

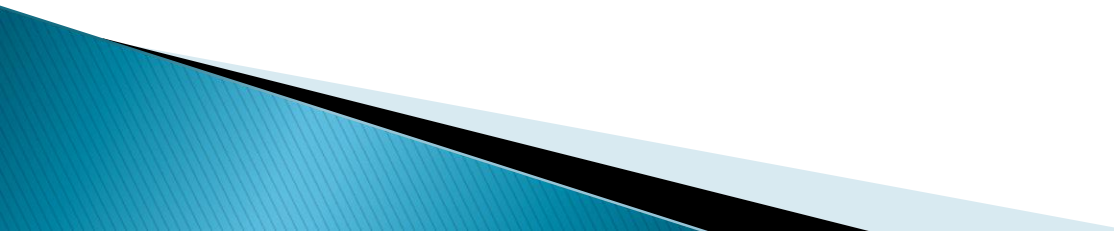
# Finance and Macroeconomic Crisis

Steven Fazzari

Washington University in St. Louis

FMM Summer School, July–August, 2013

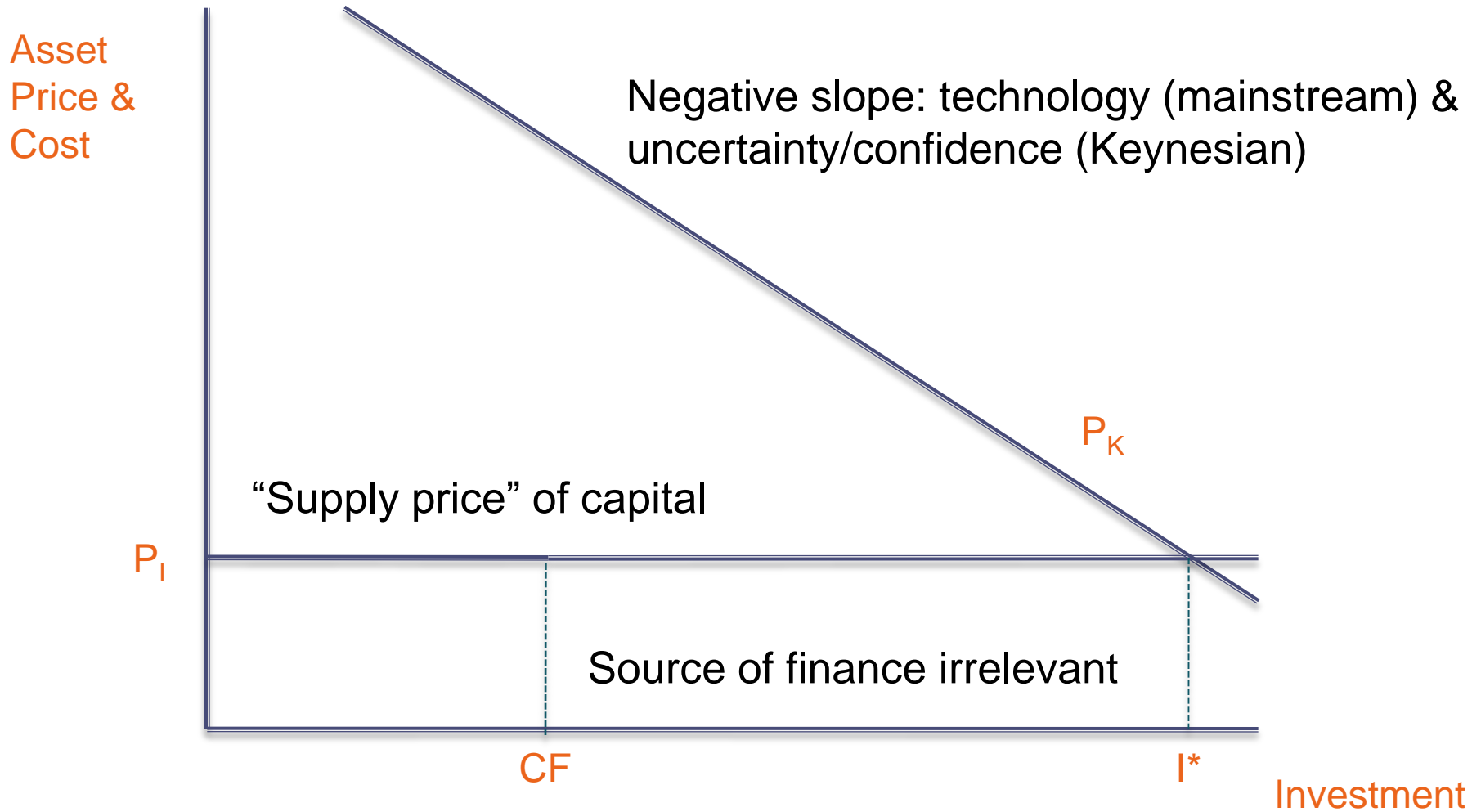
# Outline of Talk

- ▶ Why does finance matter? (Microfoundations)
    - Firms: financial constraints on investment
    - Households: liquidity constraints or something else?
  - ▶ Micro to macro: finance can constrain investment but saving does not constrain investment (short)
  - ▶ Dynamic theory of financial crisis: Minsky
  - ▶ Relevance to recent events
- 

# Thoughts on “Microfoundations”

- ▶ Phrase emerges following the Lucas critique
  - Very narrow meaning in mainstream
- ▶ But behavior is important, heterodox economists should engage these ideas
- ▶ General principle
  - Uncertainty as fundamental
  - Linkages flow from behavior to macro results and from macro to behavior
  - Behavior evolves in a social context

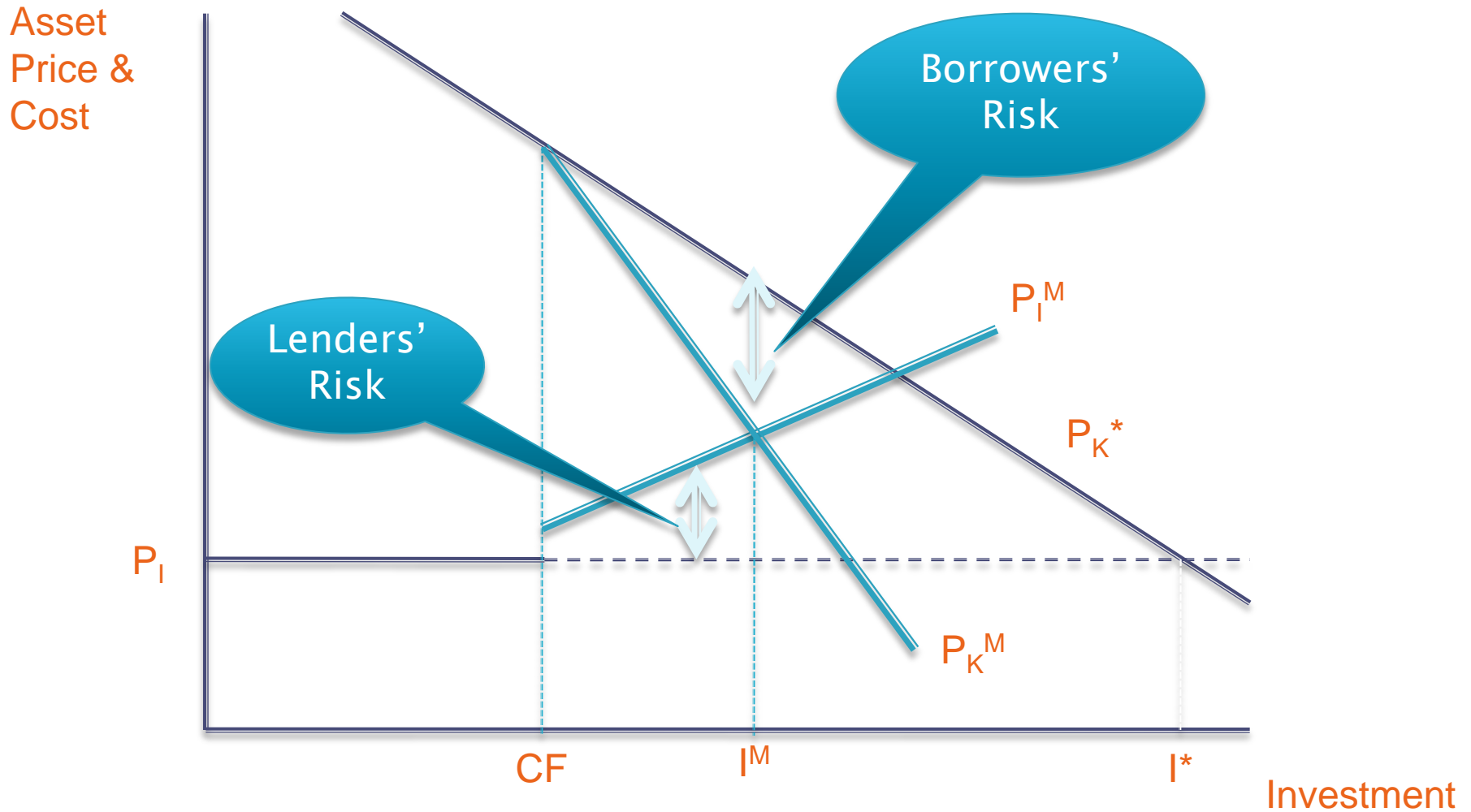
# Investment Model without Finance



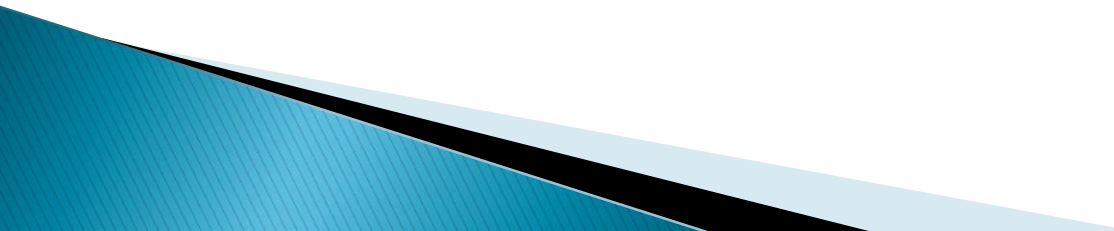
# Introduce Finance

- ▶ Minsky: “A decision to invest ... is always a decision about a liability structure;” finance always crucial
- ▶ Financial effects in the investment diagram
  - Internal funds
  - Borrowers’ risk (subjective)
    - Entrepreneurial perception; not necessarily in market prices
    - Kalecki increasing risk
    - Complementary story: Crotty and corporate control
  - Lenders’ risk (in contracts)
  - Margins of safety
- ▶ Uncertainty and fundamentals of firm / lender behavior

# Keynes-Kalecki-Minsky Investment Model: The Role of Finance



# What Drives Investment?

- ▶ Expectations of quasi-rents
    - Technology and market opportunities.
    - Capacity utilization
    - Confidence (even for internally financed I)
  - ▶ Evolving conditions of finance
    - Changes in cash flow (link to Bhaduri–Marglin ...)
    - Confidence and borrowers' risk (Kalecki)
    - Confidence and lenders' risk (link to model of Giuseppe F.; loan markups & creditworthiness parameter)
  - ▶ What “margin of safety?”
  - ▶ Investment decision is a finance decision
- 

# Review of the Evidence

- ▶ Cash flow and Investment (micro)
  - Huge literature
  - Identification and “heterogeneity”
  - Recent counter-revolution; but finance effects widely accepted
- ▶ Debt and interest effects (micro)
  - Ambiguous empirical effects of leverage (correlation with investment “shock”)
  - Ndikumana (JPKE, 1999)
- ▶ Credit channel (macro)

# Contrast with Mainstream (1)

## Modigliani – Miller Dichotomy

- ▶ Minsky perspective (1986, 1993):

“As the standard interpretation of Keynes was assimilated to traditional economics, the emphasis upon finance and debt structures that was evident in the 1920s and 1930s was lost. In today’s standard economic theory, an abstract nonfinancial economy is analyzed.”
- ▶ Modigliani–Miller & Jorgenson (through 1970s)
- ▶ Changes in 1980s; do not want to be outdated in critique of mainstream

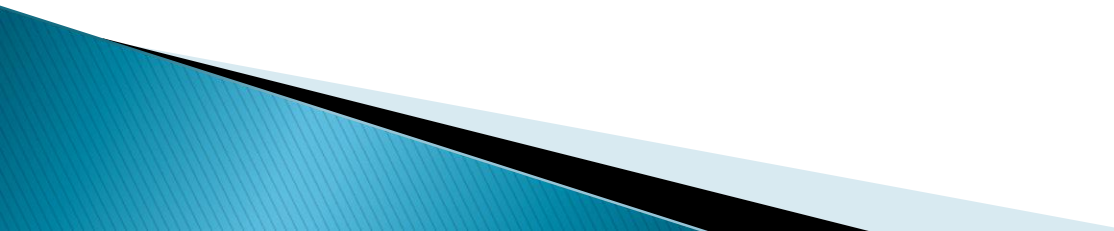
# Contrast with Mainstream (2): Asymmetric Information & Finance Constraints

- ▶ “New Keynesian” finance and investment
  - Credit rationing (Stiglitz & Weiss, 1981)
  - Equity “Lemons” premium (Myers & Majluf, 1984)
- ▶ Basic idea: start with excess demand for credit
  - Higher interest rate deters good borrowers but not bad; makes “mix” less favorable to lender (adverse selection)
  - Might not be profitable for lender to raise interest rates with excess demand  $\Rightarrow$  credit rationing
  - Firm may invest in project with internal finance that can’t be financed externally
- ▶ Finance matters; contrast with Modigliani/Miller and Jorgenson
  - Most focus on investment, but also household “liquidity constraint”
  - A.I. problems keep households below optimal consumption path due to inability to borrow

# Heterodoxy and A.I. Models (F&V)

- ▶ A.I. clearly sufficient for finance effects on investment
  - More than an “imperfection”
  - Pervasive feature of decentralized economies
  - Especially with fundamental uncertainty
- ▶ Is it necessary?
  - Possibly for narrow definition of “finance constraint”
  - Borrowers’ risk may have nothing to do with A.I.
  - Lenders’ liquidity concerns with uncertainty
- ▶ A.I. an important source of finance effects; not the only source

# Missing Finance Effects in Mainstream Models with A.I.

- ▶ Greater access to debt destabilizing
    - Relaxing liquidity constraints should be optimal and sustainable, but evidence suggests otherwise
  - ▶ Bank & finance behavior that magnifies instability (see Dymski)
    - Destabilizing innovation to avoid financial regulation
    - Contrast with mainstream view of financial innovation as efficiency enhancing
  - ▶ Importance of uncertainty and liquidity
  - ▶ Macro dynamics of finance: systematic tendency to fragility (vs. equilibrium driven by shocks to financial technology)
- 

# From Micro to Macro: Finance and Saving (1)

- ▶ Micro: finance constrains investment
- ▶ Micro: investment drives saving; how to reconcile?
- ▶ Do not think of aggregate saving as financing aggregate investment
  - Investment creates saving through income creation
  - Keynes GT, chapter 14; contrast with neoclassical macro

## From Micro to Macro: Finance and Saving (2)

- ▶ Scarcity of investment finance arises from assessment of “creditworthiness” (G. Fontana presentation)
- ▶ Source of investment finance is endogenous money
- ▶ Constraint is micro-level decisions to finance capital expenditure (borrowers and lenders)
  - The level of investment financed at micro level will generate adequate macro saving endogenously

# Financial Dynamics of Investment

- ▶ Extend static model with explicit dynamics
  - Minsky's "Financial Instability Hypothesis"
- ▶ Endogenous transition to financial fragility in expansion leads to financial crisis
- ▶ "Financial fragility, which is a prerequisite for financial instability, is, fundamentally, a result of internal market processes. (Minsky, 1986, p. 280)"
- ▶ Two key concept: validation and fragility

# Validation: Minsky is a Keynesian

- ▶ More aggressive finance  $\Rightarrow$  spending  $\uparrow \Rightarrow$  income  $\uparrow$  to help “validate” financial practice
- ▶ Keynesian demand effects
  - Kaleckian models: investment generates profits
  - Minsky adopted this way of thinking
- ▶ Asset prices and collateral value
- ▶ Proximate constraint on output (most of the time) is demand
  - Contrast with mainstream New Keynesian view
  - Investment / Finance validation process works through demand creation that proceeds for years; not just “short run”
- ▶ Fundamental direction of instability is upward
  - Contrast with common emphasis on crisis

# Fragility

- ▶ Validation => try more aggressive strategies
  - With past success, probe opportunities for profit (finance capitalism)
- ▶ What does “fragility” mean?
  - Higher leverage; shorter financing; more liberal lending standards; less intensive credit evaluation; greater reliance on risky asset prices & collateral; innovate around regulation ...
  - Related to hedge / speculative / Ponzi progression
  - Decline in perceived borrowers' risk & lenders' risk
- ▶ More fragility => eventual crisis

# Expansion: The Basic Story

- ▶ Stability ...
  - Validation of current financial practices
- ▶ ... Is destabilizing
  - Rising fragility until finance induces crisis
- ▶ Marc Lavoie “paradox of tranquility”

# Role of Uncertainty in Dynamics

- ▶ Minsky perhaps less emphasis on uncertainty than others. (Davidson, Crotty)
  - “Success breeds a disregard of the possibility of failure” (1986, 237); supports upward direction of instability
- ▶ Because of uncertainty, perceptions of risk and acceptable financial structure evolve
- ▶ Convention and expectations drive systematic dynamic toward more fragile finance
  - Dymski: “Mistake uncertainty for risk.” Assume risk could be managed. Failure of stationarity / ergodicity as practices evolve
  - Importance of social environment for perception of risks and validation; not atomistic agents


# Are Agents “Irrational”

- ▶ Bernanke comment (1983, AER): If fragility is systematic, why not anticipated?
- ▶ Conception of uncertainty
  - Role of convention and generalized “adaptive” expectations
  - Backward-looking “quant” modeling
- ▶ Behavioral psychology and social herding; how do agents behave in an uncertain world?
  - 1995 JFS: “Units live in a world with intractable uncertainty; not only is their foresight imperfect, but sensate agents know that their foresight is imperfect.”

# Are We Sure About Rising Fragility?

- ▶ What prevents validation from dominating dynamics indefinitely? (Lavoie and Seccareccia, among others)
  - More debt  $\Rightarrow$  more profits
  - Does fragility necessarily rise?
- ▶ Responses
  - Validation limited by capacity constraints
  - Fragility is qualitative, not just about ratios
  - Need for formal model to explore ambiguity
- ▶ Empirical question
  - Rising business debt ratios far from clear (Charles cites)
  - Answered definitively for household finance booms

# The “Minsky Moment” and Crisis

- ▶ End of the boom (Paul McCulley)
  - ▶ Why?
    - Rising interest rates
    - Capacity constraints limit validation
    - Increasing fragility of confidence & expectations
    - Crisis trigger hard to predict and may be historically specific
    - Unsustainable processes won't be sustained
  - ▶ (Brutal) “cleansing” of finance during crisis
    - Minsky follows Schumpeter's “creative destruction”
    - Restarts the process
- 

# Formalizing Financial Instability

- ▶ Many attempts to capture ideas in mathematical models
- ▶ Challenge to capture interesting financial dynamics in formal structure
- ▶ Much focus on debt ratios ( $D/Y$  or  $D/K$ ) as measures of financial fragility
- ▶ But Minsky predicts qualitative change and feedback from validation to rising fragility
  - Largely missing in formal models

# Example—S. Charles (2008)

## ▶ Key financial equations:

- Accumulation of debt:  $\Delta D = \text{Invst} - s^f(\Pi - iD)$
- Investment and cash flow:  $\text{Invst} = \phi^0 + \phi s^f(\Pi - iD)$
- Interest rate depends on debt:  $i = i^* + \varphi (D/K)$

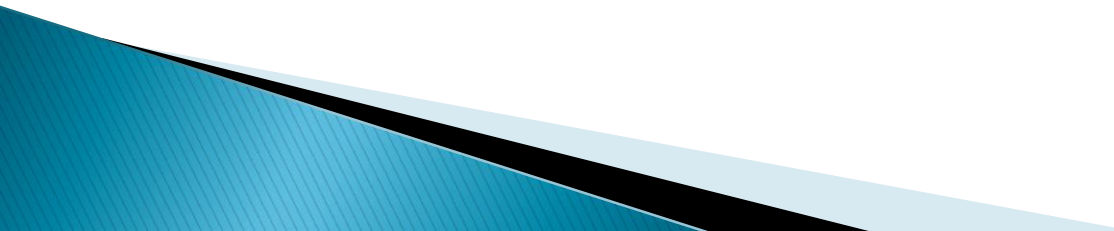
## ▶ Dynamic: $\text{Invst} \uparrow \Rightarrow D/K \uparrow \Rightarrow i \uparrow \Rightarrow \text{CF} \downarrow \Rightarrow \text{Invst} \downarrow$

- Could lead to investment “crisis”
- Right general idea, but nuance of more aggressive financial practice largely missing
- Need more analysis of how financial features feed into the results; what happens when  $\phi$  or  $\varphi$  are set to zero?
- Often missing with focus on unstable equilibria or limit cycles
- Another example: Fazz, et al. JEBO, cycles from accelerator or debt (Engelbert S. comment)

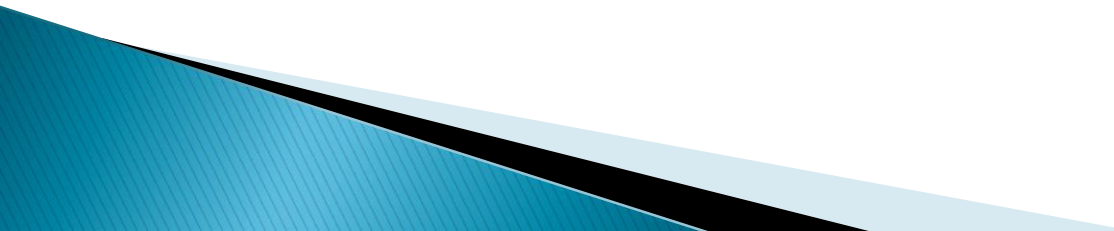
# Minsky and History

- ▶ Minsky theory not fully captured in formal models
  - Not criticism of formal work; can illuminate aspects of the ideas
  - But recognize limits of formalism and complementary value of historical analysis
  - Detailed case studies of historical periods to explore how general Minsky features did (or did not emerge)
  - Minsky's own method
- ▶ The “Consumer Age” ...

# Financial Instability Leading to Great Recession

- ▶ Most significant financial crisis since 1930s
  - ▶ Clear that household debt and consumer spending played a significant role
  - ▶ My view: macro dynamic fits broad outline of Minsky process: finance as a clear source of instability
  - ▶ Shift focus from firms to households
- 

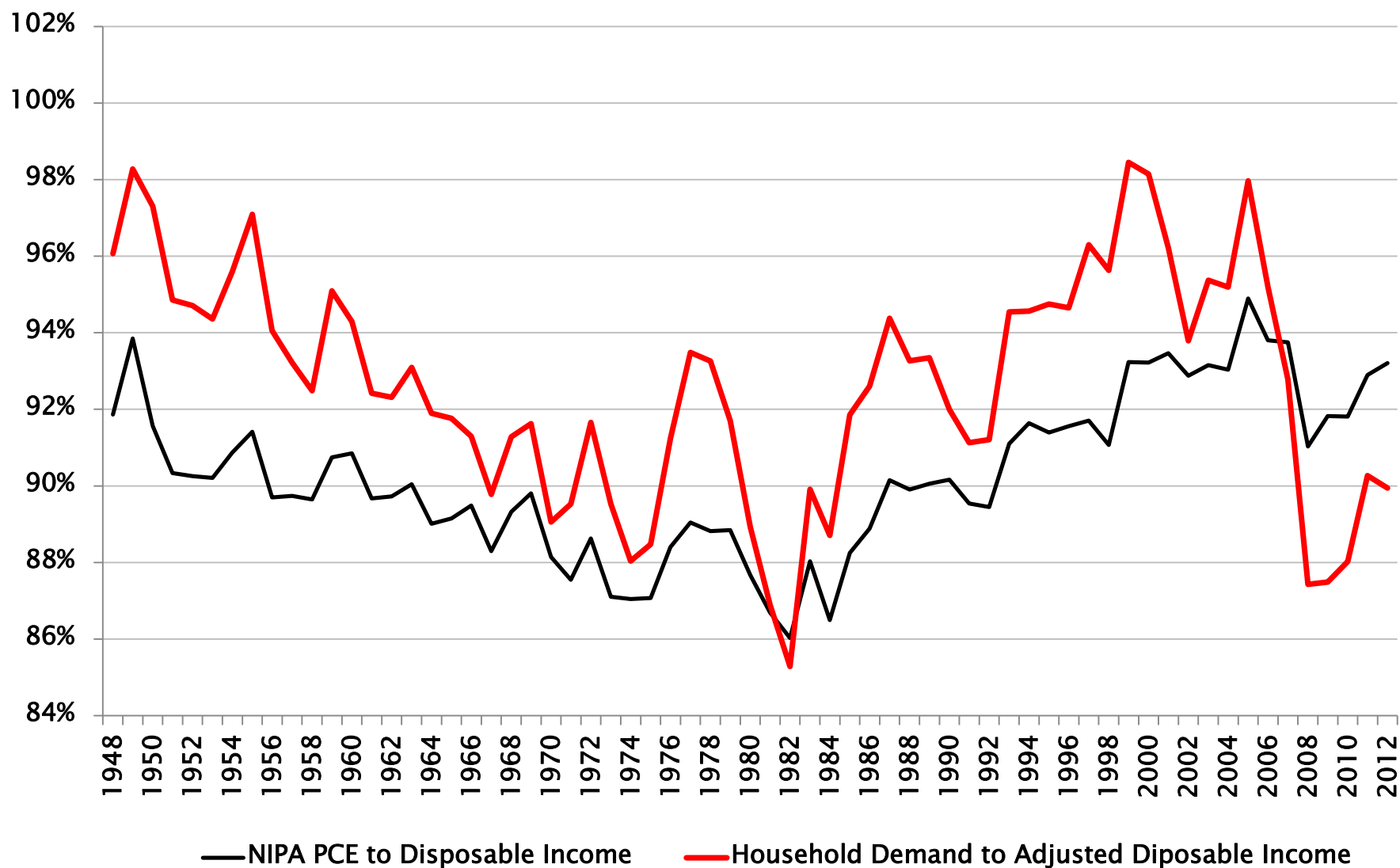
# Some Notes on Measurement

- ▶ Key question: what demand emanates from household sector?
  - ▶ Problem of housing measurement
  - ▶ New Cynamon–Fazzari work
    - Get rid of implicit owner–occupied components
    - Replace with residential construction
  - ▶ Consistent framework for measuring demand
  - ▶ Practical integration of consumption and residential construction
- 

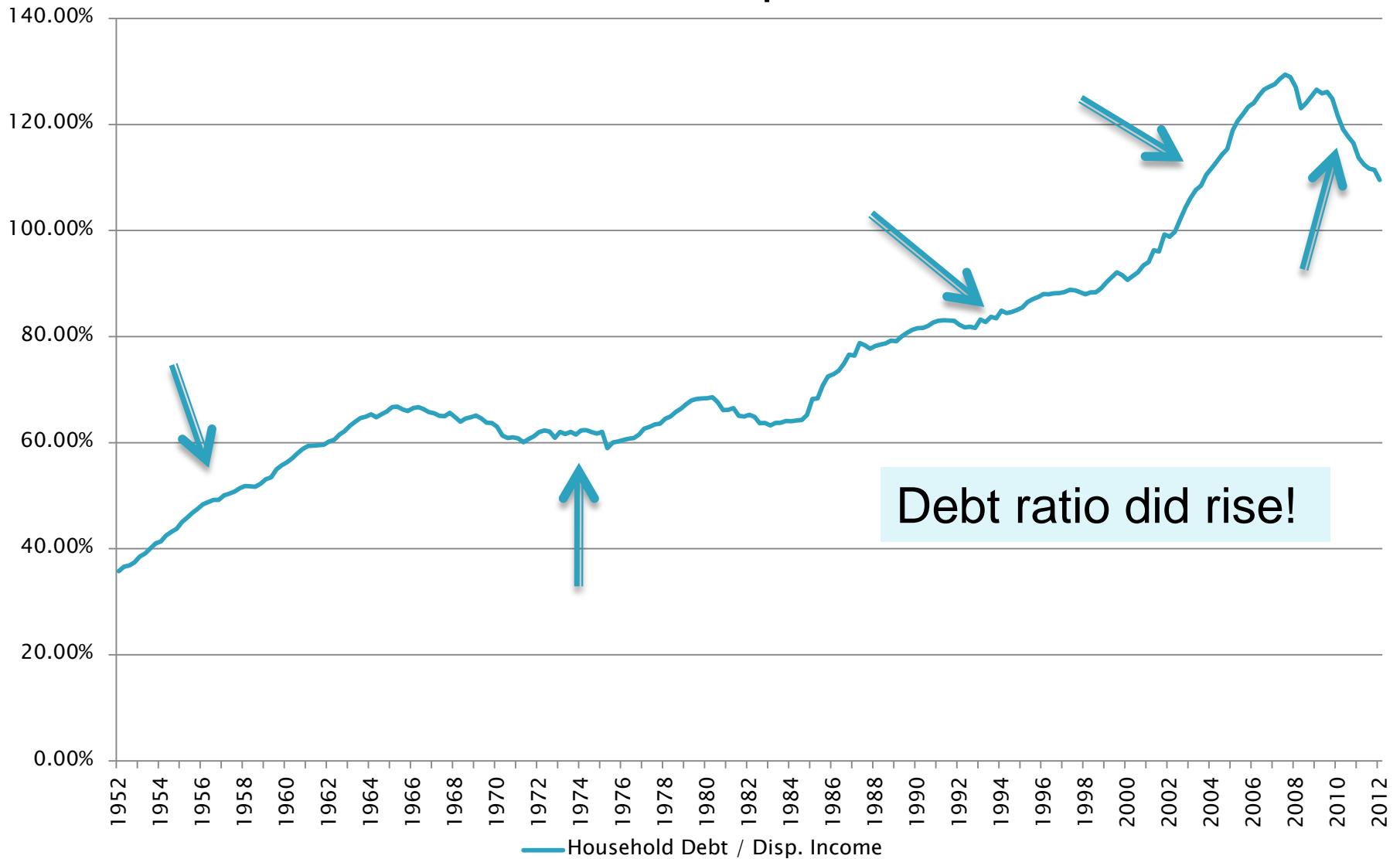
# The Consumer Age (Chart)

- ▶ Good macro performance in 1960s with stable (or falling) household spending share
- ▶ Strong positive trend of American household spending: mid 1980s to 2007
- ▶ Collapse of the Great Recession
  - Much more evident in housing-adjusted data

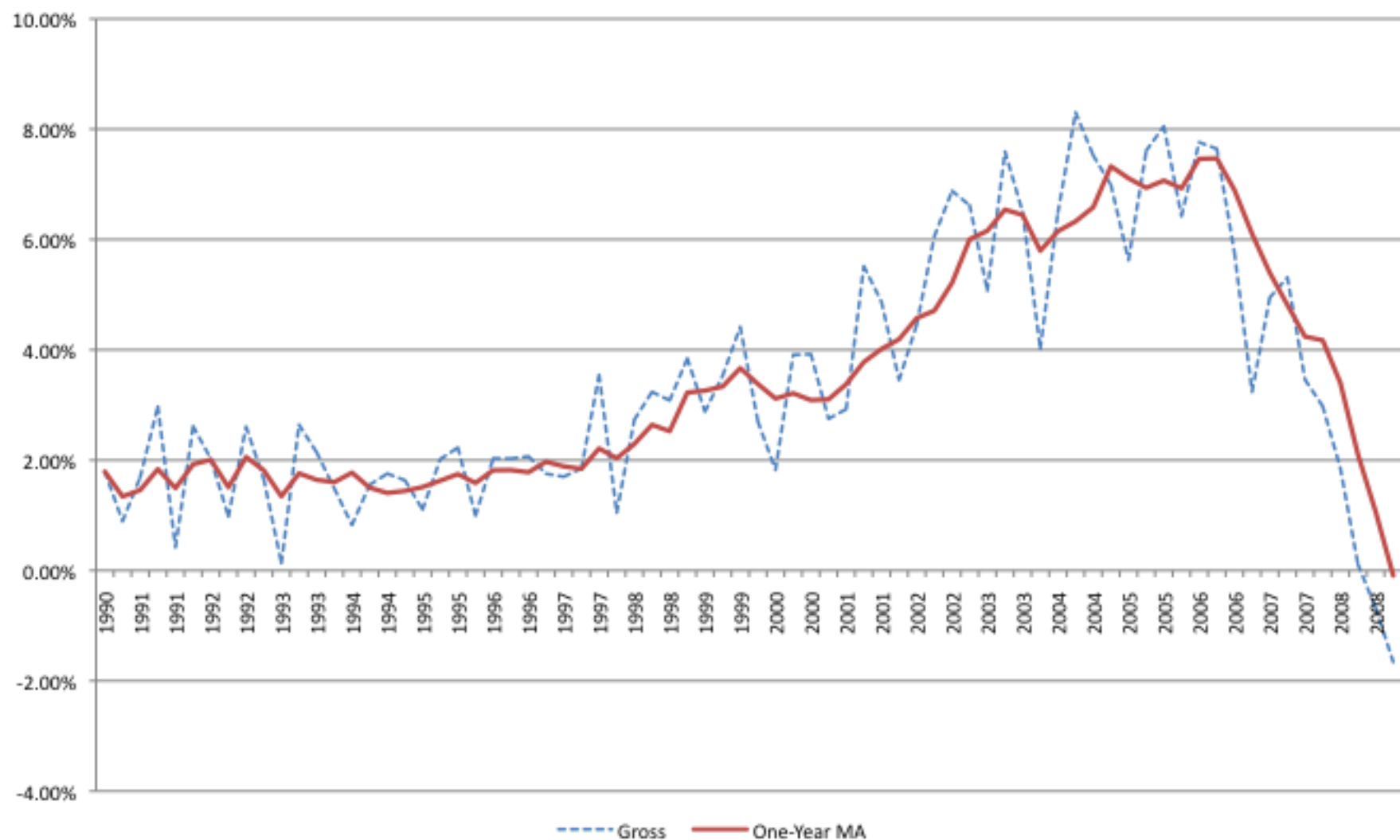
# Household Demand to Disp. Income: NIPA and Adjusted



# Household Debt to Disposable Income



## Mortgage Equity Withdrawal (Share of GDP)



# The Message

- ▶ Household spending dynamics central to Great Recession
  - Include new housing
  - Critical period is “Consumer Age”: mid 1980s – 2007, sowed the seeds of its own destruction
- ▶ Finance played central role
  - Rising fragility associated with expenditure boom
- ▶ Minsky story, applied to households

# Mainstream Consumption Theory

- ▶ Conventional life-cycle model
  - Basic demographic story fails miserably in Consumer Age
- ▶ Liquidity constraints
  - But were households moving toward “optimal path” in consumer age??
- ▶ Wealth effects? Perhaps some relevance
  - Problems with distribution: wealth held by the rich but consumption boom was broad
  - Problems with housing wealth effects

# Dynamics of Household Borrowers' Risk

- ▶ Institutional change
  - Tax reform & home equity loans
- ▶ Falling interest rates and habit of refinancing
- ▶ Experience and changing convention
  - Shift of norms
  - Social context of microfoundations

# Keynesian Validation

- ▶ Aggressive household finance stimulates demand
- ▶ Strong demand drives incomes
  - Great Moderation and “mild recessions”
  - Partial result of consumption–debt engine
- ▶ Consumption + housing: big quantitative effects
  - 75%+ of GDP
  - Compare with business investment: about 12%
- ▶ Asset prices (mostly houses)
  - Probably some wealth effects on spending
  - Clear effect of asset prices on collateral, and borrowing
  - Expectations and confidence

# Rising Financial Fragility

- ▶ Success => more aggressive lending
- ▶ Shift toward short-term financing (hedge, speculative, Ponzi)
  - Teaser rates; expectation of refinance
  - Borrowing to pay interest
  - Irrational? Refinancing into falling-rate markets worked for two decades, validating convention
- ▶ Stress test metaphor
  - When test item doesn't break, provides validation
  - But addition of stress leads to more fragility

# Evolution of Consumer Behavior

- ▶ Why did people do this?
- ▶ Cynamon–Fazzari story
  - Evolution of preference in social context
  - Reference groups, media cues
  - Critical role of uncertainty; people seek “safety in numbers;” convention shifts
  - Contrast with mainstream: preference as exogenous fundamental; constrains theory
- ▶ Probe behavioral space; systematic validation conditions direction of evolution

# Dynamics of Lenders' Risk

- ▶ Financial innovation breeds fragility
  - Credit-scoring technology
  - Validated by demand generation process and falling interest rates
  - Assisted by perspective of modern finance
    - False perception of risk management
    - Assumed time-invariant (ergodic) probability distributions
- ▶ Lenders' risk dynamic
  - Again, "Success breeds a disregard of the possibility of failure" (Minsky, 1986, 237); Curry quote; next page

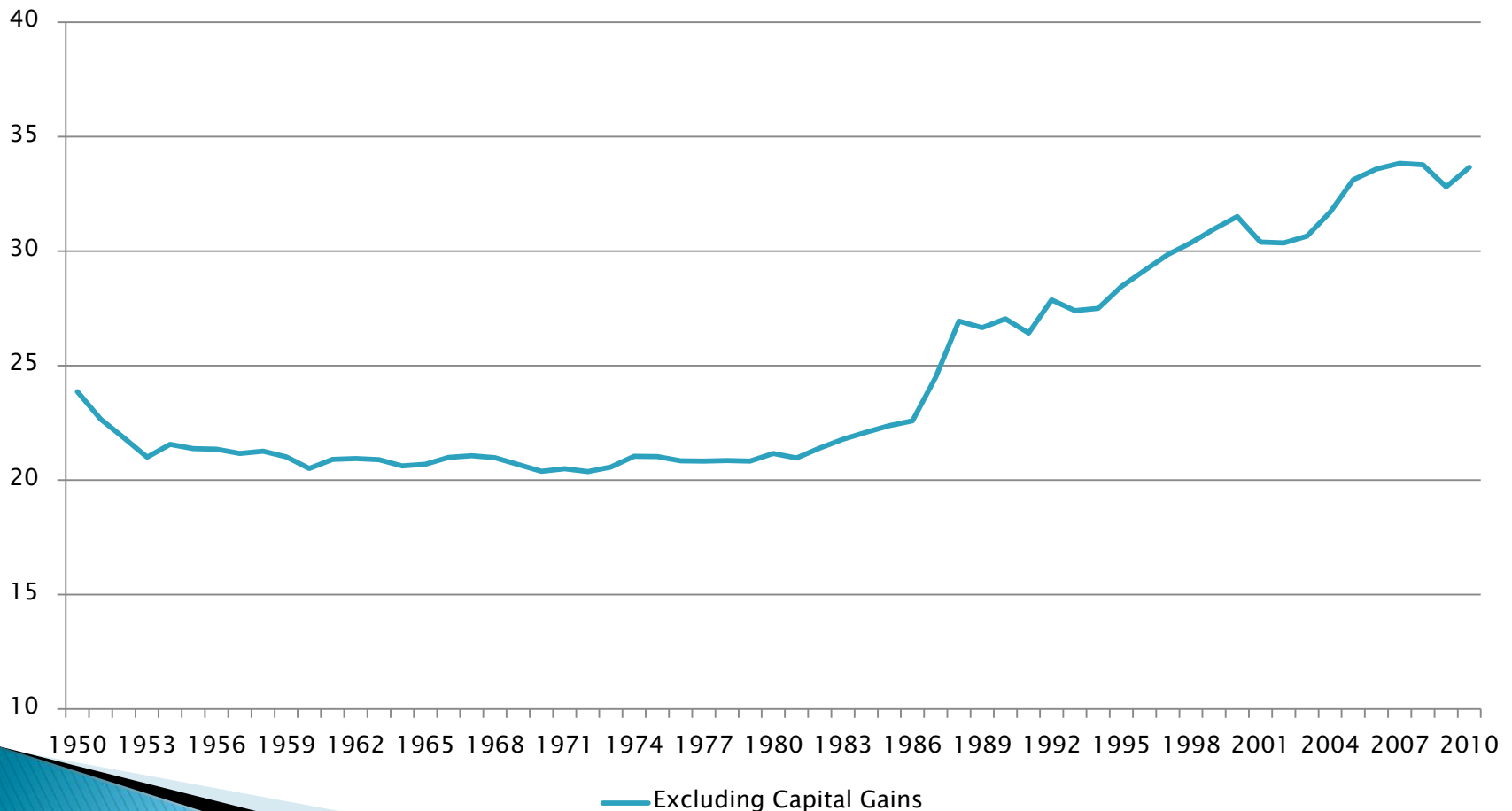
# In Their Own Words ...

- ▶ Boykin Curry, managing director of Eagle Capital: "For 20 years, the DNA of nearly every financial institution had morphed dangerously. Each time someone at the table pressed for more leverage and more risk, the next few years proved them 'right.' These people were emboldened, they were promoted and they gained control of ever more capital. Meanwhile, anyone in power who hesitated, who argued for caution, was proved 'wrong.' The cautious types were increasingly intimidated, passed over for promotion. They lost their hold on capital. This happened every day in almost every financial institution over and over, until we ended up with a very specific kind of person running things."

- Quoted in Farid Sakaria column "There is a Silver Lining," Newsweek, October 12, 2008, emphasis added

# Role of Inequality

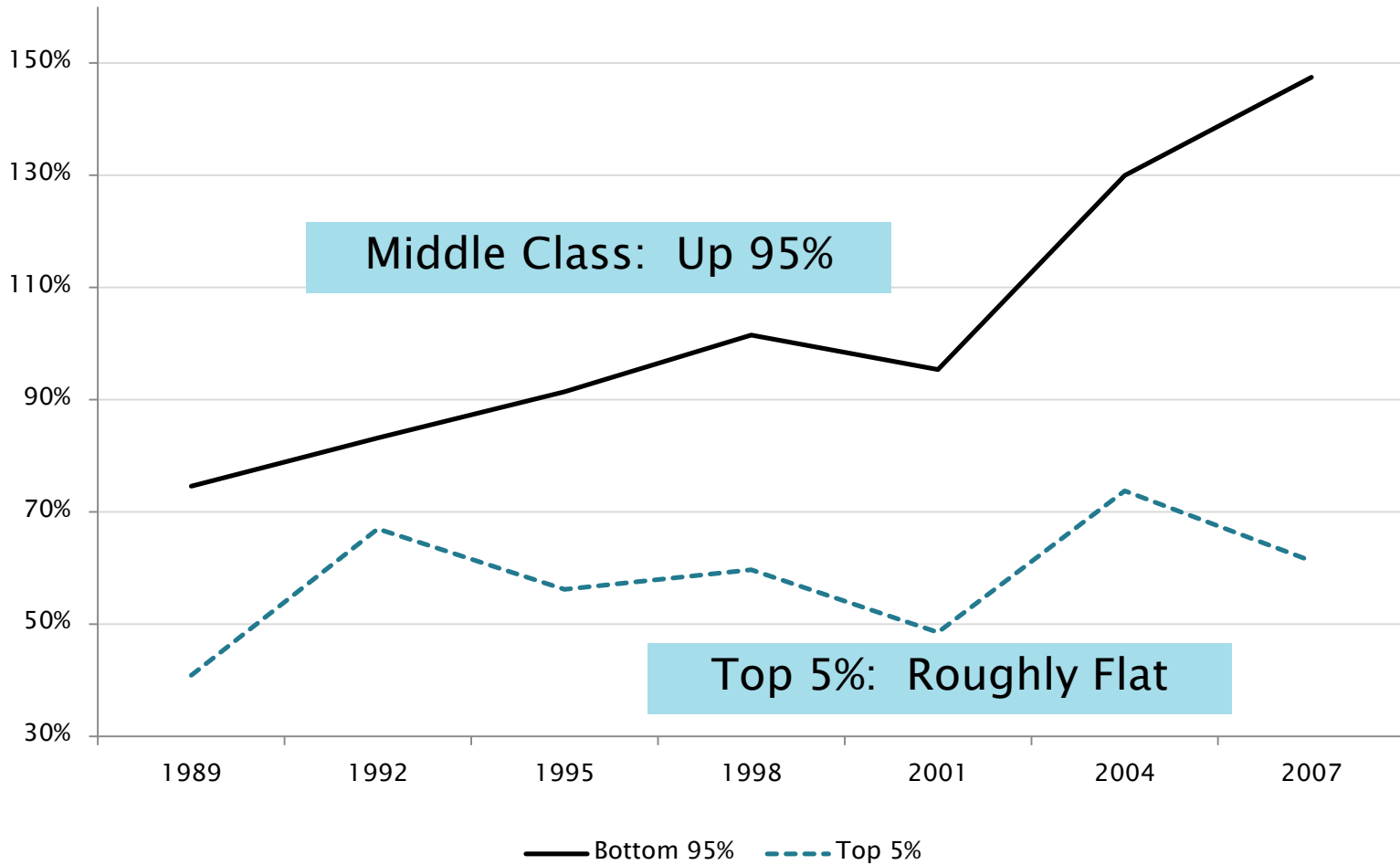
Income Share of U.S. Top 5% (Piketty/Saez -- Pre-Tax)



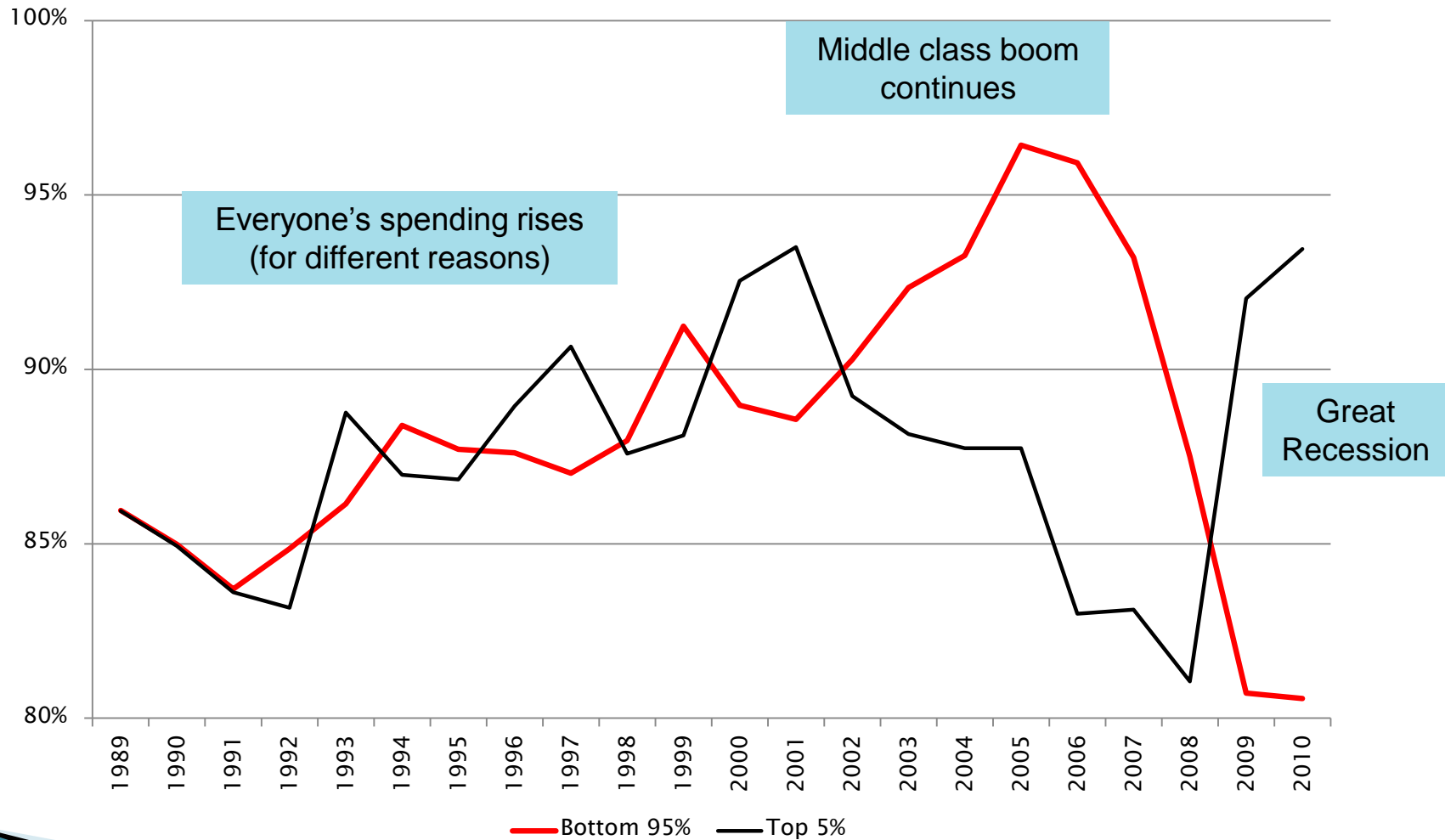
# Paradox: Strong Consumer Spending with Rising Inequality

- ▶ Look beyond aggregates ...
  - What was happening to spending and debt across income classes?
- ▶ Survey of consumer finance for debt
- ▶ Data challenges for spending and saving
  - Mark Zandi (plus a lot of work) for spending rates

# Who Was Borrowing? (SCF)



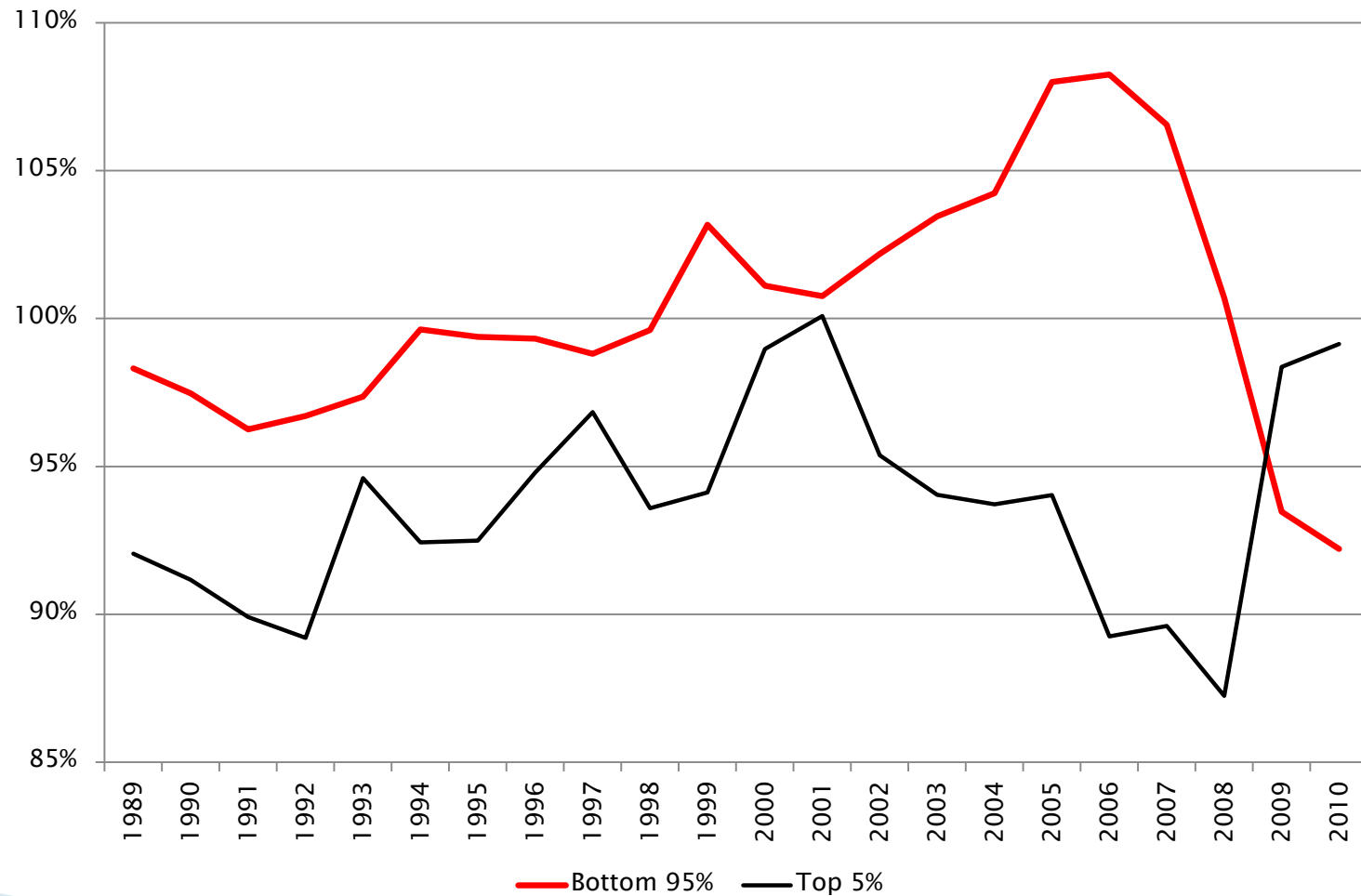
# Disaggregated Demand Rates



# Resolving the Paradox

- ▶ Demand drag from inequality postponed by lend-and-spend dynamic of middle class
- ▶ Created extreme financial fragility that spawned the Great Recession
  - Debt ratios
  - Outlay rates (next chart)

# Outlays to Adjusted Disposable Income (Demand + Transfers)

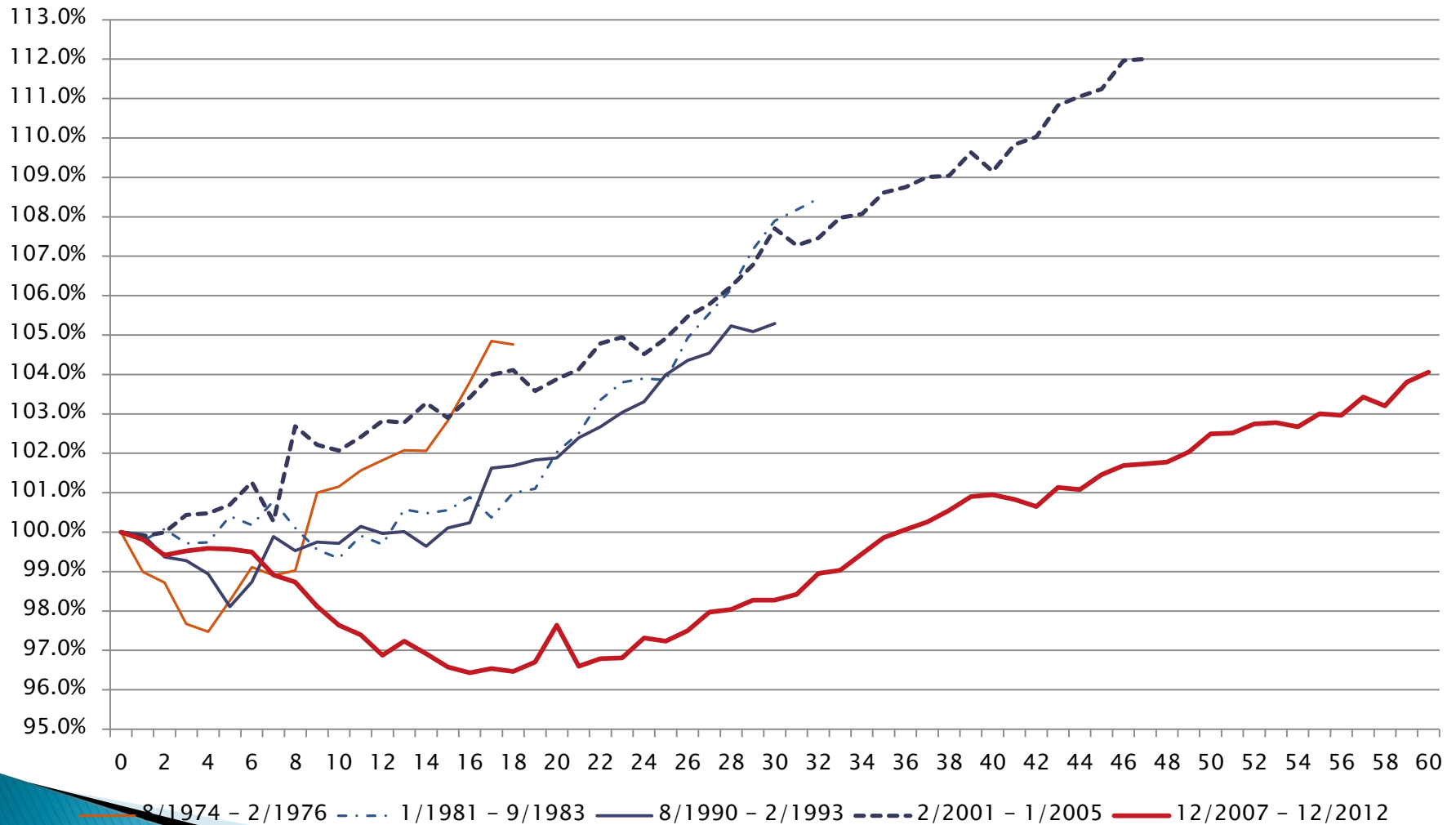


# Collapse of Demand Generation Process

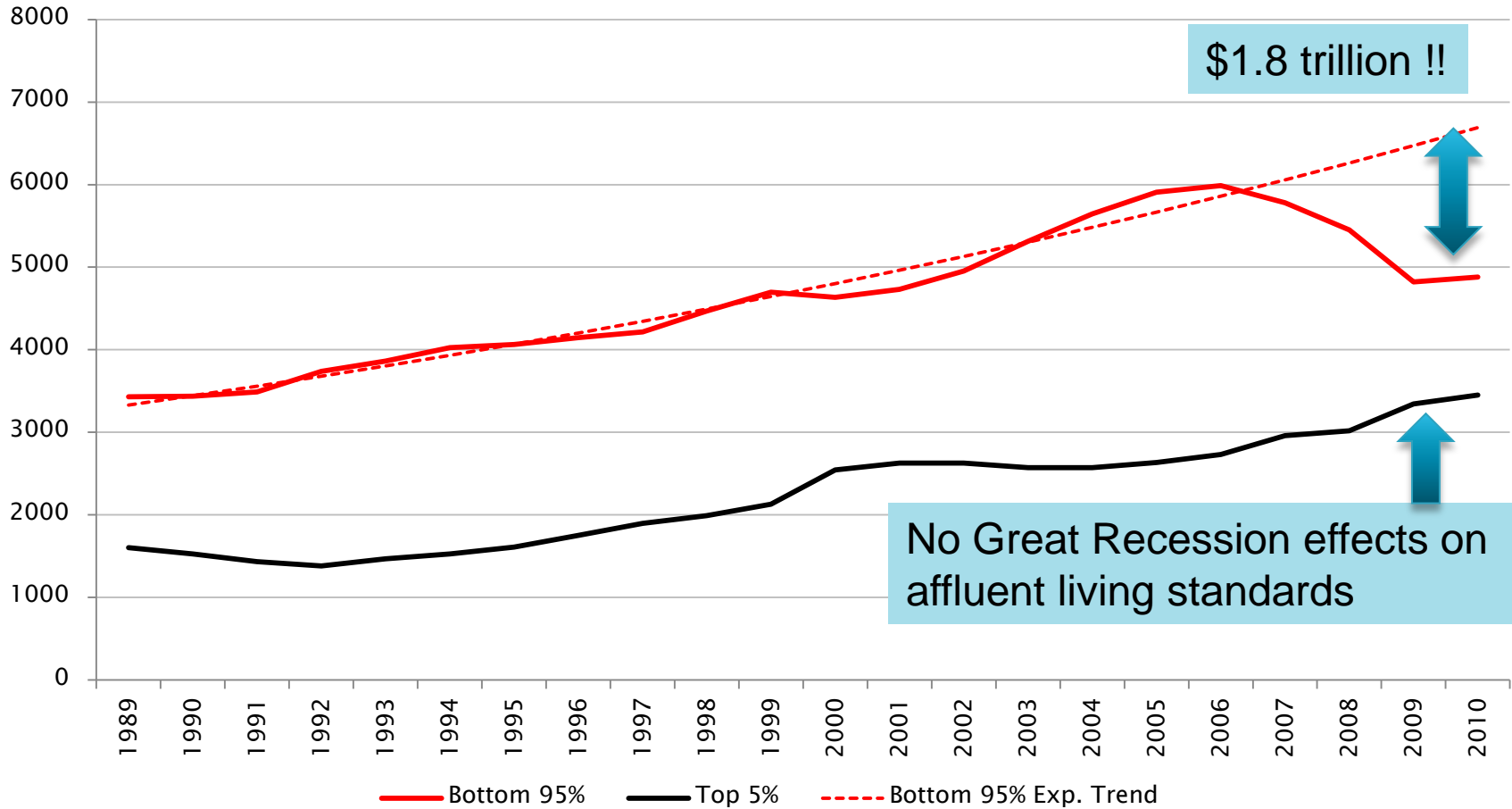
- ▶ Loss of debt-financed spending by the middle class
  - Not just effect of redistribution on average propensity to consume
  - Loss of demand growth generation
- ▶ Two perspectives ...

# Real Consumption Profiles Until Initial Employment Restored

## (Standard NIPA Data, Unadjusted)



# Disaggregate Real Demand Trends



# Challenges Going Forward

- ▶ Compromised aggregate demand generating process
    - Deleveraging level effect and loss of consumption-led growth
  - ▶ Minsky “cleansing” stage perhaps less effective with households
    - Compromised financial units not wiped out
    - Decentralized units
    - Personal distributional controversies salient with “bailouts”; are people more upset if their neighbor is bailed out than if AIG or JP Morgan is bailed out?
  - ▶ No obvious solution for rising inequality
- 