The Saving Glut of the Rich

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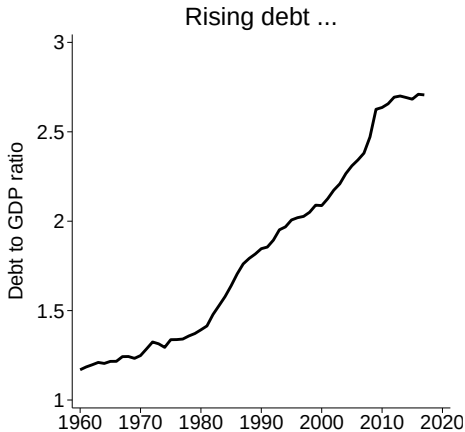
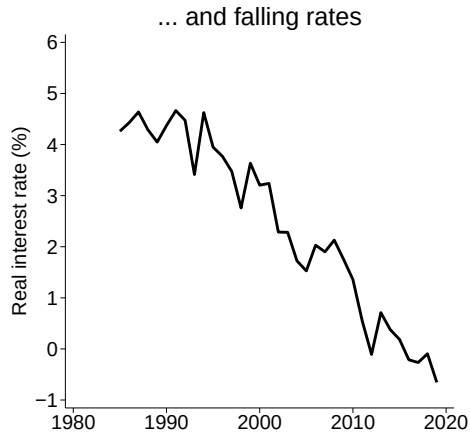
Motivation


Rising debt ...
Debt to GDP ratio
3
2.5
2
1.5
1
1960
1970
1980
1990
2000
2010
2020


... and falling rates
Real interest rate (%)
6
5
4
3
2
1
0
−1
1980
1990
2000
2010
2020

Two Research Studies

1. **The Saving Glut of the Rich** (facts)
    - Measuring the rise in savings by the rich in a national accounting framework
    - Savings have been transformed into gov and hh borrowing, as opposed to investment
2. **Indebted Demand** (model)
    - Model incorporating differential MPCs out of lifetime income (non-homotheticity)
    - Inequality, financial liberalization lead to rising debt and lower interest rates
    - Implications for monetary and fiscal policy, risk of debt traps

Saving Glut of the Rich: Findings

- Measuring the savings of the rich, and what it finances:
  - using income flows (the NIPA)
  - using measures of debt and wealth (the Financial Accounts)
  - using state-level first-difference specification that approximates ideal experiment
- Findings
  - Savings by the top 1% have risen 2.5 to 4 pp of national income comparing 1960s and 1970s to post-2000; same order of magnitude as global saving glut
  - Savings associated with borrowing by non-rich and gov; not rise in investment
  - State-level analysis: Rise in top income shares explains all of the rise in household debt held as a financial asset by household sector

Related Empirical Literature

- **Income inequality:** Katz and Murphy (1992); Piketty and Saez (2003); Autor, et al (2008); Atkinson et al (2011); Piketty, et al (2017); CBO (2019); Smith, et al (2019)
- **Wealth inequality:** Saez and Zucman (2016); Wolf (2017); Bricker, et al (2018); Batty, et al (2019); Kuhn et al (2020); Smith, et al (2020)
- **Long-term rise in household debt:** Bartscher et al (2020)
- **Linking inequality and borrowing:** Rajan (2011); Cynamon and Fazzari (2015); Bertrand and Morse (2016); Kumhof, et al (2015)
- **Consumption:** Slesnick (2001), Krueger and Perri (2006), Blundell et al. (2008), Heathcote et al. (2010), Aguiar and Bils (2015), Attanasio and Pistaferri (2016), Meyer and Sullivan (2017), Guvenen et al. (2017), Fisher et al. (2016), Guvenen et al. (2019), and De Nardi et al. (2018)).

Measuring the Saving Glut of the Rich

Savings in the NIPA

- Start with GDP

$$Y = C + G + I + (X - M) \tag{1}$$

- National income: $Z = Y - \delta + W - \epsilon$; δ: consumption of fixed capital, W: net income from abroad, ϵ: statistical discrepancy; $F = (X - M + W)$

$$Z - C = G + I^n + F - \epsilon \tag{2}$$

- Using the government budget constraint $S^g = T - R - G$:

$$\Theta = Z - T + R - C = I^n + F - S^g - \epsilon \tag{3}$$

- Θ is the key concept of **aggregate private savings** (includes personal and business savings)

Accounting for the Distribution

- Split savings by income or wealth distribution:

$$\Theta_{top1} + \Theta_{next9} + \Theta_{bot90} = I^n + F - S^g - \epsilon$$

- Central challenge is measurement of Θ_{it}: savings by group i in year t
- Two approaches:
  - Income less consumption approach:

$$\Theta_{it} = Z_{it} - T_{it} + R_{it} - C_{it}$$

  - Wealth-based approach

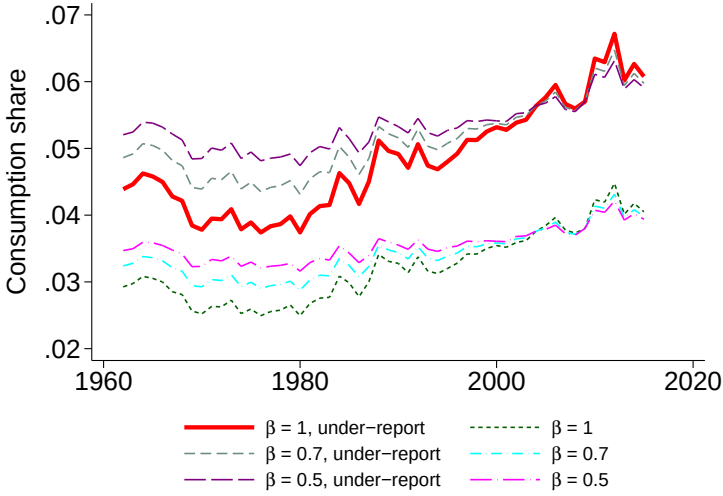
$$\Theta_{it} = \sum_{j \in J} \left(\Delta W_{it}^j - \pi_t^j W_{i,t-1}^j \right)$$

Measurement: Income less consumption approach

- $Z_{it} - T_{it} + R_{it}$:
  - Piketty et al 2018; Congressional Budget Office
- C_{it}:
  - Two inputs: (1) consumption share in a baseline year and (2) assumption on long-run evolution of consumption to income ratio
  - Baseline uses PSID, SCF (Fisher et al 2017)
  - Consumption to income ratio assumption over time follows Straub (2019):

$$\frac{C_{it}}{\bar{y}_t} = K * \left(\frac{y_{it}}{\bar{y}_t}\right)^{\beta}$$

Consumption Share of the Top 1% of Income Distribution

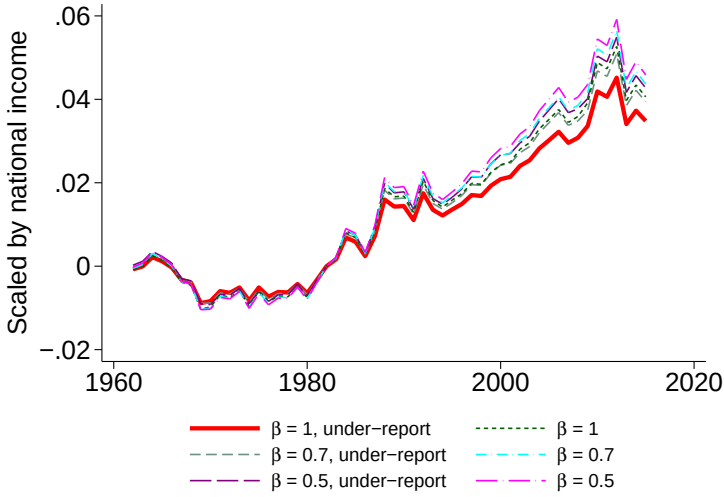


Measurement: Wealth-based approach

- W_{it}^{j}:
  - Saez Zucman 2016; Piketty et al 2018; Distributional Financial Accounts
  - Careful consideration of criticisms in Bricker et al 2018; Smith et al 2020
- π_{t}^{j}:
  - As in Saez Zucman 2016 (and others), with a few changes
  - Ensure that total savings adds up to national accounts
  - Take into account debt write-downs

How Large Is the Saving Glut of Rich?

Saving Glut of the Rich Relative to 1982 (Income less consumption approach)



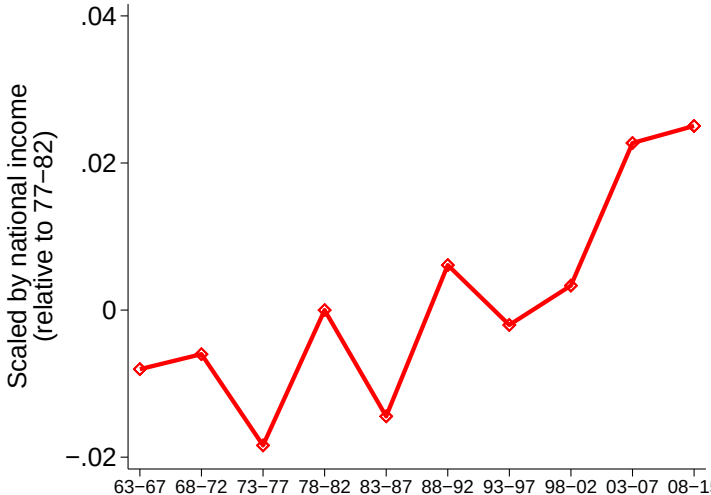
Saving Glut of the Rich over Time

Time Period	Baseline
63-82	0.057
83-97	0.073
98-07	0.086
08-15	0.099

Saving Glut of the Rich over Time: Robustness

	PSZ			CBO		
Decade	$\beta = 1$	$\beta = 0.7$	$\beta = 0.5$	$\beta = 1$	$\beta = 0.7$	$\beta = 0.5$
79-82	0.000	0.000	0.000	0.000	0.000	0.000
83-97	0.015	0.016	0.018	0.017	0.018	0.020
98-07	0.028	0.032	0.035	0.037	0.040	0.043
08-15	0.041	0.046	0.049	0.031	0.035	0.039

Saving Glut of the Rich
(Wealth-based approach)



Where Does the Saving Glut Settle?

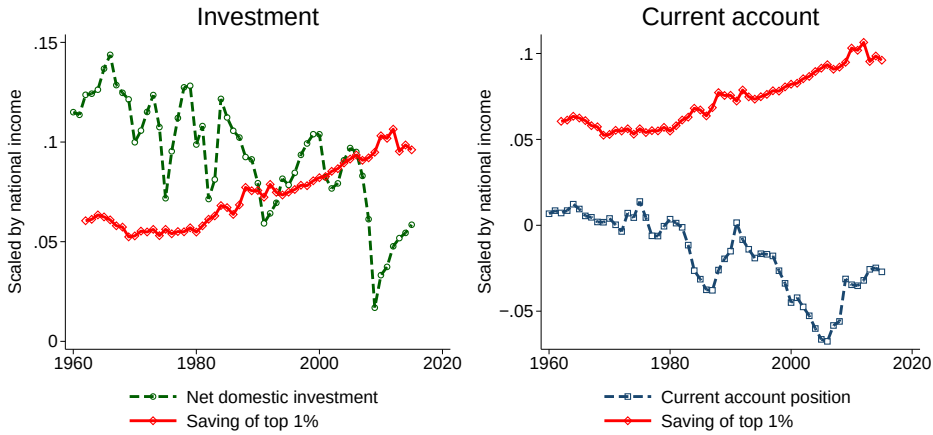
Where Does the Saving Glut Settle?

- Re-arranging the NIPA equation and scaling by Z_t yields:

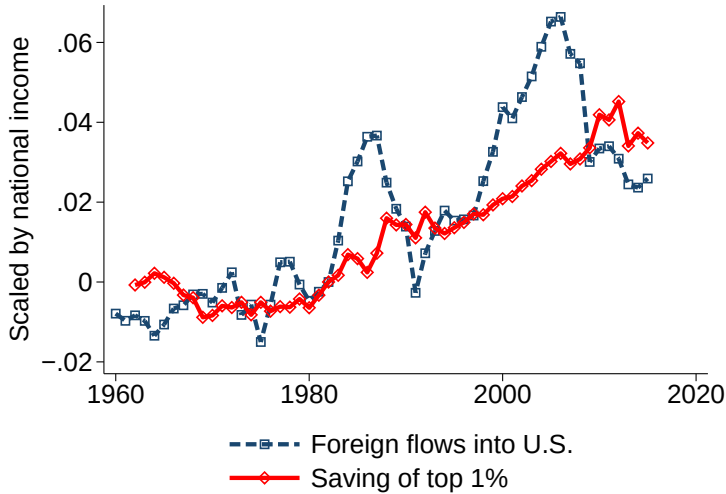
$$\theta_{top1,t} = \frac{I_t^n + F_t}{Z_t} - \theta_{next9,t} - \theta_{bot90,t} - \frac{S_t^g}{Z_t}$$

- Saving glut could be invested, could be sent overseas ...
- or could finance more borrowing by the bottom 99% and the government

Net Domestic Investment and the Foreign Account



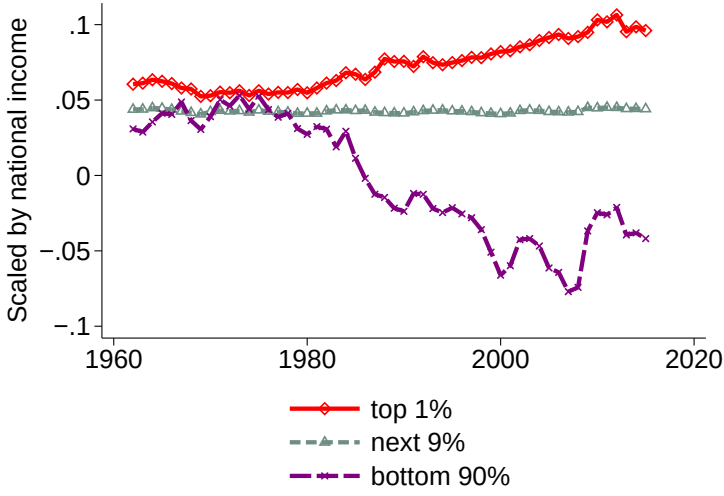
Saving Glut of the Rich and the Global Saving Glut



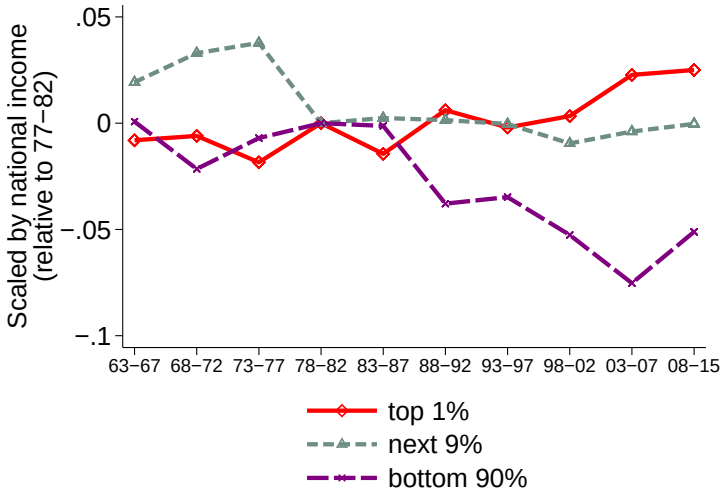
Traditional Channels of Absorption

Time Period	Saving glut	Investment	Current Account
63-82	0.057	0.114	0.003
83-97	0.073	0.088	-0.020
98-07	0.086	0.091	-0.050
08-15	0.099	0.045	-0.033

Saving Glut of the Rich and Saving of the non-Rich



Using the Wealth-based Approach



Absorption by the Bottom 90%

Time Period	Top 1%	Next 9%	Bottom 90%	Gov Saving
63-82	0.057	0.043	0.040	-0.030
83-97	0.073	0.043	-0.011	-0.051
98-07	0.086	0.042	-0.055	-0.026
08-15	0.099	0.044	-0.038	-0.089

Integrating to Obtain Accumulated Absorption

- Start with:

$$\theta_{top1,t} + \theta_{bot99,t} - \left(\frac{I^n}{Z}\right)_t - \left(\frac{F}{Z}\right)_t + \left(\frac{S^g}{Z}\right)_t + \epsilon_t = 0$$

- For each of the 6 variables, construct

$$\hat{V}_t = V_t - V_{pre}$$

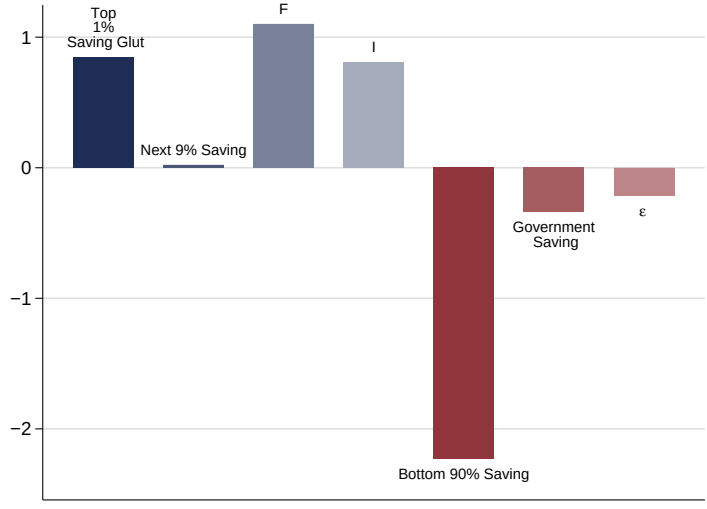
- Obtain:

$$\overline{V} = \sum_{t=1983}^{2015} \hat{V}_t$$

- Then:

$$\overline{\theta_{top1}} + \overline{\theta_{bot99}} - \overline{\left(\frac{I^n}{Z}\right)} - \overline{\left(\frac{F}{Z}\right)} + \overline{\left(\frac{S^g}{Z}\right)} + \bar{\epsilon} = 0$$

Absorption of the Accumulated Saving Glut of Rich



Linking the Saving of the Rich to the Borrowing of the Non-Rich

The Rich Financing the Non-Rich

- Goal is to measure how much of the wealth of the rich represents a claim on the borrowing of the non-rich
- Matrix representation:

$$\begin{bmatrix} A_1 \\ A_2 \\ \vdots \\ A_I \end{bmatrix} = \begin{bmatrix} \omega_{1,1} & \omega_{1,2} & \cdots & \cdots & \omega_{1,C} \\ \omega_{2,1} & \omega_{2,2} & \cdots & \cdots & \omega_{2,C} \\ \vdots & \vdots & \ddots & \ddots & \vdots \\ \omega_{I,1} & \omega_{I,2} & \cdots & \cdots & \omega_{I,C} \end{bmatrix} \begin{bmatrix} F_1 \\ F_2 \\ \vdots \\ F_C \end{bmatrix}$$

- The vector F_c requires us to "unveil" the financial system; the rich hold household debt through banks, non-financial businesses, mutual funds, etc.

Unveiling the Financial System

- Start with household debt (mortgages and consumer credit) in Financial Accounts
- Use linkages in Financial Accounts to unveil the holdings in a series of rounds
- Series of rounds
  1. Start with GSEs, ABS issuers, banks, REITS, finance companies
  2. Unveil GSEs, ABS issuers, REITS, finance companies
  3. Unveil mutual and money market funds
  4. Unveil banks
  5. Unveil corporations
- Proportionality of ownership claims is crucial assumption

START	Pass-Through Agency, ABS, REITs, Finance Comps	FED	Mutual/ Money Market Funds	Depository Institutions	Non-Fin. Corp Businesses	Non-Fin. Non-Corp Businesses	FINAL
Total HH Debt							HH Debt Held by U.S. Households

Pensions
0.18

Life Ins. Reserves
0.04

Mutual Funds
0.05

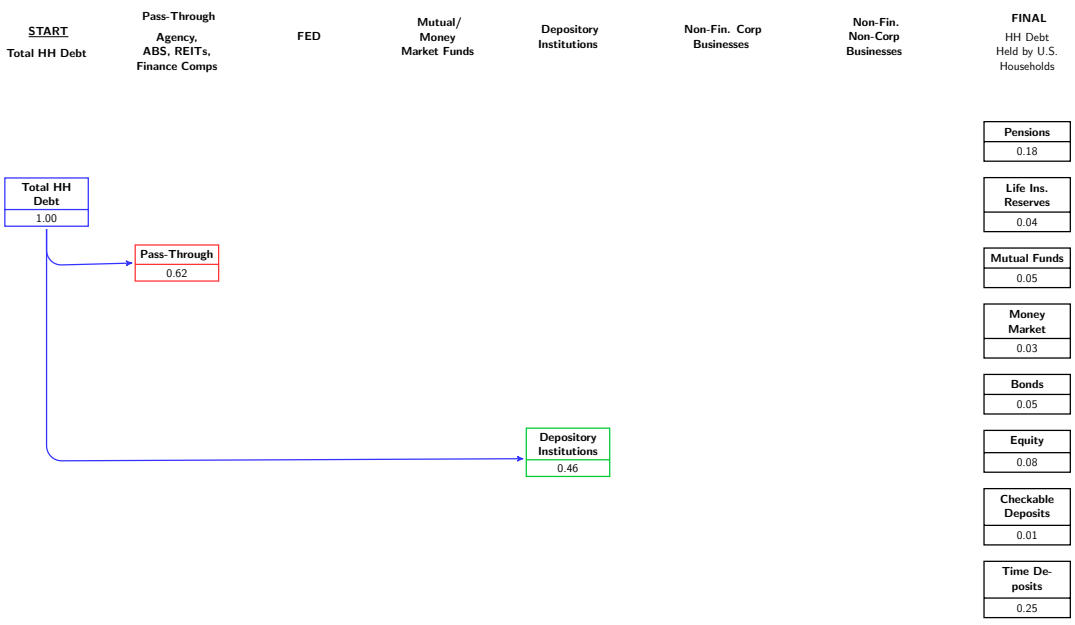
Money Market
0.03

Bonds
0.05

Equity
0.08

Checkable Deposits
0.01

Time De-posits
0.25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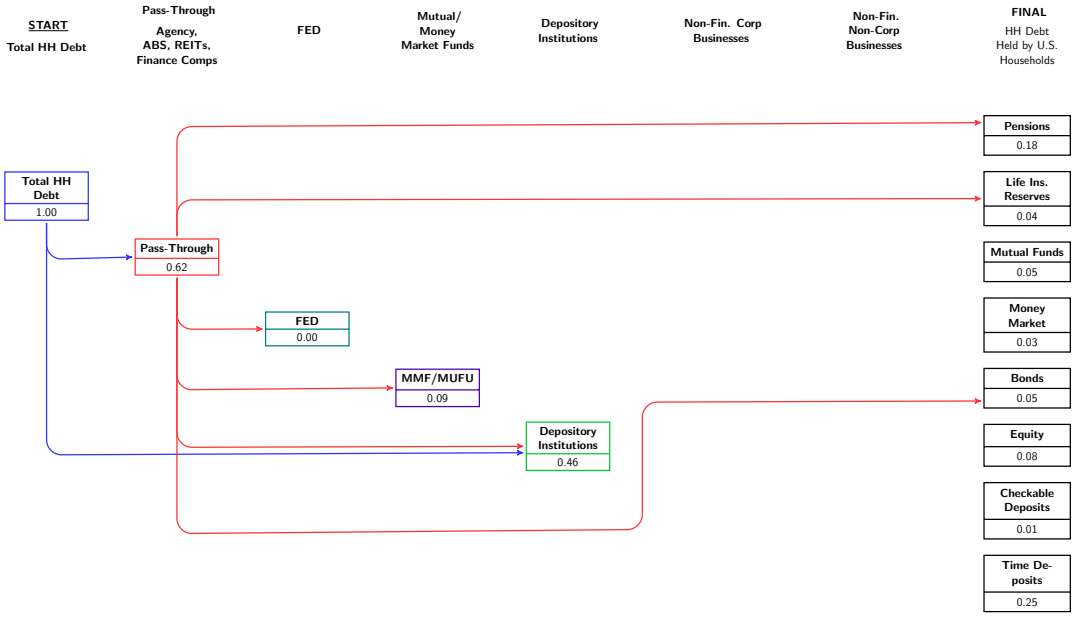
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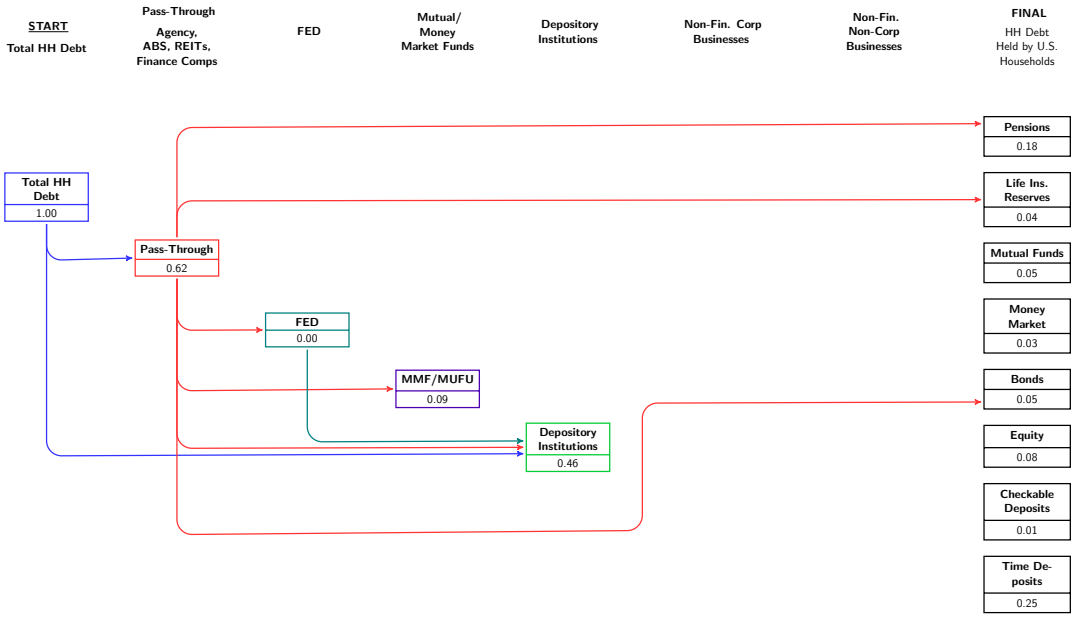
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Agency,
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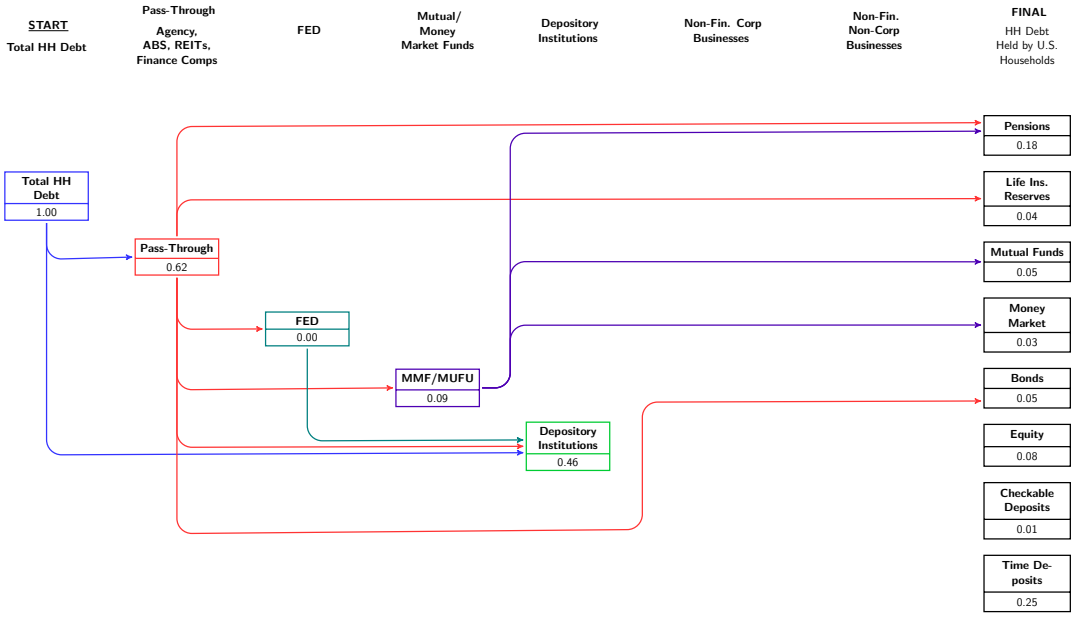
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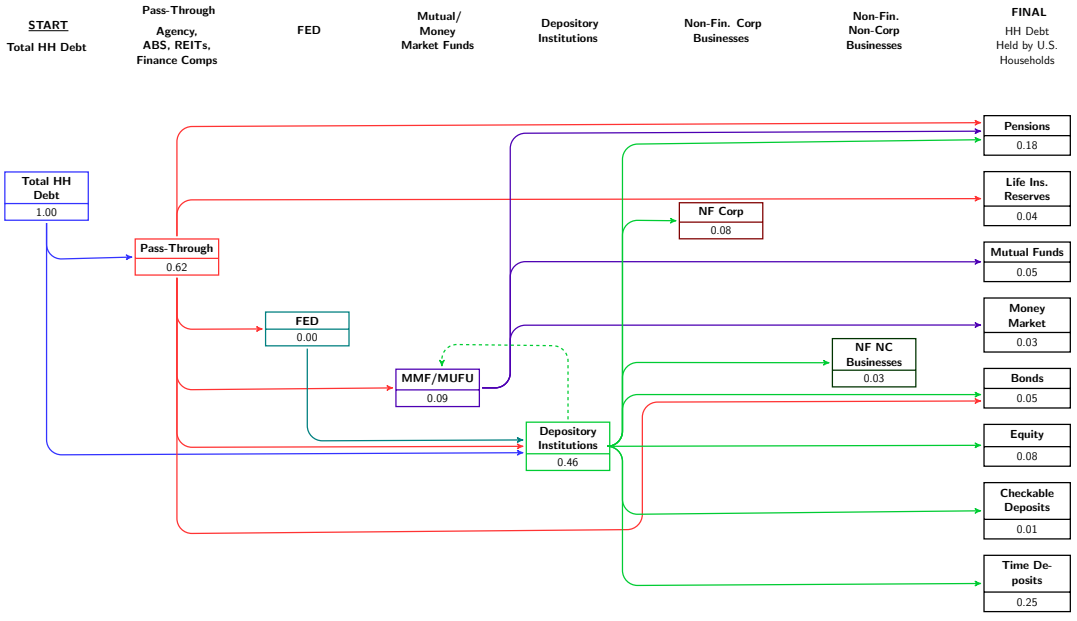
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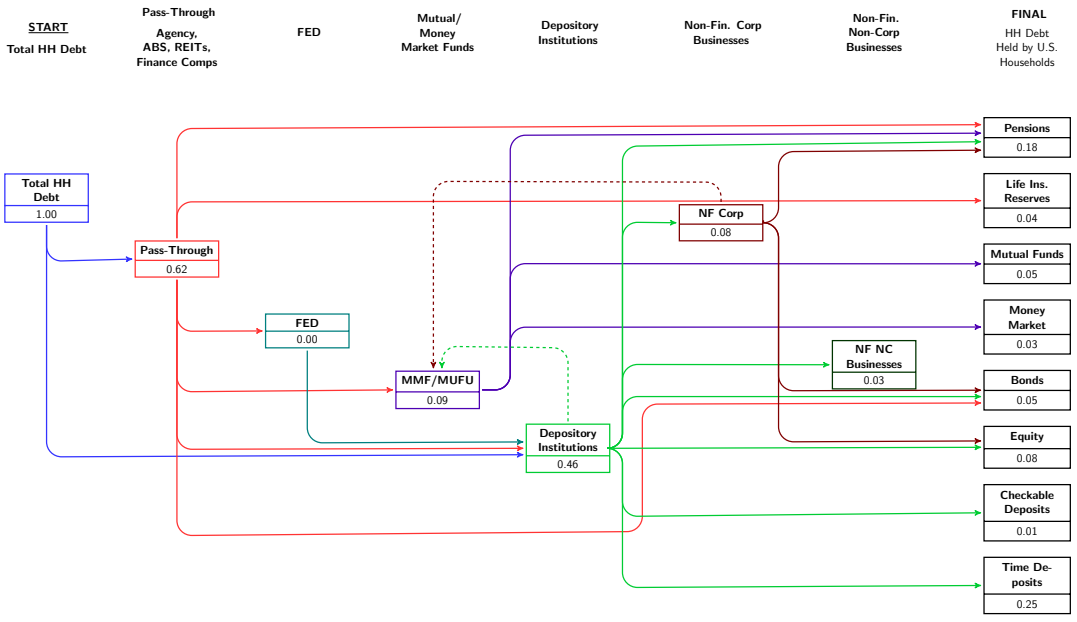
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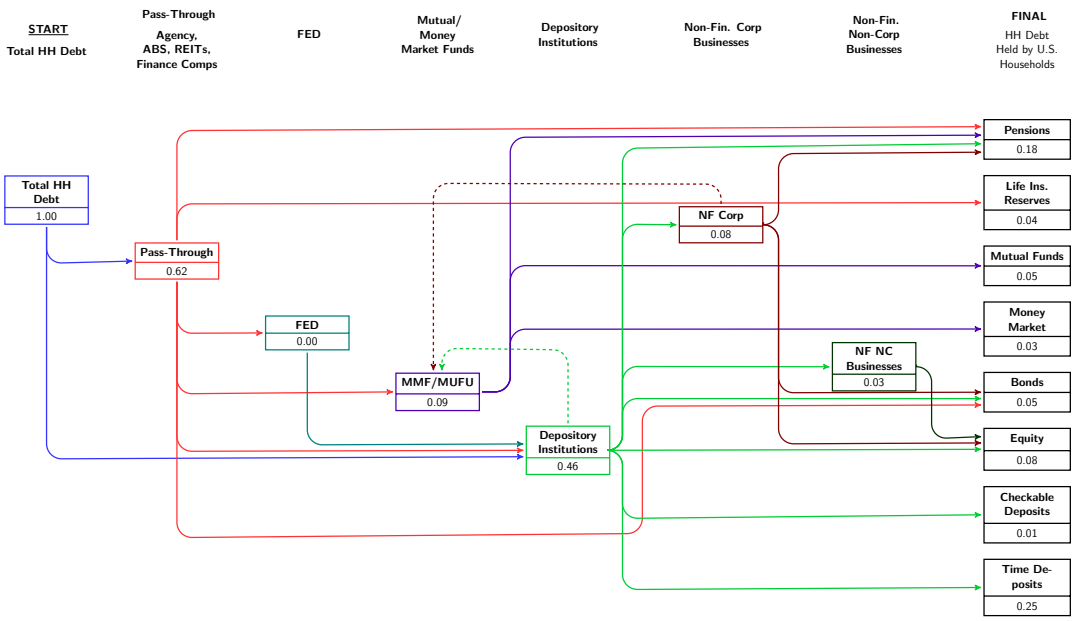
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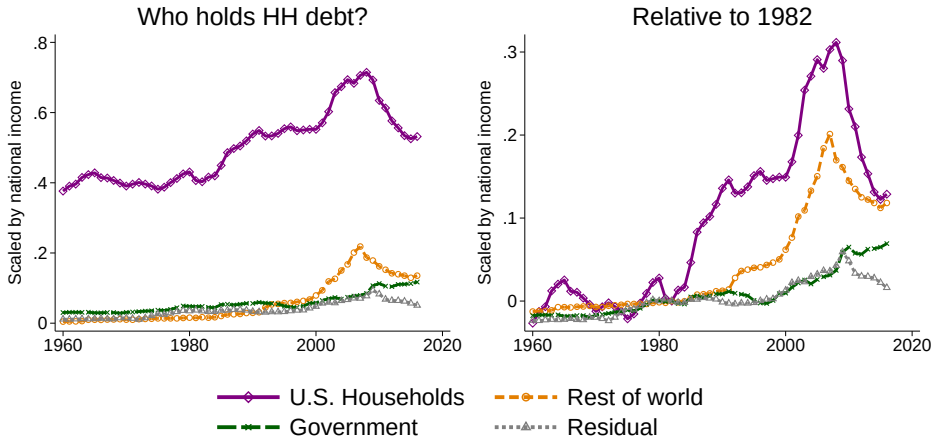
Who Holds Household Debt as a Financial Asset?



The Rich Financing the Non-Rich

- Matrix representation:

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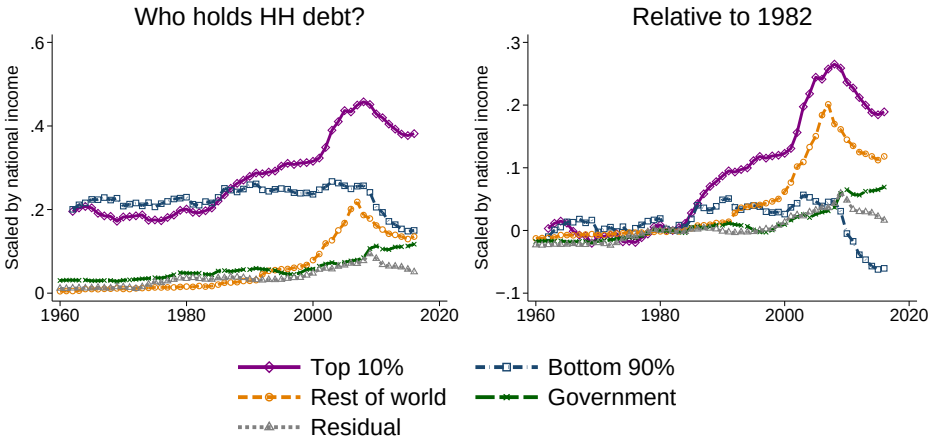
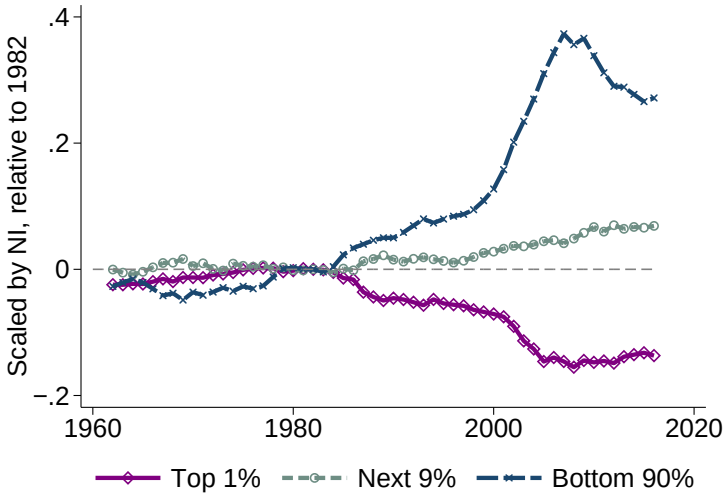
- The weights $\omega_{i,c}$ come from capitalization technique (SZ 2016, Smith et al 2020) or Distributional Financial Accounts (Batty et al 2019)

Who Holds Household Debt across the Income Distribution?



Net Household Debt across Wealth Distribution Relative to 1982

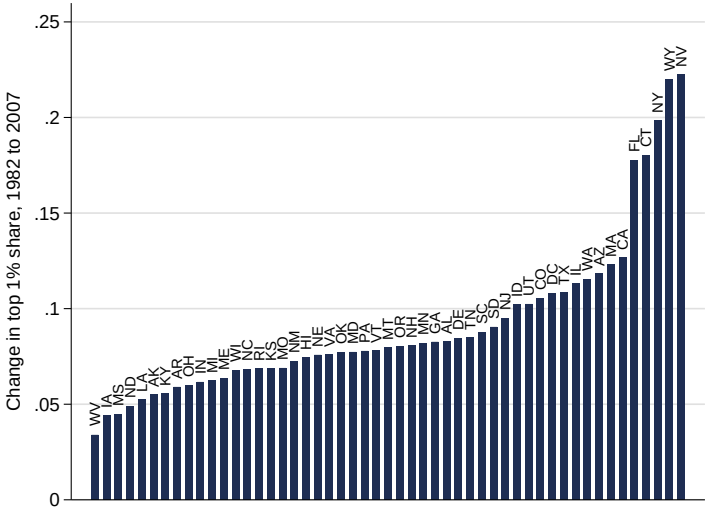


State-level analysis

Advantages of State-level Analysis

- Ideal thought experiment: holding all else equal, how does an increase in top income shares affect the accumulation of household debt held as a financial asset of the rich?
- State-level first-difference specification is closer to this ideal thought experiment
- Advantages:
  - Removes other aggregate secular trends (demographics, current account deficits, etc)
  - Helps more directly tie rise in top income shares to accumulation of household debt as financial asset

Change in Top 1% Share of Income Across States

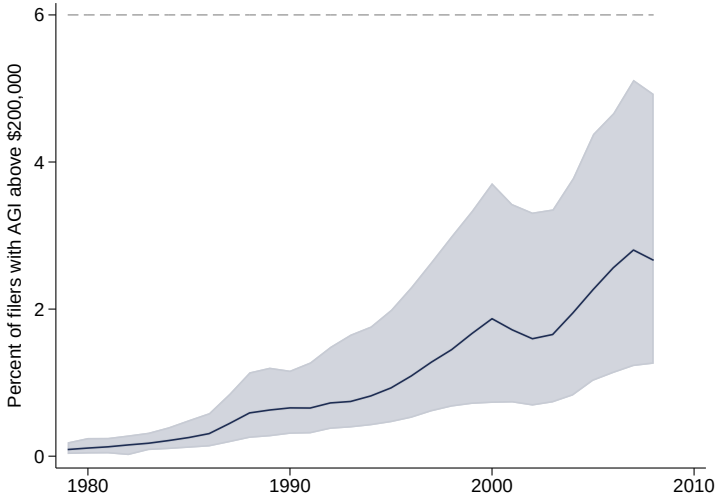


State-level data

- Benchmark: same as Saez-Zucman, with state-level identifiers to create both wealth and income shares across the income distribution
- Key difference: state-level identifiers missing in micro-data for those with AGI above $200K
- Ameliorate this problem using state-level aggregates for all individuals with more than $200K from SOI (new dataset!), but then top income group cannot be too narrow (top 6%)
- Novel data allows us to create:

$$A^{HHD}_{i,s,t} = \sum_{c} \pi_{c,i,s,t} * A^{HHD}_{c,t}$$

Percentage of Filers with AGI Above $200,000



State-level specification

- Let

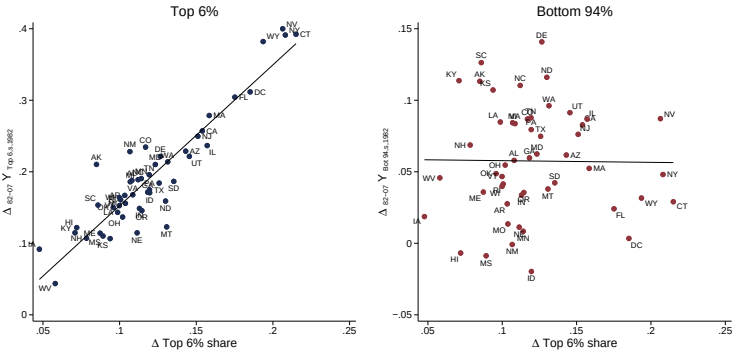
$$\Delta_{82,07} Y_{is} = \frac{A^{HHD}_{is,2004-07}}{AGI_{s,2004-07}} - \frac{A^{HHD}_{is,1982}}{AGI_{s,1982}}$$

- Key specification:

$$\Delta_{82,07} Y_{is} = \alpha + \beta_i * \Delta_{82,07} Top6Share_s + \Gamma * X_s + \varepsilon_s$$

- Notice:
  - $\Delta_{82,07} Y_s = \sum_i \Delta_{82,07} Y_{is}$, and so sum of β_i gives total effect of $\Delta_{82,07} Top6Share_s$
  - Controls X_s allow us to fix initial household debt ownership (valuation effects), average income growth, initial income levels, etc

Change in Household Debt Holding Against Rise in Top Income Share

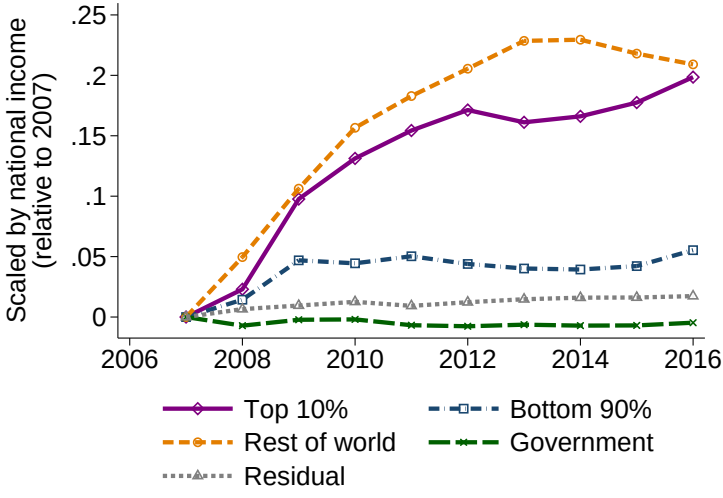


Back of Envelope Aggregate Calculation

- Rise in the share of the top 6% is 14.9% in aggregate
- Coefficient implies: 14.9% increase in top income share associated with a 29.1 percentage point increase in the holdings of household debt as a share of income
- Total rise in household debt held as a financial asset by households as a share of national income at the U.S. level between 1982 and 2007 is 30.3 percentage points
- State-level coefficient estimate implies that rise in top 6% income share explains almost all of the rise in household debt held as finacnial asset by households

Post Recession: The Rise in Government Debt

The Rise of Government after Great Recession

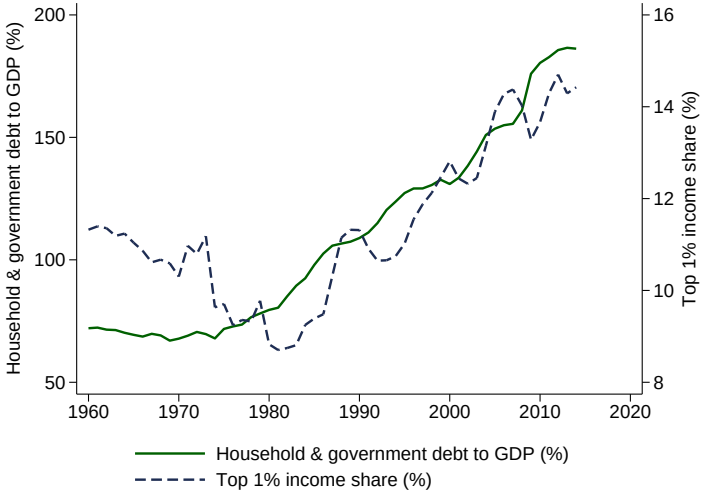


Conclusion

Implications

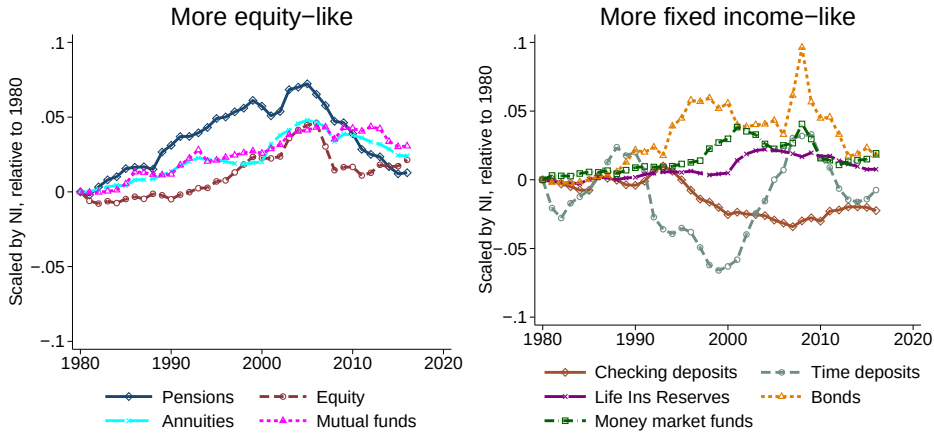
- Saving glut of the rich may be linked to decline in interest rates and rise in household debt across advanced countries (see model paper)
- Because they ignore distribution, national saving rates can be misleading
- Financial system is channeling funds to households and governments, while investment is weak. Why?

Top income shares and rising household debt across countries

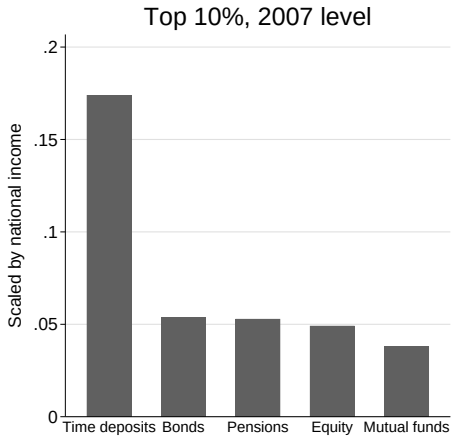


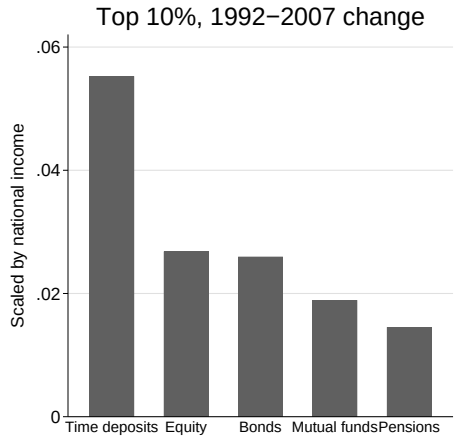
Extra Slides

Instruments through which Household Debt Held by Households

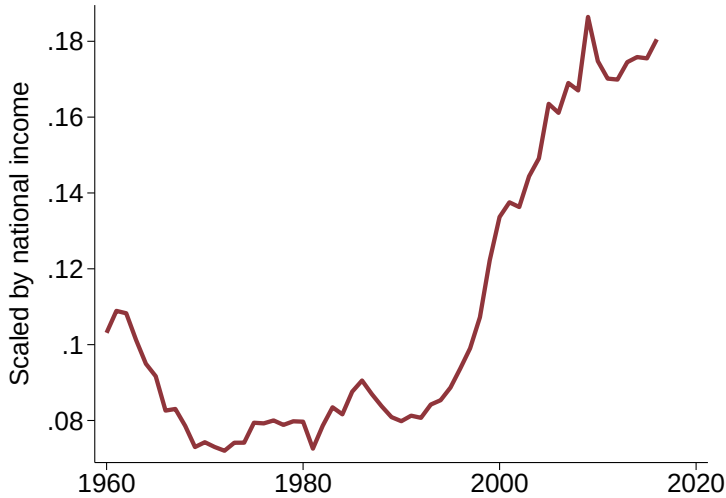


Through What Instruments Does Top 10% Hold Household Debt?

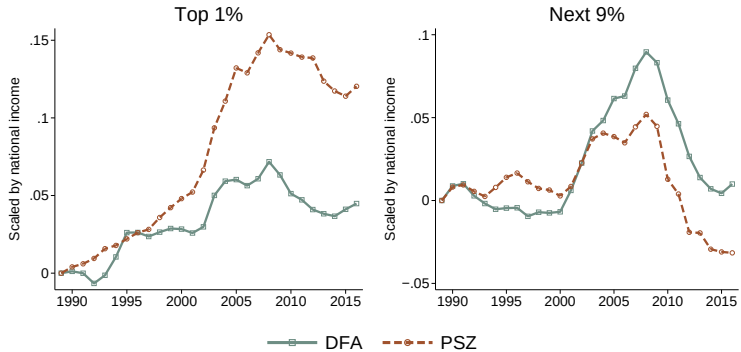




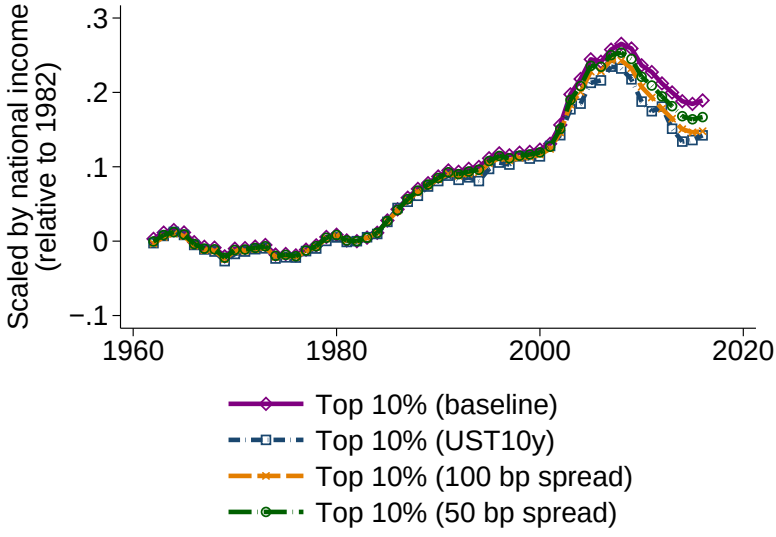
Non-financial business deposits and money market fund holdings



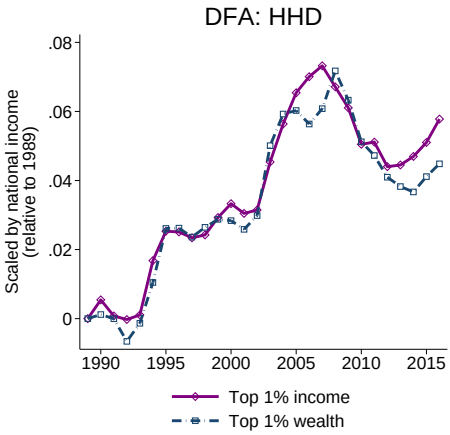
Who Holds Household Debt across the Wealth Distribution? Details

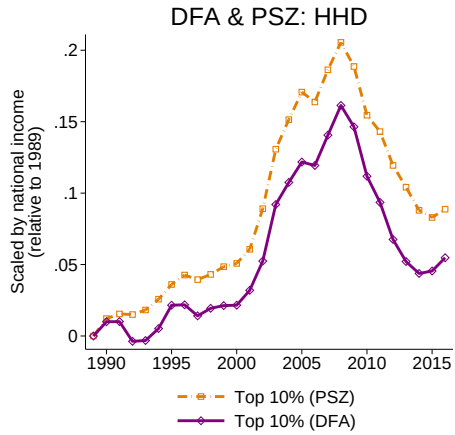


Robustness of household debt holdings of the rich

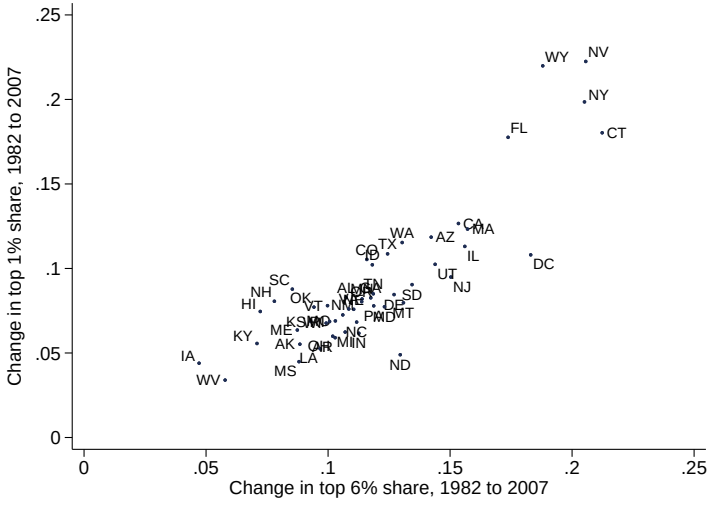


Household debt holdings of the rich, DFA





Change in Top 1% Share Against Change in Top 6% Share



Note: Survey Data Misses Many Sources of Income

- The measure of saving used here includes both personal and business saving
- Survey data misses all of business saving, and many sources of personal saving
- Business saving (undistributed corporate profits) averaged 4.2% of national income from 2012 to 2015, completely ignored in survey measures of income
- Survey data misses 21% of personal income (Heathcote, et al 2010) including employer-contributions to pensions and income on pensions that is not yet distributed