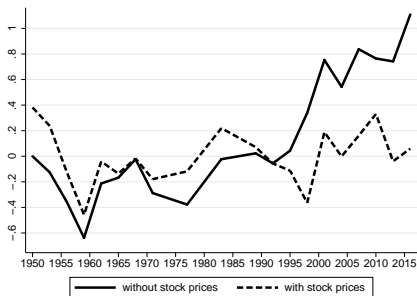
$$\gamma_t = \alpha + \phi \left(\frac{P_t}{\bar{P}_{1970}} \right) + \hat{\gamma}_t$$

Stock market and wealth dynamics

- Regress “college effect” on stock price growth P_t

$$\gamma_t = \alpha + \phi \left(\frac{P_t}{\bar{P}_{1970}} \right) + \hat{\gamma}_t$$

- Residual “college effect” $\hat{\gamma}_t$ shows no time trend



Asset prices and wealth dynamics

- Wealth growth of college households exceeds income growth

Asset prices and wealth dynamics

- Wealth growth of college households exceeds income growth
- Widening wealth divide between college and non-college households

Asset prices and wealth dynamics

- Wealth growth of college households exceeds income growth
- Widening wealth divide between college and non-college households
- Estimated “college effect” correlates strongly with stock prices

Asset prices and wealth dynamics

- Wealth growth of college households exceeds income growth
- Widening wealth divide between college and non-college households
- Estimated “college effect” correlates strongly with stock prices
- Wealth growth differences explained by stock price changes

Asset prices and wealth dynamics

- Wealth growth of college households exceeds income growth
- Widening wealth divide between college and non-college households
- Estimated “college effect” correlates strongly with stock prices
- Wealth growth differences explained by stock price changes
- Asset prices important driver of wealth dynamics

Conclusions

- New micro data on the long-run evolution of U.S. households' financial situation

Additional slides

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- Differential wealth growth of college and non-college households

Additional slides

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Additional slides

Conclusions

- New micro data on the long-run evolution of U.S. households' financial situation
- Differential wealth growth of college and non-college households
- Large part of wealth growth of college households not due to income growth
- Evidence points towards large capital gains from stock market for college households

Additional slides

Additional slides

The College Wealth Divide

Evidence from the

Historical Survey of Consumer Finances 1949 - 2016

Is College Still Worth It?

Symposium at the St. Louis Federal Reserve Bank

May 24, 2018

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Re-weighting: Representativeness

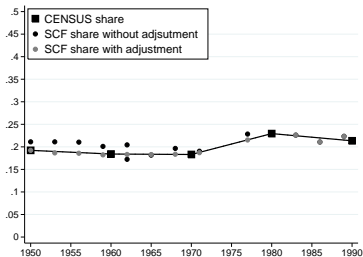
- Consider demographic characteristics of household heads

Re-weighting: Representativeness

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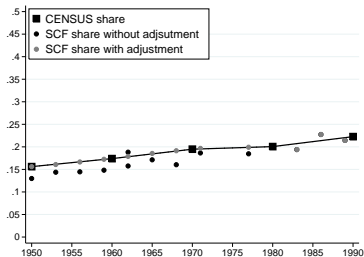
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- Adjust survey weights using 24 demographic cells



- Age group 25 - 34

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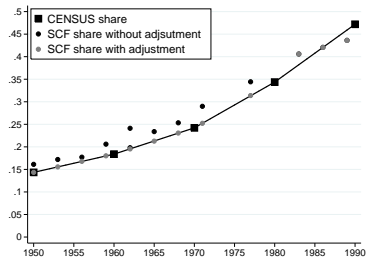
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- Age group 65 - 99

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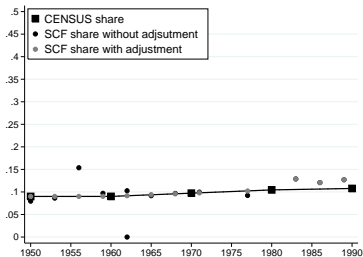
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- College graduates

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- Calibrate re-weighting using 1983 distribution of list sample
- Re-weight existent underrepresented household information in "historical" SCF data

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	top 10%	top 5%	top 1%	top 10%	top 5%	top 1%
SFCC 1962	21 %	35 %	63 %	20 %	28 %	48 %
SCF 1983	17 %	34 %	88 %	17 %	32 %	72 %

Validating re-weighting approach

1. Compare to similarly designed 1962 survey to check for changing non-response pattern
2. Drop 1983 list sample and re-weight sample ("proof of concept")

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 3. Balance sheets

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- Balance sheet of "Main Street America" (houses, mortgages, and cars) well covered
- Capitalization method imputes large part of assets (in 2010)
 1. 91% of wealth for bottom 90%
 2. 40% of wealth for top 10%