Household Income, Demand, and Saving:
Deriving Macro Data with Micro Data Concepts

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Frontiers of Measuring Household Economic Behavior

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Acknowledgements

Multi-year research project linking
household finances and economic growth

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- Joint work with Steve Fazzari

- Generous support from INET

- Opinions are mine and not those of the Fed

This Session

Reconciling macro and micro estimates of U.S. household income and expenditures

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Reconciling macro and micro estimates of U.S. household income and expenditures

- Understand how the aggregate measures are distributed

- Validate survey measures comparing to trusted aggregate measures

- Learn from aggregates consistent with micro data concepts

Motivation for Measurement

INEQUALITY AND CONSUMPTION

The Original Goal

Investigate relationship between income inequality and Great Recession

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Investigate relationship between income inequality and Great Recession

- Rich have lower propensity to consume
  - (Maki and Palumbo 2001)

- Increasing share of income flowing toward rich
  - (Piketty and Saez, 2003; CBO, 2013; Johnson and Smeeding, 2014)

- Downward pressure on aggregate consumption ?

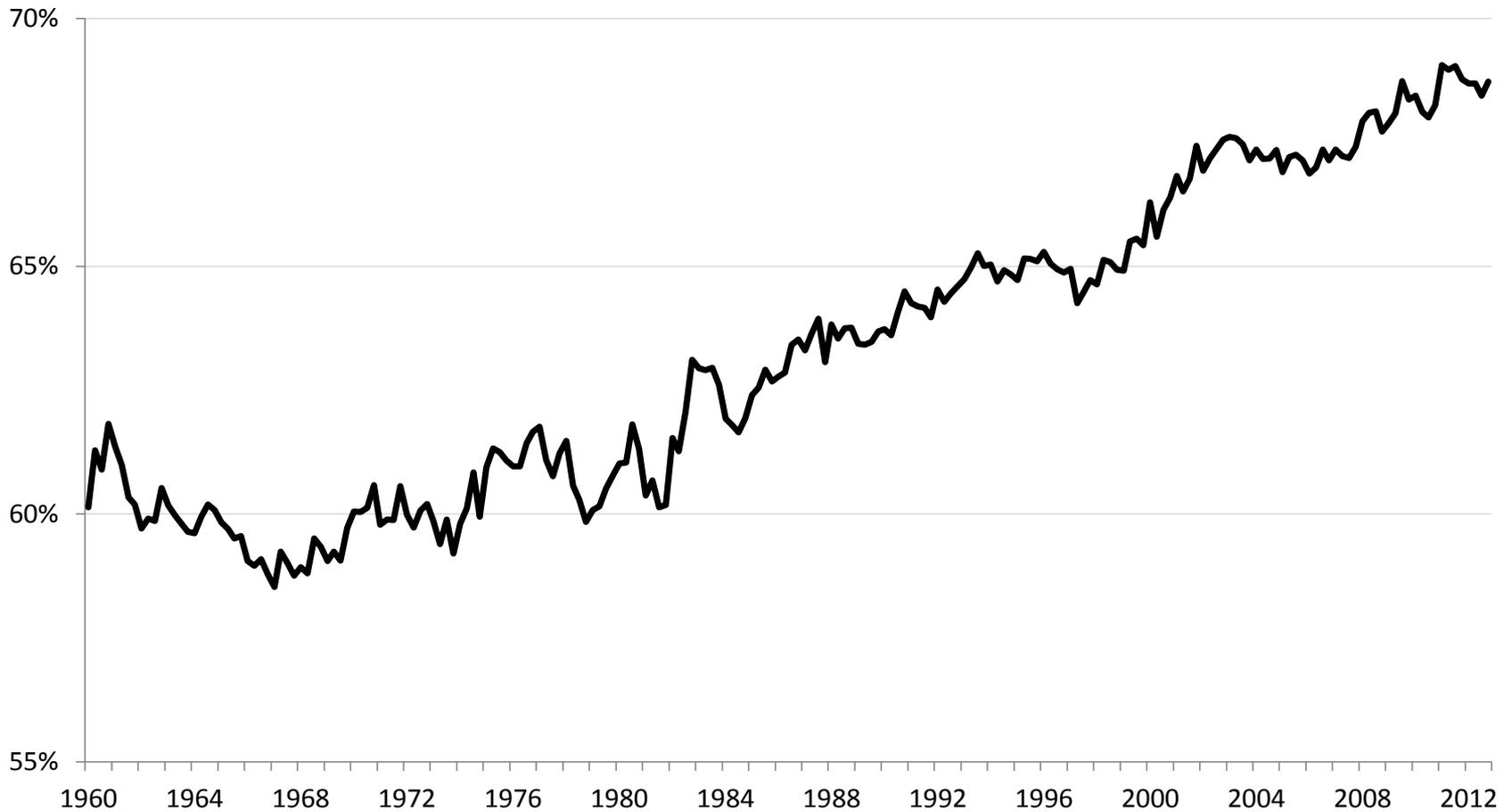# Increasing share of income flowing toward rich

Income share of the top 5% of US households
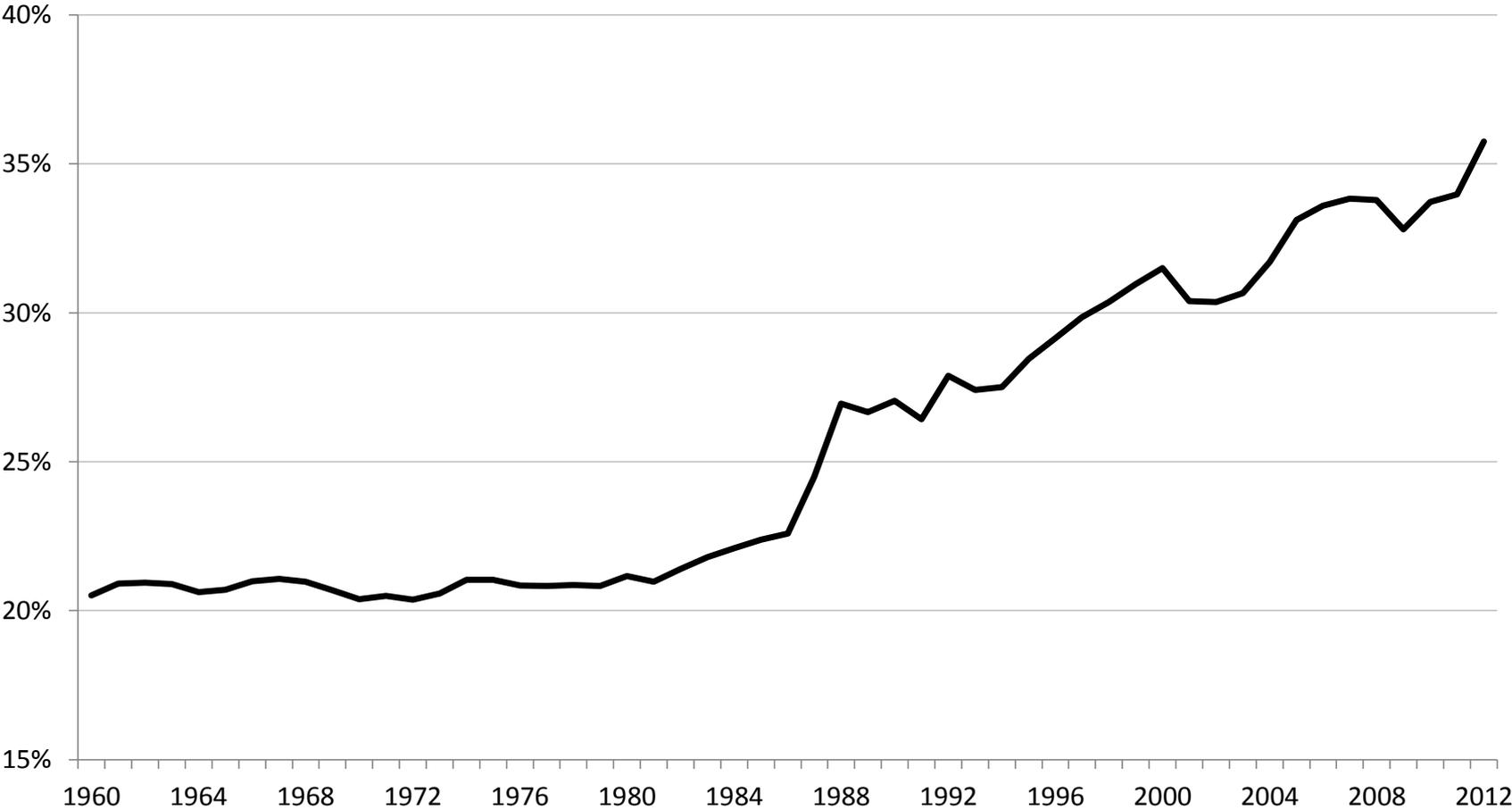
Source: The World Top Incomes Database
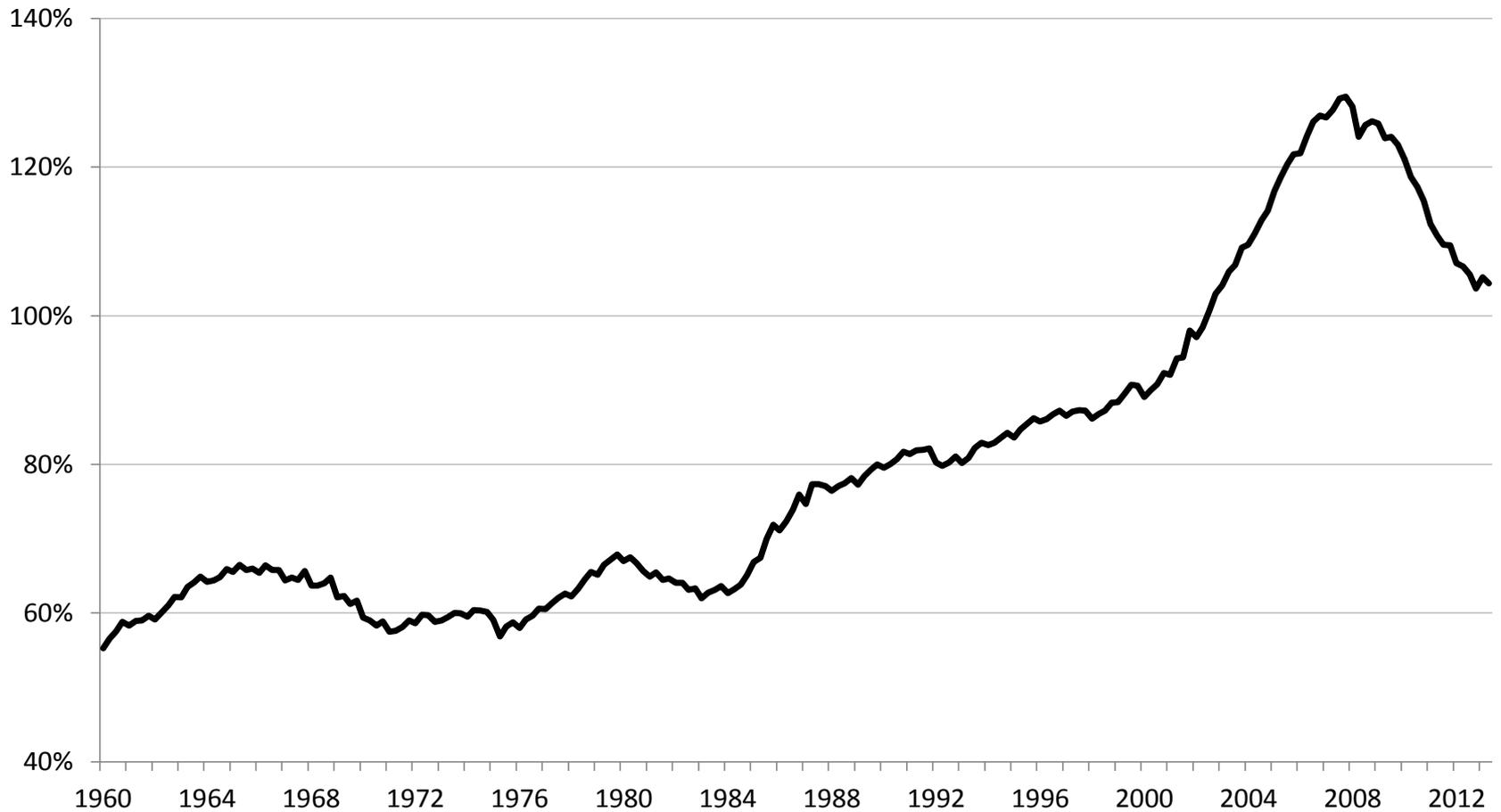
Consumption Drove Economic Growth

Consumption share of GDP

Source: BEA National Income and Product Accounts

Households Doubled their Leverage

Debt to income ratio of US households

Source: FRB Financial Accounts of the United States

Initial Plan

Find a micro data set with income and consumption expenditure

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Find a micro data set with income and consumption expenditure

- SCF: oversamples wealthy, but no consumption data

- CPS: annual and large sample, but no consumption

- CE: fails to match aggregate data in level or trend
  - Under-reporting especially among higher income households (Sabelhaus, Johnson, Ash, Swanson, Garner, Greenlees, Henderson, 2013)

Revised Plan

Use a mix of aggregate and micro data to generate results at "group" level

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- SCF: for distribution of balance sheet accounts

- CPS: for distribution of income

- National accounts: for authoritative time series

Maki and Palumbo (2001)

	Assets and Liabilities		Income
	Stocks	*Flows*	
Aggregate	FAOTUS	FAOTUS	NIPA
			disposable personal income
Micro	SCF	*identification	CPS
	shares interpolated linearly between waves	assume flows proportional to holdings	money income

- Numbers add up to net worth and saving for the personal sector published in the FAOTUS

- Distribution matches the SCF in every survey year

Revised Plan ii

M&P for group-level *saving* numbers and then back out consumption numbers

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M&P for group-level *saving* numbers and then back out consumption numbers

- Mark Zandi provided us with saving rate information derived using the M&P approach

- First, we adjusted those FAOTUS saving numbers to match NIPA saving numbers

- Then we allocated NIPA transfers and interest between our groups so we could back out "group" consumption

Revised Plan ii

M&P for group-level *saving* numbers and then back out consumption numbers

Disposable Income   –   Saving   =   Outlays

Outlays   =   Consumption   +   Transfers +   Interest

Consumption   =   Disposable Income   –   Saving   –   Transfers   –   Interest

The Story

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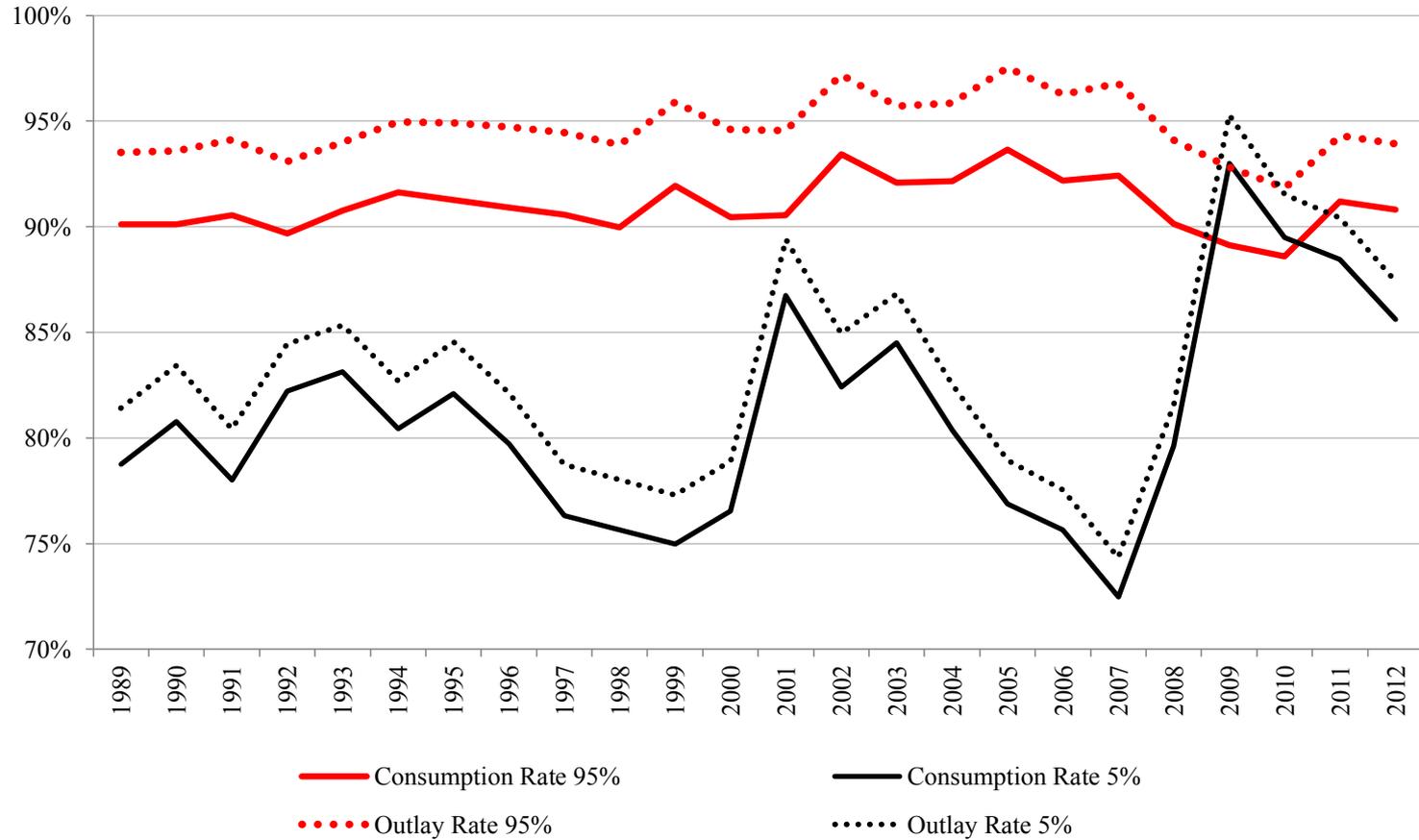- Consumption rate of non-rich stable or rising

After Great Recession:

- Consumption of rich only has recovered

- Per capita, real GDP far below trend after Great Recession
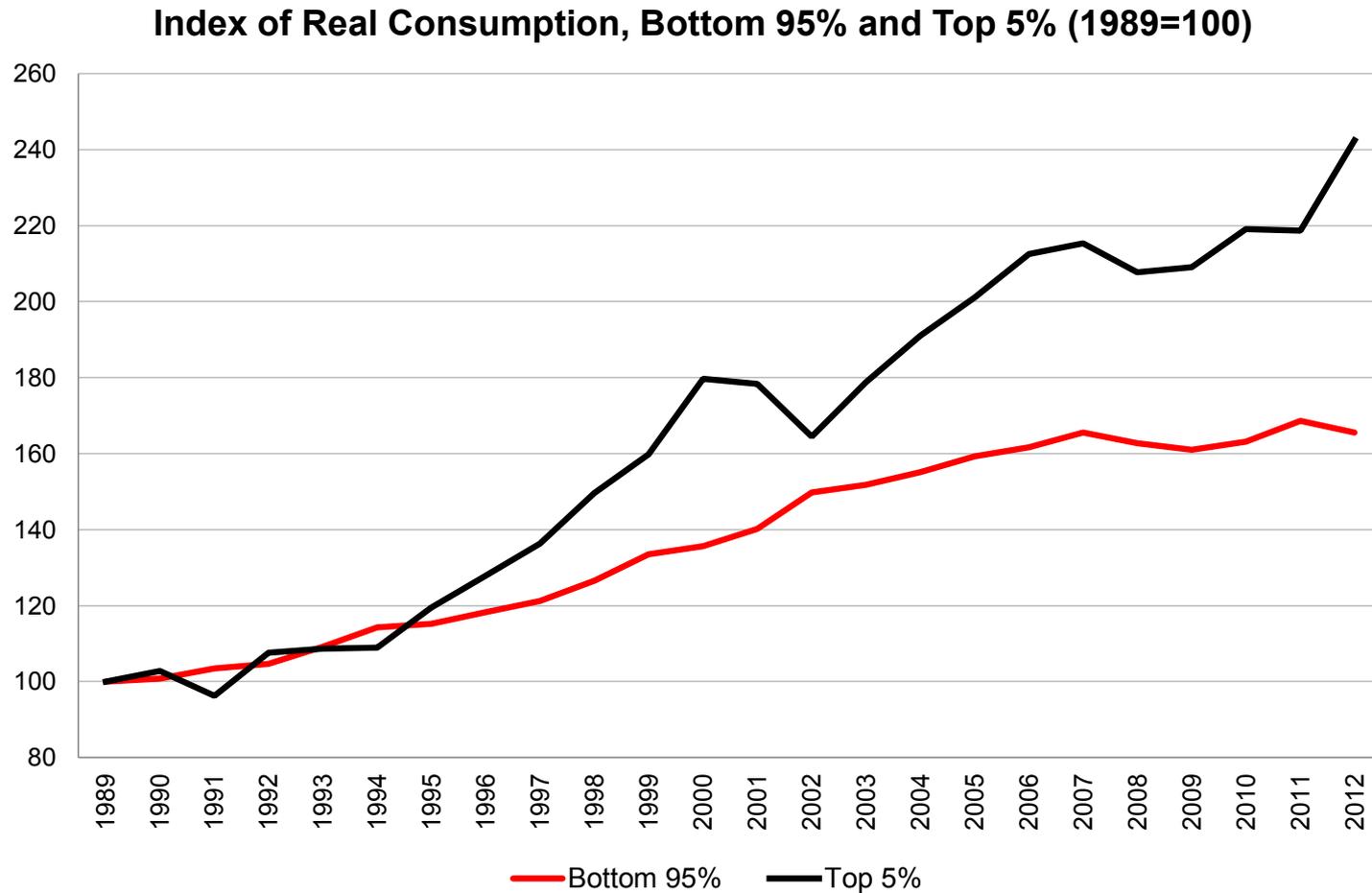
Debt to income ratio of non-rich increased
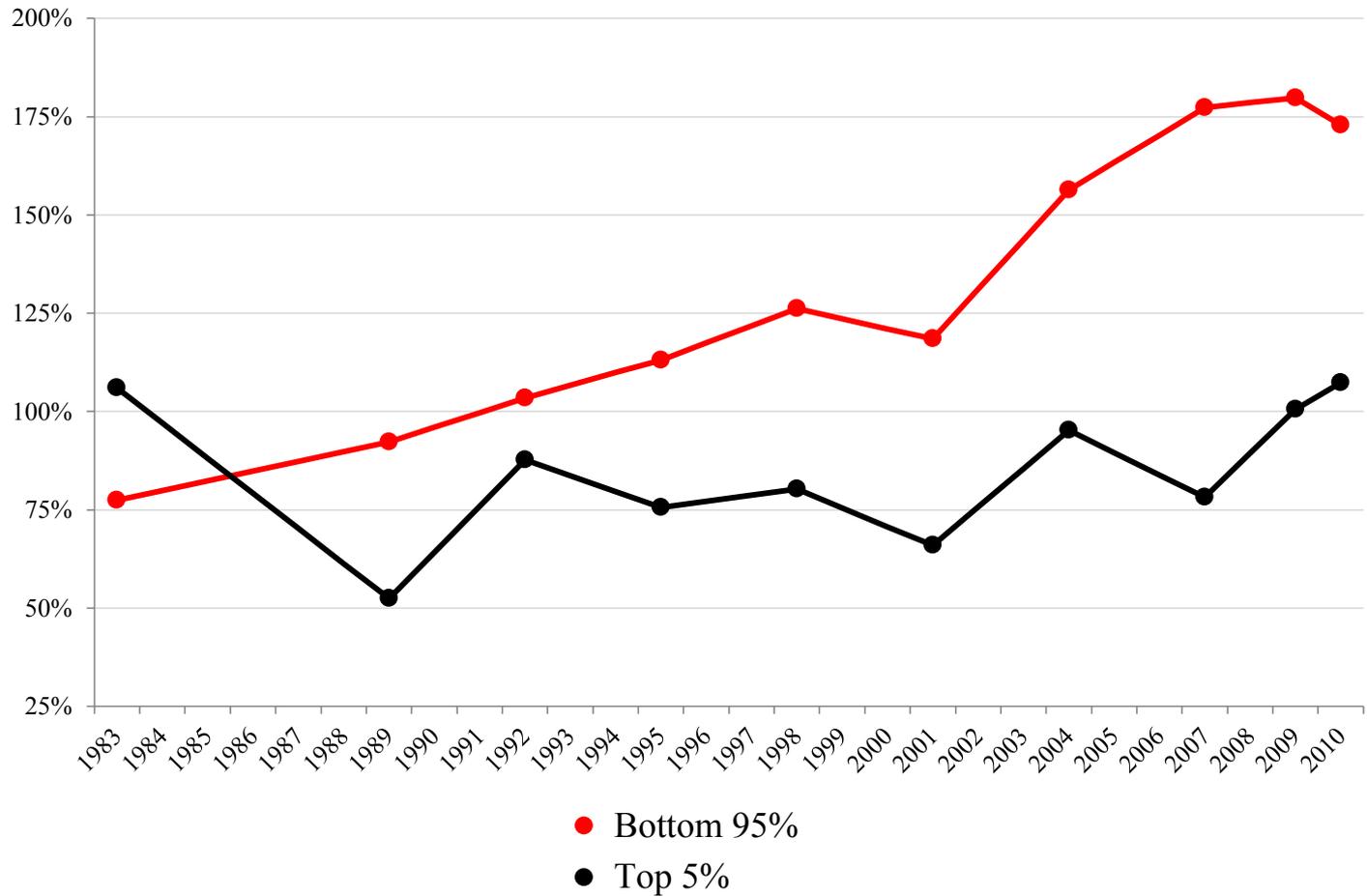
Legend:
- ● Bottom 95%
- ● Top 5%

Consumption rate of non-rich stable or rising

Source: Cynamon and Fazzari (2015)

Consumption of rich has recovered; that of non-rich has not

Index of Real Consumption, Bottom 95% and Top 5% (1989=100)

Source: Data from Cynamon and Fazzari (2015)

GDP well below trend after Great Recession

Per capita, real GDP, chained dollars (exponential trend)
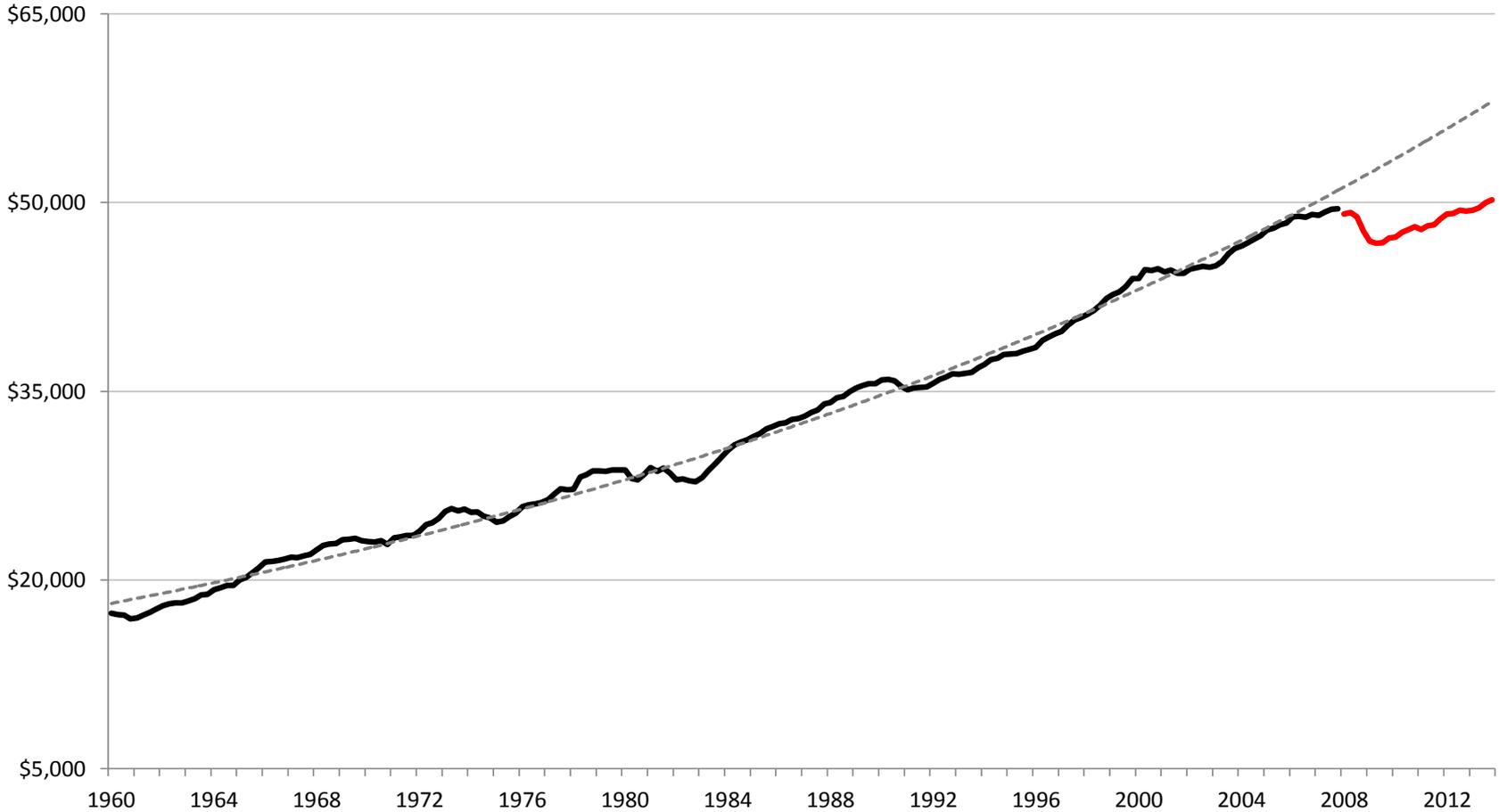
Source: BEA National Product Accounts

Measurement Exercise

MEASURING DEMAND

"Household Income, Demand, and Saving: Deriving Macro Data with Micro Data Concepts"
Forthcoming in the *Review of Income and Wealth*
Working paper available at SSRN: http://ssrn.com/abstract=2211896

Motivation

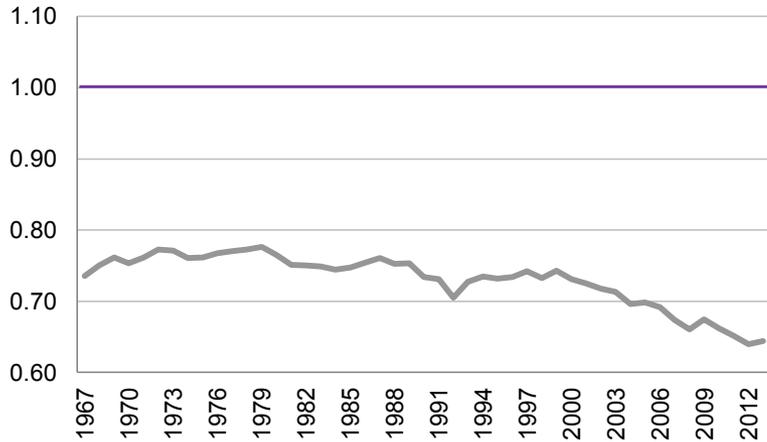Reconcile macro and micro estimates of U.S. household income and expenditures

Motivation i

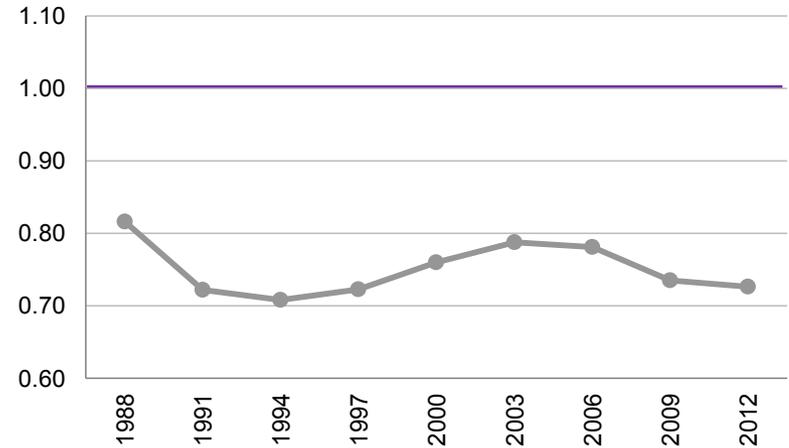Reconcile macro and micro estimates of U.S. household income and expenditures

- Maki and Palumbo (2001) reliant on consistent concepts
  - CPS income distribution applied to NIPA disposable personal income
  - SCF net worth distribution applied to FAOTUS balance sheet

- But there are inconsistencies between micro and macro data
  - Not just sampling error; important conceptual differences

- Previous efforts to match NIPA and survey income
  - Katz (2012), Bosworth *et al.* (2007)
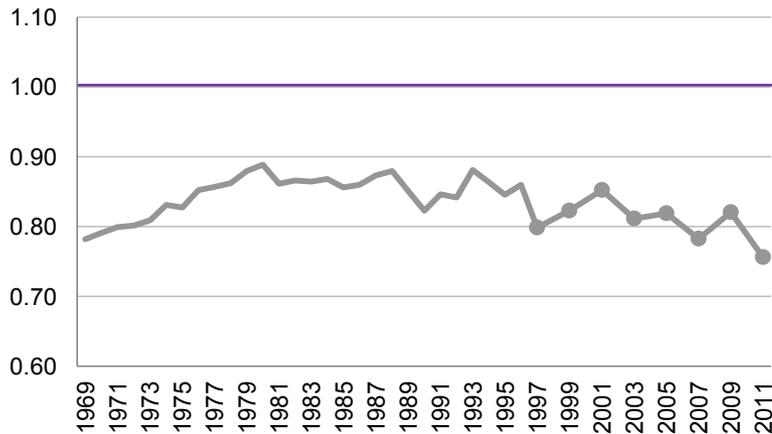
Comparisons to Survey Data

Pre-tax income data from surveys well below 100% of NIPA personal income

Motivation ii

Reconcile macro and micro estimates of U.S. household income and expenditures

- Might learn from macro measures adjusted to match micro concepts
  - PCE vs. what households actually spend
  - Different definitions of saving may tell different stories

Objective

Measure the flows of purchasing power under the control of the household

- Eliminate imputed value of services in consumption
  - Example: Imputed rent

- Eliminate spending not controlled by households
  - Example: Medicare

Objective

Measure the flows of purchasing power under the control of the household

- Household financial flows the way households actually see these flows

- Concept likely to correspond better with flows households report on surveys

Key Identity

- Accounting identity maintained before and after adjustments:

Disposable Income = **Consumption** + **Household Investment** + **Transfers & Interest** + **Financial Saving**

- Identity holds in NIPA
  - Household investment not distinguished from financial saving

- Adjustments to consumption or income require balancing change elsewhere

Housing Example (2013 $billions)

	Disp. Income	Cons.	HH Invest.	Trans. & Int.	Fin. Saving
Implicit Rent	- 1326	- 1326			
Intermediate Inputs	+ 152	+ 152			
Mortgage Interest	+ 334			+ 334	
Depreciation	+ 312				+ 312
New Construction Single-Family Homes			+ 426		- 426
Broker commissions		+ 105	- 105		
Total	- 528	- 1068	+ 321	+ 334	- 115

- Eliminate "rent home to yourself" business

Other Important Adjustments

- About 40 separate adjustments

- Remove non profit institutions that serve households

- Free financial services

- Medical care
  - Employer and government, not households

- Retirement accounting
  - Exclude contributions by employers and government to defined benefit plans
 - Include benefits from DB plans

Other Important Adjustments

Category	Disposable Income	Consumption	Transfers & Interest	Financial Saving
Owner-Occupied Housing	-4%	-9%	81%	-19%
Financial Services	-6%	-2%		-76%
Defined Benefit Pensions	-1%			-27%
Third-Party Paid Medical Services	-13%	-14%		
Non-Profit Sector	-1%	-4%	61%	8%
Other	-2%			-30%
Adjusted Data	*73%*	*70%*	*242%*	*-44%*

Note: Household investment excluded form table, because it has no clear personal sector counterpart in the NIPA
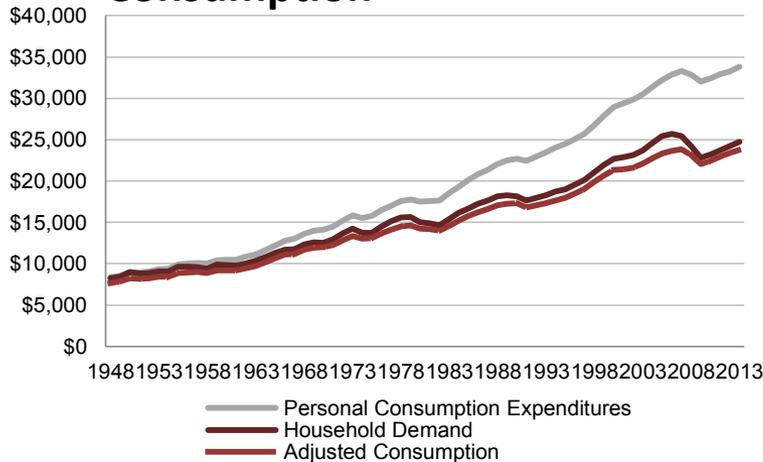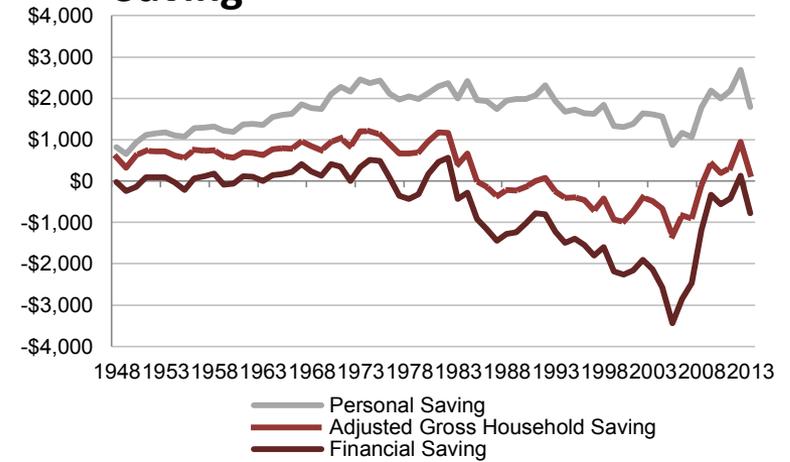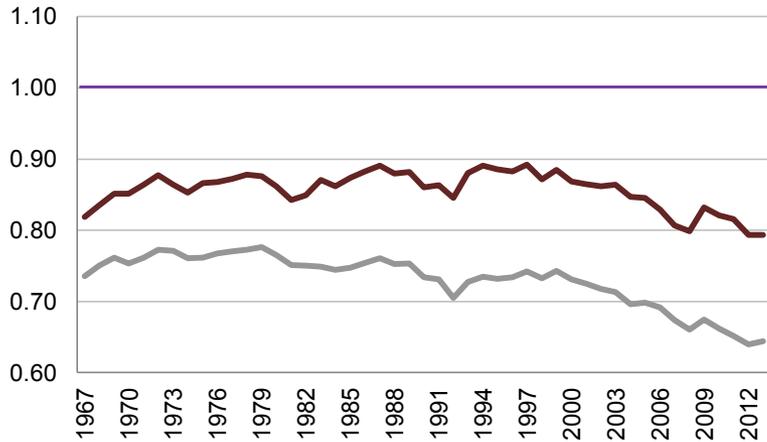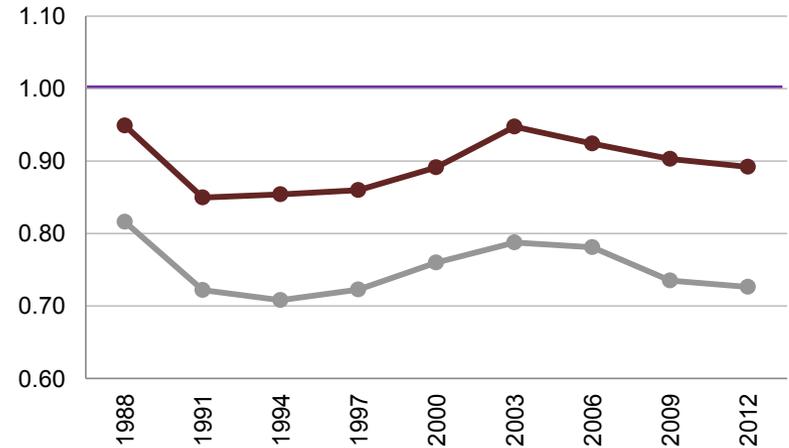
Adjusted measures: real, per capita
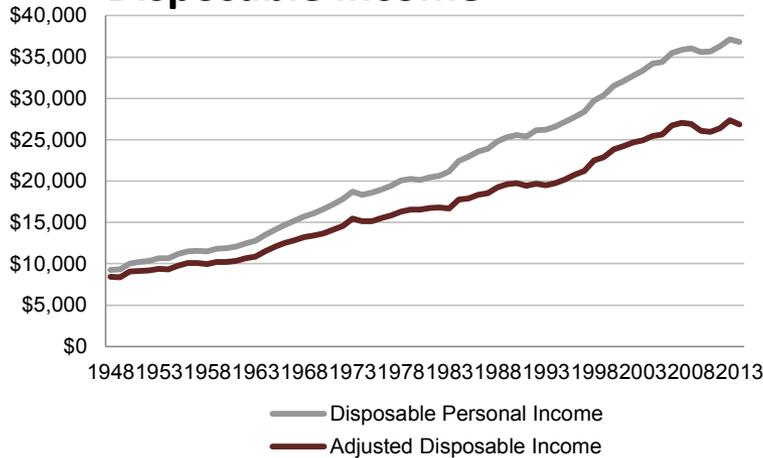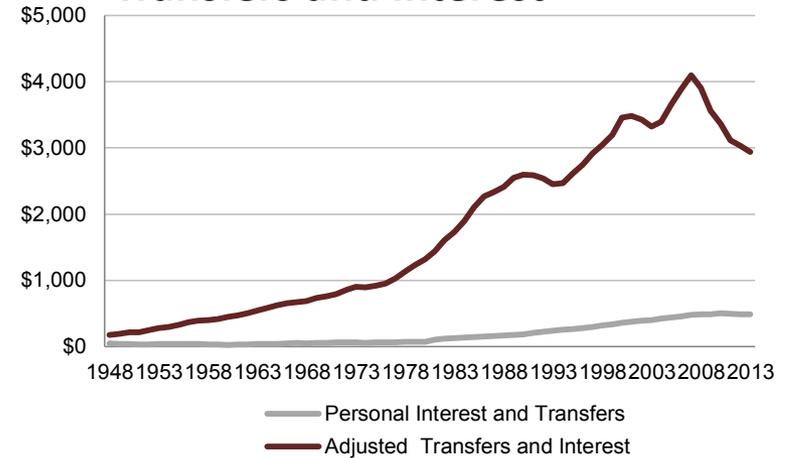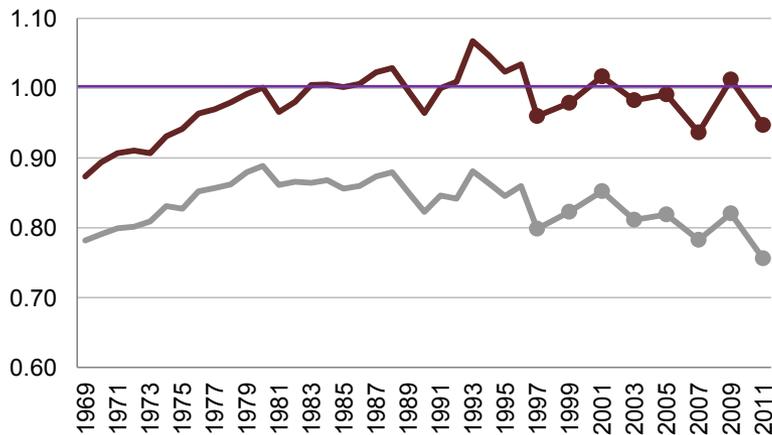
Comparisons to Survey Data
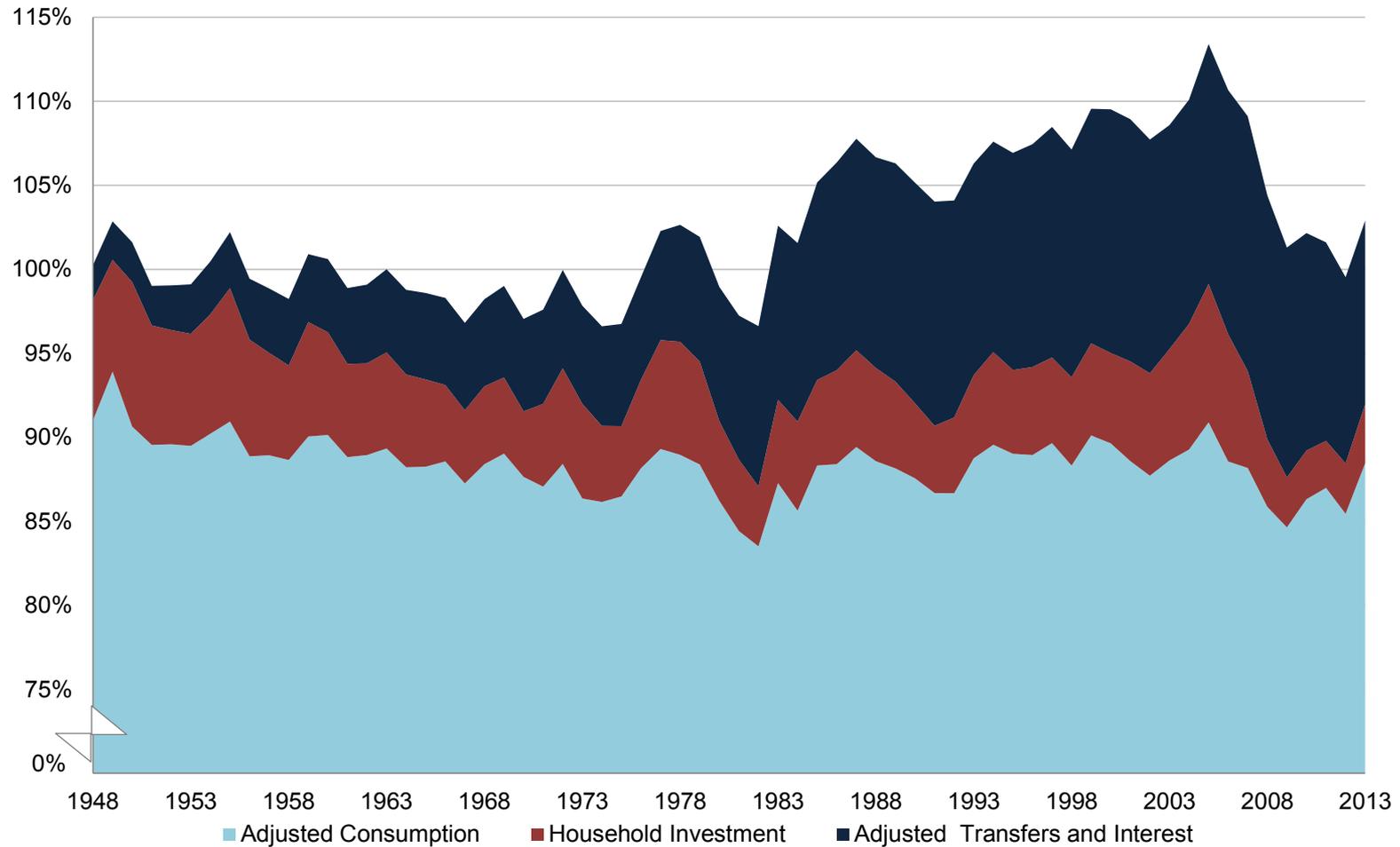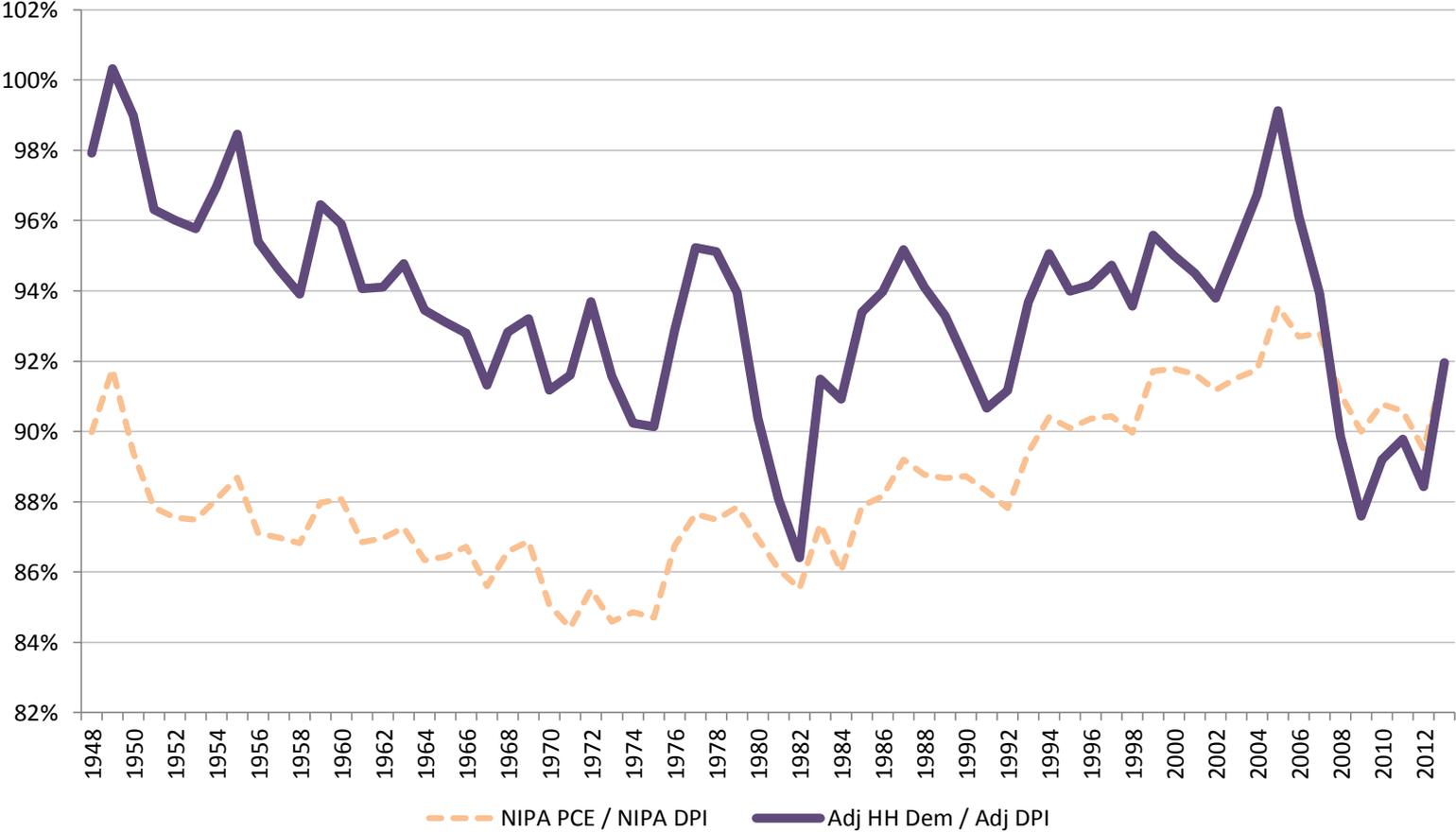

CPS

SCF

PSID

Note: All measures shown pre-tax; CBO net realized capital gains added to adjusted disposable income to match SCF, which includes realized gains.
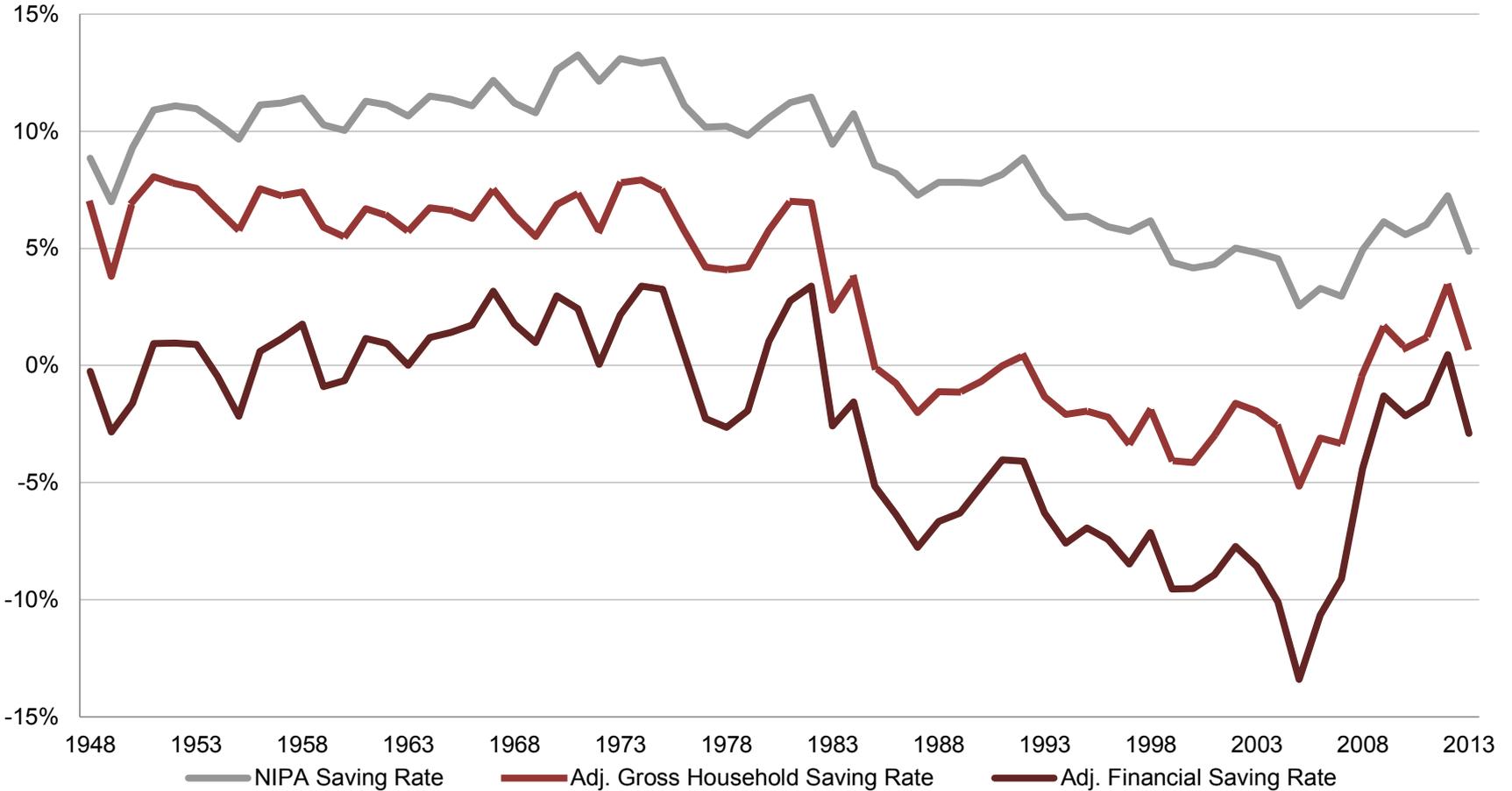
Expenditure Shares of Income

Legend: Adjusted Consumption | Household Investment | Adjusted Transfers and Interest

Bigger Collapse: Cash Flow Measure

Demand Rates: NIPA Definition and Adjusted

New saving rate concepts

Future Directions

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   - Wondering if anybody at the Board would like to team up with us

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3. Exploit panel structure of PSID to see if story of rising balance sheet fragility among non-rich followed by discrete fall in consumption during GR holds up at household level
   – Joint work with Daniel Cooper