

Reversing the Tipping Point?

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It is more likely the US household has traversed a tipping point

- Examining household finances, one might define a tipping point in terms of debt ratios reaching a certain level
- While household leverage ratios reversed course after the crisis of 2007-2009, we believe that this is not indicative of movement toward reversing the tipping point
- For a majority of households the current levels of spending are not sustainable
- Both the fraction of households with unsustainable spending and the extent of the unsustainable spending by those households continued to increase after the crisis

Part 1

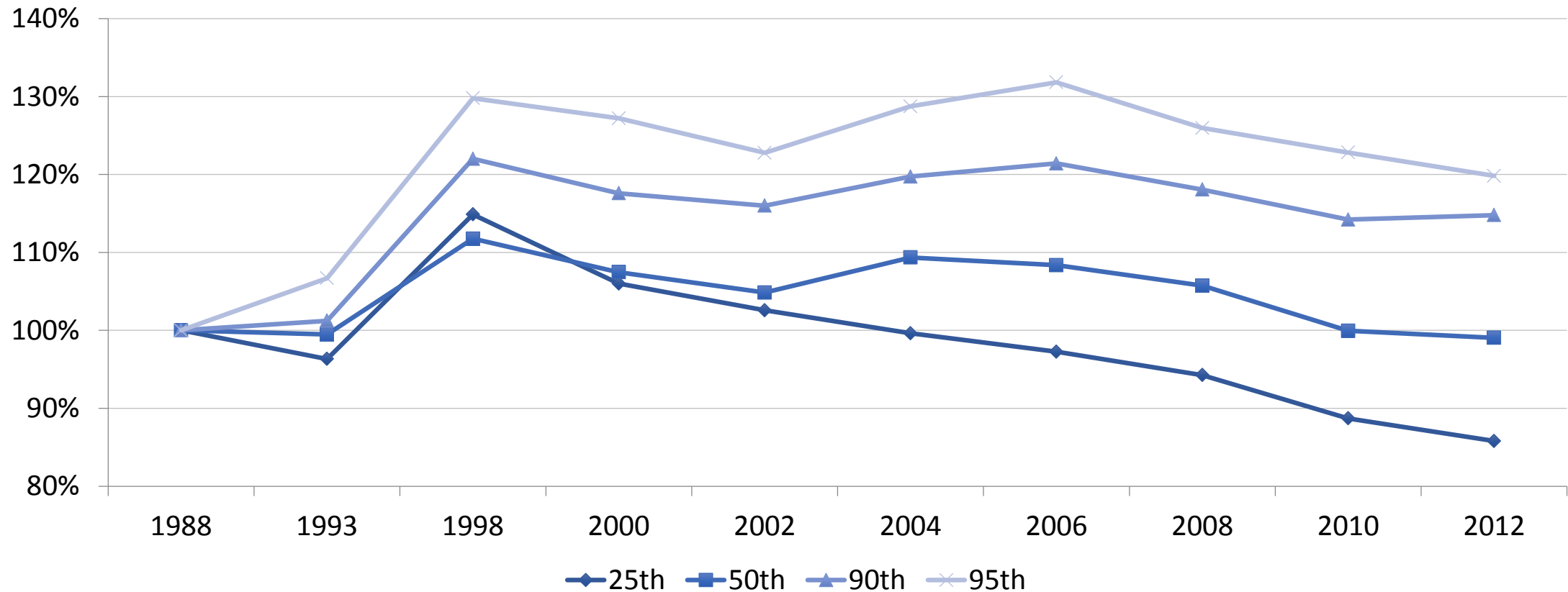
Household consumption and debt in a period of rising income inequality

Household consumption and debt in a period of rising income inequality

- Income growth stagnant and concentrated at the top
- Households across the income distribution have increased consumption as a share of income
- Marked rise in household debt-income ratios with growth arrested by financial crisis
- Dramatic rise in consumption inequality

Real income profiles relative to 1988 show rising inequality and lack of income growth*

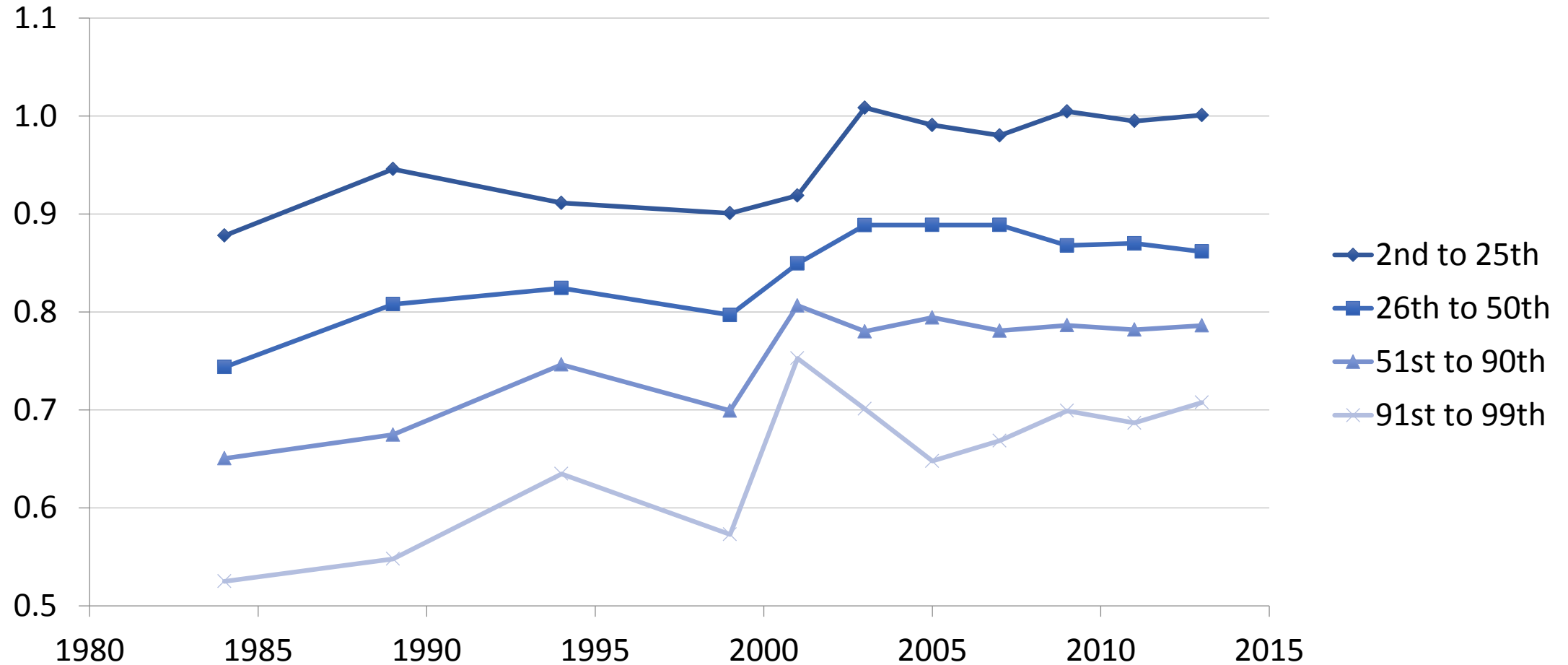
(real income relative to 1988)



*This is derived from the PSID, so the true top of the income distribution, where growth was most concentrated, is not reflected

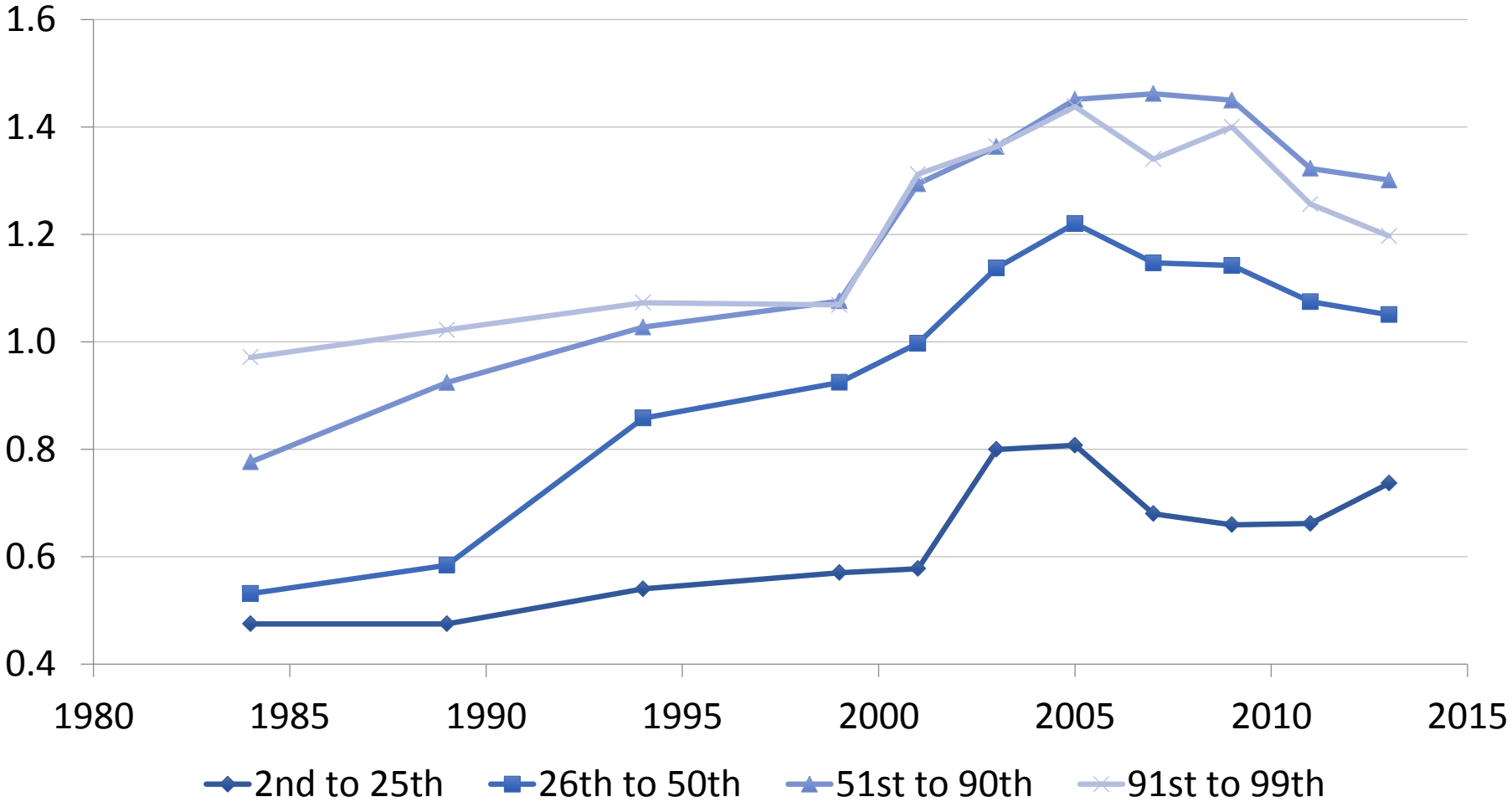
Consumption has increased as a share of pre-tax family income

(median consumption-to-income ratio by income percentile)



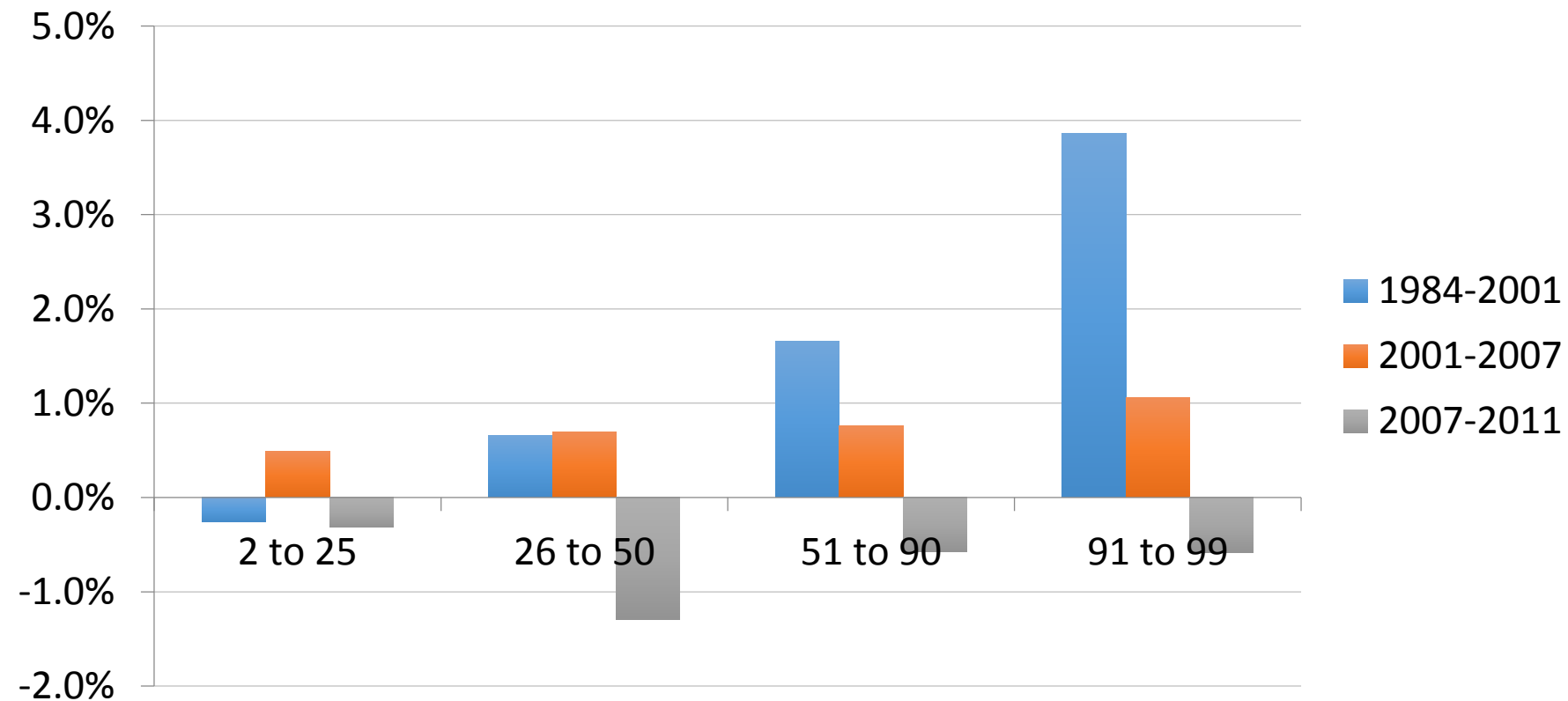
Leverage rose across the income distribution until the eve of the financial crisis and has declined a bit since

(debt-to-income ratio by income percentile)



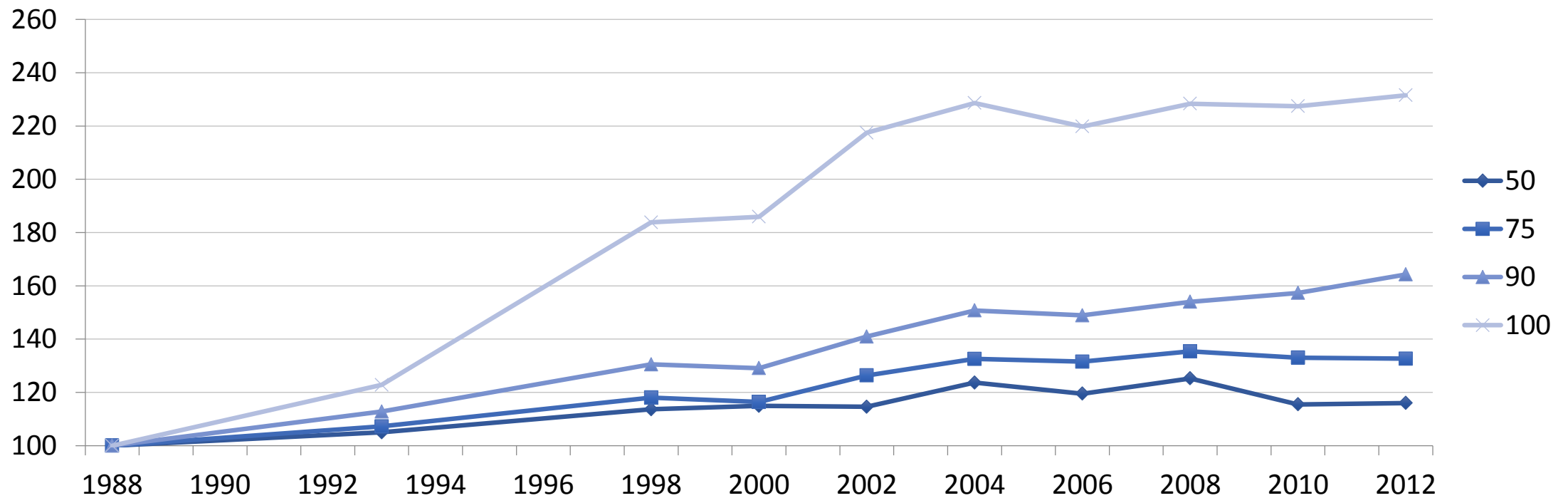
Consumption growth of those with higher incomes tracked their higher relative income growth rates

(consumption growth by income percentile)



There was a dramatic rise in consumption inequality as the top earners pulled away from other households

Real Mean Consumption Index (1988=100)
(by average income percentile group)



Part 2

How do we measure
household financial
sustainability?

We define sustainability based on each household's comprehensive balance sheet, income, and consumption

- Household has assets, liabilities, income and consumption
- Sustainable if:
 - Consumption can remain constant over remaining lifetime
 - Liabilities can be paid off
 - Assets at expected death date of longest lived partner ≥ 0
- Future income growth based on age and education
- Social Security
- Incorporate return on assets and interest on debt

Households have a variety of resources available to finance consumption expenditures over the life course

- Owner-occupied housing
 - Price increases at inflation rate
 - Use home equity to finance retirement consumption
- Future income flows
 - Growth components: education + macro real growth + age
- Challenge of estimating Social Security
 - Reproduce benefit rules, estimating 35 years of highest indexed earning from PSID panel data
- Financial assets and liabilities

Actual consumption is estimated based on balance sheet changes and income, then extrapolated with simple model

- Two partners, different retirement horizons
- Retirement
 - Fixed component of consumption
 - Drop in spending? We assume 90%
- Assume zero real growth going forward
 - Not fully consistent: 57% of sample obs. have positive growth
 - Median annualized real consumption growth: 1.8%
 - Baseline estimates over-state ability to maintain current dynamic path if households actually grow real consumption
 - Zero real growth and the concept of sustainability

We use a simple portfolio assumption along with contemporaneous forecasts to project future assets

- Inflation going forward
 - 10-year median projections from professional forecast survey
- Asset returns
 - Fixed portfolio shares: 20% cash, 40% equities, 40% bonds
 - 10-year median return projections
 - Biases toward sustainability: much higher share of cash in identified assets (don't know allocation of pension and IRA)
- Debt interest rate
 - Assume same as asset returns, analytical requirement
 - Correlation seems reasonably good (see table)

Asset Returns and Mortgage Interest Rates

Year	Average Survey Mortgage Rate	Weight Average Projected Asset Return
1989	10.3	9.4
1994	8.4	9.1
1999	7.7	7.3
2001	7.8	6.3
2003	6.7	6.1
2005	6.2	6.2
2007	6.4	5.5
2009	6.0	5.9
2011	5.5	5.1
2013	4.7	5.5
2015	3.9	4.5

For households with positive mortgage balance; 2015 mortgage rates preliminary

Algebra of Sustainability

$$NW_t + H_t = A_{t-1}(1 + r_t^A) + H_{t-1}(1 + \pi) \\ + (Y_{1,t}^{NA} + Y_{2,t}^{NA}) - (C_{1,t} + C_{2,t}) - (1 + r_t^L)L_{t-1}.$$

$$NW_{NM} + H_{NM} = NW_t(1 + r)^{NM-t} + H_t(1 + \pi)^{NM-t} \\ + \sum_{j=t}^{N_1} (Y_{1,j}^{NA} - C_{1,j})(1 + r)^{NM-j} + \sum_{j=t}^{N_2} (Y_{2,j}^{NA} - C_{2,j})(1 + r)^{NM-j}$$

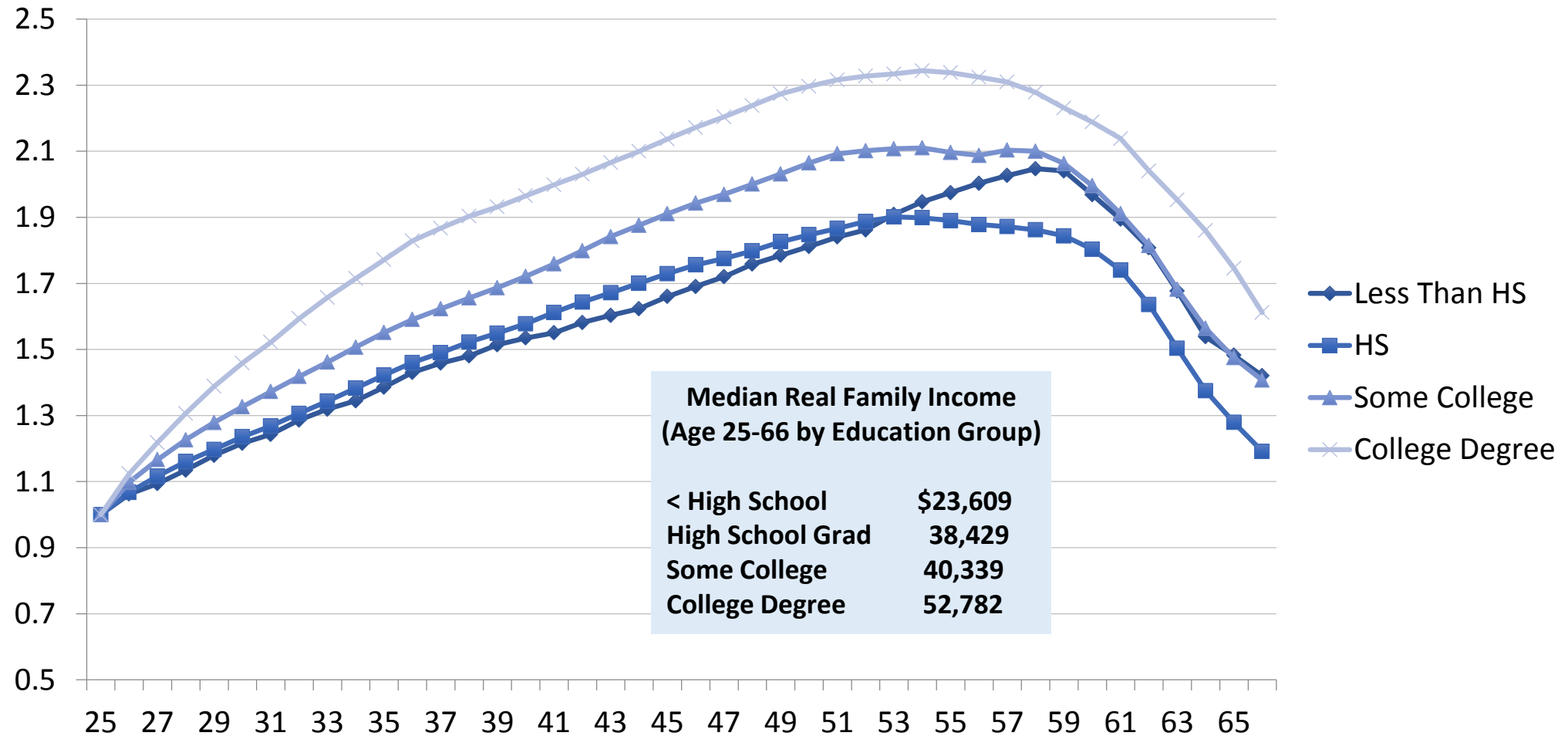
$$C_t^* = \left[\left(\frac{1 - \gamma}{2} \right) (V_{1,t}^C + V_{2,t}^C) + \gamma V_t^C \right]^{-1} \left\{ NW_t + H_t \left(\frac{1 + \pi}{1 + r} \right)^{NM-t} + [Y_{1,t}^{NA} V_{1,t}^Y + Y_{2,t}^{NA} V_{2,t}^Y] \right. \\ \left. + PVSS_t \right\} \quad (9)$$

When we impute income, we use growth rates based on three components

- Age
 - CPS data 1991 – 2011
 - Big drop off after late 50s (Surprising? See graph)
- Education group
- Aggregate effect
 - Volatile and procyclical
 - Drops from 1.6% (1988-2000 avg.) to 0.3% (2001-2011 avg)
 - Full sample average of 1.0%
- What to project going forward?
 - Productivity forecast 1.4%, but wages don't capture productivity
 - BLS Hourly Real Avg. 1.1% 1993-2016
- Assume constant 1.0% for projected years
 - Lower value would reflect recent US experience

We use aggregate wage data from the Current Population Survey to extrapolate household incomes into the future

(From CPS data with 1.0% aggregate growth)



Implementation – PSID Data

- Challenge of measuring consumption: income data + balance sheet + stock-flow identity
 - Panel data necessary
 - TAXSIM for federal and state taxes
 - Sales tax and property tax treated as expenditure
- Outlays and consumption: estimating interest expense
- Likely incomplete data on defined-benefit pensions
 - Adding pensions would raise level of sustainability but steepened declining trend
- Permanent vs. transitory income

Analysis Sample

- PSID frequency + need for adjacent balance sheet observations within households
 - Five-year waves: 1983, 1988, 1993, 1998
 - Two-year waves: 2000 to 2014
- Working age and post education: 25 to “normal” retirement
- About 53,000 observations, roughly 4,000 to 6,000 per year
- Roughly representative through upper-middle class
 - 2014 median household income: \$57,000
 - 2012 95th percentile: \$192,000
 - Thin sample in top 1%

Our sample understates high incomes; it is not representative at the top of the income distribution

Percentile Group	Analysis Sample Avg. Income (2012)	CBO Average Market Income (2013)
90 th to 95 th percentile	\$169,000	\$195,000
95 th to 99 th percentile	\$241,000	\$322,000
Top 1 percent	\$657,000	\$1,571,000

Part 3

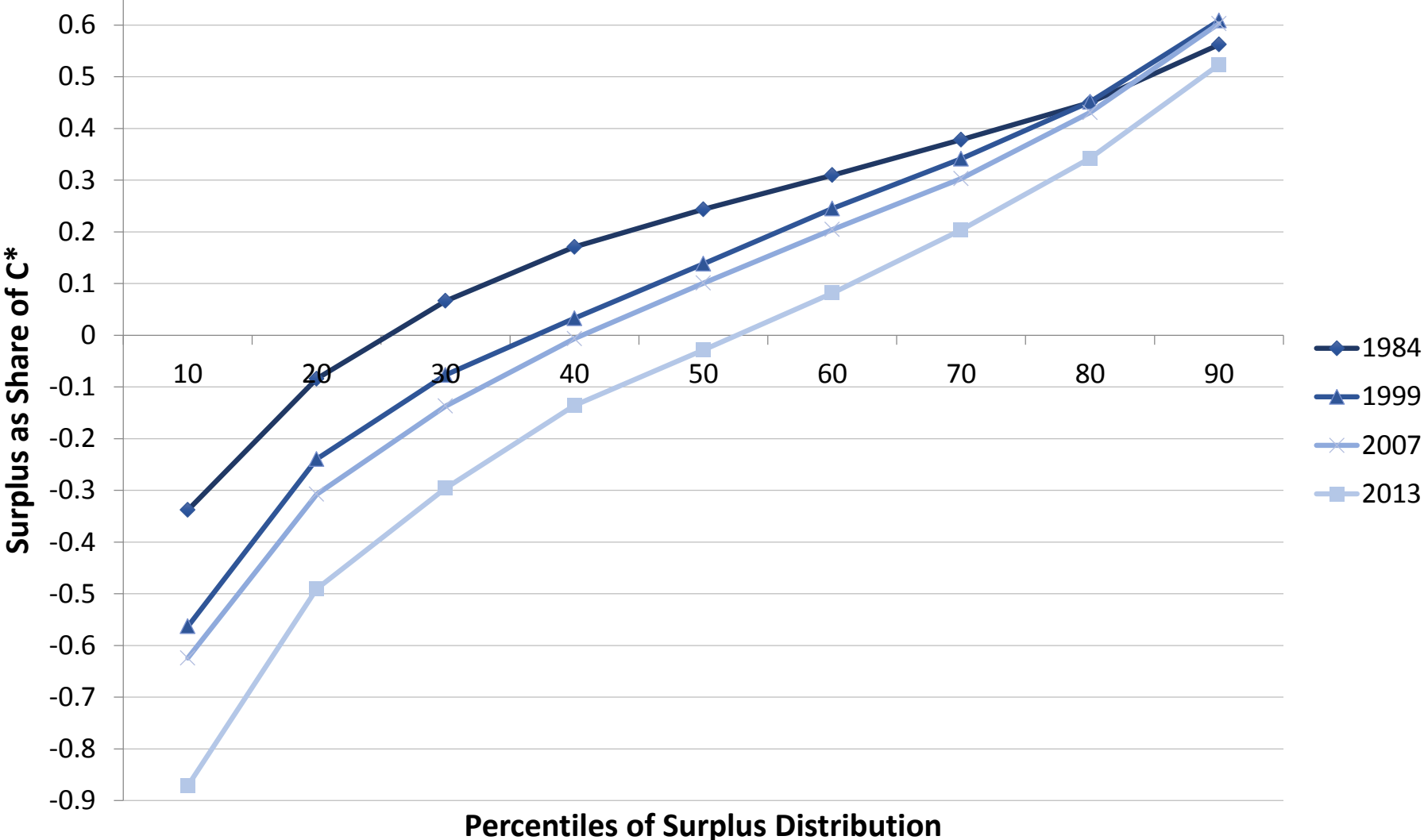
Characteristics of sustainability

Household financial sustainability declined markedly during the three decades from 1984 to 2013

- Looking at the distribution of household surplus or deficit as a share of sustainable consumption, we can see that sustainability declined on both the extensive and intensive margins
- Financial sustainability declined at all levels of the income distribution
- Households with an older head are less likely to be sustainable
- Restricting the sample to Baby Boomers to keep a consistent birth cohort, we see
 - the share of sustainable households decline,
 - the households as a group shift from a healthy surplus to a wide deficit, and
 - the fraction of consumption “beyond their means” rise from 2%-30%

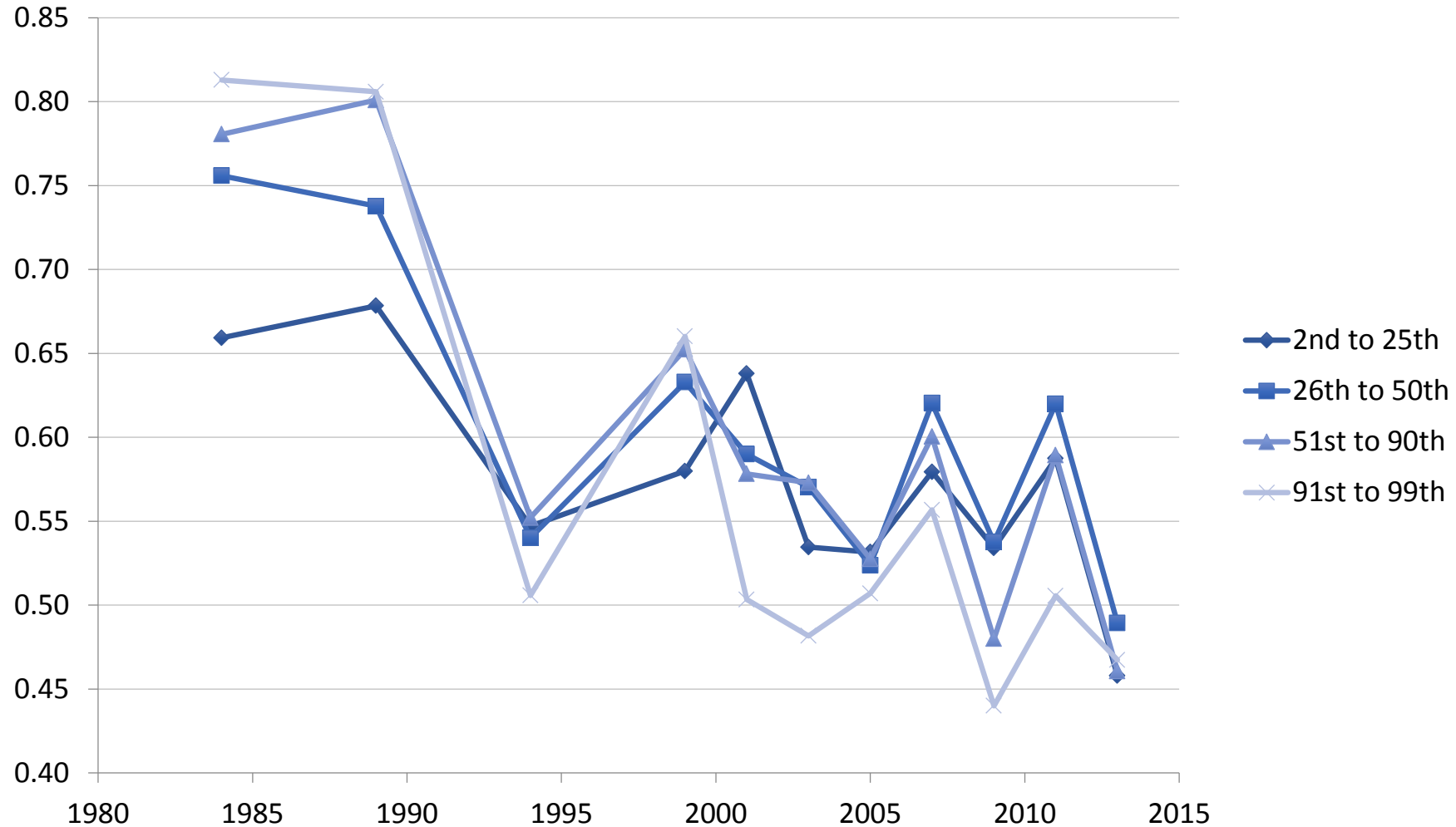
Household surplus declined across the full distribution

(Percentiles of surplus as share of sustainable consumption)



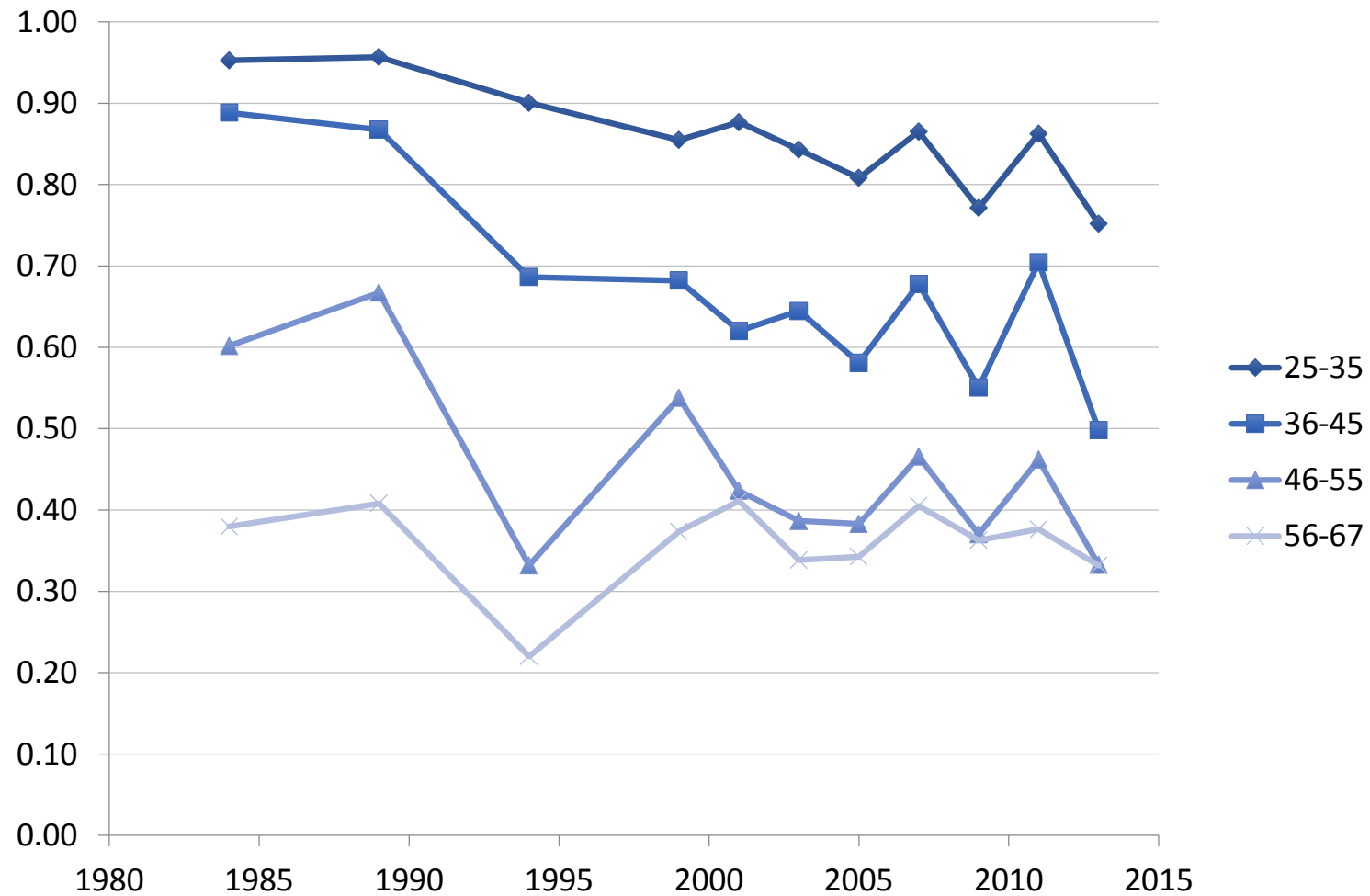
Financial sustainability declined across the income distribution

(This chart shows the fraction of households that are sustainable by income percentile over time)



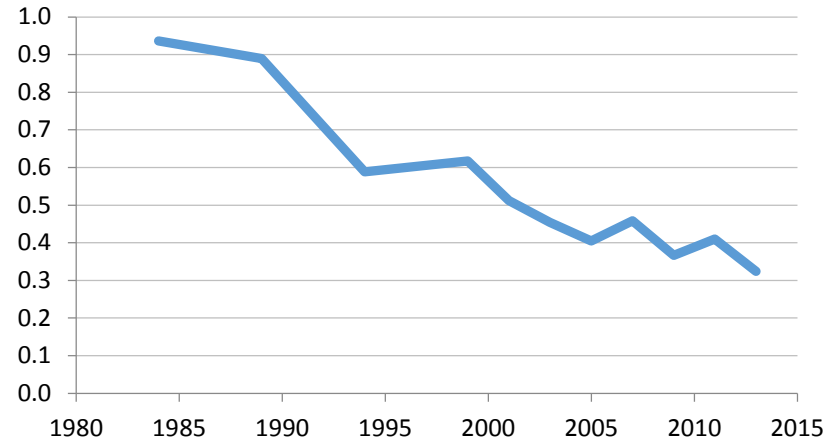
Age: Older households are less sustainable

(Sustainability share by age group)

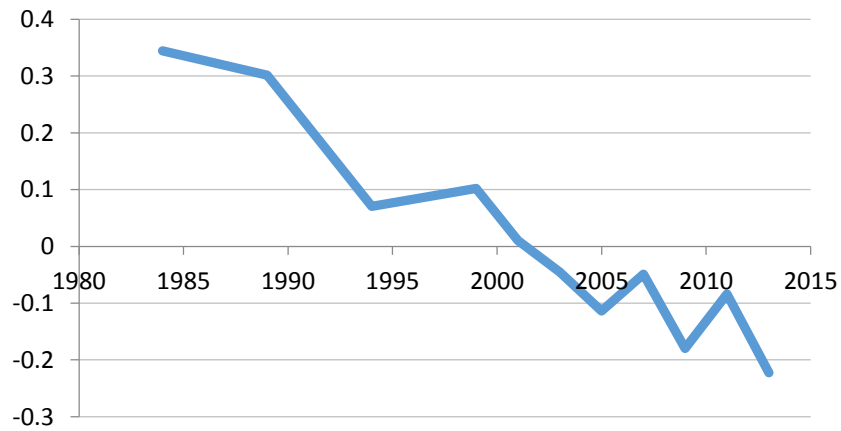


Baby Boomers (1946-65): Dramatic decline in sustainability

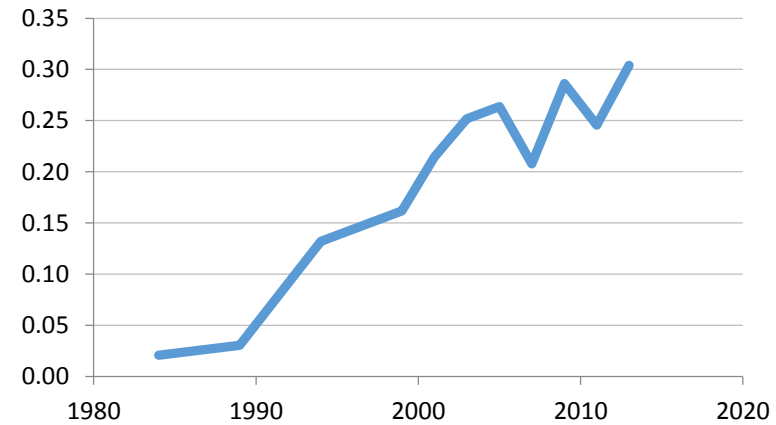
Share Sustainable



Surplus/Sustainable Consumption



CAR / Total Consumption



Part 4

Significance of results for current economic issues

Examining financial health at the household level offers insights into a number of economic issues

- The financial crisis of 2007-2009 might have been a demonstration of a tipping point caused by unsustainable spending over many years
- The long accumulation of unsustainable spending, particularly clear in the Baby Boomer analysis, suggests that the problem was excessive consumption relative to household resources and not a one-off shock
- The pattern of sustainability with respect to age of household head suggests that the majority of households are failing to save adequately to maintain their consumption in retirement

Household Finance and the Crisis

- Dramatic drop in household financial sustainability from late 1980s: 75% to 56%
- Main cause seemed to be over-consumption
- Rising debt played a role: facilitated excess consumption
 - Even sustainable households borrow
- Larger deficits lower consumption => demand drag
 - Bigger drag as more households unsustainable and deficits larger
- No “cliff” in the micro data that explains timing of the crisis
 - Need to tie together with financial markets and macro determination of income

Behavior vs. “Unfortunate Shocks”

- What caused falling sustainability?
 - Over-consumption
 - Unanticipated and unfavorable shocks to sustainable consumption
- Rather tricky issue to define empirically, needs more work
 - Counterfactuals
 - Decomposition of change in sustainability
- Suggestive evidence for over-consumption
 - Rising consumption / income
 - Age results

Retirement Issues

- Big decline in sustainability as households age
- Likely interpretation: households not saving for retirement
 - Easy for young to look sustainable if they just consume income
- What will happen?
 - Will people work longer?
 - Will they cut back?
 - Demographics and demand drag => secular stagnation

Thank you